Portsmouth City Council

CITY DEAL - TIPNER WEST

Phase 2 Ground Contamination Investigation Interpretative Report

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Portsmouth City Council

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EXECUTIVE SUMMARY

WSP was instructed by Savills on behalf of Portsmouth City Council (PCC) to provide multi-disciplinary consultancy services for the proposed development of the City Deal scheme, located at Tipner West and Horsea Island East in Portsmouth. This report provides an assessment of the environmental conditions and potential ground contamination on accessible areas of Tipner West (referred to as the site).

In support of a future planning application for this scheme WSP has completed this assessment of ground contamination to inform constraints for the masterplan which is currently under development. The work was undertaken in accordance with our proposals dated 8 August 2016 (ref. 70015362_08082016) and 8 February 2017 (ref. 70015362.GE1 v2) and comprises an assessment of previous investigations as well as works undertaken by WSP.

For the purpose of this assessment the site which was investigated has been divided into three areas of discussion, based on common former use and underlying ground conditions. These comprise the following which are made up of the present land use areas:

Area 1 –the firing range(area W9) and the Tipner Boating and Angling Club(TBAC, area W8);

Area 2 – the former MOD landfill (area W4) and the Portsmouth Harbour Cruising Club (PHCC, area W3); and

Area 3 – the National Seamanship Training Centre (area W7) and vacant land owned by PCC to the north of the firing range (area W5).

There are areas of the Tipner West peninsula (including the scrapyard and aggregates depot on Tipner point, harbour school and foreshore around the peninsula) that were not accessible during this assessment. It is recommended that further assessment of these areas is undertaken when access is possible and the development proposals for these areas are fixed.

The site is located in a sensitive environmental setting, adjacent to Tipner Lake (Portsmouth Harbour - a Site of Special Scientific Interest, Special Protection Area) and underlain by Secondary A /Undifferentiated Aquifers in the superficial deposits and Lambeth Group and a Principal Aquifer in the Chalk.

The site has a varied history under military ownership with areas of the site used for gunpowder manufacture, a barracks, firing range and use for recreational boating clubs. The area has undergone significant alteration through landfilling activities along the western and southern coast (firing range area W9) and in a former lagoon in the north (MOD landfill area W4).

A ground investigation was scoped and undertaken by WSP in August 2016 and April 2017 to compliment previous exploratory works undertaken across the site. The intrusive works comprised 19 rotary boreholes, 37 window sample boreholes and 38 trial pits with associated soil and groundwater sampling. A programme of groundwater and gas monitoring was conducted between June and September 2017.

Ground conditions were found to be consistent with the previous site assessments comprising a sequence of Topsoil and Made Ground overlying superficial deposits, Lambeth Group and Lewes Nodular Chalk. The Made Ground was locally absent on parts of the firing range (Area 1, W9) with topsoil present over superficial deposits. The Made Ground deposits are highly variable and reflect the historical activities of deposition in each area, maximum thicknesses of Made Ground (5.0 m) were recorded in filled ground south of the firing range (Area1, W9) and in the former MOD landfill (Area 2, W4)

Superficial deposits, including River Terrace Deposits, Residual Deposits and Beach and Tidal Flat Deposits were recorded during the investigation. These comprised predominantly gravelly or sandy clay and were locally absent around the western and southern perimeter of the firing range (Area 1, W9) and beneath parts of the former MOD landfill (Area 2, W4). The superficial deposits were proven up to 4.4 m in thickness. The Lambeth Group comprises stiff clays with sand at the base of the unit. The Lambeth Group thickness was unproven at the southern side of Area 1 (in TBAC W8 and the firing range W9), it thins to the north of Area 1 and is absent in Area 2 (areas W3, W4).Lewes Nodular Chalk was encountered in exploratory locations in the

northern half of the site as a structureless Chalk and proven to 10 m below ground level (bgl). Regionally the Chalk is greater than 100 m in thickness.

The aquifers identified on site were subject to further assessment as part of this investigation. Water levels in the superficial Secondary A and Undifferentiated Aquifers, where recorded, were between -0.88 m and 2.4 m AOD during the monitoring period. Water quality data indicated some degree of saline intrusion near the coast in these shallow aquifers. However, continuous water level monitoring showed there was limited fluctuation in water level observed with the tide in these aquifers.

Groundwater in the Secondary A aquifer in the Lambeth Group was recorded between 0.08 m and 2.87 m AOD during monitoring. The sand at the base of this unit is considered likely to be in continuity with the underlying Chalk, whilst the clays at the top of this formation are likely to act to isolate the Chalk from the overlying superficial deposits and Made Ground.

The groundwater levels within the Principal Chalk Aquifer were between -0.45 m and 1.52 m AOD during monitoring. Continuous groundwater monitoring in this aquifer recorded a variation in water levels of up to 1.8 m over a tidal cycle and evidence of saline intrusion is apparent close to the coast.

Moderately elevated concentrations of carbon dioxide (up to 18%) and methane (max. 33%) were recorded during monitoring in wells that were not flooded screening the Made Ground and superficial deposits. Although these were generally associated with no detectable gas flows. Highest gas concentrations were detected in the former landfill in Area 2 (W4). Unflooded monitoring wells in Area 1(W8 and W9) were classified as either CIRIA Characteristic Situation 1 or 2. All wells in Area 2 (W3, W4) were classified as Characteristic Situation 2. Monitoring wells that were not flooded in Area 3 were classified as Characteristic Situation 1. Flooded wells screening deeper strata recorded higher flow rates which are considered to be driven by fluctuation in groundwater however as the wells were flooded during monitoring these are not considered representative of the gas conditions in the underlying strata.

During the monitoring period following the intrusive works, a monitoring well, W4BH307, in Area 2 (the former MOD Landfill, W4) was vandalised. Diesel was identified in the monitoring well during subsequent monitoring as measurable free product on the groundwater.

Radiological risks were assessed with monitoring at surface and in materials below ground during the investigation in Area 1 (firing range W9 and TBAC W8) and Area 2 (former MOD landfill W4). Radiological on-site screening and confirmatory analysis did not encounter gross gamma counts in excess of normal background levels in the intrusive locations monitored in these areas. Radiological risks can therefore be excluded in the areas which were assessed from the identified potential development constraints, unless additional information or unexpected materials are encountered during groundworks.

A generic quantitative risk assessment was completed for the site on the basis of an undetermined end use and identified controlled water receptors of Tipner Lake Portsmouth Harbour, the Secondary A/Undifferentiated Aquifer in the superficial deposits, Secondary A Aquifer in the Lambeth Group and Principal Chalk Aquifer.

Risks to Controlled Waters: Excluding the tampered well in the former landfill, generally marginal exceedances were noted for metals, PAHs and inorganic contaminants for assessment criteria for surface waters and aquifers in the Secondary and Principal Aquifers monitored during the investigation. This is consistent with the conditions reported by IKM across the wider Tipner Peninsula. The proposed development will increase hard standing on the site which will reduce infiltration and contaminant mass flux associated with leachate, providing some betterment of water quality. Given the saline intrusion identified in the investigation the future resource potential of these aquifers is considered to be low and therefore the risk to these aquifers is also considered to be low. The risks to Portsmouth Harbour from these marginal exceedances of the assessment criteria are also considered to be low given the potential for dilution in the aquifers and the harbour the intervention for these marginal exceedances is not warranted. Locally the product identified in W4BH307 presents a risk to controlled waters and further management is recommended.

Risks to Current Site Users: Risks were assessed to be low to moderate from direct contact, ingestion, inhalation exposure to the contamination identified in the Made Ground on site. This pathway is potentially active in areas of exposed Made Ground in the current site setting including parts of the firing range (W9) in Area 1, the former MOD landfill (W4)where capping is intermittent in Area 2 and open ground in Area 3.

Risks to Future Site Users: There is a moderate risk to future site users from asbestos, PAHs and lead in the Made Ground in all areas of the site. However, the proposed development includes land raising to mitigate

flood risk across the majority of the site. In these areas, the pathway of direct exposure will be broken and the associated risk to future site users low. There is a low risk from ground gas to future site users.

Following the completion of this additional assessment at the site, the potential development constraints are considered to comprise:

- **Made Ground** which is present across the majority of the site, containing lead, PAHs and asbestos and organic contamination in localised areas. The exposure to this material in the future development will need to be appropriately managed to mitigate risks to future site users. Some areas of deeper Made Ground, notably along the coast in Area 1 included higher concentrations of asbestos. This will present a potential constraint to management of earthworks and foundation works in these areas.
- **Former MOD Landfill** this landfill contains significant quantities of asbestos containing materials as well as free fibres. The area is currently accessible to the public and only partially capped. The area should be isolated from public access and disturbance to the landfill minimised during the proposed development where practicable.
- **Ground gas** which is predominantly assessed as low risk across the site, there were locally elevated concentrations of carbon dioxide recorded in the Made Ground across the site and chalk and elevated methane in the former landfill (W4) which indicates that gas protection measures are likely to be required in the proposed development.

Design mitigation measures for the development are likely to include the following, subject to the design of the development:

- Capping of Made Ground in areas of soft landscaping and installation of clean service trenches through areas of Made Ground; and
- Gas protection measures area likely to be required in the new buildings in accordance with conditions identified in the respective monitoring wells. Where Made Ground or chalk is present this is likely to be CIRIA Characteristic Situation 2.

Recommendations

The next steps of assessment will be determined by the masterplan. Once the development scheme is fixed, it will be prudent to undertake a revised assessment of the data and a targeted development specific investigation. This should address the limitations of the current assessment and increase coverage in areas of higher end use sensitivity where ground levels will remain at grade in the proposed masterplan.

Further assessment is recommended in areas of the Tipner peninsula that were not accessible. These include the aggregate depot and scrapyard on Tipner point. The harbour school and foreshore should also be investigated if and where these are scheduled for redevelopment within the fixed masterplan.

Whilst the risks to Controlled Waters are considered to be low, it is recommended that additional groundwater sampling is undertaken to form a baseline of water quality against which the impact of future development works can be monitored. Further gas monitoring is recommended once the scheme is fixed to assess ground gas risks in relation to the proposed end use.

To capture the design mitigation measures across the City Deal project it is recommended that an outline remediation strategy is prepared which sets out a framework for management of ground contamination risks during the development of the scheme.

The identified product in monitoring well W4BH307 is an anomaly that presents a risk to the Chalk aquifer. It is recommended that this further assessed through bail down testing and steps are taken to recover the product and then the well decommissioned.

On the basis of the exploratory works, it appears that the capping layer in the former landfill (W4) within Area 2 is intermittent and it is recommended that the area is fenced off to limit public access to this open space.

This assessment should be provided to the PCC Contaminated Land Officer for comment and the recommendations for the scheme agreed as part of the future planning process.

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1 INTRODUCTION

1.1 TERMS OF REFERENCE

1.1.1 WSP was instructed by Savills on behalf of Portsmouth City Council (PCC) to provide multi-disciplinary consultancy services for the proposed development of the City Deal scheme, located on a site at Tipner West and Horsea Island East in Portsmouth.

1.1.2 In support of a future planning application for this scheme WSP has completed this assessment of ground contamination and any associated liabilities to inform constraints for the masterplan for the scheme which is currently under development. The work was undertaken in accordance with our proposals dated 8 August 2016 (ref. 70015362_08082016) and 8 February 2017 (ref. 70015362.GE1 v2). This report provides an assessment of the parcels of land at Tipner West. The assessment of Horsea Island East is provided in WSP *City Deal – Horsea Island East: Phase 2 Ground Contamination Investigation Interpretative Report ref 70015362.003.CL* (January 2018).

1.1.3 The survey areas defined for the City Deal scheme are provided in drawing 70015362 SURVEY in **Appendix A**. The location of the areas subject to assessment in this report and current layout are presented in **Figures 1** and **2**.

1.2 DEVELOPMENT PLANS

1.2.1 The proposed masterplan for the City Deal scheme is not yet fixed but is proposed to comprise a mixed use residential and commercial development in support of proposed uses for this area as set out in the Portsmouth Plan, (Portsmouth's Core Strategy, January 2012). The current understanding is that the development will be spread between Tipner West (on land to the west of the existing M275) and Horsea Island East with the two areas connected by a new road bridge.

1.3 CLIENT AIMS

1.3.1 Savills and PCC require a detailed understanding of constraints to the City Deal redevelopment plans with respect to soil and groundwater conditions across Tipner West, and require the information to feed into the development of the masterplan and the planning process.

1.3.2 In order to support this aim, WSP completed a constraints and opportunities assessment for the scheme in April 2016 (see **Section 1.7** for full reference). This assessment included a review of existing ground contamination assessments available for the site and identified data gaps in the existing information. The aims of this current assessment are to:

- Target the data gaps in the existing ground investigation data which were identified in the Constraints and Opportunities assessment;
- Collate and produce a comprehensive assessment of the ground conditions for the site using current and previous third party data and findings;
- Complete a generic quantitative assessment of potential risks to human health and controlled waters across the Tipner West area of the City Deal Development Envelope in order to inform the proposed development;
- Define constraints to redevelopment, based on the available information; and
- Identify area of uncertainty, any future works that may be required and next steps to support a future planning application.

1.4 PROJECT SCOPE

1.4.1 To assist in meeting PCC's aims as stated in **Section 1.3,** the scope of the project comprised:

- Two phases of site investigation carried out between 11 and 19 August 2016 and between 10 April and 29 September 2017.
- A period of groundwater and soil gas monitoring carried out between 2 June and 29 September 2017;
- Generic Quantitative Risk Assessment (GQRA) of potentially sensitive receptors with respect to ground and groundwater contamination;
- Refinement of the Conceptual Site Model (CSM) provided in the Constraints and Opportunities report based on the site data collected; and
- Provision of recommendations with respect to the management and mitigation of any potential ground contamination constraints or liabilities which are identified.

1.4.2 The assessment in this report excludes the land on Harbour School, scrap yard and aggregates depot areas on Tipner West and the foreshore around Tipner West and Horsea Island East. Further investigation is recommended for the scrapyard and aggregates depot when access is possible and further investigation may be required in all or part of the school and foreshore areas when the masterplan scheme for these areas is fixed.

1.4.3 This report forms part of the Health and Safety file for the site.

1.5 LEGISLATIVE CONTEXT AND GUIDANCE

1.5.1 The assessment was undertaken in the legislative context of the National Planning Policy Framework (2012).

1.5.2 The following good practice and statutory guidance was considered and the assessment was undertaken in general accordance with:

- Environment Agency (EA) 'Model Procedures for the Management of Land Contamination', CLR11 (2004);
- NHBC 'Guidance for the Safe Development of Housing on Land Affected by Contamination', R&D66 (2008);
- CIRIA 'Assessing Risks Posed by Hazardous Ground Gases to Buildings', C665 (2007);
- British Standard 'Investigation of Potentially Contaminated Sites – Code of Practice', BS EN 10175:2011;
- Defra 'Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance', PB13735 (2012);
- British Standard 'Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs)' BS 8576:2013;
- British Standard 'Code of Practice for Ground Investigations', BS 5930:2015; and
- UK Water Industry Research document 'Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites'. (Ref 10 / WM / 03 / 21).

1.6 REPORT STRUCTURE

1.6.1 The report is structured to provide a focussed assessment on soil and groundwater conditions on the site. Information from the Local Authority and scope and findings of the investigation supporting this appraisal are presented within the Appendices.

1.6.2 As part of the constraints assessment the Tipner West site was subdivided into nine current land use areas devised in a previous desk study assessment completed by Lake Environmental (for reference see **Section 1.7**). For the purpose of this report and the current contaminated land assessment the Tipner West site is

subdivided into three areas based on areas of common historical site use and prevailing geology. The site areas are summarised in **Table 1** and shown on the exploratory hole plan in **Figure 3**. Site history is summarised in **Section 2.6** and the ground conditions in **Section 4**.

Table 1 - Investigation Area References

Summary Areas for this Assessment Based on Historical Use	Tipner West Area (ref. in Constraints Report)	Current Usage	Bedrock
Area 1 Firing Range	W8	Tipner Boating and Angling Club	Lambeth Group
	W9	Tipner Firing Range	
Area 2 Former MOD Landfill	W3	Portsmouth Harbour Cruising Club (PHCC)	Lewes Nodular Chalk
	W4	Open land	
Area 3 Former Military Barracks	W5	Scrubland	Lewes Nodular Chalk
	W7	National Seamanship Training Centre	

1.7 SOURCES OF INFORMATION

1.7.1 The sources of information used in the production of this report are summarised in **Table 2**. Information from these sources relating to the underlying ground conditions has also been included in Sections 2 to 6 of this report, where relevant.

Table 2 - Sources of Information

Source	Report
WSP Reports	WSP|PB, 2016. 'Constraints & Opportunities Report, City Deal – Tipner West & Horsea Island East Regeneration'. WSP Parsons Brinckerhoff April 2016, ref. 5362-001 WSP|PB, 2016a. 'W9 Tipner Firing Range – Ground Investigation Initial Findings'. WSP Parsons Brinckerhoff, December 2016, ref 70015362.
Third Party Reports	The following reports were made available in full to WSP: ■ *Contamination of beaches – trials at Tipner.* Porton Report,1939 (Report No. 2067) ■ *Tipner/Stamshaw area desk study.* Parkman Environment, 1994 (Report no. 11288/OR/1 C). ■ *Tipner/Stamshaw Area, Ground Investigation and Risk Assessment* - Parkman Environment, 1994 (Report No. 11288/OR/2 C). ■ *Tipner redevelopment area, Portsmouth desk study* C L Associates, 1996 (Ref. 8735). ■ *Waterside Special School contaminations site investigation and assessment*. Clayton Environmental, 1996 (Report No. C02452). ■ *HMS Excellent Tipner Ranges Land Quality Assessment Phase Two: Intrusive Survey Factual Report.* Scott Wilson Kirkpatrick &Co. Ltd. June 1997 (Project No. N3/06656). ■ *Tipner West – Portsmouth contaminated land desk study.* Gifford 2001 (Report No. B4240/R01). ■ *Site investigation for contamination status assessment at the Portsmouth Harbour Cruising Club, Tipner, Portsmouth*. University of Portsmouth, 2004 (Report No. UPEL 1408 P -352). ■ *Tipner site desk study report*. IKM Consulting Ltd. 2005 (Ref. 1544). ■ *Tipner, Portsmouth Factual and interpretative report, Final Report*. IKM Consulting Ltd. 2006 (Ref. 1544- 061025). ■ *Tipner, Port Solent and Horsea Island, Portsmouth City Council Desk Study Report*. Atkins 2010 (Ref. 5089843). ■ *Harbour School Sports Hall land contamination assessment report and outline*

	remediation strategy. Entec, 2010 (Ref. 26713-RR004i2). ▪ *Summary of desk study site investigation information available West Tipner, Portsmouth.* Lake Environmental, 2013 (Ref. 00132LE PCC TWS v-1). ▪ *Tipner Firing Range, Portsmouth: Site Investigation and Geoenvironmental Assessment.* ESI, 2015 (Ref. 63341R1). ▪ *Tipner Firing Range – Explosive Ordnance Threat Assessment in Respect of Tipner Range, Portsmouth,* Bactec, March 2015 (Ref. 5939TA). ▪ *Detailed unexploded Ordnance (UXO) Threat & Risk Assessment, City Deal Portsmouth W3*, 6 Alpha Associates, 2016, (Ref. P5380_W3). ▪ *Detailed unexploded Ordnance (UXO) Threat & Risk Assessment, City Deal Portsmouth W4,* 6 Alpha Associates, 2016 (Ref. P5380_W4). ▪ *Detailed unexploded Ordnance (UXO) Threat & Risk Assessment, City Deal Portsmouth W5,* 6 Alpha Associates, July 2016 (Ref. P5380_W5). ▪ *Detailed unexploded Ordnance (UXO) Threat & Risk Assessment, City Deal Portsmouth W6* , 6 Alpha Associates, July 2016 (Ref. P5380_W6). ▪ *Detailed unexploded Ordnance (UXO) Threat & Risk Assessment, City Deal Portsmouth W7* , 6 Alpha Associates, July 2016 (Ref. P5380_W7). ▪ *Detailed unexploded Ordnance (UXO) Threat & Risk Assessment, City Deal Portsmouth W8* , 6 Alpha Associates, July 2016 (Ref. P5380_W8). ▪ *Assessment of the Potential for Radiological Contamination within the Horsea Island East and Tipner West Redevelopment Zone*. Matom, 2016 (Ref: 03/146/03.02). ▪ *Site Investigation and Sampling Operations of MOD Firing Range (Area W9) Tipner, Portsmouth.* Matom, 2016 (Ref: 03/146/03.20). ▪ *Site Investigation and Sampling Operations of MoD Landfill (Area W4), Tipner Boating Club (Area W8) and Tipner Firing Range (Area W9) Tipner, Portsmouth*, Matom 2017 (Ref: 03/146/03.29).
Other Information1	Landmark 'Envirocheck report' ref.92465501_1_1, dated 4th August 2016 presented in Portsmouth Park and Ride Phase 1 Land Contamination Assessment. WSP 2017 (ref. 70017620-01). EA 'What's In Your Backyard?' website accessed on 19th July 2017. British Geological Society (BGS) 1:50,000 Series Geological Map Sheet 331 'Portsmouth' (Solid & Drift ed). BGS 'Geology of Britain' online viewer accessed on 19th July 2016. NHBC, EA and CIEH 'Guidance for the Safe Development of Housing on Land Affected by Contamination' R&D66. Appendix 3. (2008). The Contaminated Land Officer at Portsmouth City Council provided a summary of the council records pertaining to the site which is provided in **Appendix B.**

For the purposes of this assessment, WSP understands that PCC has reliance on the reports provided by Atkins, Lake Environmental, ESI, 6 Alpha and Matom.

1.8 LIMITATIONS

1.8.1 This report is addressed to and may be relied upon by Portsmouth City Council. It may not be relied upon or transferred to any other parties without the express written agreement of WSP. The report should be read and used in full. No responsibly will be accepted where this report is used, either in its entirety or in part, by any other party. Limitations are provided in **Appendix G**.

1 The report contains British Geological Survey materials ©NERC 2018 and Environment Agency information ©Environment Agency and database right.

2 SITE SETTING

2.1 SITE DESCRIPTION AND CURRENT USE

2.1.1 The broader survey areas for the City Deal development are illustrated in drawing 70015362.SURVEY in **Appendix A**. The location of the areas investigated in this assessment and current layout plans are presented in **Figures 1** and **2**.

2.1.2 The centre of the Tipner West site is located at National Grid Reference (NGR) 463860, 103270 and is located off Tipner Lane, Portsmouth, PO2 8RD.

2.1.3 The majority of the site comprises a MOD firing range (area W9), with a disused area of Site of Special Scientific Interest (SSSI); Ramsar site; and Special Protection Area (SPA) along its southern side. This area is part of the wider SSSI, Ramsar site and SPA of Portsmouth Harbour which is designated due to the mudflats 'supporting extensive beds of eelgrass, green algae, and sea lettuce, provide feeding grounds for internationally important numbers of wintering Dark-bellied Brent Geese'. A unique and high quality flora and fauna occur at the site. Nationally important numbers of Grey Plover, Dunlin, and Black-tailed Godwit are supported'. This area of the site is an overwintering and breeding area for Brent Geese.

2.1.4 The remainder of Tipner West site comprises Tipner Boating and Angling Club (TBAC, area W8) in the south-eastern corner, Portsmouth Harbour Cruising Club (PHCC, area W3) and the National Seamanship Training Centre (NSTC, area W7) on the north-eastern perimeter, a former MOD landfill now open scrubby ground (area W4) towards the north-eastern corner, and an area of scrubland owned by PCC (W5) located between the firing range and the north-eastern area of the site.

2.1.5 A scrapyard and an aggregates depot occupy the north-eastern tip of Tipner West but have not been included in this investigation due to access being restricted by the site owners. The Harbour School, a school for children and young people with social, emotional and mental health needs, is located between the scrubland, scrubby ground, scrapyard and Portsmouth Harbour Cruising Club but is beyond the scope of City Deal at the time of writing.

2.1.6 **Table 3** summarises the specific information for each of the Areas on the Tipner West site.

Table 3 – Summary of Site Information

Detail	Area 1 Tipner Firing Range (W8 Tipner Boating and Angling Club) (W9 Tipner Firing Range)	Area 2 Former MOD Landfill (W3 Portsmouth Harbour Cruising Club) W4 open Land)	Area 3 Former Military Barracks (W5 Scrubland) (W7 National Seamanship Training Centre)
Site Description and Current Use	W8, the Tipner Boating and Angling Club comprises a boat storage yard with a single storey club house building and a car park. W9, the Tipner firing range comprises a large open predominantly grassed area with one central rifle range and three smaller small arms firing ranges over a variety of distances. The main rifle range includes a combined earth and raised concrete wall butt. Each smaller firing range is backed by a butt formed from an embankment of earth. The area is bordered by scrub vegetation. A central paved road provides vehicles access. A number of small buildings are located on the range at the eastern, western and southern extents of the active range. Currently in use by the MOD as a firing range.	W3, the Portsmouth Harbour Cruising Club comprises a sailing club and boat storage yard with diesel fuel storage and a single storey clubhouse building. W4, the former MOD landfill, comprises an open area of raised ground bordered with trees and bramble vegetation.	W5 comprises open land with dense scrub vegetation in the northwest and mature trees in the east. W7, the Seamanship training centre comprises a boat store and chalet style accommodation building.
Chemical and Fuel Storage	No fixed fuel storage was noted in the boating and angling club. It is understood that members bring their own fuel for boats to site. A storage building on the northern boundary of the range, held notices for flammable goods but the materials stored in the building are unknown.	An above ground diesel fuel tank is present in the Portsmouth Harbour Cruising Club at the northern boundary of the car park area. This comprises a metal tank located over a brick bund with an adjoining fuel dispensing pump.	No fixed fuel storage was located in this area.
Area	Approximately 15.5 ha	Approximately 2.07 ha	Approximately 0.85 ha

Detail	Area 1 Tipner Firing Range (W8 Tipner Boating and Angling Club) (W9 Tipner Firing Range)	Area 2 Former MOD Landfill (W3 Portsmouth Harbour Cruising Club) W4 open Land)	Area 3 Former Military Barracks (W5 Scrubland) (W7 National Seamanship Training Centre)
Surrounding Area	Portsmouth Harbour borders this area to the north, west and south. W5 PCC scrubland is also located to the north of the firing range. Tipner lane and the M275 border the area to the east.	An operational scrapyard and aggregates depot are located to the north of this area. The embankment for the M275 borders the area to the east. Tipner Lane and the Harbour School are to the south.	Tipner lane borders the area to the east. The Harbour School to the north and the firing range is located to the south. Portsmouth Harbour borders these areas to the west.
Topography	W8 is broadly level with a fall in ground level at the southern boundary on the shore with the harbour. W9 is a predominantly level area with locally raised ground (~1.0 m) in areas around the firing range at the north and in scrubland to the south. Firing points on the range and each earth firing butt are raised above surrounding levels. Levels fall to the north, west and south on the shoreline with Portsmouth Harbour.	W3 is broadly level and at the same elevation as Tipner Lane. W4 comprises raised ground which is 1 to 2 m higher than Tipner Lane. The highest point is in the northeast corner with levels falling towards each boundary to tie into the surrounding levels.	W5 is an area of raised ground with levels locally 1-3 m higher than levels on Tipner Lane to the east. W7 is level and at the same level as Tipner Lane. Along the shoreline with Portsmouth Harbour levels reduces by about 1 m onto tidal flats of the harbour. .
Ground Cover	W8 is gravel surfaced. The slipway and area adjacent to the clubhouse is paved in concrete. A car parking area adjacent to the boat yard is hard covered. Brambles and mature trees border the perimeters of this area. W9 is predominantly covered in grass in the central range areas. The area to the south of the firing range is covered in bramble vegetation. Several stands of Japanese Knotweed are present on the area south of the rifle range. A tarmac access road crosses this area from a tarmac car park in the northeast corner to a hard cover area to the rear of the main range.	W3 is entirely covered in concrete with a slipway into Portsmouth harbour. W4 is predominantly soft covered roughly vegetated granular fill material with numerous materials at the surface including brick, metal, rope and sporadic potential cement bound asbestos containing materials (ACM). There are semi mature trees along the boundaries of area W4 and the southern boundary of W3.	W5 is heavily vegetated at the eastern end with a mixture of mature trees and bramble vegetation. At the western end the area is covered in dense brambles either side of a footpath. W7 includes a tarmac car park and gravel surfaced boat storage area with borders of soft landscaping some vegetation is present along the boundary with the Harbour School.

2.2 PUBLISHED GEOLOGY

2.2.1 The Tipner West site is shown in BGS maps to be underlain by superficial deposits of River Terrace Deposits in the central and southern half of the site (Area 1 and Area 3) and Raised Marine Deposits around the western and southern perimeter of the firing range (W9) and beneath the former landfill (W4) and Portsmouth harbour cruising club (W3) in Area 2. The underlying bedrock is recorded as Lambeth Group in the south and Lewes Nodular Chalk in the north of the site with the division between these two units concurrent with the northern boundary of the firing range. Beach and Tidal Flat Deposits are recorded adjacent to the site in Portsmouth Harbour overlying the respective bedrock units which are recorded beneath the River Terrace Deposits and Raised Marine Deposits.

2.3 HYDROGEOLOGY

2.3.1 Regional BGS records classify the Raised Marine Deposits and Beach and Tidal Flat Deposits as Secondary Undifferentiated Aquifers. The River Terrace Deposits and Lambeth Group are recorded as Secondary A Aquifers. The Lewes Nodular Chalk is classified as a Principal Aquifer.

2.3.2 The site is not within a source protection zone. The underlying geology across the entire Tipner West site is classified as medium-high vulnerability with a soluble rock risk with respect to susceptibility to contamination release at ground level. This classification is considered likely relate to the underlying Principal chalk aquifer.

2.4 HYDROLOGY

2.4.1 The closest surface water feature to the site is Portsmouth Harbour which borders the Tipner West site on all coastal boundaries along the western and southern sides of this site. Portsmouth Harbour was classified as moderate biological and overall water quality and good chemical quality in 2016.

2.4.2 The site is entirely within either Flood Zone 2 or Flood Zone 3.

2.5 SURROUNDING LAND USES

2.5.1 The Tipner West peninsula is surrounded on the north, south and west by Portsmouth Harbour. Bordering the site to the east is Tipner Lane and the M275. The M275 is a dual three lane motorway on a raised embankment. Further east, adjacent to the motorway is a park and ride; residential housing; allotments; and reclaimed vacant land which is proposed for housing redevelopment. Envirocheck records indicate that several historical landfills are recorded 90 m east of the site. These include Stamshaw Area 1; Stamshaw Area Site A; and Stamshaw Chemical Works which reportedly accepted inert, industrial and household waste. The vacant land on Tipner East was historically used for a variety of contaminative uses as discussed in Section 2.6.

2.5.2 The scrapyard adjacent to the north of the site assessed in this report is registered as a licenced waste management facility for metal recycling. The scrapyard was formerly licenced as a household, commercial and industrial waste transfer station. The scrapyard holds a planning hazardous substance consent for storage of up to 82 (unspecified unit) of unspecified hazardous materials. Hope Construction hold a LAPPC permit for the blending packing, loading and use of bulk cement. The licence is located at a distance of 440 m east from the site. However based on discharge consent details below, this is considered likely to relate to the cement batching plant on the scrapyard adjacent to the north of the site.

2.5.3 A number of lapsed and current discharge consents relate to operations on the scrapyard as follows:

- Trafalgar Wharfs Ltd is recorded with 2 entries for lapsed discharge consents for the discharge of surface water to Portsmouth Harbour;
- 3 entries are held by Hope Construction and Lafarge Aggregates in relation to discharge of trade effluent to ground; and
- Pioneer concrete have a discharge consent for trade discharge to Portsmouth harbour at the same location as LaFarge/Hope Construction.

2.5.4 Southern Water hold a discharge consent for discharge of sewage to Portsmouth Harbour at a distance of 460 m south of the site.

2.6 SITE HISTORY

2.6.1 Tipner West was formerly an area of salterns adjacent to Portsmouth Harbour, before acquisition and development by the military prior to 1802. For clarity, the site has been divided into areas based on its history for the following discussions.

Area 1 - Tipner Firing Range

2.6.2 The initial use of this area was the Stamshaw Powder Works and magazine, which comprised a series of buildings for reprocessing gunpowder. These buildings were spread across the Tipner area with a cluster of buildings (dusting and mixing houses) at the area south of what is now the firing range(W9) from 1804 (Gifford, 2001). A pump was present on the area south of the range in 1870 which was later recorded as a well until 1962 when it was no longer mapped. A built wall is present along the western perimeter of the range in 1878, the area west of this is recorded as liable to flood in spring tides.

2.6.3 Records from 1898 show the Stamshaw Powder Works buildings in the south to be ruins. At this time the firing range commenced its development with, targets and several small buildings to the rear of the targets present. The area south of the range was reported to have been raised A second range is present on maps dated 1911 with several small buildings and a signalling station in the area at the southern boundary of the rifle range and several more small buildings on the northern side of the range by the shore with Portsmouth Harbour.

2.6.4 Gifford (2001) reported that ranges were used (pre World War 2) for various activities including an anti aircraft yard; a biological anti gas school; a grenade training area (west of the main firing butt); a burning ground; and clay pigeon shooting range. A plan of Tipner Range dated 1920 (Gifford, 2001) shows a gas house in the northwest corner; a photographic store; two anti aircraft gun towers and shelters on the northern shore of the range. A concrete causeway extended out along the northern side of a lagoon at the corner of the site.

2.6.5 Mustard gas degradation trials were conducted on the beach on the northwest corner of the firing range in 1939 which comprised two trials. The trials involved spreading mustard on areas of the beach below and above high tide and monitoring of the residue over an eight week and six week period respectively (Porton report, 1939).

2.6.6 IKM (2005) reported that sea walls were recorded in aerial photographs in 1945 along the southern coast south of the range, behind which was a dry pit with a rectilinear pattern at the base indicative of a foundation and signs of refuse and military waste deposited in the pit including whole aircraft. Two craters were noted on the range in the 1945 aerial photographs, suspected to be bomb craters (IKM, 2005).

2.6.7 Three streams were recorded to cross the Tipner firing range between 1898 and 1952 in records provided by PCC . One stream was oriented northeast to south across the range, the second stream oriented west to east. The third stream was oriented due south in the land south of the range. All of the streams are now absent indicating that they have either been infilled or diverted.

2.6.8 Aerial photographs dated 1953 show evidence of rubble tipping in two pits north and south of the range in an uncontrolled manner (IKM, 2005). The Scott Wilson Land Quality Assessment of Tipner Ranges (Scott Wilson, 1996), records these infilling activities as four separate areas of potential filling on area W9 Tipner Firing Range. The infilling comprised the two large areas covering all of the open land north and south of the main range. SWK reported these areas received spoil (concrete, brick and soil) from the M27/A3M extension; a large area covering most of the land west of the main range recorded to have been filled with spoil (concrete, brick and soil) from dockyards and bomb damage in Portsmouth; and a small area behind the butt for the 50 m pistol range recorded as a ‘tip’. Historical photographs show the large pond to the west of the range was subject to infilling in 1967 and the pit south of the range had been filled by this time.

2.6.9 In maps dated 1950 a circular tank is recorded on the northern boundary of the range which remains present on site. This tank maybe one of the former anti aircraft gun towers recorded in 1920. The firing range extended off-site into what is now known as Tipner East. The range was truncated during the construction of the M275 in the 1970s. At this time, the southeast area of the firing range on Tipner West was redeveloped as the Tipner Boating and Angling Club (W8). The Tipner Boating and Angling Club comprised a car park and club house with boats stored in a surrounding yard. A jetty provides access to Portsmouth Harbour.

2.6.10 Little change occurred in this area in the 1980s. In the 1990s an additional small range was added to the range. The centre of this area has remained as a firing range is still used as a range by the MOD and private clubs to the present day.

Area 2 - Former MOD Landfill

2.6.11 Prior to military development in 1800s, this area was part of an area of salterns in 1773 (Gifford, 2001). A tidal pond and sluice gate was present to the east. A depression covered most of area W3 in the west along with a number of officers' quarters present on the western part of area W4 (the centre of Area 2) in 1878. In 1895 a large square tank was present on the coast in area W3. The tank was recorded as a static water tank once used as a swimming pool, which was still present in 2005 (IKM, 2005), In 1909 additional buildings were located north of the officers building in W4 and north of the static water tank in W3.

2.6.12 A drainage ditch was recorded in maps dated 1932 oriented east west near the northern boundary of area W4. The officers' quarters was recorded as Tipner House and the depression in the western half of area W3 was absent. Tipner House was demolished by 1952.

2.6.13 In 1964 the site of area W3 was sold to Portsmouth City Council and developed into Portsmouth Harbour Cruising Club (PHCC). Anecdotal records indicate that the club house building on the northern boundary of this area was a former gas cleansing centre and that rubble from the demolition of the barracks buildings was used to raise ground levels on the PHCC site during construction of the yard (Gifford, 2001). The club was subjected to little alteration since its development in the 1970s.

2.6.14 In 1967, aerial photographs show the northwest side of Area 2 (area W4) was used by the MOD for landfilling in an uncontrolled manner. Anecdotal records indicate that refuse tipped in this area included waste material from stripping of military vessels, including asbestos, metal, cellulose and fluorescent paint. PCC records indicate that Area 2 (Former MOD Landfill, area W4) is recorded as part of an area of landfilling which extends east beneath the M275 and the park and ride site to the east of the M275. The area was sold to PCC in 1972 and is summarised as admiralty landfill, waste infill and raising of land. In 2013, the interchange on the M275 and Park and Ride were constructed. As part of this work area W4 was used as a contractor's compound and used for the deposition of surplus soil excavated from the park and ride construction east of the M275.

Area 3 - Former Military Barracks

2.6.15 Following military acquisition in circa 1802, maps dating from the 1860s show Area 3 to have been developed as the Tipner infantry barracks, with buildings across the area. The building layout increased in this area post WWI with additional buildings recorded in 1932 with a fire station at the west end of a row of buildings by the coast which was labelled as a fire engine house in 1937(part of area W7). Further terraced housing was added by 1945. In 1953 aerial records show some demolition of the terrace housing and officer quarters (IKM, 2005).

2.6.16 This land was sold to PCC in 1964. Most of the remaining barracks were demolished prior to the construction of Waterside School in 1971 adjacent to this area (IKM, 2005). Maps from 1980 subsequent to PCC's acquisition show most of the buildings to be absent except for two at the eastern extent. These structures were demolished some time before 2000. The National Seamanship Training Centre was granted a lease in the early 1990s and a slipway was constructed on the foreshore (IKM, 2005). The southern part of this area (W5) is raised above surrounding areas although the source and date of this material placement is not apparent from the available records.

OFF-SITE

2.6.17 The areas to the east and north of the Tipner West site were formerly subject to a mix of military and industrial uses. In tandem with these activities was uncontrolled land reclamation of Tipner Lake as Paulsgrove Landfill north east of the site. **Table 4** provides a summary of relevant information for potential historical off-Site sources noted on the available mapping in chronological order.

Table 4 - Summary of Pertinent Off-Site History of Areas Surrounding the Site

Historical Off-Site Land Use	Distance from Site	Direction from Site	Dates	Data Source
Stamshaw powder magazines	Adjacent	North	Pre 1898 to pre1960	Envirocheck Report
Stamshaw Brickworks with clay pit which was later landfilled	400 m	East	Pre 1868 to pre 1909	Envirocheck Report
Stamshaw Chemical (tar) Works	370 m	East	Pre 1898 to pre 1950	Envirocheck Report
Glue Factory	270 m	East	Pre 1931	PCC CLO records
Petrol Storage Depot with 8 No. large above ground tanks. 4 No. additional tanks shown in 1969 mapping.	300 m	East	Pre 1932 to pre 2000	Envirocheck Report
Royal Navy Fleet Photographic Unit	Adjacent	East	Pre 1932 to 2015	PCC CLO records
Timber Yard	340 m	East	Pre 1945 to pre 1969	Envirocheck Report
Timber Yard (Possible expansion of the above occupying previous Chemical Works land)	60 m	Northeast and East	Pre 1950 to pre 1969	Envirocheck Report
Vickers Motor Vehicle Repair Works	270 m	East	Pre 1950 to 1982	PCC CLO records
Scrap yard (occupying previous north-eastern Timber Yard land) – land reclamation as scrapyard footprint is enlarged along northern and western shorelines compared with the original coastline. MOD shipbreaking operations and scrap merchant	60 m	Northeast and East	Pre 1962 to 1997	PCC CLO records
Scrapyard and aggregates depot	Adjacent	North	Pre 1969 to present	Envirocheck Report
M275 motorway	Adjacent	West	Pre 1978 to present	Envirocheck Report

2.7 UNEXPLODED ORDNANCE

2.7.1 Bactec undertook a desk study for ESI in 2015 and determined a high risk of UXO on the Tipner firing range area including the SSSI. Bactec made the following recommendations for mitigation measures during intrusive works on the firing range:

- Groundworks in all areas:
  - Explosive ordnance safety and awareness briefing to all personnel conducting works;
  - Provision of unexploded ordnance site safety instructions;
  - Intrusive magnetometer survey of all pile /borehole locations, OR non intrusive survey ahead of intrusive works in greenfield areas;
  - Groundworks in developed areas: and
  - EOD engineer presence to supervise shallow works.

- Groundworks in former Stamshaw Powder Works and Magazine:
  - Perform testing for explosive compound residue; and
  - EOD engineer presence with smiths explosive vapour detector.
- Groundworks in area of former mustard gas trials:
  - Bespoke chemicals weapons mitigation measures to be adopted.

2.7.2 6 Alpha Associates undertook desk studies for the remaining areas of Tipner West for WSP in July 2016 and determined a medium/high risk of UXO across remainder of the site. 6 Alpha Associates made the following recommendations for mitigation measures during the intrusive works:

- All groundworks in all areas:
  - Prepare a UXO Risk Management Plan for all groundworks; and
  - Provide UXO safety and awareness briefings.
- Groundworks in previously undisturbed ground:
  - Provide Explosive Ordnance Disposal (EOD) non-intrusive survey or banksman support.

2.8 POTENTIAL SOURCES OF CONTAMINATION

ON-SITE CONTAMINATION SOURCES

2.8.1 On the basis of the available existing site investigation records the site was assessed in terms of confidence in the existing ground investigation data and data gaps in the available assessment. Areas of potential concern at the site are shown in **Figure 5** and are summarised in **Table 5** .

Table 5 – Areas of Potential Concern

Area of Potential Concern	Potential Contaminants	Contaminants identified in Previous Investigations
Area 1 Tipner Firing Range		
Infilled ground north, west and south of the firing range including: Filled Former Drainage Ditch Filled Former Pond Raised ground Stamshaw Powder Works Two bomb craters on the rifle range.	Wide range of contaminants possible including: metals, asbestos, PAHs, petroleum hydrocarbons, radioactive materials, VOCs, explosive residues, and ground gas	Elevated concentrations of metals (lead and cadmium) and PAHs in Made Ground. Asbestos and ACMs present. No investigation in the Tipner angling and boating club area (W8). Ground gas in Made Ground recorded up to 7.4% carbon dioxide in monitoring in 2015.
Former buildings associated with military use and Stamshaw powder works on southern boundary of the range area	Metals, asbestos, UXO and explosive residues, PAH, petroleum hydrocarbons	Trace asbestos, elevated lead and PAHs
Possible tank on the northern boundary of the range	Possible source of petroleum hydrocarbons or VOCs	Elevated petroleum hydrocarbons in area southeast of tank.
Historical mustard gas trial area on beach adjacent to the range	Mustard compounds	No chemical weapons residues detected to date.
Firing ranges and firing points	Metals, radiological materials	No investigation of firing points to date. Elevated metal concentrations (lead) in soils across the range.
Area 2 Former MOD Landfill		
Historical landfilling in a former pit/depression in Area W3 and lagoon/drain in W4 by the MOD in 1950s and relocation of material from the park and ride in 2013	Metals, asbestos, PAH, petroleum hydrocarbons, Polychlorinated Biphenyl's (PCBs), radioactive materials, VOCs and ground gas	Asbestos present throughout the Made Ground. Moderate metals and PAHs contamination in the Made Ground across this area.

Area of Potential Concern	Potential Contaminants	Contaminants identified in Previous Investigations
Former buildings (officers' quarters and barracks) associated with military use	Metals, asbestos, UXO and explosive residues, PAH, petroleum hydrocarbons	Ground gas recorded elevated methane (up to 5.5%) and carbon dioxide (up to 59%) in Made Ground.
Area 3 Former Military Barracks		
Former military barracks buildings including fire station / engine house	Metals, asbestos, UXO and explosive residues, PAH, petroleum hydrocarbons, perfluorooctanesulfonic acid	Elevated lead concentrations and asbestos detected in Made Ground
Raised ground of unknown origin	Metals, asbestos, PAH, petroleum hydrocarbons, radioactive materials, VOCs.	

2.8.2 All areas of the site are in a lower probability area radon area, as less than 1% of homes are above the action level. No radon protective measures are considered necessary for new properties or extensions.

OFF-SITE CONTAMINATION SOURCES

2.8.3 Within the surrounding area, the following potential sources of contamination that could migrate onto the site are listed in **Table 6.**

Table 6 – Potential off site Contamination Sources

Area of Potential Concern (Primary Sources)	Potential Contaminants
M275	Potential for deposition of lead and MTBE from air pollution.
Former MOD landfill adjacent to the east of the site	Metals, asbestos, PAH, petroleum hydrocarbons, Polychlorinated Biphenyl's (PCBs), radioactive materials, VOCs and ground gas
Royal Navy Fleet Photographic Unit adjacent to the east of the site	Metals, ammonia, acids
Scrap yard / Scrap metal merchants/ Metal waste treatment centre (Shipbreakers) adjacent to the north of the site	Hydrocarbons including waste oils, greases, PAHs, and lubricants. Metals, asbestos, elemental mercury, solvents, radium and decay products associated with ship instrumentation/dials, PCBs, dioxins and furans, antifouling paints, cyanide, CFCs, nitrate, nitrite, sulphate, and azides. Made Ground comprising metals and other inorganics, PAHs, VOCs, and asbestos. Ground gases
Land reclamation 70 m east of the site, plus various other areas of known and potentially filled ground.	Made Ground: metals and other inorganics, hydrocarbons, PAHs, volatile organic compounds (VOCs), asbestos. Ground gases generated from biodegradation of natural organic materials and/or contaminants.
Former Timber Yard 70 m east	Dependent on whether preservative treatment occurred in addition to the manufacture of timber products. Resins/adhesives, oxides, acids, heavy metal coatings, organochlorine compounds, fuels, PCBs, dioxins and furans.
Former Fuel Depot and Chemical Works 300 m east	Inorganics including cyanide, ammonia, metals, petroleum hydrocarbons and VOCs.

2.8.4 The Tipner Regeneration Company Limited (TRC) recently submitted two planning applications to Portsmouth City Council for the remediation and redevelopment of land to the east of the M275 at Tipner. This land includes the north-western timber yard/ scrapyard (including pier), and Petrol Storage Depot. The proposed development is to construct 620 houses and 1,000 square metres of business space. In 2013, Tamdown Group with consultants Merebrook and Campbell Reith remediated the historical chemical works/eastern timber yard/coal depot as part of the Tipner Regeneration project. The remediation included the installation of a low permeability barrier around the majority of the site to prevent potentially contaminated groundwater exiting the site during and after the remediation works.

2.8.5 The fleet photographic unit was recently developed into a park and ride. It is assumed that any significant contamination was addressed during the redevelopment works.

2.8.6 As such, the historical Royal Navy Fleet Photographic Unit, chemical works (tar works) and petrol storage depot were discounted as potential sources of off-site contamination due to these sites having been previously remediated.

3 RATIONALE FOR INVESTIGATION

3.1 APPROACH

3.1.1 WSP completed a review of the existing information for the site to develop the scope of further investigation. The full review is provided in the WSP Constraints Report (WSP, 2016). The rationale for the intrusive investigation works was to address data gaps, obtain current information where site conditions had changed and provide greater spatial coverage on ground conditions.

3.1.2 WSP developed a scope of investigation for Tipner West taking into consideration the following factors:

- Proposed future uses (as currently proposed);
- The extent of previous investigations undertaken and the confidence levels we have assigned to this information;
- Data gaps identified with respect of potential sources and ground conditions; and
- Further assessment of previously encountered contamination.

COVERAGE

3.1.3 The existing investigation coverage across the Tipner West site that was provided to WSP varies in age, quality and completeness. **Figure 4** summarises historical exploratory locations on the site which have been included in the review by WSP.

3.1.4 The firing range (area W9) in Area 1 and part of Area 3 (area W5) were subject to an investigation by ESI in 2014 as part of the proposed land transfer of this area between the MOD and PCC. PCC has reliance on the ESI information and the area has not been altered since the works were completed. As such the confidence in the available ESI ground investigation data is good. The ESI investigation provided good spatial coverage for an initial evaluation of the site and in the context of due diligence.

3.1.5 The eastern part of the range (area W9) and Areas 2 and 3 were investigated by IKM as part of a broader assessment of the Tipner peninsula in 2005. The investigation also provided reasonable coverage, however the confidence in this data is low as the site has been altered since the works were completed including:

- Construction of a new junction on the M275;
- Placement of Made Ground in the former landfill in Area 2 during the construction of a park and ride off site; and
- Construction of a sports hall at Harbour school with associated landscaping in the area adjacent to Area 3 (on area W5).

3.1.6 Ground Engineering and Entec completed investigations in Area 3 in 2002 and 2009, respectively. However, the ground conditions in this area have since been altered by the construction of the sports hall at Harbour school providing low confidence in this data.

3.1.7 Investigations were also conducted on the range in 1997 and the Portsmouth Harbour Cruising Club in 2004, but given the time that has elapsed since these assessments the confidence in the data is considered to be low. No investigation data was available for the Tipner Boating and Angling Club in Area 1.

3.1.8 To support detailed planning, from WSP's review additional assessment was considered to be required in the following areas:

- Areas of raised and filled ground at various locations across the site;
- Ground gas in Made Ground, Superficial and Bedrock strata;
- The hydrogeological regime, in particular with respect to determining vertical connectivity between aquifers and tidal influence;
- Additional assessment of potential contamination in the vicinity of former structures; and
- Military activities on site including the firing ranges and former mustard gas trials areas.

3.1.9 On the basis of the data gaps, the soil sampling strategy and the requirements of the monitoring network, the rationale for the exploratory positions is summarised in **Appendix C** exploratory hole locations are presented in **Figure 3**.

SOIL SAMPLING RATIONALE

3.1.10 The ground conditions encountered across the Tipner West site in previous investigations comprise Made Ground over variable superficial deposits with Lambeth Group bedrock in the south and Chalk bedrock in the north. The Made Ground was thicker where areas had been infilled or reclaimed and in areas of mounding. Exploratory boreholes and the accompanying sampling strategy were proposed to obtain soil analytical data from each of these strata, to characterise conditions in the potential areas of concern identified by WSP and to supplement existing data.

MONITORING WELL NETWORK

3.1.11 The current network of wells, where serviceable, is considered to be largely unsuitable as the majority have been installed across multiple geological strata. As such, the investigation required the installation of a network of deeper monitoring wells to target the Chalk or Lambeth Group aquifers and a network of shallow wells to target the perched groundwater and soil gases within the Made Ground or groundwater and soil gases in the superficial and bedrock aquifers. Details of the fieldwork methodologies and techniques that were undertaken, the monitoring data and a summary of the exploratory location rationale is presented in **Appendix C**.

3.2 CONSTRAINTS TO INVESTIGATION

3.2.1 A number of constraints on the site limited the proposed scope of investigation. These were incorporated into the proposed scope of works. Constraints that were encountered during the investigation and limited the actual scope that could be achieved are discussed in **Appendix C**.

SENSITIVE ECOLOGY AND JAPANESE KNOTWEED

3.2.2 The surrounding area includes several statutory and non-statutory designated sites. As such, intrusive works required appropriate consents from Natural England (NE). The works needed to occur during the summer, when the bird species which are part of the reasons for designation of Portsmouth Harbour were not present. It was also necessary to identify the locations of active bird nests and the exploratory locations were positioned to avoid these.

3.2.3 Parts of Tipner West were densely vegetated, which required vegetation clearance to facilitate access to proposed exploratory locations. An ecological watching brief along with vegetation clearance in some areas was therefore included as part of the mobilisation of the works on site.

3.2.4 Japanese Knotweed is present in some parts of the site which required identification by the ecologist and a stand off established during the works to avoid the spread of this plant.

RADIOLOGICAL

3.2.5 Tipner West has been subject to military activities in part from 1802 to the present day. As such, there is potential for ionising radiological sources to be present including: radium sulphide associated with luminescent dials and instrumentation; depleted uranium associated with ammunition and armour plating; and decay products including thorium, protactinium and radon gas. A radiological desk study was commissioned by WSP for the site and the findings are presented in the Matom Report. This assessment determined that areas W4, W8 and W9 had an elevated potential risk of radiological contamination on the basis that historical activities in these areas included disposal and landfilling of MOD assets, dismantled naval vessels and military vehicles, areas of filling and land raising with unknown materials and spent ordnance. As such specialist Radiological Protection Supervisor (RPS) support was included during the fieldwork in these areas.

UNEXPLODED ORDNANCE

3.2.6 The desk based UXO assessments for the site reported a medium to high risk of UXO being present across the site predominantly due to the historical use as a barracks, current use as a firing range and German bombing during WWII. It was therefore considered prudent to maintain a UXO watching brief during the ground investigation.

FLOOD DEFENCES

3.2.7 Given the site location within and in proximity to the sea defences, SSSI and SPA of Portsmouth Harbour exploratory boreholes within 16 m of any defences would need to be authorised under a bespoke environmental permit from the Environment Agency. As such, boreholes were positioned further inland to mitigate the requirement for a bespoke permit.

4 GROUND CONDITIONS ASSESSMENT

4.1 SUMMARY OF WSP 2016 AND 2017 INVESTIGATION FINDINGS

4.1.1 The intrusive locations of the 2016 and 2017 ground investigation locations are presented in **Figure 3** and the exploratory hole logs are provided in **Appendix D**. The ground conditions encountered in 2016 and 2017 ground investigations by WSP are generally consistent with previous investigations across Tipner West and the geological sequence detailed in the BGS geological maps although the distribution of superficial deposits is more complex than detailed in the BGS geological maps. The site has been split into three areas as shown on **Figure 3**, based on common historical use and ground conditions. The areas of W1, W2 and W6 are excluded from the assessment.

4.1.2 A summary of the geological conditions encountered during the 2016 and 2017 site investigations of Tipner West is presented in **Table 7, Table 8** and **Table 9**.

Table 7 - Summary of Area 1 Tipner Firing Range Geological Conditions Encountered during WSP Investigation of Tipner West

Geological Unit	Elevation of base of strata (m AOD)^	Thickness Range (m)^	Typical Description
Topsoil	4.39 to 1.47 m AOD	0.10 to 1.50	Typically grass over soft sandy and/or gravelly clay, gravelly silty or clayey sand.
Made Ground	3.39 to -- 0.91 (4.48 to -1.57) m AOD	0.40 to 4.50 (0.20 to 5.00) m	Highly variable material of cohesive and granular deposits with inclusions of brick, concrete, flint, chalk, quartzite, quartz, and slate, varying anthropogenic materials and organic odour.
Superficial Deposits - River Terrace Deposits (undifferentiated), Raised Marine Deposits, & Beach and Tidal Flat Deposits (undifferentiated)	2.13 to -1.47 (3.29 to -2.39) m AOD	0.40 to 3.40 (0.10 to 3.80) m	The three superficial deposits encountered were recorded as follows: River Terrace Deposits - Typically soft and firm light brown, light orangish brown, orangish brown, green mottled orange, sandy silty or gravelly clay, sandy gravelly clay, silty gravelly clay. Raised Marine Deposits - Typically light yellowish brown, brownish orange, clayey or gravelly sand. Beach and Tidal Flat Deposits - Typically soft to stiff bluish grey, greyish brown, gravelly silty clay, gravelly sandy clay, clay, slightly sandy silt, slightly clayey sand or clayey gravel with various mottling.
Lambeth Group	-0.49 to -6.62 (2.74 to -7.32) m AOD	1.50 to 6.90 (0.10 to 8.85) m	Typically firm and stiff orangish brown, brown, brownish grey, reddish grey, silty sandy clay with varied coloured mottle. Locally layers of loose to medium dense yellow gravelly sand, with gravel fractions comprised of fine to coarse rounded to angular of flint.
Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation (undifferentiated)	(-5.59 to -6.72) m AOD	(0.10 to 5.10) m	Typically structureless chalk composed of white gravelly silt or sandy gravelly silt, or silty sandy gravel, or silt.

Note: m AOD – Metres above ordnance datum.
Numbers in brackets indicate where the stratum was not proved to depth in some or all locations.

Table 8 - Summary of Area 2 Former MOD Firing Range Geological Conditions Encountered during WSP Investigation of Tipner West

Geological Unit	Elevation of base of strata (m AOD)^	Thickness Range (m)^	Typical Description
Concrete	2.81 to 2.36 m AOD	0.15 to 0.35 m	Concrete
Made Ground	1.52 to -0.16 (4.07) m AOD	1.10 to 4.80 (0.40) m	Highly variable material of cohesive and granular deposits with inclusions of brick, concrete, flint, chalk, quartzite, quartz, and slate, varying anthropogenic materials such as asbestos sheeting, paint cans and various metal fragments.
Superficial Deposits - River Terrace Deposits (undifferentiated), Raised Marine Deposits, & Beach and Tidal Flat Deposits (undifferentiated)	-0.40 to -3.08 (1.21) m AOD	0.50 to 2.68 (0.20 to 3.70) m	The three superficial deposits encountered were recorded as follows: River Terrace Deposits – Typically firm light brown or light orangish brown gravelly sandy clay or sandy silty clay Raised Marine Deposits – Typically light yellowish brown clayey sand Beach and Tidal Flat Deposits – Typically soft and frim bluish grey or grey silty gravelly clay or clay with various mottling and gravel fractions of flint and chalk.
Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation (undifferentiated)	(-2.04 to -7.90) m AOD	(1.10 to 6.10) m	Typically structureless chalk composed of white sandy gravelly silt, or gravelly silt, or silty gravel.

Note: m AOD – Metres above ordnance datum.
Numbers in brackets indicate where the stratum was not proved to depth in some or all locations.

Table 9 - Summary of Area 3 Former Military Barracks Geological Conditions Encountered during WSP Investigation of Tipner West

Geological Unit	Elevation of base of strata (m AOD)^	Thickness Range (m)^	Typical Description
Topsoil	5.27 to 4.14 m AOD	0.10 to 0.40 m	Typically grass over soft sandy and/or gravelly clay, gravelly silty or clayey sand.
Made Ground	2.63 to 0.43 (4.12) m AOD	0.60 to 4.00 (5.00) m	Highly variable material of cohesive and granular deposits with inclusions of brick, concrete, flint, chalk, asphalt, and varying anthropogenic materials and organic odour.
Superficial Deposits - River Terrace Deposits (undifferentiated),	2.43 to -2.07 m AOD	0.20 to 2.80 m	The three superficial deposits encountered were recorded as follows: River Terrace Deposits – Soft and firm light brown or light orangish brown sandy silty clay, or silty clay, or gravelly clay

Geological Unit	Elevation of base of strata (m AOD)^	Thickness Range (m)^	Typical Description
Raised Marine Deposits, & Beach and Tidal Flat Deposits (undifferentiated)			Raised Marine Deposits – Typically brownish orange gravelly sand Beach and Tidal Flat Deposits – Typically soft and firm greyish brown, green, grey, light brown with localised mottling, sandy clay or gravely clay. Locally a clayey sand or a clayey gravel.
Lambeth Group	(1.48) m AOD	(0.70) m	Typically soft brownish orange mottled light grey and reddish brown clay.
Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation (undifferentiated)	(-1.57 to -7.52) m AOD	(0.95 to 5.45) m	Typically structureless chalk composed of brown, cream, white gravelly clay, or gravelly silt or sandy clayey silt, or silt.

Note: m AOD – Metres above ordnance datum.
Numbers in brackets indicate where the stratum was not proved to depth in some or all locations.

4.2 GROUND CONDITIONS SUMMARY OF TIPNER WEST

4.2.1 This following sections summarise the geological strata encountered from the recent 2016 and 2017 investigation undertaken by WSP in addition to the following investigations:

- Ground Engineering (2002);
- University of Plymouth (2004);
- IKM (2006);
- Entec (2009); and
- ESI (2015).

4.2.2 A total of 281 exploratory holes have been reviewed and summarised. The summary only details investigations carried out within the red line boundary of the site and exclude any ground investigations carried out on the neighbouring scrapyard, aggregate depot and the Harbour School.

4.2.3 Given the complexities of the depositional environment, the interpretation of the superficial deposits from differing phases of GI can be somewhat subjective. In the ESI assessment the superficial deposits were grouped together and discussed by the split between cohesive and granular deposits whilst at the time of IKM assessment the superficial deposits in the centre of the site currently classified as river terrace deposits were recorded as brickearth. The WSP interpretation of different superficial deposits encountered across the site during the 2016 and 2017 phases of investigation is discussed below.

4.3 TOPSOIL

4.3.1 Topsoil was encountered in 26 of the exploratory holes undertaken restricted to areas of open ground in Tipner. Specifically 21 locations across the firing range (area W9); four locations across the scrubland (W5); and one location in the National Seamanship Training Centre (area W7). The topsoil typically comprised grass over a sandy gravelly clay or a silty gravelly sand with frequent rootlets and occasional roots. Gravel fractions were typically comprised of fine to coarse angular to rounded flint, with occasional round cobbles of flint.

4.3.2 The thickness of the topsoil ranged from between 0.1 to 1.5 m, but was typically thinner and ranged between 0.1 and 0.4 m in all locations except three positions on the firing range area W9 (BH202, BH209, WS209), where the topsoil thickness was recorded between 1.0 and 1.5 m. However, this may have been misinterpreted given the difficulties in distinguishing between top soil and superficial deposits and may actually be River Terrace Deposits. The elevation of the base of the topsoil was recorded between 5.27 to 1.47 m AOD.

4.4 CONCRETE

4.4.1 Concrete slabs were recorded in areas of hard standing at ground level in the Portsmouth Harbour Cruising Club (area W3) and concrete obstructions recorded at depth in the former landfill (area W4); the scrubland (area W5); the Tipner Boating and Angling Club (area W8); and the area south of the firing range (area W9). Obstructions are summarised in **Table D2.1** and recorded in the exploratory logs in **Appendix D**. A concrete slab covers the boat yard in the PHCC (area W3). The thickness of the concrete slab varied between 0.10 and 0.35 m. The elevation of the base of the concrete was recorded between 2.83 and 2.36 m AOD. Concrete was encountered at surface in all locations and there were no reinforcements or significant voids noted within the concrete slab.

4.4.2 Concrete obstructions were encountered at depths between 0.4 m and 1.95 m bgl in the former landfill (area W4), 0.6 m and 2 m bgl in PCC land (area W5), 0.2 m bgl in the TBAC (area W8) and 0.4 m to 3.0 m bgl in the firing range (area W9).

4.5 MADE GROUND

4.5.1 Made Ground was encountered within 253 of the exploratory holes, being absent in only nine locations investigated. Absences were predominantly located in the main range on the firing range (area W9, BH202, BH206, BH209, TP209, TP210, TP214, W9WS325a, WS208, WS209).

4.5.2 The Made Ground was typically encountered from surface or locally beneath a thin layer of Topsoil or concrete slab. The Made Ground was proven to elevations between 4.00 to -2.04 m AOD with a thickness ranging from between 0.10 to 5.10 m.

4.5.3 The Made Ground has been categorised (where possible) where the thickness and composition of the Made Ground is similar from area to area.

AREA 1 TIPNER FIRING RANGE

W8 Tipner Boating and Angling Club

4.5.4 In area W8 (TBAC), Made Ground was encountered in all eight exploratory locations, with six proving the depth of the Made Ground and was encountered from ground level. The depth to the base of the Made Ground was proved to depths between 2.59 and 0.63 m AOD with an average depth of 1.16m bgl. The thickness of the Made Ground was proved to be between 0.40 and 2.00 m in thickness. The thickness of the Made Ground was reasonably consistent across W8, with the thinnest parts near the boundary with W9 the MOD Firing Range (W8WS321) and near the entrance to W8 (W8WS317c and W8WS318). The Made Ground was not proved in locations W3WS317a and W3WS317b due to concrete obstructions, but an alternative location near these holes proved Made Ground to 0.9 m bgl (W3WS317c). The greatest thickness of Made Ground was recorded in W3BH308 which is closest to the coast. The greater thickness of Made Ground is concurrent with the records which indicate historical ground filling along the coast in this area.

4.5.5 The Made Ground in this area was typically described as gravelly clayey sand, and gravelly clay, with gravel fractions consisting of flint, concrete, brick, and asphalt / tarmacadam, with occasional cobbles of concrete and brick, with rare boulders of concrete, with occasional roots and rootlets, and rare fragments of ceramic, glass, clinker and other anthropogenic material.

W9 Firing Range

4.5.6 Across area W9, the firing range, a total of 161 locations encountered Made Ground with 131 proving the depth of the Made Ground. The Made Ground was typically encountered at surface or occasionally below a thin layer of topsoil. The thickness across the firing range was highly variable with a number of mounds and areas of infilled ground.

4.5.7 The thickest area of Made Ground was encountered on land south of the active part of the firing range (BH103, ESI, 2015) which is an area of infilled ground around the former Stamshaw Powder Works. Made Ground was recorded at depths between 2.5 and 5.0 m bgl, with a thickness range of between 2.2 and 5.0 m. The Made Ground in this area was variable and comprised both cohesive and granular soils. Frequent fragments of brick and concrete were encountered, with occasional and rare fragments of metal wire, iron rods, plastic, wood, glass and burnt materials. Occasional domestic waste was recorded in TP124.

4.5.8 The west and northwestern corner of the firing range (area W9) was an area of infilled ground in the location of a former lagoon centred around WSP borehole BH201. The area was investigated by ESI (2015) and WSP

(2016) as part of the wider Tipner West investigations. Topsoil was not present and, where proven, the Made Ground was encountered at depths of between 0.65 to 4.5 m bgl, Where not fully proven, Made Ground was encountered at >5.0 m bgl (WS207). The Made Ground was found to be highly variable, predominantly cohesive but with granular layers also present. Some of the cohesive material was recorded as being reworked natural material with frequent fragments of sandstone, brick, concrete, and rare fragments of wood, metal and ceramic also recorded.

4.5.9 A small area of infilled ground was identified on the north perimeter of the firing range, centred near ESI trial pit TP167 which may be associated with surplus material generated from the construction of the M27/A3M extension. This area was investigated in 2015 and 2016 and the Made Ground was encountered at depths between 1.2 and 2.9 m bgl, with a thickness range of between 1.05 and 2.9 m. Other localised areas of potentially infilled ground were determined to be an infilled bomb crater (TP213); an infilled drainage ditch (TP208, TP212 and W9HP301); and an infilled pond (BH208 and TP110). The depth to the Made Ground was proved to be at depths between 0.5 and 1.3 m bgl, with a thickness range of between 0.5 and 1.2 m in the areas of the drainage ditch and infilled bomb crater. The infilled pond thickness was greater with the Made Ground proved to a depth of 3.35 m bgl in BH208. Material encountered in these locations comprised sand and/or gravelly clay of flint, brick, wood, plastic, concrete, ash and metal. Boulders of brick, concrete, metal, limestone and granite were also recorded.

4.5.10 The firing points were raised approximately between 0.5 m and 1.2 m above the surrounding land and investigations concluded that Made Ground was predominantly above ground level with a limited extent below ground. The Made Ground was encountered to depths of 1.00 m in the rifle mounds, but was not proved to full depth in most of the hand pit exploratory locations which terminated 1.0 m bgl. The rifle ranges were typically constructed of re-worked natural materials comprising gravelly clay of flint, brick and chalk with rare to occasional fragments of glass, clinker, and concrete rubble.

4.5.11 Immediately north of the entrance gate the ground was mounded and heavily overgrown with scrub vegetation. A window sampled borehole (WS206) at the base of the mound encountered Made Ground of brick, concrete and plastic to 1.2 m bgl. It is anticipated that material in this raised area is of similar composition.

4.5.12 Outside of the highlighted infilled and raised ground areas, the Made Ground was recorded to depths up to 4.4 m bgl, with a thickness up to 4.2 m and an average thickness of 1.10m. The thickest deposits were possibly related to Lambeth Group deposits in WS203 which were interpreted as reworked during fieldworks. The typical description of the Made Ground in these areas was clayey gravelly silty sand, silty sandy gravelly clay, with gravel fractions consisting of flint, concrete, brick, and occasional asphalt /tarmacadam, slate and other man made lithologies.

AREA 2 FORMER MOD LANDFILL

W4 Former MOD Landfill

4.5.13 All exploratory locations encountered Made Ground across the former MOD landfill (area W4) with 28 of the 39 locations proving the depth of the Made Ground. Surplus material from the redevelopment of the Park and Ride at Tipner East was deposited onto the area in 2013 which raised ground levels so the thickness and elevation data from the historical investigations is no longer accurate. Therefore, only the recent investigation by WSP (2017) has been used to calculate the thickness of the Made Ground across the landfill. The Made Ground was encountered from surface.

4.5.14 A geotextile membrane was encountered in six of the 19 locations that were advanced across the area of the former MOD landfill that had been subject to capping in 2013. The membrane is understood to demarcate the base of the capping layer. The top layer of Made Ground, which WSP has interpreted as the capping layer, ranged from 300 to 900 mm thick and comprised a light brown slightly gravelly clayey sand with occasional rootlets. The gravel included brick, concrete and flint. Pieces of glass, metal and gravel were also present at the surface. Where the membrane was present, the thickness of material above the membrane was at least 300 mm.

4.5.15 On the basis of topographic levels recorded in this area, the ground has been both filled and raised by waste materials. The ground level on the landfill ranges between 3.5 m and 5 m AOD, which is 0.5 m to 2.0 m above surrounding levels. The proved base of the Made Ground varied between -0.2 m AOD and 1.5 m AOD (2.40 and 4.80 m bgl). The proved thickness of Made Ground ranged between 2.40 to 4.60m, with an average thickness of 3.28m. The Made Ground was found to be thinner in the areas close to the western border adjacent the areas of W3 and W6 with the Made Ground thickness between 2.50 and 3.00 m. The Made

Ground was predominantly thicker in the centre and to the east and north eastern boundary of the area (adjacent the M275 motorway). One of the historical boreholes (BHLW6) recorded the Made Ground to be 5.10 m thick along the eastern extent of area W4, however the exact depth is expected to be greater as this borehole was constructed prior to the depositing of the capping layer.

4.5.16 The Made Ground recorded across the former MOD landfill (area W4) was highly variable and was typically described as silty gravelly clayey sand, silty sandy gravelly clay, silty clay, sandy clayey gravel, with gravel fractions mainly comprising flint, chalk, brick, concrete, with occasional cobbles of concrete and brick, rare boulders of concrete, and with varying proportions of decaying roots and rootlets, metal fragments, tile, wood fragments, metal wire, electrical wire, concrete kerb stones, fabric, mdf, asbestos lagging, asbestos cement, paint cans, asphalt / tarmacadam, and various other man made lithologies.

W3 Portsmouth Harbour Cruising Club

4.5.17 The former landfilling activities in area W4 is understood to extend onto the eastern boundary of Portsmouth Harbour Cruising Club area W3, whilst a former depression further to the west in area W3 was anecdotally infilled with demolition material from the former barracks (Gifford, 2001).

4.5.18 All exploratory locations encountered Made Ground with 12 of the 15 locations proving the depth of the Made Ground. The Made Ground was encountered beneath a thin layer of concrete slab in every location. The depth to base of the Made Ground was proved to depths between 0.46 and 2.20 m AOD. Typical depth of Made Ground is 1.0 m in the west and 2.5 m where the landfill encroaches onto this area in the southeast. The thickness of the Made Ground was proved to be between 0.08 and 2.35 m in thickness, with an average thickness of 0.92m.

4.5.19 The typical description of the Made Ground in W3 consisted of either a very soft to firm gravelly sandy clay or clayey gravelly sand, with gravel fractions comprised of flint, brick, concrete, asphalt and rare chalk and slate. Locally cobbles of bricks and partially decaying roots were noted. This reflects the anecdotal records that demolition materials were used in raising levels in the west prior to construction of the PHCC boat yard.

4.5.20 Along the eastern border where former landfilling is understood to encroach into this area, the Made Ground is more variable with manmade lithologies such as clay pipes, glass, textile, rope and metal pipes being encountered.

4.5.21 A black colouring and faint hydrocarbon odour were noted in the shallow Made Ground in W3WS302 (0.3 m bgl) in the vicinity of an above ground diesel tank on the eastern edge of the PHCC area.

AREA 3 FORMER MILITARY BARRACKS

W5 Scrubland

4.5.22 All exploratory locations encountered Made Ground across the scrubland (area W5) with 23 of 32 locations proving the depth of the Made Ground, encountered from surface or locally beneath a thin layer of Topsoil. The depth to base of the Made Ground was proved to depths between 3.06 and 0.73 m AOD (proven thickness between 0.60 and 4.20 m). The thickness of Made Ground in the east near Tipner Lane was significantly less at 0.6 m bgl in W5HP306. In W5BH303, the maximum observed thickness of Made Ground was recorded to 4.2 m bgl. This hole was centrally located in area W5 near the boundary with the adjacent sports hall for the Harbour School.

4.5.23 The raised Made Ground mound in the east part of area W5 (adjacent to Tipner Lane) was not fully proved in the central part of this area due to encountering obstructions or reaching the limit of excavation in trial pits. The greatest unproven thickness was 3.2 m in location TP159. Topographic levels in this area suggest that land has been raised with the Made Ground as the ground levels are locally higher than the surrounding land by up to 2 m. This land raise is concurrent with the typical thickness of Made Ground. However, the thicker Made Ground deposits observed in W5BH303, suggest some localised filling has occurred in addition to land raising.

4.5.24 The Made Ground in area W5 (Scrubland) was typically described as a soft and firm sandy gravelly clay or clayey gravelly sand, with gravel fractions consisting of flint, brick concrete and occasional ash, clinker, asphalt and rare other man made mixed lithologies. Occasional cobbles and paving slabs of concrete were also noted. Evidence of potential capping was apparent in the centre of area W5 adjacent to the entrance to harbour school, exploratory locations TP159, TP166, W5TP303 and W5WS306 recorded a plastic and geotextile marker layer at 0.3m bgl beneath a dark brown sandy clay.

W7 National Seamanship Training Centre

4.5.25 All exploratory locations encountered Made Ground across the National Seamanship Training Centre (area W7), with all proving the depth of the Made Ground, which was typically encountered from surface or locally beneath a thin layer of Topsoil. The depth to the base of the Made Ground was proved to depths between 2.28 and 0.43 m AOD and between 1.00 and 3.00 m thick. The thickness of the Made Ground was reasonably consistent across the site, but thinned in locations to the north near the coast line and in the south east part of W7 where Tipner Lane entered this area.

4.5.26 The Made Ground beneath the NSTC (Area W7) was typically described as a soft to stiff sandy gravelly clay, with gravel fractions consisting of flint, bricks, concrete, asphalt / tarmacadam, locally with gravel of chalk, cobbles of bricks, with roots and rootlets, and fragments of tiles and clay pipes.

4.6 SUPERFICIAL DEPOSITS (RIVER TERRACE DEPOSITS, BEACH AND TIDAL FLAT DEPOSITS AND RAISED MARINE DEPOSITS)

4.6.1 The superficial deposits on the Tipner West site are recorded in regional geological records by the BGS to comprise three separate units, namely River Terrace, Beach and Tidal Flat and Raised Marine Deposits. The River Terrace Deposits are recorded in the centre of the Tipner Firing Range, with Raised Marine Deposits present beneath the River Terrace Deposits and forming the main deposit along the western and northern areas of the site. Underlying these units at the coast are the Beach and Tidal Flat Deposits which are recorded beneath Portsmouth Harbour.

4.6.2 Current and previous exploratory investigation records for the Tipner West site which encountered each superficial deposit were collated and the description of each of these units was reviewed.

4.6.3 The River Terrace Deposits (undifferentiated) were typically recorded as soft and firm brownish orange and orangish brown, locally with grey, bluish grey and green mottling, silty sandy gravelly clay. Gravel is fine to coarse angular and subangular of flint with localised bands of shells.

4.6.4 The Raised Marine Deposits were typically recorded as light yellowish brown, reddish orange, brownish orange, orangish brown, gravelly sand, or sandy gravel, with localised lenses of clay. The gravel fraction was typically described as fine to coarse, angular to rounded flint.

4.6.5 The Beach and Tidal Flat Deposits were typically recorded as soft to stiff bluish grey, light orangish brown, greyish brown, grey, gravelly silty sandy clay, locally with lenses of clayey silt and clayey gravel, with grey, black, orange, red and brown, orangish brown mottle. Localised decaying roots, decayed plant matter, and an organic odour were noted. The gravel fraction was typically recorded as fine to coarse angular and subrounded flint, and very weak to moderately strong chalk.

4.6.6 These three units comprise differing components of sand, silt, gravel and clay and in the recent WSP investigation the units were identified where feasible. Previous phases of investigation at the site did not always distinguish between the different strata and either provided factual descriptions of the deposits or referred to the deposits as Superficial, Brick Earth or Alluvium. Given the complex tidal deposition environment, subsequent reworking in the area (both natural and anthropogenic) and the inherent difficulties in distinguishing between the superficial deposits, for the purpose of this assessment the superficial deposits have been grouped together to review spatial distribution. A contour plot of the proven thickness of the superficial deposits is presented in **Figure 7**.

AREA 1 - TIPNER FIRING RANGE

4.6.7 Cross sections through Area 1 are presented in **Figure 9, 12** and **13**. Superficial deposits were recorded in 125 of 179 current and historical exploratory logs across Area 1. The deposits were either beneath topsoil or Made Ground. The reported thickness of superficial deposits ranged from absent to 4.4 m. The deposits are thicker in the centre of the firing range and to the eastern end of the rifle range (area W9). The superficial deposits were locally absent in the two larger areas of fill located west and south of the rifle range (areas centred around BH201 and BH103 respectively). In these areas the Made Ground was recorded directly overlying the Lambeth Group. The superficial deposits were typically more granular in the central and western parts of Area 1 in areas mapped by the BGS as River Terrace Deposits.

AREA 2 - FORMER MOD LANDFILL

4.6.8 Superficial deposits appear to be continuous across Area 2 and were penetrated in 37 of 54 exploratory locations at depths between 0.18 m and 4.8 m bgl (-0.2 m and 2.45 m AOD). The superficial deposits were predominantly recorded as Beach and Tidal Flat Deposits of cohesive slightly sandy, gravelly clay or sandy silt over weathered residual Chalk deposits of gravelly silt. A thin band of peat was recorded in location W3BH301 near the coast in the PHCC (area W3) at depths between 1.6 and 1.7 m bgl. The superficial deposits beneath the PHCC (W3) were typically 2.00 m thick and thinned towards the boundary with the adjacent former landfill. The superficial deposits were not proven in the northern half of the PHCC due to the deposits exceeding the limit of drilling in W3WS301 (maximum unproven thickness of 3.7 m).

4.6.9 The depth to these deposits increased with distance inland corresponding to the increasing thickness of the overlying Made Ground in the former MOD landfill (area W4). Beneath the landfill the deposits thicken towards the western boundary to a maximum of 4.7 m (BHLW8) from a 'thin point' at W4BH304 (0.55 m thick). The deposits were not proven in the northeast corner of the former landfill due to the thickness of overlying Made Ground and are potentially absent in this area. IKM exploratory hole BHLW6 recorded Made Ground directly overlying the Chalk in the northeast corner of the landfill.

AREA 3 - FORMER MILITARY BARRACKS

4.6.10 The superficial deposits in Area 3 were proven in 9 exploratory locations at depths between 0.6 m and 4.2 m bgl (0.43 m to 2.43 m AOD). The superficial deposits appear to be continuous across this area and vary between 0.3 m and 5.3 m in reported thickness. However, obstructions in the Made Ground in the centre of this area (around W5TP305 in area W5) precluded excavation into this strata.

4.6.11 The superficial deposits were recorded as River Terrace Deposits, Beach and Tidal Flat Deposits and Raised Marine Deposits in this area. The River Terrace Deposits were predominantly encountered in the centre and east of this area, whilst Tidal Flat Deposits were prevalent closer to the coast. The superficial deposits predominantly comprised cohesive deposits of sandy or gravelly clay overlying the Chalk. Five exploratory locations in the centre of area W5 recorded granular deposits of sand or gravel at depths between 2.5 m and 7m bgl.

4.7 LAMBETH GROUP

4.7.1 The distribution of the Lambeth Group encountered during investigations across the Tipner West site is in general agreement with the BGS maps. This unit was encountered in exploratory holes across the firing range and thickened to the south. Based on the available exploratory hole records the boundary between the Lambeth Group and the Chalk lies between the firing range (area W9) and the Scrubland (area W5) which concurs with regional BGS records.

4.7.2 The Lambeth Group was encountered in 77 exploratory holes across the site and was typically encountered beneath the Made Ground and the superficial deposits. The Lambeth Group was directly below the Made Ground in the areas of filled ground west and south of the rifle range in Area 1 (area W9) in all other locations the superficial deposits were present over this unit. The Lambeth Group was proven to a maximum depth of -9.70 m AOD with a thickness of between 1.50 to 11.20 m in the centre and north of the range. The total thickness at the southern side of the firing range (area W9) was not proven, BGS borehole records from the construction of the M275 indicate the base of the Lambeth Group is approximately 22 m bgl at the south side of the current junction on the M275 (BGS borehole record SU60SW/133).

4.7.3 The Lambeth Group was typically recorded as firm and stiff brownish reddish greyish orange, orangish brown, brownish reddish grey, gravelly silty sandy clay, with grey orange, red, grey, greyish blue, reddish brown mottle. Locally decaying roots were observed. The gravel fraction was recorded as fine to coarse and angular to rounded flint. At the top of the formation, the Lambeth Group was identified as being weathered and consisting of soft brownish orange mottled light grey and reddish brown clay. At the base of the formation, where encountered the deposits include blue grey sand overlying the Chalk.

4.8 LEWES NODULAR, SEAFORD, NEWHAVEN AND CULVER CHALK FORMATION (UNDIFFERENTIATED)

4.8.1 The Chalk Formation underlies the entire Tipner West Peninsula, but was only proved in the central and northern parts of the site due to the thickness of the Lambeth Group in the southern part of the site.

4.8.2 The Lewes Nodular, Seaford, Newhaven, and Culver Chalk Formation (Undifferentiated) was encountered in 33 exploratory holes across the site. The Chalk was typically found beneath the Lambeth Group in the southern part of the site and beneath the superficial deposits in the northern part of the site. The full depth of the Chalk Formation was not proven, with an unproven maximum depth of -12.20 m AOD. BGS borehole records in the Portsmouth area record the Chalk to be greater than 100 m thick (BGS borehole record SU60SE120). The Chalk was typically recorded as structureless chalk composed of white gravelly sandy silt, or silty gravel. The clasts were typically recorded as low to medium density, very weak to medium strong and angular to subrounded chalk with occasionally recorded rounded coarse flint gravel. Locally the top of the Chalk was encountered as a weathered very soft to stiff silty sandy gravelly clay, and sandy clayey silt.

4.8.3 Given the method of drilling it is not possible to definitively determine the Grade or structure of the Chalk. However, from the available logs and the recent investigation it is probable that the Grade varies from a structureless fine soil (Grade Dm) grading to a structureless coarse soil (Grade Dc) with depth.

4.9 DISCUSSION

Area 1 - Tipner Firing Range

4.9.1 Ground conditions vary across Area 1 comprising a variable thickness of Made Ground over discontinuous superficial units of River Terrace, Raised Marine and Raised Beach and Tidal Flat Deposits or directly overlying the Lambeth Group. Made Ground varied in nature and thickness by area within the firing range (area W9) according to the activities which led to their deposition. Areas of infilling were present in former pond locations along the western and southern coastal perimeter of the range with greatest thicknesses of Made Ground recorded west and south of the active parts of the range. Made Ground in areas of infilling include waste materials such as brick and concrete with occasional and rare fragments of metal wire, iron rods, plastic, wood, glass and burnt materials. Areas of raised ground on the range include firing points on the main range and firing butts behind the range. Where investigated the raised ground was found to comprise reworked natural material on the firing points and Made Ground with anthropogenic materials on the raised butts.

4.9.2 The superficial deposits underlying the Made Ground were thicker and more granular in the centre of the range and more cohesive and then absent at the coast where Made Ground directly overlies the Lambeth Group.

4.9.3 The Lambeth Group was found to underlie the superficial deposits across the centre of Area 1 and comprised firm to stiff silty clay which was sandy towards the base of the unit. The Lambeth Group thins to the north of Area 1 as the Chalk outcrops further north of this area. In areas of infilling on the western and southern coast the Lambeth Group is directly beneath Made Ground. These cohesive deposits are considered to provide a low permeability barrier to vertical migration of contamination from the Made Ground to the underlying chalk.

Area 2 - Former MOD Landfill

4.9.4 The ground conditions in the former MOD landfill (area W4) reflect the historical land filling activities that are understood to have occurred here and comprised deep deposits of Made Ground in the east overlying cohesive superficial deposits which in turn overlie the Chalk. The Made Ground in this area includes a mix of waste materials of mixed lithologies such as clay pipes, glass, textile, rope and metal pipes. This material was variably capped by light brown slightly gravelly clayey sand which is marked by a membrane that was intermittently present across the area. Brick, concrete and flint, and pieces of glass, metal and gravel were also present at the surface. The thickness of the Made Ground reduced to the west under the current PHCC (area W3), the description of the Made Ground observed at the eastern boundary of the PHCC indicates that the historical landfilling activities extend into this area. Near the coast in this area, the Made Ground included bricks, concrete and slate which is consistent with anecdotal records that demolition material from the former barracks were used to raise levels prior to construction of the PHCC boat yard.

4.9.5 The superficial deposits in this area predominantly comprised sandy or gravelly clays recorded as Beach and Tidal Flat Deposits with residual chalk deposits of gravelly clay at the base. Typically 1 to 4 m in thickness, these deposits were noted to thin to a minimum of 0.5 m beneath the landfill in the western corner of area of W4 and are potentially absent in the northeast corner of this area according to IKM exploratory records. This thinning of the superficial deposits is concurrent with the presence of a former lagoon and drainage channel recorded in the area beneath the landfill which extended to the northeast beneath the current M275. The Chalk underlying the superficial deposits comprises structureless chalk of gravelly silt.

Area 3 - Former Military Barracks

4.9.6 The ground conditions in Area 3 reflected this area's mixed history of use as a barracks with some subsequent material deposition. The ground levels in areas W5 and W7 were between 1 and 3 m higher than ground level in this part of the Tipner West Peninsula. The corresponding thickness of Made Ground increased according to ground elevation suggesting a significant deposition of material has historically occurred in area W5 and W7. Greatest thickness of Made Ground was recorded in area W5 and not proven in the centre of this area. The Made Ground typically comprised sandy gravelly clay or clayey gravelly sand, with gravel fractions consisting of flint, brick concrete and occasional ash, clinker, asphalt. A ground investigation report prepared by Scott Wilson Kirkpatrick for the Tipner Range to the south of this area recorded widespread filling across the north of the Tipner Range associated with the development of the M27/A3M extension. This filling may have also spread onto area W5 creating the observed mounds in this area or alternatively may have been associated with the clearance of the former barracks.

4.9.7 Beneath the Made Ground in Area 3 where it was fully penetrated, the superficial deposits comprise cohesive deposits of sandy gravelly clay over the Chalk.

5 HYDROGEOLOGICAL ASSESSMENT

5.1 GROUNDWATER ENCOUNTERED DURING INVESTIGATION

5.1.1 Groundwater strikes recorded during the ground investigations are presented in the exploratory logs in **Appendix D** and summarised in **Table D.3.1**. For the discussion of water strikes in Area 1 Tipner Firing Range, both records provided by ESI and WSP have been reviewed.

MADE GROUND

Area 1 - Tipner Firing Range

5.1.2 Perched water was intermittently encountered in the Made Ground in Area 1. Strikes were observed at elevations between 0.87 m and 2.73 m AOD (1.20 m and 3.10 m bgl). Water strikes in the Made Ground on the range were in locations that were close to the northern coast (WS203); an infilled bomb crater (BH102); infilled former ponds near the western coast (BH101,BH208,WS101,WS102); and filled ground close to the southern coast (W9BH310, W9WS324). Water strikes were typically noted near the interface with lower permeability deposits (including Lambeth Group, River Terrace Deposits or cohesive Made Ground).

Area 2 - Former MOD Landfill

5.1.3 In Area 2 water was encountered in the Made Ground at depths between 0.40 m and 1.60 m bgl (1.68 m and 4.31m AOD) and appeared to be perched at interfaces with more cohesive underlying Made Ground or superficial deposits. No water strikes were recorded in the Made Ground in the PHCC (W3).

Area 3 - Former Military Barracks

5.1.4 No groundwater was encountered in the Made Ground in Area 3 (areas W5 and W7) during exploratory works completed by WSP in 2017.

SUPERFICIAL DEPOSITS

Area 1 - Tipner Firing Range

5.1.5 Water strikes were intermittently encountered in the superficial deposits on the Firing Range (area W8 and W9) at depths between 1.3 m and 3.70 m bgl (-0.73 and 1.96 m AOD). Groundwater was predominantly observed in the River Terrace Deposits, with two exploratory locations (W8WS321 and W9WS324) recording water strikes in cohesive Beach and Tidal Flat Deposits. Exploratory locations located towards the perimeter of the firing range (south and eastern areas generally recorded between 1.0 m and 2.0 m AOD whilst in the centre of the firing range the water strikes were lower (WS205 and WS210) and potentially indicative of perched water on underlying cohesive strata. Three water strikes in the superficial deposits were recorded to rise following the strike suggesting locally confined groundwater conditions in these locations or tidal influence on water levels (BH102, W9WS325c and WS103).

Area 2 - Former MOD Landfill

5.1.6 In Area 2 water strikes were recorded in the superficial deposits in one location in PHCC (area W3) and three locations in the Former MOD Landfill (area W4). The water strike in area PHCC was in W3WS301 at 4.20 m bgl (-1.42 m AOD) in the Beach and Tidal Flat Deposits. In the landfill area two strikes were measured at approximately 5.20 m bgl (-0.40 m AOD to -0.54 m AOD) in W4BH306 and W4BH307, also in Beach and Tidal Flat Deposits. Both strikes were observed to rise in water level (0.30 m) 20 minutes after the strike. This indicates the groundwater in these locations is partially confined by cohesive materials in these deposits.

5.1.7 The third water strike in in the former MOD landfill (W4) was much shallower in W4 TP313 and was reported as a seepage in River Terrace Deposits immediately beneath the Made Ground (2.50 m bgl, 1.42 m AOD).

Area 3 - Former Military Barracks

5.1.8 One water strike was recorded in the superficial deposits (Raised Marine Deposits) in area W5 (W5WS307c) at 2.80 m bgl (2.49 m AOD).

LAMBETH GROUP

5.1.9 Water strikes in the Lambeth Group were only recorded in Area 1. There were eight exploratory locations (seven on W9 the firing range and one in W8 the Tipner Boating and Angling Club) across the area which recorded strikes in this strata at depths between 3.00 m and 8.20 m bgl (-4.64 m AOD to 1.74 m AOD). Deeper water strikes in locations BH104 (5.70 m bgl) and BH204 (8.20 m bgl) reported a rise in water level over 20 minutes between 2.50 m and 2.90 m respectively.

LEWES NODULAR, SEAFORD, NEWHAVEN AND CULVER CHALK FORMATION (UNDIFFERENTIATED)

5.1.10 Water strikes in the Chalk were only observed in exploratory locations in Areas 2 and 3 predominantly due to the depth of exploratory holes not being sufficient to encounter Chalk in Area 1.

Area 2 - Former MOD Landfill

5.1.11 Water strikes were recorded in the Chalk in three locations in Area 3 comprising two locations in PHCC (W3WS304, W3BH301) and one in the landfill (W4BH305). All three strikes were at a similar elevation between -1.94 m and -2.25 m AOD (4.90 m to 6.90 m bgl). The strikes in W3BH301 and W4BH305 rose by 0.20 m and 1.50 m respectively indicating the groundwater is partially confined by overlying cohesive deposits.

Area 3 - Former Military Barracks

5.1.12 Borehole W5BH302 in Area 3 encountered a water strike at in the Chalk at 5.00 m bgl (-0.24 m AOD). No rise was recorded with the strike.

5.2 MONITORED GROUNDWATER ELEVATIONS

5.2.1 Groundwater elevation monitoring was also undertaken on six occasions following the site works at monitoring wells installed by WSP. Monitoring records are presented in **Appendix D**. Groundwater level loggers were installed in selected wells to record continuous groundwater elevation data. Loggers were deployed sequentially in different monitoring wells across the site between February 2017 and November 2017 and monitoring is ongoing. The full records of time based groundwater monitoring will be reported in the City Deal Groundwater Report (in progress). Preliminary observations from the data recorded to date are discussed below. Tides in Portsmouth harbour as reported by the National Tidal and Sea Level Facility2 to range between of -2.59 m and 2.40 m AOD (0.14 m to 5.13 m above chart datum). Observed groundwater levels have been reviewed in the context of this tidal range.

MADE GROUND

Area 1 - Tipner Firing Range

5.2.2 Water levels in the Made Ground were recorded on Area 1 the Tipner Firing Range during the monitoring period at depths between 1.34 m and 2.89 m bgl (1.43 to 2.69 m AOD). Most of the monitoring wells installed in the Made Ground were designed as gas monitoring wells (BH201, W9WS323 and W9WS324) which ideally should be dry. As such water present in these locations is incidental and dry wells do not necessarily indicate an absence of perched water. Continuous water level monitoring in well BH201 installed in the cohesive Made Ground above the more granular Made Ground did not show a significant variation in water levels over the period of a tidal cycle.

Area 2 - Former MOD Landfill

5.2.3 In Area 2 perched water levels in the Made Ground during the monitoring period varied between 0.16 m and 2.87m bgl (1.2 m and 4.35 m AOD). The monitored water levels at the eastern edge of PHCC (area W3) were at approximately 1.2 m AOD in W3WS304, whilst water levels in the landfill (area W4) were recorded between 1.2 m to 1.5 m AOD in locations W4WS312, W4WS315 and W4WS316. Very shallow water was recorded in

[2] National Tidal and Sea Level Facility Highest and lowest predicted tides accessed at http://www.ntslf.org/tides/hilo

the Made Ground at location W4WS313 throughout the monitoring period (0.16 m to 0.51 m bgl). This location is close to the alignment of an infilled former drainage ditch which may be locally influencing water levels in this position.

5.2.4 Continuous water level monitoring in July 2017 in well W4WS312 (approximately 120 m from the coast) indicates no significant variation in water levels in the predominantly cohesive Made Ground in response to tidal cycles in Portsmouth Harbour.

Area 3 - Former Military Barracks

5.2.5 Three monitoring wells in Area 3 (W5WS307c, W7WS308 and W7WS310) recorded water levels in the Made Ground between 1.88 m and 2.11 m bgl (1.34 m to 3.18 m AOD). These monitoring wells were located near the coast, but were installed as gas monitoring locations. Recorded water levels in the wells were typically within 0.1m of the base of each well screen which is insufficient for data logger installation to assess any tidal effects on perched water at this location.

SUPERFICIAL DEPOSITS

Area 1 - Tipner Firing Range

5.2.6 Ten monitoring wells in Area 1 which screened the superficial deposits were recorded with groundwater levels ranging between 0.43 m and 2.44 m bgl (1.37 m and 2.44 m AOD) during the monitoring period. Water levels were generally closer to ground level in the TBAC (area W8) in the southeast corner of the Firing Range 0.43 m to 1.71 m bgl. Water levels across the Tipner Range area were recorded between 1.00 m and 2.44 m bgl (1.37 m to 2.21 m AOD).

5.2.7 Continuous groundwater level monitoring in wells screening the River Terrace superficial deposits, WS209 and W8WS320 showed minor fluctuation in water levels (approximately 0.03 m) over a tidal cycle. These monitoring wells were in the centre of this area (WS209) and near the coast (W8WS320) and installed in granular deposits of gravel or sand.

Area 2 - Former MOD Landfill

5.2.8 Two wells in Area 2 the former MOD landfill screen the Tidal Flat superficial deposits (W3WS301 and W4BH306). Monitoring in these locations recorded groundwater levels between 1.6 m and 5.28 m bgl (-0.88m and 1.21 m AOD). The water levels were notably lower further inland at W4BH306, which may be indicative of water being in continuity with the underlying chalk in this location which was observed with a similar range in water level during monitoring.

Area 3 - Former Military Barracks

5.2.9 One monitoring well in Area 3 screened the superficial deposits (W7WS311), this location recorded groundwater levels between 2.45 m and 3.54 m bgl (0.90 m and 1.99 m AOD).

LAMBETH GROUP

5.2.10 The Lambeth Group thins and is absent in Areas 2 and 3, so monitoring wells were only installed in this stratum in Area 1.

Area 1 - Tipner Firing Range

5.2.11 Ten monitoring wells which screened the Lambeth Group in Area 1 were assessed during the monitoring period and groundwater levels recorded between 0.51 m and 3.48 m bgl (0.08 m and 2.87 m AOD). Water levels in WS208 and BH206, which are both located in the centre of the firing range, were higher than the levels reported in Lambeth Deposits across the rest of the range. Water levels were lower in locations BH204 and BH205 (recorded water levels varied between 0.08 m to 1.20 m AOD). These monitoring wells had screened intervals close to the interface with the underlying Chalk and may therefore be recording groundwater levels where the granular base of the Lambeth Group is in likely to be in continuity with the Chalk.

5.2.12 No data loggers were installed in monitoring wells screening the Lambeth Group in Area 1.

LEWES NODULAR, SEAFORD, NEWHAVEN, CULVER CHALK FORMATION (UNDIFFERENTIATED)

Area 1 - Tipner Firing Range

5.2.13 Only one well, BH203, installed with a screen in the Chalk was monitored by WSP in Area 1. This location recorded groundwater levels between 3.23 m and 4.02 m bgl (0.48 m and 1.27 m AOD). Continuous groundwater level monitoring in this location showed a significant fluctuation in head (up to 1.80 m) over a tidal cycle. The Chalk aquifer is therefore likely to be in continuity with the harbour.

Area 2 - Former MOD Landfill

5.2.14 Four monitoring wells installed in the Chalk were monitored by WSP in Area 2 (W3BH301, W4BH304, W4BH305 and W4 BH306). Groundwater was recorded in these locations between 1.13 m and 4.47 m bgl (0.45 m and 1.57 m AOD). Continuous groundwater level monitoring was undertaken in wells W3BH301 and W4BH305 in July 2017, both locations recorded a fluctuation in groundwater level in line with the tidal cycle in Portsmouth Harbour. Recorded water levels fluctuated by up to 1.15 m in W3BH301 and 1.00 m in W4BH305 over a tidal cycle. W3BH301 and W4BH305 are located approximately 20 m and 70 m from the coast, respectively.

Area 3 - Former Military Barracks

5.2.15 One monitoring well in Area 3, W7WS309, installed in the Chalk in Area 3 was monitored by WSP. Groundwater levels in this location were recorded between 1.91 m and 2.11 m bgl (1.42 m and 1.52 m AOD). Continuous level monitoring in this location recorded a fluctuation in water level by approximately 0.05 m over the period of a tidal cycle.

5.3 HYDRAULIC GRADIENT

5.3.1 A groundwater elevation contour plot for the superficial deposits is presented in **Figure 14** based on available data logger recorded water levels in the superficial deposits during high tide on 26 July 2017. Groundwater levels were higher in the River Terrace Deposits at the southern area of the Tipner West site (around 2.00 m AOD in area W8) where the deposits were underlain by Lambeth Group and diminished in level in the centre of the firing range (area W9) and increased again near the coast. The logged readings from these locations did not suggest significant tidal variation in the groundwater in these deposits. Further assessment of the data logger records will be presented in the City Deal Groundwater Monitoring Report 2018.

5.3.2 Groundwater contours were plotted for the Chalk at two points in the tidal cycle as presented in **Figure 15** using data logger records from wells screening the Chalk. At high tide the inferred groundwater contours indicate an inferred gradient of 0.0032 which dips inland to the east and at low tide the gradient is shallower with an inferred gradient of 0.0021 towards the east. The gradient on both tides is based on levels between W3BH301 and W4BH305 as the levels in W7WS309 are locally higher, possibly due to the screen depth at this location affecting the observed water level.

5.4 IN-SITU GEOCHEMISTRY MEASUREMENTS

5.4.1 Geochemical parameters were recorded during low flow purging prior to groundwater sampling. The following conditions were observed in the groundwater as summarised in **Table 10.** Stabilised parameters by location are presented in **Table D.3.2** in **Appendix D**.

Table 10 – Recorded Range of In-Situ Geochemistry Measurements

Stratum	Temperature (ºC)	Dissolved Oxygen (mg/l)	Electrical Conductivity (µS/m)	Redox Potential (mV)	pH
Made Ground	15.3 – 18.8	0.10 – 8.46	355 – 3000	-324 - 21	6.68-7.89
Superficial	13.0 – 17.2	0.70 – 3.23	722 – 2430	-352.2 – 46	6.2 7 – 7
Lambeth Group	13.5 – 15.56	0.78 –5.17	608 – 9,971	-298.2 – 94	6.39 – 7
Chalk	11.1 – 15.5	0.20 – 3.20	2601 – 15,927	-310.6 - -11.6	6.78 – 6.97

5.4.2 The following are noted with respect to the reported geochemical parameters:

- pH conditions observed were generally neutral in all aquifers;
- High conductivity readings were noted in the Lambeth Group and Chalk aquifers which is indicative of brackish conditions. The locations in the superficial, Lambeth Group and Chalk aquifers with higher reported conductivity were typically closer to the coast and chloride concentrations in these locations were also higher (>200 mg/l) suggesting saline intrusion is apparent near the coast. Lower conductivity readings were recorded further inland. Higher conductivity readings were recorded in the Made Ground perched water in BH208 (an infilled pond close to the coast) and in the former landfill (W4WS312 and W4WS313) however the chloride concentrations in these locations were lower than observed in the bedrock aquifers (<200 mg/l) suggesting the higher conductivity may be attributable to the leachate in the filled ground; and
- Redox conditions were indicative of predominantly reducing conditions in the aquifers where they were sampled on site.

5.5 SUMMARY OF FINDINGS

5.5.1 Based on the desk-based information and the ground conditions encountered during the recent investigation, the hydrogeological model for the site is summarised below.

5.5.2 On the basis of the available information the hydrogeological conditions on site are inferred to comprise intermittent perched water in Made Ground; the Secondary A and Secondary Undifferentiated Aquifers in the superficial deposits and Secondary A Aquifer in the Lambeth Group or Principal Aquifer in the Chalk.

5.5.3 Perched water in the Made Ground is intermittent across the site and more prevalent in areas of infilled former ponds near the coast in Area 1 and in the deep fill in the former landfill in Area 2. Both of these areas of infilling coincide with former lagoons or ponds which may still be in continuity with former drainage channels on the site. Water levels in the perched water in the former landfill (area W4) were generally 1 m to 3 m bgl but locally very shallow in one location, 0.16 m to 0.5 m bgl (W4WS313).

5.5.4 Groundwater is present in the superficial deposits across the site. Levels are around 2 m AOD in the Secondary A Aquifer in the River Terrace Deposits in the south of the site and lower in the Secondary Aquifer (Undifferentiated) in the Tidal Flat Deposits in the northern part of the site (between -0.9 m and 1.2 m AOD). Minor fluctuation in the water levels in the River Terrace Deposits (superficial deposits) in the centre of the firing range indicate this Secondary A Aquifer is potentially in continuity with Portsmouth Harbour and the effect of tides on water levels was apparent in a well approximately 150 m from the coast. However the variation in water level at this distance is nominal. The conductivity and chloride concentrations observed in these aquifers were moderately higher in monitoring wells close to the coast suggesting some degree of saline intrusion is active near the coast. Continual groundwater monitoring in the superficial deposits recorded a different trend to that observed in the Chalk and Lambeth Group aquifers suggesting that these are predominantly mutually exclusive groundwater environments.

5.5.5 Groundwater was encountered in the Secondary A Aquifer in the Lambeth Group in Area 1 at levels between 0.08 m and 2.80 m AOD with levels higher in the centre of the Area 1 than at the coast. Conductivity and chloride readings in the Lambeth Group were high in coastal monitoring locations suggesting some degree of saline intrusion. At the coast the Made Ground directly sits on the Lambeth Group so water is likely to be perched on the Lambeth Group in the Made Ground at these locations. The upper deposits in the Lambeth Group are cohesive whilst the base of this unit is defined by sandy beds. This unit is therefore considered to act as a barrier to vertical continuity between the Made Ground and the Chalk where present. The sandy beds at the base may however be in continuity with the underlying Chalk.

5.5.6 Groundwater was recorded in the Principal Aquifer in the Chalk across the site. This aquifer appears to be partially confined beneath the overlying cohesive superficial deposits or Lambeth Group in most parts of the site. The water levels in the Chalk vary by up to 1.0 m over a tidal cycle suggesting this unit is laterally in continuity with the Portsmouth Harbour. Conductivity and chloride concentrations in the Chalk aquifer vary with distance from the coast, higher conductivity readings were recorded in the Chalk at the coast particularly in BH203 (15,927 µs/cm, 5,150 mg/l chloride) and W3BH301 (10,109 µs/cm, 3,460 mg/l chloride), whereas further inland the conductivity and chloride concentrations are lower in W4BH305 (2601 µs/cm, 326 mg/l chloride). The resource potential of this aquifer is therefore considered to be diminished by saline intrusion near the coast.

5.5.7 There is potential for continuity between the groundwater in the Chalk and the overlying Made Ground where the thickness of the superficial deposits thins and is potentially absent in the former landfill in Area 2. In the former landfill the conductivity was very similar between the perched water in the Made Ground and the Chalk at around 2600µs/cm.

6 CONTAMINANT DISTRIBUTION

6.1.1 Observations of potential contamination during the WSP investigation are presented in the exploratory logs in **Appendix D.2**. A summary of in-situ readings, observations and obstructions and suspected asbestos observations are provided in **Table D.2.1** and **Table D.2.2** respectively in **Appendix D**. The analytical data are presented in **Tables E.1.1** to **E.1.3** and **Table E1.2.1** to **Table E.2.3** in **Appendix E**.

6.1.2 A detailed discussion of the contaminant distribution is provided in **Appendix D**.

6.2 UXO, RADIOLOGICAL AND EXPLOSIVE RESIDUES

6.2.1 Radiological screening and monitoring was completed during intrusive works in Area 1 (areas W8 and W9) and Area 2 (area W4). No readings were recorded above background levels during the works and in soil sampled from selected exploratory locations in these areas.

6.2.2 Unexploded ordnance specialist supervision was provided during all of the intrusive works in all areas assessed. No unexploded ordnance was encountered in any of the exploratory holes investigated, although a number of spent bullet casings were encountered at surface in the range area and some spent bullets were encountered in near surface soils in the range area.

6.2.3 Explosive residue testing was completed in soil samples from the range area and no detectable compounds were recorded. In BH102, RDX (cyclo-1,3,5-trimethylene-2,4,6-trinitramine) was detected in the groundwater at 1.2 µg/l marginally above limits of detection in the ESI investigation in 2015.

6.3 SOIL

AREA 1

6.3.1 The results of asbestos, lead, metals and selected organic contaminant analysis in Area 1 are presented in **Figures 16-19** respectively. The following were noted with respect to each of these analytes and discussed in further detail in **Appendix D**:

- Asbestos was identified in the Made Ground in areas of filled ground in Area 1 (periphery of area W9) with concentrations up to 18.6% reported in samples subject to asbestos quantification;
- Metals were detected in Made Ground sampled in Area 1 with lead concentrations being the most significant of these in concentration and prevalence. Lead was identified in shallow soils across the range and in the Made Ground. Highest reported lead concentration was 53,300mg/kg (TP134, 0.5m bgl). Moderately elevated concentrations of arsenic, copper, nickel and zinc were also reported in areas of fill at the north and western areas of the range;
- Tributyltin was detected in shallow soil samples analysed from the TBAC (area W8) part of Area 1 (maximum 0.82mg/kg in W8WS320);
- Polycyclic aromatic hydrocarbons were the most prevalent of the detected organic compounds in Area 1. Concentrations of benzo(a)pyrene were detected in the Made Ground across this area, with highest reported concentrations observed in the peripheral areas of filled ground (maximum of 63.2 mg/kg in BH208 at 1.0m bgl), this sample was also noted with moderate long chain petroleum hydrocarbon concentrations (1340mg/kg aromatic C_{21}-C_{35});
- Petroleum hydrocarbons were detected at moderate concentrations in the TBAC (area W8) and the areas of filled ground around the periphery of the firing range(area W9), the composition of hydrocarbons were predominantly longer chain aromatic hydrocarbons; and
- Concentrations of volatile organic compounds where analysed were typically below laboratory limits of detection.

AREA 2

6.3.2 The results of asbestos, lead, metals and selected organic contaminant analysis in Area 2 are presented in **Figures 16 , 20 -22** respectively. The following were noted with respect to each of these analytes and discussed in further detail in **Appendix D**:

- Asbestos was identified throughout the Made Ground in the former landfill (W4) and in areas where it appears that the former landfill encroaches beneath the PHCC (W3). Concentrations up to 1.32% were reported in samples subject to asbestos quantification;

- Lead was the most prevalent metal detected in this area with concentrations being higher in samples of the Made Ground from the former landfill (55,800mg/kg in W4TP307). Locally elevated concentrations of hexavalent chromium and zinc were also reported in the former landfill both of which were highest in the same sample from W4TP307 which presents an exception when compared to the remainder of the dataset;
- Tributyltin was detected in a shallow soil sample analysed from the PHCC (area W3, maximum 1.26mg/kg in W3BH301);
- Polycyclic aromatic hydrocarbons were the most prevalent of the detected organic compounds in Area 2. Concentrations of benzo(a)pyrene were detected in the Made Ground across this area, with highest reported concentrations observed in the location where the former landfill encroaches onto the eastern side of the PHCC (maximum of 25.1 mg/kg in W3WS305 at 0.7m bgl);
- Petroleum hydrocarbons were detected at moderate concentrations throughout the Made Ground in the former landfill (area W4) the composition of hydrocarbons were predominantly longer chain aromatic hydrocarbons. The highest concentration was recorded in W4TP307 at 1.0m bgl 5,380mg/kg;
- At the eastern border of the filled area beneath PHCC area W3, staining and a hydrocarbon odour were noted in the Made Ground in W3WS302, near an existing above ground fuel tank;
- PCBs were detected in seven samples at depth in the Made Ground within the former landfill (area W4, maximum concentration 0.678mg/kg); and
- Isolated samples reported detectable concentrations of volatile organic compounds in the former landfill with alkylated benzenes detected in association with the maximum reported petroleum hydrocarbon results.

AREA 3

6.3.3 The results of asbestos, lead, metals and selected organic contaminant analysis in Area 3 are summarised in **Figures 16, 20 -22** respectively. The following were noted with respect to each of these analytes and discussed in further detail in **Appendix D**:

- Limited concentrations of asbestos were detected in the Made Ground samples in Area 3, trace fibres were detected and a quantified result of 0.0013% was reported for a sample from TP164;
- Metal concentrations in the Made Ground in this area were generally low, as with other areas of the site lead was the most prevalent metal in reported analysis with concentrations up to 863mg/kg in TP169 at depth ;
- PAHs were the most prevalent of organic contaminants identified in the Made Ground in this area with concentrations generally lower than elsewhere on the Tipner West site. A maximum concentration of 10.9mg/kg benzo(a)pyrene was reported in the Made Ground in WS109;
- Petroleum hydrocarbons where detected in the Made Ground were typically at lower concentrations than elsewhere on the Tipner West site, with a maximum concentration reported in W5WS307c (404mg/kg); and
- Concentrations of volatile organic compounds where analysed were typically below laboratory limits of detection.

6.4 GROUNDWATER

6.4.1 Concentrations of lead and ammoniacal nitrogen as NH_4 in groundwater are summarised in **Figure 23** and **25** and concentrations of PAHs in groundwater in **Figures 24** and **26**.

6.4.2 A detailed discussion of contaminant distribution is presented in **Appendix D**. The following distribution patterns were noted with respect to analytes identified in the groundwater sampled by WSP across the site:

- Chloride and sulphate concentrations in the groundwater in the superficial deposits and chalk near the coast are indicative of brackish conditions and influence of coastal waters on these aquifers;
- Ammonia was detected at higher concentrations in the groundwater in the superficial deposits in the area of filled ground south of the firing range (3.02mg/l in W9WS325) and the Chalk in the former landfill (up to 3.6 mg/l in W4BH304). Locally higher concentrations were detected in perched water in the Made Ground in the former landfill (13.2mg/l in W4WS312).
- Metal concentrations were higher in the perched water in the Made Ground and superficial deposits across the site than the underlying Lambeth Group and Chalk aquifers with lead being the most prevalent metal. Highest lead concentrations were detected in perched water sampled in the landfill on the eastern boundary of the PHCC W3WS304 (1,290ug/l lead);
- Petroleum hydrocarbons and PAHs follow a similar distribution to metals, with higher concentrations reported in the perched water in Made Ground and superficial deposit groundwater than in the underlying bedrock aquifers. Highest reported concentrations of petroleum hydrocarbons(total aliphatic and aromatic

fractions) and PAHs (benzo(a)pyrene) were detected in superficial deposits in area W8 (686ug/l total TPH and 5.29ug/l benzo(a)pyrene in W8WS317);and

- Detectable concentrations of chlorinated volatile organic compounds were recorded in the perched water in the Made Ground in the former landfill (2.34ug/l trichloroethene and 2.14ug/l chlorobenzene in W4WS312).

6.5 GROUND GAS

6.5.1 Ground gas conditions recorded vary across the site by location and strata types.

AREA 1

6.5.2 Moderate carbon dioxide concentrations were recorded in monitoring wells screening the Made Ground or Lambeth Group in Area 1 (upto 10%v/v). Methane and carbon dioxide were recorded in the superficial deposits in wells in this area (up to 9.4%v/v methane and 20.2% v/v carbon dioxide) but as these wells were flooded they are not necessarily indicative of conditions in the formation.

AREA 2

6.5.3 In the former landfill moderate concentrations of methane (upto 33%v/v) and carbon dioxide (upto 18.7%v/v) were recorded in the Made Ground with low flow rates. Lower gas concentrations were recorded in wells screening the superficial deposits (0.8%v/v methane and 12.8%v/v carbon dioxide) and chalk (12.2 % carbon dioxide).

AREA 3

6.5.4 Lower gas concentrations were recorded in the Made Ground in Area 3 than elsewhere on the Tipner West site (up to 4.8%v/v/ carbon dioxide and 0.1%v/v methane). Wells screening the Chalk in this area recorded up to 12% carbon dioxide and 0.5% methane (W5BH302). However, these deeper wells were flooded and as such are not necessarily representative of conditions in the formation.

7 QUANTITATIVE RISK ASSESSMENT

7.1 INTRODUCTION

7.1.1 Following the tiered approach which is described in CLR11, this Section provides a Generic Quantitative Risk Assessment (GQRA) of those contaminant linkages identified in the Conceptual Site Model (CSM) for the site.

7.1.2 The approach to WSP risk assessment is set out in **Appendix E**. **Appendix F** presents the soil and groundwater laboratory certificates.

7.2 HUMAN HEALTH RISK ASSESSMENT

RATIONALE

7.2.1 Defra and the EA have published a limited number of Soil Guideline Values (SGVs) for a series of generic land use scenarios which follow the Contaminated Land Exposure Assessment (CLEA) methodology. Where SGVs are not available, WSP has derived a set of Generic Assessment Criteria (GAC) for the CLEA generic land use scenarios using the CLEA Workbook v1.071 Excel modelling tool. The CLEA workbook does not currently have the capacity to derive criteria to assess risks from the inhalation of vapours derived from contaminants dissolved in groundwater. Therefore, a set of groundwater GACs has also been derived using the Johnson & Ettinger (J&E) approach. Further details on the assumptions and methodologies adopted by WSP are provided in **Appendix E**.

7.2.2 At this time, no details of the redevelopment are available and this assessment has been designed to support the masterplan. As such, it is assumed that all exposure pathways are plausible and that generic CLEA land use scenarios are applicable.

7.2.3 The soil chemical data has been compared against an end use GAC for a conservative 1% soil organic matter (SOM) content. The average SOM for the samples collected by WSP in 2017 as follows:

- Area 1: Range <0.35 to 10.3%, mean of 2.0%.
- Area 2: Range <0.35 to 5.83% (excluding outlier of 15.1%), mean of 2.4%.
- Area 3: Range <0.35 to 3.14% (excluding outlier of 19.7%), mean of 1.5%.

7.2.4 For some contaminants of concern, direct contact will be the dominant pathway for exposure. In order to support with development options, human exposure to all unsaturated soils, irrespective of depth, was assumed possible for the purpose of this assessment. This will maximise the information available to the design and construction teams on the suitability of all unsaturated material and can support with their materials management options.

7.2.5 **Tables E.1.1** to **E1.3** in **Appendix E** present a generic assessment of the WSP 2017 soil analytical data and the laboratory certificates of the soil chemical analysis are provided in **Appendix F**.

7.2.6 Potential risks to human health from soil gases are assessed in **Section 7.4.**

ASSESSMENT OF RISKS TO FUTURE SITE USERS

AREA 1

7.2.7 A summary of soil analytical results which exceed residential GAC in Area 1 is presented in **Table 11**. Asbestos observations in soil are presented in **Figure 16**, lead soil concentrations in Area 1 are presented in **Figure 17** and exceedances of metal and organic contaminants in **Figures 18** and **19**, respectively.

Table 11 - Area 1 Summary of Soil Analytical Results in Excess of GAC - Residential with Consumption of Homegrown Produce (WSP and ESI data)

Analyte	Unit	Made Ground		Natural Ground		GAC	Location No. >GAC	Locations exceeding GAC
		Min	Max	Min	Max			
Metals and Organo Tins								
Beryllium	mg/kg	0.14	2.37	0.18	1.79	1.70	3	TP117, TP156, TP158
Arsenic	mg/kg	1.97	118	0.60	85.2	32.0	12	BH208, TP101, TP107, TP109, TP110, TP127, TP136, TP163, TP167, TP168, WS104, WS107
Copper	mg/kg	3.96	4,740	1.98	162	2,490	3	TP109, TP163, WS101
Hexavalent Chromium	mg/kg	0.60	14.5	0.60	1.20	4.50	1	TP167
Lead	mg/kg	6.35	53,300	0.70	500	148	70	BH101, BH201, BH202, BH203, BH204, BH205, BH206, BH207, BH208, HP201, HP203, HP204, HP205, HP206, HP211, TP101, TP103, TP104, TP105, TP106, TP107, TP108, TP109, TP110, TP111, TP112, TP116, TP117, TP119, TP120, TP121, TP126, TP134, TP135, TP139, TP142, TP146, TP147, TP148, TP150, TP154, TP157, TP163, TP167, TP168, TP201, TP203, TP207, TP208, TP210, TP211, TP212, TP213, W8BH308, W8WS319, WS101, WS102, WS103, WS104, WS106, WS106a, WS108, WS202, WS203, WS205, WS206, WS207, WS210, WS211, WS212
Nickel	mg/kg	2.34	537	0.27	81.6	126	4	HP201, TP106, TP109, WS103
Zinc	mg/kg	9.37	9,550	1.90	364	3,860	3	HP211, TP163, TP167
Tributyl tin	mg/kg	0.020	0.82	0.020	0.020	0.26	3	W8WS319, W8WS320, W8WS321
PAH								
Benzo (a) pyrene	mg/kg	0.015	63.2	0.015	2.48	1.60	34	BH101, BH204, BH208, HP210, TP101, TP102, TP103, TP104, TP105, TP106, TP107, TP109, TP111, TP119, TP120, TP121, TP124, TP126,

Analyte	Unit	Made Ground		Natural Ground		GAC	Location No. >GAC	Locations exceeding GAC
		Min	Max	Min	Max			
								TP135, TP167, TP168, TP203, TP207, TP208, TP212, W8WS317c, W8WS318, W8WS319, W8WS321, W9BH310, WS104, WS202, WS205, WS207
Naphthalene	mg/kg	0.009	7.98	0.009	0.65	2.3	3	TP121, TP122, WS104
BTEX								
Benzene	mg/kg	0.009	0.19	0.009	0.090	0.08	1	TP207
Petroleum Hydrocarbons								
Aromatic C_{16}-C_{21}	mg/kg	0.10	418	0.10	92.3	249	2	BH208, TP126
Aromatic C_{21}-C_{35}	mg/kg	0.10	1,340	0.10	269	873	2	BH208, TP126
Aromatic C_{35}-C_{44}	mg/kg	0.10	939	0.10	82.9	873	1	W8WS317c
TPH Hazard Index	fraction	0.003	8.30	0.003	1.72	1.00	24	BH204, BH208, HP210, TP101, TP103, TP105, TP106, TP107, TP111, TP116, TP120, TP121, TP124, TP126, TP135, TP168, TP207, TP208, TP212, W8WS317c, W8WS318, W8WS321, WS202, WS207
Dioxins, Furans PCBs								
Dioxins, furans and dioxin-like PCBs	µg/kg	0.124	17.1	-	-	8	1	WS202

7.2.8 The soil contamination within Area 1 is characterised largely by lead, PAHs, petroleum hydrocarbons and asbestos in Made Ground. The potential risks from lead and PAHs within the Made Ground was predominantly for a residential with plant uptake land use scenario across the firing range (W9). It should be noted that these contaminants are also higher than the residential without plant uptake GACs. Localised exceedances of the GACs for a commercial land use scenario were encountered sporadically in the soil samples but not within any clearly distinguishable or definable areas of the site. It is noted that exceedances across the Tipner Boating and Angling Club (area W8) were much more localised and near-surface and also included tributyl tin at concentrations that exceeded the GAC for a residential land use assuming the consumption of homegrown produce.

7.2.9 An isolated exceedance of the dioxins, furans and dioxin-like PCBs with respect to residential without consumption of homegrown produce GAC was encountered in the Made Ground present in the infilled north-western corner of the firing range, area W9 (WS202 at 1.0 m bgl).

7.2.10 Asbestos was encountered as ACMs and as fibres detected in the samples analysed in the laboratory in the following areas of Area 1 as shown in **Figure 16**:

- Rifle Range on area W9 – quantifiable fibres at shallow depths (0.6- 0.8 m bgl) towards the western end of the rifle range (TP126, TP135, BH204) with concentrations up to 0.0069% v/v.
- Infill in north-western corner of firing range (W9)– visible fragments of ACMs were noted at depth in the Made Ground and quantifiable asbestos fibres recorded in samples between 0.5 m and 2.4 m bgl with a maximum concentration of 0.359% v/v.
- Infilling on northern boundary of area W9 – detectable fibres recorded in samples between 0.7 m and 0.8 m bgl in TP167 and TP168 maximum concentration of 0.0014 %.
- Infilling on western firing range of area W9 - detected fibres at two locations (TP110 and TP212) below the quantification limit at 1.0 m bgl.
- Infilling south of the range in area W9– pieces of asbestos cement board was recorded in Made Ground (W9WS322b at 0.7 m bgl) and detected fibres in two locations (TP121 and TP123) below the quantification limit between 1.3 m and 3.1 m bgl.
- Eastern corner at entrance to area W9– detected fibres at two locations (TP152, WS206) at depths between 0.35 m and 1.0 m bgl with a maximum concentration of 0.163% v/v.

7.2.11 As such, a potential risk exists to future site users of all land use scenarios from the presence of asbestos fibres in Made Ground in these areas.

7.2.12 No asbestos was positively identified in soil samples collected from the material from which the firing points were constructed in area W9 or from the Tipner Boating and Angling Club area (W8) of Area 1.

7.2.13 These findings concur with ESI's human health GQRA for this area of Tipner West.

AREA 2

7.2.14 A summary of soil analytical results which exceed residential GAC in Area 2 is presented in **Table 12.** Soil concentrations of asbestos are presented in **Figure 16**, lead, metal and organic soil concentrations in excess of GAC in Area 2 & 3 are summarised in **Figures 21** to **23** respectively.

Table 12 - Area 2 Summary of Soil Analytical Results in Excess of GAC - Residential with Consumption of Homegrown Produce (WSP data)

Analyte	Units	Made Ground		Natural Ground		GAC	No. of Locations >GAC	Locations exceeding GAC
		Min	Max	Min	Max			
Metals								
Arsenic	mg/kg	2.19	26.9	2.04	32.6	32.0	1	W3BH301
Hexavalent Chromium	mg/kg	0.60	51.0	0.60	0.60	4.50	2	W4TP307, W4WS312
Lead	mg/kg	6.68	55,800	1.10	2,800	148	22	W3BH301, W3WS301, W3WS302, W3WS304, W3WS305, W4BH304, W4BH306, W4BH307, W4TP307, W4TP308, W4TP309, W4TP310, W4TP311, W4TP312, W4TP313, W4TP314, W4TP315, W4TP316, W4WS312, W4WS313, W4WS314, W4WS316
Zinc	mg/kg	21.2	4,180	13.0	425	3,860	1	W4TP307
Tributyl tin	mg/kg	0.02	1.26	0.02	0.02	0.26	1	W3BH301
PAH								
Benzo (a)	mg/kg	0.015	25.1	0.015	0.089	1.60	22	W3WS301, W3WS302,

Analyte	Units	Made Ground		Natural Ground		GAC	No. of Locations >GAC	Locations exceeding GAC
		Min	Max	Min	Max			
pyrene								W3WS304, W3WS305, W4BH305, W4BH306, W4BH307, W4TP307, W4TP308, W4TP309, W4TP310, W4TP311, W4TP312, W4TP313, W4TP314, W4TP315, W4TP316, W4WS312, W4WS313, W4WS314, W4WS315a, W4WS316
Naphthalene	mg/kg	0.009	116	0.009	0.017	2.30	1	W4TP307
BTEX								
Benzene	mg/kg	0.009	0.43	0.09	0.09	0.089	1	W4TP313
Petroleum Hydrocarbons								
Aliphatic C_{08}-C_{10}	mg/kg	0.01	628	0.01	0.14	27.0	1	W4TP307
Aliphatic C_{10}-C_{12}	mg/kg	0.01	563	0.01	1.39	132	1	W4TP307
Aliphatic C_{12}-C_{16}	mg/kg	0.1	1,200	0.1	1.79	1,030	1	W4TP307
Aromatic C_{08}-C_{10}	mg/kg	0.01	555	0.01	0.093	34.0	1	W4TP307
Aromatic C_{10}-C_{12}	mg/kg	0.01	376	0.01	0.93	74.0	1	W4TP307
Aromatic C_{12}-C_{16}	mg/kg	0.1	361	0.1	0.98	141	2	W4TP307, W4WS313
Aromatic C_{16}-C_{21}	mg/kg	0.1	538	0.1	9.92	249	2	W4TP308, W4WS313
Aromatic C_{21}-C_{35}	mg/kg	0.23	1,150	0.1	27.8	873	1	W4WS313
TPH Hazard Index	-	0.004	110	0.005	0.19	1.00	20	W3WS301, W3WS302, W3WS304, W3WS305, W4BH306, W4TP307, W4TP308, W4TP309, W4TP310, W4TP311, W4TP312, W4TP313, W4TP314, W4TP315, W4TP316, W4WS312, W4WS313, W4WS314, W4WS315a, W4WS316
Dioxins, Furans and PCBs								
Dioxins, furans and dioxin-like	µg/kg	0.000649	678.21	-	-	8	7	W4BH306, W4WS312, W4WS313, W4TP307, W4TP313, W4TP314,

Analyte	Units	Made Ground		Natural Ground		GAC	No. of Locations >GAC	Locations exceeding GAC
		Min	Max	Min	Max			
PCBs								W4TP316
VOC								
1,2,4-Trimethyl benzene	mg/kg	0.09	26.7	0.09	0.09	5.00	1	W4TP307

7.2.15 With respect to exposure to contaminated soils in Area 2, the potential risks to future site users are widespread with exceedances distributed throughout the full thickness of Made Ground, both within the 'original' MOD landfill and the recent capping layer.

7.2.16 Asbestos as fibres and ACMs including woven fabric, lagging, cement-bound tiles were encountered within the former MOD landfill material. Loose asbestos fibres were present predominantly in the form of amosite, with some chrysotile and occasional crocidolite fibres also detected. The maximum quantification was recorded as 1.32% in Made Ground at 0.8-0.85 m bgl in the eastern corner of W3 (W3WS302). Within the recent capping layer (that was placed across W4 as part of wider construction works on Tipner East), asbestos fibres in the form of predominantly amosite with some crocidolite and visible ACMs were found to be present near-surface (<0.5 m) across the western side and eastern corner of W4 during the WSP 2017 investigation. As such, a potential risk exists to future site users of all potential land use scenarios due to the potential for exposure to asbestos fibres in Made Ground via inhalation.

7.2.17 Dioxins, furans and dioxin-like PCBs largely exceeded the residential and commercial GACs throughout the Made Ground in the samples that were analysed from the MOD landfill material.

7.2.18 With respect to other chemical contaminants the majority of the exceedances detected in the WSP 2017 investigation pose a potential risk to a future residential land use with or without consumption of homegrown produce. The key contaminants of concern are lead and PAHs which significantly exceeded their respective GACs throughout the Made Ground across the whole of the landfilled portion of Area 2 (including the capping layer). In addition, lead concentrations in the Made Ground within the northern and central area of the former MOD landfill also exceeded the lead GAC for a commercial land use scenario.

7.2.19 A sample from W4TP307 at 1.0 m bgl in the Made Ground appears to present an exception to the remainder of the samples analysed from the landfill as the results present a range of exceedances which were markedly higher than the remainder of the dataset and are summarised in **Table 13.**

Table 13 - Summary of Exceedances at W4TP307 1.0 m

Chemical of Concern	Concentration (mg/kg)	Land Use GAC(s) Exceeded
Hexavalent Chromium	51	Residential With Consumption of Homegrown Produce Residential Without Consumption of Homegrown Produce Commercial
Lead	55,800	Residential With Consumption of Homegrown Produce Residential Without Consumption of Homegrown Produce Commercial
Zinc	4,180	Residential With Consumption of Homegrown Produce
Petroleum Hydrocarbons (various fractions)	5,190 (total)	Residential With Consumption of Homegrown Produce Residential Without Consumption of Homegrown Produce
Benzo(a)pyrene as a surrogate marker for genotoxic PAHs	5.65	Residential With Consumption of Homegrown Produce Residential Without Consumption of Homegrown Produce

Chemical of Concern	Concentration (mg/kg)	Land Use GAC(s) Exceeded
Naphthalene as a marker compound for volatile PAHs	116	Residential With Consumption of Homegrown Produce Residential Without Consumption of Homegrown Produce
1,2,4-Trimethylbenzene	26.7	Residential With Consumption of Homegrown Produce Residential Without Consumption of Homegrown Produce
Dioxins, furans and dioxin-like PCBs (µg/kg)	678	Residential With Consumption of Homegrown Produce Residential Without Consumption of Homegrown Produce Commercial

7.2.20 A small number of other contaminants exceeded their GACs in highly localised areas of single samples, and usually marginal exceedances of the GACs for a residential land use scenario with or without the consumption of homegrown produce. These are not considered to be significant compared to the wide distribution of the key contaminants of concern identified (lead, PAHs and asbestos).

AREA 3

7.2.21 A summary of soil analytical results which exceed residential GAC in Area 3 is presented in **Table 14**.

Table 14 - Area 3 Summary of Soil Analytical Results in Excess of GAC - Residential with Consumption of Homegrown Produce (WSP and ESI data)

Analyte	Units	Made Ground		Natural Ground		GAC	No. of Locations >GAC	Locations exceeding GAC
		Min	Max	Min	Max			
Metals								
Beryllium	mg/kg	0.35	1.81	-	-	1.70	1	TP169
Copper	mg/kg	7.2	2,770	1.88	51	2,490	1	TP159
Lead	mg/kg	16.8	863	1.41	58.4	148	13	TP159, TP164, TP165, TP169, W5HP306, W5TP301, W5TP302, W5TP303, W5TP304, W5WS307c, W7WS309, W7WS311, WS110
PAH								
Benzo (a) pyrene	mg/kg	0.015	10.9	0.015	0.038	1.60	7	TP169, W5BH302, W5TP304, W5TP305, W7WS308, W7WS310, WS109
Petroleum Hydrocarbons								
TPH Hazard Index	-	0.014	1.94	0.003	0.055	1.00	4	W5BH302, W5TP305, W5WS306, W5WS307c

7.2.22 With respect to exposure to contaminated soils in Area 3, the potential risks to future site users are limited to lead, PAHs and asbestos within largely near-surface Made Ground and within the raised mound in the south-east of the area. Although there was little correlation between the locations of the exceedances of these three analytes. PAHs and lead in the WSP 2017 investigation exceeded the GACs for a residential receptor, largely irrespective of residential with or without plant uptake end use.

7.2.23 Calculated TPH hazard index indicates hydrocarbon concentrations in a number of samples exceed residential GAC. In addition to lead, copper concentrations reported in a sample from ESI TP159 at 1.0 m bgl also exceeded residential with consumption of homegrown produce GAC. A sample in ESI trial pit TP169 also exceeded the residential GAC for Beryllium, this however was taken at 2.0 m bgl so is not considered to present a risk from exposure to future site users at this depth.

7.2.24 No commercial GACs were exceeded for PAHs or lead. However, asbestos was encountered as fibres of chrysotile and occasionally amosite, at concentrations up to 0.0013% v/v in samples across the area both within the raised ground in the south-eastern corner of the area and the more level areas in the north-west. As such, a potential risk exists to future site users of all land use scenarios from the presence of asbestos fibres in Made Ground.

7.2.25 These findings concur with ESI's human health GQRA for this area of Tipner West.

7.2.26 It is understood that current proposals for the Tipner West area of the City Deal site are likely to incorporate land raising across all areas to mitigate flood risk to the proposed development. As such, unless significant earthworks below existing ground levels are proposed, the dermal contact and ingestion exposure pathways will be broken in these areas of land raising. In this scenario the dominant pathway will be indoor and outdoor exposure to soil vapour in the proposed development. The data gathered to date do not indicate a significant risk from volatile organic compounds, naphthalene, semi volatile organic compounds or lighter fraction hydrocarbons. The risks to future site users in this scenario may therefore considered to be low.

7.3 CONTROLLED WATERS RISK ASSESSMENT

RATIONALE

7.3.1 The generic controlled waters risk assessment was conducted in accordance with the principles of EA 'Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination' 2006 (EA 2006) and the 'prevent and limit' approach of the Water Framework Directive (2000/60.EC). Generic controlled waters risk assessments compare directly measured concentrations with standard assessment criteria. In this case the following assessments were undertaken:

- Level 1 - evaluates the concentrations of chemicals within the porewater in the unsaturated zone of source area soil, in this case soil leachate analysis.
- Level 2 - evaluates the concentrations of chemicals within the saturated zone immediately underlying a source area i.e. taking dilution and attenuation into account, in this case groundwater analysis.

7.3.2 Appropriate Water Quality Standards (WQS) are selected based on both a hierarchy of relevance to England and Wales and the receptor. In this case, the controlled water receptors identified in the CSM were superficial and bedrock aquifers and Portsmouth Harbour which holds various statutory ecological designations. As such, the following hierarchies of WQS were considered to be appropriate:

Aquifers

- UK Drinking Water Quality Standards (DWS) from The Water Supply (Water Quality) Regulations 2000 (amended 2004);
- EC Drinking Water Directive 1998;
- World Health Organisation Guidelines for Drinking Water Quality, Fourth Edition, Volume 1, (2017);
- World Health Organisation Petroleum Products in Drinking Water (2008); and
- CL:AIRE Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies' v1.1 March 2017.

Surface Waters

- Environmental Quality Standards (EQS) from The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015; and
- Proxy compounds as described in CL:AIRE 2017.

Further details on WSP's approach to the selection of suitable WQS is provided in **Appendix E**.

7.3.3 **Tables E.2.2** to **E.2.4** in **Appendix E** present a generic assessment of the soil leachate and groundwater chemical analytical data and the laboratory certificates of the chemical analysis are provided in **Appendix F**.

7.3.4 To reflect the fact that groundwater is not present in discrete units based on the boundaries between Areas 1, 2 and 3 the discussions cover the whole of the investigated parts of the Tipner West site with key features being discussed where pertinent.

RISKS TO SECONDARY AND PRINCIPAL AQUIFERS

Level 1 Assessment

7.3.5 A summary of leachate results exceeding drinking water standard assessment criteria is provided in **Table 15**.

Table 15 - Summary of Leachate Analytical Results in Excess of Groundwater DWS Assessment Criteria (WSP and ESI Data)

Analyte	Min (µg/l)	Max (µg/l)	WQS (µg/l)	Ref.	No. Locations >WQS	Locations Failing Screening
Inorganic						
Ammoniacal Nitrogen as NH_4	18.2	1030	500	1	2	W4BH306, W4WS314
Metals						
Antimony	0.2	142.0	5.00	1	10	TP101, TP104, TP108, TP110, TP116, TP135, TP139, TP146, TP155, TP167
Arsenic	0.4	972.0	10.0	1	4	TP110, TP167, W3BH301, W7WS311
Chromium	1.00	56.90	50.0	1	1	TP167
Lead	0.10	11.30	10.0	1	2	BH208, TP139
Mercury	0.010	2.11	1.00	1	1	TP110
General Chemistry						
pH	6.34	10.60	6.50/10.0	1	3	W3BH301, W4WS314, WS212
Petroleum Hydrocarbons						
Aromatic C21-C35	10.0	2140.0	90.0	2	1	W8WS320
PAHs						
Benzo (a) pyrene	0.01	0.12	4.68	0.01	17	BH208, BH209, TP106, TP108, TP109, TP116, TP118, TP135, TP146, TP158, TP169, W3BH301, W4BH306, W5BH302, W7WS308, W8WS321, WS202

Assessment Criteria Ref:

1. Statutory Instrument 2016 No.614, Water, England and Wales. The Water Supply (Water Quality) Regulations 2016

2. World Health Organization (WHO), 2008. Petroleum products in drinking-water. Background document for development of WHO guidelines for drinking water quality. WHO/SDE/WSH/05.08/123.

7.3.6 Ammoniacal nitrogen exceeded the DWS in three Made Ground samples from within the MOD landfill at two locations.

7.3.7 Isolated and marginal exceedances of the antimony, arsenic, chromium, lead and mercury DWSs were encountered in samples of Made Ground predominantly across areas of filled ground in Areas 1, 2 and 3. One higher arsenic leachate concentration was reported in a sample of Made Ground from the infilled pond area on Area 1 (TP110, 972 µg/l).

7.3.8 PAHs exceeded their respective DWS at seventeen locations across the site within Made Ground and the Chalk.

7.3.9 The redevelopment of the site will increase the cover of hard standing across all areas of development. This will act to reduce infiltration and the generation of leachate. Overall this would result in a reduction in the mass flux of contaminants from the Made Ground into the underlying aquifers and result in betterment of Controlled Waters.

Level 2 Assessment

7.3.10 A summary of groundwater and perched water analytical results in excess of the drinking water standards is provided in **Table 16**. Groundwater concentrations of inorganic and organic analytes in excess of the DWS are presented in **Figures 23** and **24** respectively. Groundwater samples were taken, where feasible at low tide to obtain representative samples.

Table 16 - Summary of Water Analytical Results in Excess of Groundwater DWS Assessment Criteria (WSP Data)

Analyte	Unit	Made Ground (perched)		Superficial Deposits		Lambeth Group		Chalk		DWS	Ref	Locations Failing Screening			
												Made Ground	Superficial	Lambeth	Chalk
		Min	Max	Min	Max	Min	Max	Min	Max						
Inorganics															
Ammoniacal Nitrogen as NH4	mg/l	0.49	13.2	0.3	3.02	0.3	1.63	0.3	3.63	0.5	1	BH208, W3WS304, W4WS312, W4WS313, W4WS315	W9WS325 c, WS210	W9BH309 W9BH310	W3BH301, W4BH304, W4BH305
Sulphate as SO4	mg/l	37	540	29.4	351	44.1	1220	78.6	1130	250	1	W3WS304, W4WS312, W4WS313	W8WS317 c, W8WS318, W8WS320	W9BH309 W9BH310	BH203, W3BH301
Chloride	mg/l	-	-	-	-	-	-	70.8	5150	250	1	-	-	-	BH203, W3BH301, W4BH305
Metals															
Arsenic	µg/l	2.5	42.3	2.4	29.1	-	-	2.0	24.0	10	1	BH208, W3WS304, W4WS312	BH207, W8WS317 cW8WS318, WS209, WS210	-	BH203, W3BH301, W4BH305
Chromium	µg/l	3.0	91.4	3.0	82.7	-	-	-	-	50	1	BH208	W8WS317	-	-

Analyte	Unit	Made Ground (perched)		Superficial Deposits		Lambeth Group		Chalk		DWS	Ref	Locations Failing Screening			
												Made Ground	Superficial	Lambeth	Chalk
		Min	Max	Min	Max	Min	Max	Min	Max						
													WS209		
Lead	µg/l	1	1290	0.7	316	1.66	11.0	0.50	11.4	10	1	BH208, W3WS304, W4WS312	BH207, W8WS317c, W8WS318, WS209, WS210	W9BH309	W4BH305
Nickel	µg/l	6.3	230.0	5.8	157	4.6	199	-	-	20	1	BH208, W3WS304	BH207, W8WS317c, W8WS318, WS209, WS210	BH204, W9BH309 W9BH310	-
Selenium	µg/l	2.34	12.3	1.00	12.00	1.3	22.8	1.8	42.0	10	1	BH208	W3WS301	W9BH309 W9BH310	BH203, W3BH301
PAHs															
Benzo (a) pyrene	µg/l	0.01	3.01	0.01	5.29	-	-	0.009	0.016			BH208, W3WS304	W8WS317c, W8WS318, WS209, WS210	-	W4BH305, W7WS309
General Chemistry															
pH	pH	6.27	7.60	-	-	5.86	7.12	-	-	6.5-10	1	WS204	-	BH205, W9BH309	-
Phthalates															

Analyte	Unit	Made Ground (perched)		Superficial Deposits		Lambeth Group		Chalk		DWS	Ref	Locations Failing Screening			
												Made Ground	Superficial	Lambeth	Chalk
		Min	Max	Min	Max	Min	Max	Min	Max						
Bis (2-ethylhexyl) phthalate	µg/l	-	-	2.00	9.61	-	-	-	-	8	2	-	W8WS317c	-	-
Petroleum Hydrocarbons															
Aromatic C21-C35	µg/l	10.0	96.0	10.0	248.0	-	-	-	-	90	3	W3WS304	W8WS317c, W8WS318, WS210	-	-

"-" aquifer sample concentrations which were below assessment criteria

Assessment criteria Ref:

1. Statutory Instrument 2016 No.614, Water, England and Wales. The Water Supply (Water Quality) Regulations 2016

2. World Health Organisation (WHO), 2017. Guidelines for drinking-water quality: fourth edition incorporating the first addendum.

3. World Health Organization (WHO), 2008. Petroleum products in drinking-water. Background document for development of WHO guidelines for drinking water quality. WHO/SDE/WSH/05.08/123.

7.3.11 The key contaminants of concern to the aquifers are lead and PAHs. Exceedances of lead across the firing range and TBAC (Area 1) and the former MOD landfill and PHCC (Area 2) within the Made Ground and superficial deposits are considered likely to be attributable, at least in part, to the elevated lead concentrations within the Made Ground in these areas. The DWSs for PAHs were largely exceeded within Made Ground in the TBAC (W8), infilled areas on the firing range (W9) and the MOD landfill (W4), although to a lesser extent than lead. Given that PAHs are low in solubility the impact to the underlying natural aquifers appears to be minimal. Whilst groundwater samples were taken at low tide where feasible, there may however, be an influence from coastal waters on water quality recorded in the groundwater.

OTHER THAN LEAD AND PAHS, THE EXCEEDANCES OF THE DWSS WERE RESTRICTED TO:

- Sulphate across all strata in coastal locations;
- Chloride within the Chalk;
- Ammonia across all strata on the firing range (W9) and the MOD landfill (W4);
- Arsenic, chromium, nickel and selenium largely within the Made Ground and superficial deposits;
- Nitrate at two locations on the southern coastline (W9BH309 within the Lambeth Group and W8WS318 within the superficial deposits);
- Hydrocarbons in isolated locations in the superficial deposits in Area 1 and Made Ground in Area 2;
- Phthalates in superficial deposits in Area 1, which may be associated with former materials reported to be buried here from the Stamshaw chemical works;

7.3.12 The observed concentrations of these contaminants were all lower in the Chalk, which is concurrent with the isolation of these deposits by the overlying cohesive superficial or Lambeth group deposits. Given the observed sulphate and chloride concentrations in both aquifers and the proximity of the site to the coast it is considered likely that they are both impacted by saline intrusion which will limit the future potable resource potential of these water bodies. The reported groundwater analytical concentrations are similar to conditions reported by IKM across the wider Tipner Peninsula and reflective of regional water quality with potential influences from coastal waters and neighbouring areas. The proposed development will involve a significant proportion of hard standing which will reduce infiltration rates across the area and reduce leachate generation in the Made Ground providing some betterment to groundwater quality. So the observed exceedances of the conservative drinking water guideline values in both aquifers are not considered to present a significant risk to these receptors.

RISKS TO COASTAL WATERS

Level 1 Assessment

7.3.13 A summary of leachate results exceeding coastal EQS assessment criteria is provided in **Table 17** . Groundwater concentrations of inorganic and organic analytes in excess of the EQS are presented in **Figures 25** and **26** respectively.

Table 17 - Summary of Leachate Analytical Results in Excess of Surface Water EQS (WSP and ESI Data)

Analyte	Min (µg/l)	Max (µg/l)	EQS (µg/l)	Ref.	No. Locations >EQS	Locations Failing Screening
Inorganic						
Ammoniacal Nitrogen as NH3 (calculated)	0.6	469	21	1	2	TP108, TP135, TP155, W4BH306, W4WS314
Metals						
Arsenic	0.4	972.0	25.0	1	1	TP110

Analyte	Min (µg/l)	Max (µg/l)	EQS (µg/l)	Ref.	No. Locations >EQS	Locations Failing Screening
Copper	0.3	212.0	3.76	1	29	BH207, BH208, TP101, TP104, TP106, TP108, TP109, TP110, TP114, TP116, TP118, TP122, TP135, TP139, TP146, TP154, TP155, TP158, TP167, TP169, W3BH301, W4BH305, W4BH306, W4WS314, W8WS319, W8WS320, W8WS321, W9BH310, WS202
Lead	0.10	11.30	1.30	1	14	BH201, BH207, BH208, TP101, TP135, TP139, TP155, W3BH301, W4BH306, W7WS308, W8WS319, W8WS321, W9BH310, WS202
Nickel	0.41	10.30	8.60	1	2	TP135, TP139
Zinc	1.00	71.90	6.80	1	7	TP135, TP139, TP143, TP155, TP167, W4BH306, W9BH310
PAH						
Anthracene	0.015	1.190	0.10	1	6	BH208, TP118, TP135, TP169, W4BH306, W4WS314
Benzo (a) pyrene	0.01	4.68	0.0002	1	20	BH207, BH208, BH209, TP106, TP108, TP109, TP116, TP118, TP135, TP146, TP158, TP169, W3BH301, W4BH306, W5BH302, W7WS308, W7WS311, W8WS319, W8WS321, WS202
Fluoranthene	0.02	5.72	0.006	1	32	BH201, BH207, BH208, TP101, TP104, TP106, TP108, TP109, TP110, TP114, TP116, TP118, TP122, TP135, TP139, TP146, TP155, TP158, TP167, TP169, W3BH301, W4BH304, W4BH306, W4WS314, W5BH302, W7WS308, W7WS311, W8WS319, W8WS321, W9BH310, WS202, WS204
Petroleum Hydrocarbons						
Aromatic C12-C16	10.00	30.00	2.00	2	3	BH208, W4WS314, W8WS320
Aromatic C16-C21	10.00	61.00	0.10	2	3	BH208, W4WS314, W8WS320
Aromatic C21-C35	10.0	2140.0	0.0002	3	3	BH208, W4WS314, W8WS320

Assessment criteria Ref:

1 – Water Framework directive (Standards and Classification) Directions (England and Wales) 2015, EQS Transitional waters – Annual Average

2 - naphthalene proxy EQS, 2015

3 – benzo(a)pyrene proxy EQS, 2015

7.3.14 ESI data recorded three samples which reported leachate concentrations of Ammonia as NH3 in excess of the EQS in Area 1, these comprised two samples of Made Ground (TP108 - 361µg/l, TP135 - 300 µg/l) and one sample of River Terrace Deposits (TP155, 469 µg/l). Ammoniacal nitrogen as NH3 marginally exceeded the

EQS sporadically in three Made Ground samples in Area 2 from within the MOD landfill (area W4)at two locations; the exceedances were within an order of magnitude of the EQS. No samples exceeded the ammoniacal nitrogen as NH3 EQS in Area 3.

7.3.15 Copper, lead and PAHs exceeded the EQS in leachate derived from Made Ground and topsoil samples that were taken across Tipner West, and tended to be from samples taken from the firing range and MOD landfill, but not exclusively. Arsenic, nickel and zinc concentrations also exceeded the EQS in leachate analysis in isolated samples at locations across the site. Moderately elevated arsenic concentrations were recorded in leachate analysis of Made Ground from the western area of filled ground within Area 1 (ESI, TP110 - 972 µg/l).

7.3.16 Aromatic petroleum hydrocarbons >EC12-EC35 exceeded their proxy screening criteria in leachate analysis of three isolated Made Ground samples across Tipner West (W8WS320 0.1-0.3, BH208 1.0 and W4WS314 1.35-1.5).

Level 2 Assessment

7.3.17 A summary of groundwater and perched water analytical results in excess of the drinking water standards is provided in **Table 18**. Groundwater concentrations of inorganic and organic analytes in excess of the EQS are presented in **Figures 25** and **26** respectively.

Table 18 - Summary of Water Analytical Results in Excess of Groundwater EQS Assessment Criteria (WSP Data)

Analyte	Made Ground (perched)		Superficial Deposits		Lambeth Group		Chalk		EQS	Ref	Locations Failing Screening			
	Min	Max	Min	Max	Min	Max	Min	Max			Made Ground	Superficial	Lambeth	Chalk
Inorganics*														
Ammoniacal Nitrogen as NH3 (calculated)**	0.004	0.366	0.02	0.063	-	-	0.02	0.032	0.021	1	W4WS312, W4WS313, W4WS315	W9WS325c, WS210		W4BH304 W4BH305
Metals and Organotins														
Arsenic	2.5	42.3	2.4	29.1	-	-	-	-	25	1	BH208, W3WS304, W4WS312	WS209	-	-
Cadmium	0.50	4.03	0.50	1.30	-	-	-	-	0.20	1	BH208, W3WS304	W8WS317c, WS209, WS210		
Copper	4	464	4.0	180.0	4.00	10.20	4.00	15.50	3.76	1	BH208, W3WS304, W4WS312	BH207, W3WS301, W8WS317c, W8WS318, W8WS320, W9WS325c, WS209, WS210	BH204, BH205, W9BH30 W9BH310	W3BH301 W4BH305 W7WS309
Lead	1	1290	0.7	316.0	1.66	11.00	0.50	11.40	1.3	1	BH208, W3WS304,	BH207, W3WS301,	BH204, BH205,	W3BH301 W4BH305

Analyte	Made Ground (perched)		Superficial Deposits		Lambeth Group		Chalk		EQS	Ref	Locations Failing Screening			
	Min	Max	Min	Max	Min	Max	Min	Max			Made Ground	Superficial	Lambeth	Chalk
											W4WS312, W4WS313	W8WS317c, W8WS318, W8WS320, W9WS325c, WS209, WS210	BH209, W9BH309 W9BH310	W7WS309
Nickel	6.3	230.0	5.8	157.0	4.6	199.0	6.8	16.4	8.6	1	BH208, W3WS304, W4WS313	BH207, W8WS317c, W8WS318, WS209, WS210	BH204, BH205, W9BH309 W9BH310	BH203, W3BH301 W4BH305 W7WS309
Zinc	4	1170	18	448	8.8	138.0	10.6	28.9	6.80	1	BH208, W3WS304, W4WS312	BH207, W3WS301, W8WS317c, W8WS318, W8WS319, W8WS320, W9WS325c, WS209, WS210	BH204, BH205, BH209, W9BH309 W9BH310	BH203, W3BH301 W4BH304 W4BH305 W7WS309
Tributyl tin	-	-	0.001	0.010	-	-	-	-	0.0002	1	-	W3WS301, W8WS320, W9WS325c,	-	-
PAHs														
Benzo (a) pyrene	0.01	3.01	0.01	5.29	-	-	0.009	0.016	0.0002	1	BH208, W3WS304	W8WS317c, W8WS318, WS209, WS210	-	W4BH305 W7WS309

Analyte	Made Ground (perched)		Superficial Deposits		Lambeth Group		Chalk		EQS	Ref	Locations Failing Screening			
	Min	Max	Min	Max	Min	Max	Min	Max			Made Ground	Superficial	Lambeth	Chalk
Anthracene	0.015	0.341	-	-	-	-	-	-	0.1	1	BH208, W3WS304	-	-	-
Fluoranthene	0.02	3.12	0.02	0.62	0.017	0.085	0.017	0.028	0.006	1	BH208, W3WS304, W4WS313, W4WS315	W8WS317c, W8WS318, W8WS319, WS209, WS210	BH205, BH209	BH203, W4BH305
Phthalates														
Bis (2-ethylhexyl) phthalate	-	-	2.00	9.61	-	-	-	-	1.3	1	-	W8WS317c, W8WS318	-	-
Petroleum Hydrocarbons														
Aromatic C12-C16	10.00	17.00	10.00	14.00	-	-	-	-	2.00	2	BH208, W3WS304	W8WS317c, WS210	-	-
Aromatic C16-C21	10.0	32.0	10.0	43.0	-	-	-	-	0.10	2	BH208, W3WS304	W8WS317c, W8WS318, WS210	-	-
Aromatic C21-C35	10.0	96.0	10.0	248.0	-	-	-	-	0.0002	3	BH208, W3WS304	W8WS317c, W8WS318, WS210	-	-

*inorganic analytes reported in mg/l all other units in µg/l;**Ammoniacal nitrogen as NH3 calculated on basis of reported ammoniacal nitrogen and sample pH "-" sample concentrations which were below assessment criteria

Assessment Criteria Ref:

1 – Water Framework directive (Standards and Classification) Directions (England and Wales) 2015, EQS Transitional waters – Annual Average

2 - naphthalene proxy EQS, 2015

3 - anthracene proxy EQS, 2015

7.3.18 Chromium, copper, lead, nickel and zinc exceedances were widespread across the Made Ground and all aquifers across Tipner West with no clear distribution. Occasional exceedances of cadmium and arsenic were also recorded within Made Ground and superficial deposits, again with no clear distribution.

7.3.19 Ammonia marginally exceeded the EQS at locations in the firing range and the MOD landfill area.

7.3.20 PAHs in the form of benzo(a)pyrene and fluoranthene exceeded their respective EQS across approximately half the groundwater sampling locations, irrespective of aquifer. These PAHs have limited solubility and the reported concentrations of PAHs in three locations exceeded respective solubilities (W8WS317, W8WS318 and W3WS304). These reported concentrations may therefore represent particles of sediment within the samples. No naphthalene was detected which is a relatively more mobile and soluble PAH. Aromatic petroleum hydrocarbons >EC12-EC35 were also detected in five of these locations, within superficial deposits and perched water in the Made Ground. Four of these locations coincide with Made Ground in Area 1 (W8 & W9) and 2 with elevated TPH and PAH detected (BH208, W8WS317, W8WS318, W3WS304) and are considered to be reflective of the conditions in the Made Ground present at these locations. Exploratory location W3WS304 is also in proximity to an above ground diesel tank in the PHCC in Area 2, which may also be a source of the observed hydrocarbons in this monitoring well.

7.3.21 The reported analytical groundwater concentrations in this area are concurrent with the wider contaminant distribution across the Tipner Peninsula reported by IKM in their assessment in 2006. Groundwater quality may be affected by neighbouring areas and coastal waters. The exceedances recorded in the 2017 water monitoring period were typically within an order of magnitude of the adopted EQS. Furthermore, the proposed development will result in increases in hardstanding and reduced infiltration which should act to reduce contaminant flux in the water environment and achieve some betterment of groundwater quality. Given the slightly elevated contaminant concentrations and regional site setting it is considered that active intervention is not warranted and the risks to surface waters are considered to be low.

7.4 GROUND GAS ASSESSMENT

RESULTS

7.4.1 Six rounds of ground gas monitoring were undertaken between 9 June 2017 and 29 September 2017. This level of monitoring is consistent with the typical period and frequency specified in C665 for a moderate sensitivity development (flats) on a site with low gas potential.

7.4.2 Atmospheric pressure during monitoring varied between 996 and 1021mb. According to the Wundermap website[3], historical pressure graphs for a nearby weather station indicate that atmospheric pressure was falling during Visit 1 and Visit 4 and low pressure (less than 1000 mb) during Visit 2. There is also potential for tidal effects on the gas regime particularly in the Chalk where groundwater levels fluctuate over the period of a tidal cycle. The results of the gas monitoring are presented in **Appendix D** tide times during each visit are included in these records. Visits 1, 2, 5 and 6 were partly during outgoing or low tides. Visits 2, 3 and 6 were partly completed during incoming tides and Visit 4 coincided with high tide.

7.4.3 Gas Screening Values which have been calculated in accordance with C665 for each gas monitoring well as maximum flow rate multiplied by the maximum methane or carbon dioxide concentration, whichever is the higher are presented in **Appendix D**. Given the scale of the site and variability of the ground conditions, gas screening values (GSV) are calculated by monitoring well location rather than assigning a single classification to the whole site. Based on the results of the monitoring visits the GSV ranges calculated in each area of the site are discussed below and results for non flooded wells summarised in **Table 19**.

[3] https://www.wunderground.com/

Table 19 - Ground Gas Summary in Non-flooded Monitoring Wells

Site Area	Made Ground			Superficial Deposits			Chalk			GSV Range
	Max Flow (l/hr)	Max CO2 (%v/v)	Max CH4 (%v/v)	Max Flow (l/hr)	Max CO2 (%v/v)	Max CH4 (%v/v)	Max Flow (l/hr)	Max CO2 (%v/v)	Max CH4 (%v/v)	
1	0.1	10.9	0.1	3	5.9	0.1	-	-	-	0.001 - 0.096
2	6.1	18.7	33.7	0.1	12.6	0.8	0.1	12.9	12.2	0.0002-0.35
3	0.1	4.6	0.1	-	-	-	0.1	3.5	0.4	0.0001-0.0046

Area 1Tipner Firing Range

7.4.4 In Area 1 the calculated GSVs in wells that were not flooded ranged between 0.0001 and 0.096. Seven wells that screened the Made Ground south and west of the firing range in area W9 (BH208, W9WS323,W9WS324, WS202, WS204) or superficial deposits (WS212 and BH207) were either calculated with a GSV indicative of Characteristic Situation 2 or reported carbon dioxide concentrations over 5%. The remaining non flooded wells in this area and in area W8 were classified as Characteristic Situation 1. Higher flow rates and concentrations were recorded in wells which were flooded during the monitoring period. However these locations are not considered representative of gas conditions in the formation.

Area 2 Former MOD Landfill

7.4.5 In Area 2 the calculated GSVs ranged between 0.0001 and 0.35 in wells that were not flooded. All unflooded wells in this area were classified as Characteristic Situation 2, due to a GSV over 0.07 or reported concentrations of carbon dioxide over 5% or methane over 1%. Given the former landfilling activities in this area, a low risk from ground gas is considered applicable to this whole area. Moderately high methane (up to 33%) and carbon dioxide (up to 18%) concentrations were recorded in wells screening the Made Ground in this area which may be attributable to organic material in the former landfill.

Area 3 Former Military Barracks

7.4.6 In Area 3 all of the monitored wells except two were calculated with GSVs indicative of Characteristic Situation 1. Wells W5BH302 and W5BH303 which both screened the Chalk reported higher flow rates than other locations. These monitoring wells however were flooded and are not considered to be reflective of the gas conditions in the underlying strata. The observed gas flow rate in these locations appeared to be driven by groundwater fluctuation associated with the tide as the highest positive flows in these locations was recorded on an incoming tide.

GROUND GAS DATA QUALITY

7.4.7 During monitoring Visit 6 confirmatory gas sampling and laboratory analysis was undertaken on wells with moderately elevated concentrations of gas detected. These included W3WS304, W4WS314, W9WS3223 which was screened in the Made Ground and W8WS318 which was screened in the superficial deposits. The results of the laboratory analysis are included in **Appendix F** and provided in the summary of gas screening values in **Appendix D**. The results from the laboratory analysis reported concentrations of carbon dioxide and methane within 2% of those measured on the discrete monitoring visits.

7.4.8 Groundwater levels during gas monitoring are summarised in **Table D.3.3** in **Appendix D**. 25 of the 54 monitored wells were flooded by groundwater during the majority of visits throughout the monitoring period. As such, gas readings from these wells are not necessarily representative of gas conditions in the screened strata.

7.4.9 Some of the wells which reported higher gas flow rates (W4BH305, W4WS313, W5BH302, W5BH303, W8WS319 and W9WS325c) were flooded so the observed high flow rates (up to 106 l/hr) in these wells may be attributable to groundwater levels equalising with atmospheric pressure or change with the tide. Flow rates were observed which corresponded to the tides particularly in wells screening the Chalk monitoring in W5BH303 recorded a flow of 90 l/hr during an incoming tide and a flow of -48 l/hr on a falling tide.

7.5 WATER SUPPLY RISK ASSESSMENT

7.5.1 The soil chemical analytical results were reviewed in comparison to limiting values provided in the guidance for the selection of water supply pipes to be used in brownfield site prepared by UKWIR.

7.5.2 Reported concentrations of PAHs in the Made Ground on site exceed the UKWIR thresholds for PE and PVC water supply pipes. Further liaison will be required with the water supply company to agree appropriate protection measures for water supply in the proposed development. This could include the provision of clean fill in service trenches or suitable pipe materials for the reported ground conditions. A significant proportion of the site is proposed to be raised to mitigate flood risks in the proposed development. Elevated ground levels will raise services out of the Made Ground and may locally mitigate the need for protection from contamination.

7.5.3 An assessment of aggressive compounds in ground is provided separately in the geotechnical assessment report for the site.

8 REFINED CONCEPTUAL SITE MODEL

8.1 INTRODUCTION

8.1.1 This section provides a refinement of the preliminary CSM which was presented in the Constraints report. Plausible source-pathway-receptor contaminant linkages have been refined in line with industry good practice (principally CLR11 and R&D66).

8.1.2 The refined CSM provides an updated understanding of the site based on the findings of the site investigation and analytical results and draws on the ground, hydrogeological and contamination models which are presented in **Sections 4** and **5** and the contaminant distribution in **Appendix D** and the findings of the quantitative risk assessment in **Section 6**.

8.2 POTENTIAL SOURCES OF CONTAMINATION

8.2.1 **Table 20** presents a summary of the identified potential sources of current and historical contamination that were identified through the site investigations undertaken by WSP and ESI as discussed in **Sections 4, 5** and the contaminant distribution in **Appendix D**. Contamination was predominantly identified in the Made Ground in the areas that were investigated.

8.2.2 The following potential sources were discounted, based on the findings to date:

- No evidence of the bomb crater was encountered on the firing range;
- No evidence of mustard gas or its degradation products was identified in the north-western corner of the site in the area reported to have been used for trials in1939;
- No radiological contamination was encountered in the field during the intrusive works in areas W4, W8 and W9; and
- There was no evidence of significant contamination near the tank structure in the northwest corner of the firing range area W9.

Table 20 – Revised Potential Sources of Contamination on Tipner West

Potential Primary Source	Evidence of Impact (Secondary Source)	Contaminants of Concern Identified
AREA 1		
Infilled and raised ground in north-western corner of firing range. Anecdotal records indicate that the fill in this area is derived from bomb damage and dockyards.	Made Ground of gravel, gravelly clay or gravelly sand was encountered to depths of 5.00 m bgl and included demolition materials, wood, tubing, wire, plastic, polystyrene, glass, metal and ceramic. Black staining and a strong hydrocarbon odour were observed in TP107 at 1.9 m to 2.9 m bgl. No evidence of VOCs in headspace measurements.	Within deep Made Ground in areas of filled and raised ground: Chrysotile and amosite detected in samples between 1.0-3.0 m bgl. Lead and petroleum hydrocarbons. PAHs, dioxins and furans also recorded at depth. Chrysotile and crocidolite asbestos also in near surface Made Ground adjacent to the east of the infilled area. Moderate concentrations of carbon dioxide however no gas flow recorded.
Infilled ground and drainage ditch to south-west of firing range	Made Ground up to 3.3 m thick (in the former pond) and 1.4 m thick (former ditch) of gravelly clay or sand with demolition materials, rope, metal, clinker, coal, wood and plastic. No evidence of staining or odours observed in the field. No evidence of VOCs in headspace measurements.	Within deep Made Ground: Chrysotile and amosite asbestos detected in near surface soils. Highly elevated lead throughout the full thickness increasing in concentration with depth. Petroleum hydrocarbons increasing in concentration with depth. Moderate concentrations of carbon dioxide. Ammonium and metals present within perched groundwater in Made Ground.

Potential Primary Source	Evidence of Impact (Secondary Source)	Contaminants of Concern Identified
Localised infilling on northern boundary. Anecdotally derived fill from construction of M27.	Filled and raised ground comprising Made Ground up to 2.9 m thick of gravelly clay or sand with inclusions of demolition materials, cable, metal sheet and rare potential asbestos containing tiles. No evidence of staining or odours observed in the field. No evidence of VOCs in headspace measurements	Chrysotile and amosite asbestos detected in Made Ground samples up to 1.5 m bgl. Lead present throughout the full thickness of the Made Ground. PAHs, Dioxins and furans were also present. (No evidence of elevated concentrations of contaminants in the Chalk aquifer in this area.)
Firing range firing points	Made Ground unproven to 1.0 m bgl, of brown gravelly clay with inclusions of flint, brick and concrete, rare plastic, bullet casings and wood. No evidence of staining or odours observed in the field. No evidence of VOCs in headspace measurements	Highly elevated levels of lead present in Made Ground.
Stamshaw Chemical Works (SSSI area)	Raised and filled ground comprising Made Ground up to 5.0 m thick of clayey sand, gravelly clay, gravelly sand, clayey gravel, sandy gravel with inclusions of demolition materials and cable, metal, plastic, clinker, glass, wood and tarmac. No evidence of staining or odours observed in the field. No evidence of VOCs in headspace measurements	Moderately elevated levels of lead were present in Made Ground. Amosite and chrysotile was sporadically identified in deep fill (to 3.1 m bgl). PAHs and Petroleum Hydrocarbons were also present/ Moderate concentrations of carbon dioxide were identified in ground gas. Ammonium was present in groundwater collected from superficial and Lambeth Group aquifers.
Former Buildings on Firing Range	Filled ground including Made Ground up to 1.2 m in thickness comprising brown gravelly clay with inclusions of brick, concrete and plastic.	Crocidolite asbestos fibres were identified at depth (1.0 m bgl) but not detected in near-surface soils. Lead concentrations increase with depth.

Potential Primary Source	Evidence of Impact (Secondary Source)	Contaminants of Concern Identified
Firing range	Generally shallow Made Ground typically less than 1.0 m in thickness. Locally absent and up to 1.5 m thick, of sandy clay, gravelly sand, sandy gravel, with inclusions of flint, brick, rare metal, wood, bullet casings and chalk. No evidence of staining or odours observed in the field. No evidence of VOCs in headspace measurements.	Lead present in near-surface Made Ground. Copper generally reflected the distribution of lead but at lower concentrations. Ammonium, metals and PAHs were present in perched groundwater present in Made Ground. Metals and PAHs detected in groundwater collected from superficial and Lambeth Group aquifers.
Tipner Boating and Angling Club	Filled ground comprising Made Ground up to 2.00 m bgl of clayey sand, and gravelly clay, with gravel fractions consisting of flint, concrete, brick, and asphalt / tarmacadam, with occasional cobbles of concrete and brick, with rare boulders of concrete, with occasional roots and rootlets, and rare fragments of ceramic, glass, clinker and other anthropogenic material. No evidence of staining or odours observed in the field. No evidence of VOCs in headspace measurements. No olfactory signs of contamination were noted.	Lead, Organotins, PAHs and Petroleum Hydrocarbons present in near-surface Made Ground. Moderate carbon dioxide and methane concentrations were detected in superficial deposits. Metals, PAHs, Petroleum Hydrocarbons and Phthalates were present in groundwater collected from superficial aquifers.
AREA 2		
Former MOD Landfill	Visual indications of contamination comprised black mottling and waste materials in the Made Ground including metal waste, construction waste, asbestos lagging and asbestos containing materials. Moderate headspace readings were detected in in W4BH307 at 2.4 m bgl (85 ppm) indicative of potential volatile compounds.	Within infilled ground: Widespread asbestos fibres and ACMs, lead, mercury and zinc, PAHs, Petroleum Hydrocarbons and PCBs were detected in Made Ground. Elevated methane and carbon dioxide concentrations were measured. PAHs were present in perched groundwater present in Made

Potential Primary Source	Evidence of Impact (Secondary Source)	Contaminants of Concern Identified
		Ground. Metals, PAHs and Petroleum Hydrocarbons were detected on the north-western boundary of the landfill. Limited evidence of arsenic and lead leaching from the landfill, particularly on the north-eastern boundary. Trace chlorinated solvents were present in perched groundwater northern corner of the landfill. Widespread ammonium in Made Ground and underlying Chalk.
Above ground fuel tank in PHCC	Dark brown /black staining in Made Ground in W3WS302 and weak hydrocarbon odour in soils collected from 0.3 m -0.8m bgl. No detectable VOCs in headspace readings.	Petroleum hydrocarbons in shallow Made Ground
AREA 3		
Southern-eastern mound potentially associated with the demolition of the former barracks or construction of the M27	Made Ground with inclusions of demolition materials. The full thickness of Made Ground was not proven due to concrete obstructions encountered in this area.	Chrysotile and amosite were detected in Made Ground but at levels below quantifiable limits. Lead and low concentrations of PAHs were also detected in Made Ground.
National Seamanship Training Centre and former fire fighting building	Made Ground with inclusions of demolition materials.	Chrysotile and amosite were detected in Made Ground but at levels below quantifiable limits. Lead and low concentrations of PAHs were also detected in Made Ground. The concentrations of lead increased with depth. No evidence of elevated concentrations of contaminants in the principal aquifer in this area. No PFOS compounds were detected in the groundwater above limits of detection.

Potential Primary Source	Evidence of Impact (Secondary Source)	Contaminants of Concern Identified
		Moderate carbon dioxide concentrations measured in the Chalk.

8.3 POTENTIAL RECEPTORS

8.3.1 In the context of the proposed land use, the following receptors of soil and/or groundwater impact were identified:

Human Health

- Future site users (commercial and/or residential); and
- Future below ground maintenance workers.

Controlled Waters

- Principal Chalk bedrock aquifer (in the northern area of the Tipner West site);
- Secondary A Lambeth Group aquifer (in the centre and south of the Tipner West site);
- Secondary Undifferentiated aquifer in the Beach and Tidal Flat superficial deposits and Secondary A aquifer in the River Terrace superficial deposits; and
- Tipner Lake/Portsmouth Harbour.

Building Fabric and Services

- Below ground building structures and services on-site.

8.3.2 The Principal Aquifer in the Chalk at the site is affected by saline intrusion and is therefore considered to be of limited future resource potential. This is therefore considered to be a receptor of lower sensitivity. In Area 1 the Lambeth Group overlies the Chalk. This strata comprises a stiff clay with sandy lenses at the base. The clay is considered likely to act to limit vertical contaminant migration into the Chalk, although the groundwater in the lower Lambeth Group is likely to be in continuity with the Chalk. In Area 2 the cohesive superficial deposits may also act to inhibit vertical migration of contaminants from the landfill into the Chalk. However, previous IKM exploratory locations in the northwest corner of the landfill suggest the superficial deposits are absent and Made Ground directly overlies the Chalk in this area.

8.3.3 The assessment of on-site human receptors is considered to be protective of their off-site equivalents and therefore, off-site neighbours are discounted from the assessment.

8.3.4 Groundworkers during redevelopment were discounted from the assessment because there are legal requirements to ensure that suitable health and safety controls should be in place during works.

8.4 PLAUSIBLE CONTAMINANT LINKAGES

8.4.1 **Table 21** provides a revised evaluation of the potential contaminant linkages that were considered to be plausible for the future use of the site. It does not assess the current site uses and uses the current site investigation findings to refine the assessment in the Constraints report.

8.4.2 No VOCs of any note were detected or encountered during the site investigations that have been undertaken on the site to date. As such, exposure to future site users, neighbours and future maintenance workers via inhalation of soil or groundwater-derived vapours has been discounted as a plausible contaminant linkage.

Table 21 – Summary of Plausible Contaminant Linkages on Tipner West

Potential Contaminants	Potential Pathways	Potential Receptors	Comments	Encountered Distribution	Risk to Receptors
Free asbestos fibres in soil	Inhalation of asbestos fibres.	Future site users Future maintenance workers	Exposure will be dependent on the presence of buildings and hardstanding which will restrict exposure in current setting and future development. Direct exposure pathway may be active in areas of the site which are not raised for flood mitigation. Exposure during maintenance works is possible.	MOD Landfill. Deep Made Ground on firing range (north-west corner, northern boundary, south-western area, eastern entrance). Raised mounds adjacent to eastern entrance to Tipner West. Near-surface Made Ground in National Seamanship Training Centre	Moderate risk to future site users and maintenance workers in areas which remain at existing grade in proposed development. Low risk to future site users where levels raised for flood mitigation.
All other contaminants in soil and groundwater	Dermal contact, ingestion and inhalation of impacted Made Ground and soil particles.	Future site users Future maintenance workers	Exposure will be dependent on the presence of buildings and hardstanding which will restrict exposure. Direct exposure pathway may be active in areas of the site which are not raised for flood mitigation. Exposure during maintenance works is possible. Detected potential contaminants largely limited to PAHs and lead in Made Ground.	Largely lead and PAHs in Made Ground, in particular: Area 1: Raised mounds adjacent to eastern entrance to Tipner West. Raised ground and deep infilling on western coast. Deep infilling in south-western corner. Deep localised infilling on northern boundary of firing range. Former Stamshaw Powder Works on SSSI (deep in places). Tipner Boating and Angling Club northern area.	Moderate risk to future site users and maintenance workers in areas which remain at existing grade in proposed development. Low risk to future site users where levels raised for flood mitigation.

Potential Contaminants	Potential Pathways	Potential Receptors	Comments	Encountered Distribution	Risk to Receptors
				In addition: Highly elevated lead in firing points. Lead in near-surface Made Ground across firing range. Dioxins and furans in raised ground and deep infilling in north-western corner and localised infilling on northern boundary. Petroleum hydrocarbons increasing in concentration with depth in deep infilled Made Ground in south-western corner. Petroleum hydrocarbons in deep Made Ground on SSSI. Organo tins and petroleum hydrocarbons in near-surface Made Ground in Tipner Boating and Angling Club. Area 2: Made Ground including metals (lead, hexavalent chromium, zinc) and organic contaminants (benzene, benzo(a)pyrene, naphthalene,1,2,4-trimethylbenzene, petroleum hydrocarbons, PCBs dioxins and furans) across the former landfill footprint. Made Ground beneath the western part of PHCC containing lead and PAHs.	

Potential Contaminants	Potential Pathways	Potential Receptors	Comments	Encountered Distribution	Risk to Receptors
				Area 3 Deep Made Ground containing elevated metals (lead, hexavalent chromium) and PAH.	
	Vertical leaching from impacted soil and lateral migration of impacted groundwater derived from on-site sources.	Principal Chalk bedrock aquifer Secondary A and Secondary Undifferentiated superficial aquifers Tipner Lake Portsmouth Harbour SSSI, SPA and Ramsar site.	Made Ground is a potential source of soil leachate for ammonium, metal, PAH and petroleum hydrocarbon concentrations.*	Metal and PAH concentrations were reported to be marginally in excess of adopted screening criteria in the superficial and bedrock aquifers across the site. Exceedances of ammonia, hydrocarbons and phthalates were observed in isolated locations on the site. These concentrations are consistent with water quality reported by IKM in their assessment of the Tipner Peninsula in 2006. Given the measured brackish conditions in the aquifers the future potable resource potential of these water bodies is considered to be reduced. The potential risks to the aquifers as a result of minor exceedances of drinking water standards is therefore considered to be Low. There is potential for dilution of the limited contamination in the groundwater associated with tidal fluctuation in the groundwater and in the Harbour. Furthermore the proposed development will reduce infiltration and lead to an associated reduction in contaminant mass flux. This will act to provide betterment of groundwater quality. The risks to surface waters is considered to be Low and the observed minor exceedances not significant enough to warrant intervention.	Low

Potential Contaminants	Potential Pathways	Potential Receptors	Comments	Encountered Distribution	Risk to Receptors
Soil gases	Vertical and lateral migration through unsaturated soil pore space. Ingress into buildings via service penetrations, floor construction and cracks, wall cavities etc. resulting in accumulation in enclosed spaces within buildings. Migration via preferential pathways such as below ground service trenches.	Future site users New structures	Soil gas in areas of fill comprises moderate carbon dioxide concentrations with no significant flow rates. In the former landfill methane was also detected with limited flow rates. Moderate carbon dioxide concentrations and higher flow rates and were noted in flooded wells screening the Chalk. The groundwater is tidally fluctuating in the Chalk which is likely to be influencing observed gas flow rates. Accumulation of hazardous gases in confined spaces, may increase the risk of explosion of methane and asphyxiation by carbon dioxide under extreme weather conditions such as low and falling atmospheric pressure. Potential for gas migration and venting from site and within surrounding area to be altered if levels area raised for flood mitigation.	Likely to be active in all areas of the site Severity of risk linked to the identified gas conditions in each well. There is a predominantly low gas risk (Characteristic Situation 2) across the site. Higher concentrations of carbon dioxide are associated with areas of deep Made Ground and the Chalk. Moderate methane concentrations are also present in the former landfill area.	Low

Potential Contaminants	Potential Pathways	Potential Receptors	Comments	Encountered Distribution	Risk to Receptors
Aggressive contaminants	Direct contact with impacted soils and groundwater	Below ground construction materials including concrete and plastic water pipes	Low concentrations of aggressive organic contaminants in soils and near-surface ground water. Made Ground deposits on site contain moderate concentrations of organic contaminants which may affect water supply.	Made Ground is present site wide and unlikely to be suitable for PE or PVC water supply pipes.	Moderate (risk is reduced to Low for services placed in areas raised with clean fill for flood mitigation in the proposed development)

*The product identified in monitoring well W4BH307 is not included in this assessment as it is considered to have been introduced in this monitoring well and is not representative of the surrounding conditions. It does however present a high risk to the Chalk aquifer and mitigation should be considered.

9 CONCLUSIONS

9.1.1 The aims of the WSP 2016 and 2017 investigations were to complete further assessment to address identified data gaps at the site; collate available third party information; complete a generic quantitative risk assessment; and define potential constraints to future redevelopment. The investigation targeted areas of the site which were subject to limited previous investigation; areas with poor confidence in the existing data; the hydrogeological regime; the ground gas regime, and radiological risks.

9.1.2 This assessment has confirmed that there are moderate concentrations of widespread inorganic (metals, asbestos) and organic (PAHs) contamination in the soils in the areas assessed on Tipner West associated with Made Ground deposited as part of the former military and landfilling activities on site. There are potential risks to human health which will need to be managed as part of the redevelopment of the site. It is considered that risks to controlled waters do not pose a significant constraint to the redevelopment of the site.

9.1.3 For the purpose of this assessment the site was divided into three areas of discussion, based on common former use and underlying ground conditions. These areas comprise the following areas of current land use:

- Area 1 –the firing range (area W9) and Tipner Boating and Angling Club (area W8);
- Area 2 – the former MOD landfill (area W4) and the Portsmouth Harbour Cruising Club(area W3); and
- Area 3 – the national seamanship training centre (area W7) and vacant land owned by PCC (area W5) to the north of the firing range.

9.2 ENVIRONMENTAL SETTING

ENCOUNTERED GROUND CONDITIONS

9.2.1 The encountered ground conditions recorded in the two phases of investigation by WSP were consistent with both regional geological records and previous site assessments.

Area 1 - Tipner Firing Range

9.2.2 Ground conditions vary across Area 1 comprising a variable thickness of Made Ground over discontinuous superficial units of River Terrace, Raised Marine and Raised Beach and Tidal Flat Deposits or directly overlying the Lambeth Group. Made Ground varied in nature and thickness according to the activities which led to their deposition. Areas of infilling were present in former pond locations along the western and southern coastal perimeter of the range (area W9) with greatest thicknesses of Made Ground recorded west and south of the active firing ranges (up to 5 m thick). Areas of raised ground on the range (area W9) include firing points on the main range and firing butts behind each range. Where investigated the raised ground was found to comprise reworked natural material on the firing points and Made Ground with anthropogenic materials on the raised butts. The Tipner Boating and Angling Club (area W8) was underlain by cohesive Made Ground with inclusions typical of demolition material to a thickness of up to 2.0 m over superficial deposits and the Lambeth Group.

9.2.3 The superficial deposits underlying the Made Ground were thicker and more granular in the centre of the firing range and more cohesive and absent in parts along the western and southern coast where Made Ground directly overlies the Lambeth Group.

9.2.4 The Lambeth Group comprised firm to stiff silty clay with sandy beds towards the base of the unit. The Lambeth Group thins to the north of Area 1 as the Chalk outcrops further north of this area.

Area 2 - Former MOD Landfill

9.2.5 The ground conditions in the former MOD landfill reflect the historical land filling activities and comprised deep deposits of Made Ground in the east overlying cohesive superficial deposits which in turn overlie the Chalk. The Made Ground in this area includes a mix of waste materials of mixed lithologies such as clay pipes, glass, textile, rope, asbestos and metal pipes. This material was variably capped by light brown slightly gravelly clayey sand which is marked by a membrane that was intermittently present across the area. The thickness of the Made Ground reduced to the west under the current PHCC. The description of the Made Ground observed at the eastern boundary of the PHCC indicates that the historical landfilling activities extend into this area.

9.2.6 The superficial deposits in this area predominantly comprised sandy or gravelly clays recorded as Beach and Tidal Flat Deposits with residual chalk deposits of gravelly clay at the base. Typically 1 to 4 m in thickness,

these deposits were noted to 'thin' to a minimum of 0.5 m beneath the landfill in the western corner of area of W4 and are potentially absent in the northeast corner of this area according to IKM exploratory records. The Chalk underlying the superficial deposits comprises structureless chalk of gravelly silt at the depths investigated in this assessment (up to 10 m bgl).

Area 3 - Former Military Barracks

9.2.7 The ground conditions in Area 3 reflected this area's mixed history of use as a barracks with some subsequent material deposition. The ground levels in the scrubland owned by PCC (area W5) and National Seamanship Training Centre (area W7) were recorded between 1 and 3 m higher than ground levels in this part of the Tipner West Peninsula. The corresponding thickness of Made Ground increased according to ground elevation suggesting a significant deposition of material has historically been placed here . Greatest thickness of Made Ground was recorded in the scrubland (area W5) and not proven in the centre of this area due to obstructions in the Made Ground. The Made Ground typically comprised sandy gravelly clay or clayey gravelly sand, with gravel fractions consisting of flint, brick concrete and occasional ash, clinker, asphalt. Beneath the Made Ground in Area 3 where it was fully penetrated, the superficial deposits comprise cohesive deposits of sandy gravelly clay over the Chalk.

HYDROGEOLOGY

9.2.8 Groundwater conditions encountered in the investigation comprised intermittent perched water in Made Ground, the Secondary A and Secondary Undifferentiated Aquifers in the superficial deposits and Secondary A Aquifer in the Lambeth Group or Principal Aquifer in the Chalk.

9.2.9 Perched water in the Made Ground is intermittent across the site and more prevalent in areas of infilled former ponds near the coast in Area 1 and in the deep fill in the former landfill in Area 2. Both of these areas of infilling coincide with former lagoons or ponds which may still be in continuity with former drainage channels on the site.

9.2.10 Groundwater is present in the superficial deposits across the site. Levels are around 2 m AOD in the Secondary A Aquifer in the River Terrace Deposits in the south of the site and lower in the Secondary Aquifer (Undifferentiated) in the Tidal Flat Deposits in the northern part of the site (between -0.9 m and 1.2 m AOD). Minor fluctuation in the water levels in the River Terrace Deposits (superficial deposits) indicates that there may be some continuity with Portsmouth Harbour. The conductivity and chloride concentrations observed in these aquifers were higher in monitoring wells close to the coast suggesting some degree of saline intrusion. Continual groundwater monitoring in the superficial deposits recorded a different trend to that observed in the Chalk and Lambeth Group aquifers suggesting the units are not hydraulically connected.

9.2.11 Groundwater was encountered in the Secondary A Aquifer in the Lambeth Group in Area 1 at levels between 0.08 m and 2.8 m AOD with levels higher in the centre of the Area 1 than at the coast. Conductivity readings in the Lambeth Group were higher in coastal monitoring locations suggesting some degree of saline intrusion. This cohesive unit is considered to act to limit vertical continuity between the overlying superficial deposits and the Chalk in the southern part of the site.

9.2.12 Groundwater was recorded in the Principal Aquifer in the Chalk across the site. This aquifer appears to be partially confined beneath the overlying cohesive superficial deposits or Lambeth Group in most parts of the site. The water levels in the Chalk vary by up to 1.0 m over a tidal cycle suggesting this unit is laterally in continuity with the Portsmouth Harbour. Conductivity and chloride concentrations in the Chalk are indicative of saline conditions near the coast. The resource potential of this aquifer is therefore considered to be diminished by saline intrusion near the coast. There is potential for continuity between the groundwater in the Chalk and the overlying Made Ground in the former landfill where the superficial deposits were reported to be absent.

GROUND GAS

9.2.13 Ground gas has been recorded at concentrations that require specific gas protection measures over and above standard construction techniques. The gas regime varies across the site with the varying ground conditions. The sensitivity of the proposed development will vary across the site and as such, further assessment may be required to determine appropriate gas protection measures for the buildings in each area of the future development.

Area 1

9.2.14 In Area 1 monitoring wells screened within the Made Ground around the perimeter of the area; the superficial deposits in the south and west of the area; and Lambeth Group across the area (which were not flooded

during monitoring) were classified as CIRIA Characteristic Situation 1 or 2. Flooded monitoring wells recorded higher flow rates which are considered to have been influenced by tidal change in groundwater level. However, these flooded wells are not considered representative of the gas conditions in the formation.

Area 2

9.2.15 In Area 2 the majority of the monitoring wells were classified as Characteristic Situation 2, either due to calculated GSVs or elevated gas concentrations. Elevated concentrations of methane (up to 33%) and carbon dioxide (up to 18.7%) were recorded in Made Ground in the former landfill (area W4) and on the eastern boundary of Portsmouth Harbour Cruising Club (area W3).

Area 3

9.2.16 Ground gas conditions were indicative of Characteristic Situation 1 in the Made Ground in Area 3. In flooded monitoring wells in the Chalk higher flow rates and carbon dioxide concentrations were observed. It is considered that flow in these locations is driven by tidal variation in the groundwater. The readings in the Chalk are compromised by the wells being flooded during monitoring.

9.3 CONTAMINANT RISK ASSESSMENT

RADIOLOGICAL RISK

9.3.1 WSP commissioned Matom Ltd. to undertake a desk based radiological assessment of the site. This assessment determined a low risk of radiological contamination in part of Area 2 (area W3) and Area 3 (areas W5 and W7) and no additional specialist Radiological Protection Supervisor (RPS) support was considered to be required during intrusive works. In areas of higher potential risk in Area 1 (area W8 and W9) and Area 2 (area W4), RPS support was provided during the investigation along with confirmatory sampling.

9.3.2 Radiological on-site screening and confirmatory analysis did not encounter gross gamma counts in excess of normal background levels in the intrusive locations monitored in these areas. Radiological risks can therefore be excluded in the areas which were assessed from the identified potential development constraints, unless additional information or unexpected materials are encountered during groundworks.

GROUND CONTAMINATION

9.3.3 Identified potential sources of contamination at the site include the following in each area:

- Area 1 – use as a firing range; Made Ground in areas of historical filling activities in ponds north, west, and south of the range and in former drainage channels/ponds on the range; former stamshaw powder works south of the range and the use as a boating club;
- Area 2 – use as a landfill to dispose of waste materials from military vehicles, former use as a barracks and filling of the western area beneath the PHCC with demolition material and above ground fuel storage in PHCC; and
- Area 3 – former use as a barracks and land raising.

9.3.4 Asbestos, metals, PAHs and petroleum hydrocarbons were identified in the Made Ground across the site at concentrations which exceeded the adopted screening criteria. Localised samples additionally recorded concentrations of PCBs in excess of adopted screening criteria.

9.3.5 Ammoniacal nitrogen, metals, petroleum hydrocarbons and PAH concentrations in the groundwater sampled by WSP in 2017 marginally exceeded the adopted screening criteria for surface water and groundwater receptors.

DIESEL CONTAMINATION IN MONITORING WELL W4BH307

9.3.6 Following the intrusive works borehole W4BH307 was subject to vandalism. The headworks on the well were damaged, a bung in the standpipe removed and during a subsequent visit to monitor this location a measurable thickness of free product was recorded on the groundwater. Sampling and analysis of this product indicates that it comprised fresh diesel (less than 2 years old) which was visibly red when extracted from the borehole. At the time of the return visit when the product was recorded, an empty fuel can was located near the borehole. This suggests that the observed product in the well was a result of an act of vandalism and the deliberate introduction of diesel into the monitoring well. This product is considered to present a risk to the aquifer in which the monitoring well is installed.

9.4 RISK EVALUATION

9.4.1 Based on the conditions encountered during the geo-environmental investigations, risks to the key receptors are summarised below:

- **Risks to Controlled Waters** (surface waters): Risks to surface waters in Portsmouth Harbour are considered to be relatively low. Although there is some marginally elevated metal, ammonia and PAH concentrations in perched water in Made Ground and to a lesser extent secondary aquifers in the superficial deposits and the Lambeth Group and the Principal Chalk Aquifer. The concentrations in the aquifers were significantly lower and generally within an order of magnitude of the criteria. The proposed development is considered likely to achieve some betterment of groundwater quality through reducing infiltration and the associated contaminant mass flux. The reported concentrations are not considered to present a significant risk to the harbour and are not likely to warrant specific remediation.

- **Risks to Controlled Waters** (aquifers): Risks to the Secondary A and undifferentiated aquifers in the superficial deposits and Lambeth Group and Principal aquifer in the Chalk are considered to be low. Although moderate concentrations of metals, PAHs and inorganic contaminants were identified in these aquifers, these are consistent with water quality across the wider Tipner Peninsula. Furthermore, there is evidence of brackish conditions in these groundwater units near the coast which will diminish the future resource potential in these water bodies. The development of the site will also reduce infiltration and provide some betterment of water quality. The product recorded in borehole W4BH307 is however considered to present a moderate risk to the Principal aquifer in the Chalk at this location.

- **Risks to Future Site Users:** Made Ground on the site presents a moderate risk to future site users from exposure to asbestos, metals and PAHs in this material. Exposure will be dependent on the presence of buildings and hardstanding in the proposed development which will restrict exposure. Land raising is proposed as part of the development to mitigate flood risk which will break the pathway of exposure. However, exposure during maintenance works is possible. Moderately elevated ground gas concentrations were recorded in deeper Made Ground and in the Chalk, which could present a risk to future site users of the development. Contamination in the Made Ground may also affect water supplies in the proposed development.

9.5 DEVELOPMENT CONSTRAINTS

9.5.1 Following the completion of this additional assessment at the site, the potential development constraints are considered to comprise:

- **Made Ground** which is present across the majority of the site, containing lead, PAHs and asbestos and organic contamination in localised areas. The exposure to this material in the future development will need to be appropriately managed to mitigate risks to future site users. Some areas of deeper Made Ground, notably along the coast in Area 1 included higher concentrations of asbestos. This will present a potential constraint to management of earthworks and foundation works in these areas.
- **Former MOD Landfill** this landfill contains significant quantities of asbestos containing materials as well as free fibres. The area is currently accessible to the public and only partially capped. The area should be isolated from public access and disturbance to the landfill minimised during the proposed development where practicable.
- **Ground gas** which is predominantly assessed as low risk across the site, there were locally elevated concentrations of carbon dioxide recorded in the Made Ground and the Chalk and elevated methane in the former landfill which indicates that gas protection measures may be required in the proposed development.

9.5.2 A development constraints plan can be found as Figure 27.

9.6 UNCERTAINTIES

9.6.1 The scope of investigation has provided a suitable level of characterisation to develop an understanding of the constraints that must be addressed to redevelop the site for either a residential or commercial end use. However during the course of this assessment there were constraints to the investigation which present residual uncertainty in our findings. These include:

- In ground obstructions in Area 3 precluded full sampling and analysis of the Made Ground during the intrusive works, there remains uncertainty as to the full depth of Made Ground in this area;
- PCBs were identified in the former landfill, further assessment of risks to human health from these compounds may be required if this area is to proposed to be significantly altered during the development of the scheme.
- Whilst additional investigation has been completed in a selection of raised areas on the firing range there remain raised areas which, due to dense vegetation were not assessed in the works.
- The flooded monitoring wells during gas monitoring have limited the assessment of ground gas in these locations;
- There remain areas within the broader survey area for the City Deal development that have not been subject to further intrusive assessment to date (due to access constraints in areas W1 and W2 and uncertainty in masterplan usage in the intertidal area around the Tipner peninsula);
- There is uncertainty with respect to origin of the identified diesel in well W4BH307, it currently presents a risk to the surrounding formation and should be further assessed through in situ testing and the product recovered from the well as far as is reasonably practicable.

9.6.2 The spacing of the current investigation locations is at a scale appropriate to a lower sensitivity end use and does not represent a main investigation under the definition in BS 10175:2011+A1:2013. There remains uncertainty in ground conditions in areas not investigated to date particularly where dense vegetation and existing structures have precluded access during the current works.

10 RECOMMENDATIONS

10.1 OPTIONS FOR MANAGEMENT

10.1.1 Based on the available information from the WSP and former site assessments, there are considered to be low risks to Controlled Waters and moderate risks to future site users from Made Ground on site. The following development design measures are recommended.

10.2 DEVELOPMENT DESIGN MEASURES

10.2.1 Based on the findings of this investigation the following measures should be incorporated in to the proposed residential or commercial redevelopment of the site:

Table 22 – Development Design Mitigation Measures

Potential Constraint	Design Measure
Direct Exposure	Direct exposure can be managed through the provision of clean cover layers incorporated into any managed landscaping or gardens where there is existing Made Ground within the new development. The thickness of cover material will need to be designed in accordance with the proposed end use and assessed further once a detailed scheme is prepared for the site within the City Deal masterplan. Clean service trenches through areas of Made Ground are recommended to mitigate exposure of future maintenance workers to the identified contamination in the Made Ground. In areas where levels will be raised with chemically suitable imported material for flood risk mitigation the imported fill will break the pathway of direct exposure. Provided the thickness of fill is sufficient, this will mitigate the direct exposure risk and need for service protection in these areas.
Asbestos	Whilst exposure mechanisms should be managed during construction and through capping layers the presence of asbestos within the Made Ground is considered to warrant a significant risk to construction workers when undertaking any earthworks (i.e. piling) on the former landfill (area W4) and areas of deeper fill on the Firing Range (area W9). The presence of asbestos in the Made Ground should also be recorded within a post remediation/development asbestos management plan (AMP).
Material Management	There are areas of raised ground across the site which may need to be levelled and reused in the development. On the basis of the available information Made Ground in the raised areas is unlikely to be suitable for use in landscaped areas in the proposed development, it may however, be reused under hard standing or beneath a capping layer. All material reuse is recommended to be undertaken in accordance with the Development Industry Definition of Waste Code of Practice and managed under a material management plan.
Ground Gas	Ground gas protection measures are likely to be required in the proposed development and designed in accordance with gas conditions identified in the respective monitoring wells. In areas of deeper Made Ground in Area 1 and Area 2 this is likely to be CIRIA Characteristic Situation 2. In Area 3 this is Characteristic Situation 1 (no specific protection required). Further monitoring is advised in areas of potentially higher gas risk or more sensitive proposed end use.
Water Supply Pipes	Concentrations of PAHs in the Made Ground at locations across the site indicate unsuitable ground conditions for the use of PE or PVC water supply pipes. When the proposed route of potable water supply pipes has been finalised, a water supply pipe risk assessment should be undertaken on the basis of information obtained in all (current and future) phases of investigation where pipes will be laid in existing ground. Water supply pipe material selection should be in accordance with the guidance which is current at the time of construction (currently 10 / WM / 03 / 21). In areas which are proposed to be raised for flood risk mitigation, the imported material should be chemically suitable, such that no water supply protection is required in these

Potential Constraint	Design Measure
	locations.
Foundations	Foundations in the proposed development which breach areas of Made Ground and penetrate the underlying Chalk aquifer could create a preferential pathway for perched water migration into this aquifer. This potential risk should be assessed through a foundation works risk assessment.
Verification	As part of the design measures in the proposed development, all works should be verified by an independent specialist and reported in a validation report.

10.3 NEXT STEPS

10.3.1 Once the development scheme is fixed, it will be prudent to undertake a revised assessment of the data and potentially undertake a targeted development specific investigation. As part of this assessment further investigation is recommended to:

- address uncertainties in this phase of work where they limit the design of the fixed masterplan;
- obtain further data in areas intended for material reuse, in areas of proposed residential use (where a higher spatial resolution of data could be required); and
- target areas within the City Deal development that have not been assessed as part of this survey (i.e. areas of the foreshore around Tipner proposed for new infrastructure and the scrapyard and aggregates depot areas W1 and W2)..

10.3.2 Whilst the risks to Controlled Waters are considered to be low, it is recommended that additional groundwater sampling is undertaken to form a baseline of water quality against which the impact of future development works can be monitored.

10.3.3 The identified product in monitoring well W4BH307 is an anomaly that presents a potential risk to the Chalk aquifer. It is recommended that this further assessed through bail down testing and steps are taken to recover the product from the well.

10.3.4 On the basis of the exploratory works, it appears that the capping layer in the former landfill (W4) within Area 2 is intermittent and it is recommended that the area is fenced off to limit public access to this open space.

10.3.5 To capture the design mitigation measures across the City Deal project it is recommended that an outline remediation strategy is prepared which sets out a framework for management of ground contamination risks during the development of the scheme.

10.3.6 This assessment should be provided to the PCC Contaminated Land Officer for comment and the recommendations for the scheme agreed as part of the future planning process.

Appendix A

FIGURES AND DRAWINGS

\\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\70015XXX\70015362 - TIPNER WEST REGENERATION\E MODELS AND DRAWINGS\DEVELOPMENT\AUTOCAD\XS SURVEY\70015362 SURVEY.DWG 29/09/2017 14:11:26 Soriano Munoz, Eduardo

DO NOT SCALE

KEY

INDICATIVE SITE BOUNDARY

SURVEY AREA

W1	TIPNER POINT
W2	SCRAPYARD
W3	PORTSMOUTH HARBOUR CRUISING CLUB
W4	LANDFILL
W5	SCRUB LAND
W6	HARBOUR SCHOOL
W7	NATIONAL SEAMANSHIP TRAINING CENTRE
W8	TIPNER BOATING AND ANGLING CLUB
W9	FIRING RANGE

M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 HH

INSET 1

INSET 1

1:10000

1:5000

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REV	DATE	BY	DESCRIPTION	CHK	APD
A	29/09/2017		FIRST ISSUE	MJS	MJS

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CLIENT: -

ARCHITECT: -

PROJECT: CITY DEAL TIPNER WEST AND HORSEA ISLAND

TITLE: SURVEY LOCATION PLAN

SCALE @ A2: AS SHOWN	CHECKED: MJS	APPROVED: MJS
CAD FILE: 70015362 SURVEY	DESIGN-DRAWN: ESM	DATE: September 2017
PROJECT No: 70015362	DRAWING No: 70015362 SURVEY	REV: A

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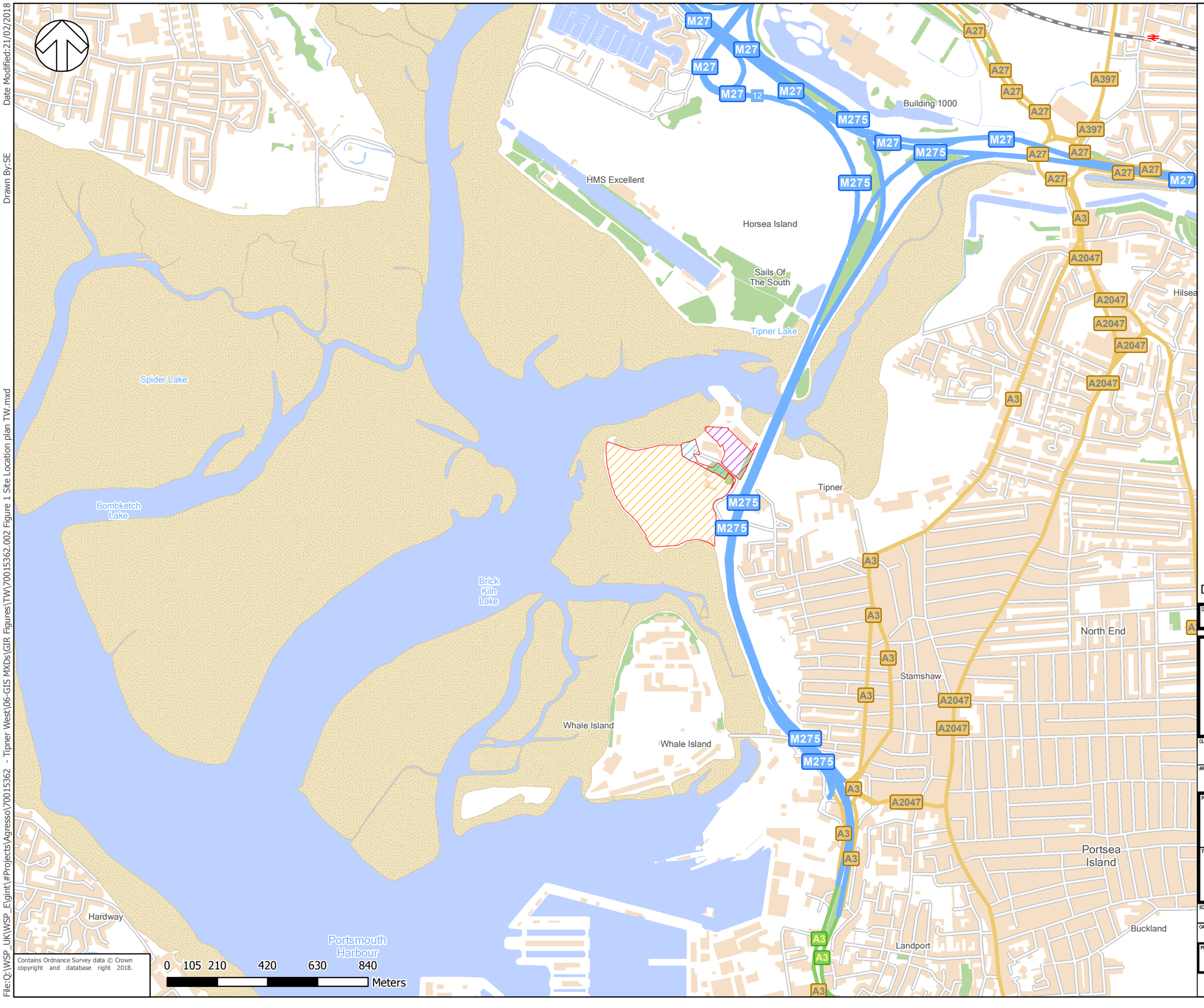
Drawn By:SE

File:Q:\WSP_UK\WSP_Egint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Figure 1 Site Location plan TW.mxd



Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks

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ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - SITE LOCATION

SCALE @ A...	CHECKED: SE	APPROVED: KB
CAD FILE:	DESIGN-DRAWN: SE	DATE: JAN 18
PROJECT No: 70015362	DRAWING No: FIGURE 1	REV:

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File:Q:\WSP_UK\WSP_E\Jint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Figure 2 Site Layout plan TW.mxd

Portsmouth Harbour

W1 Tipner Point

W3 Portsmouth Harbour Cruising Club

W5 PCC Scrub Land

W7 National Seamanship Training Centre

W2 Scrapyard

Area 3 Former Military Barracks

W6 Harbour School

Area 2 Former MOD Landfill

W4 MOD Landfill

W9 MOD Firing Range

Area 1 Tipner Firing Range

Park and Ride

M275

W8 Tipner Boating and Angling Club

Allotments

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

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0 20 40 80 120 160 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- W1 Excluded from Assessment
- W2 Excluded from Assessment
- W6 Excluded from Assessment
- Lake Environmental Assessment Site Areas

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TITLE: TIPNER WEST - SITE LAYOUT

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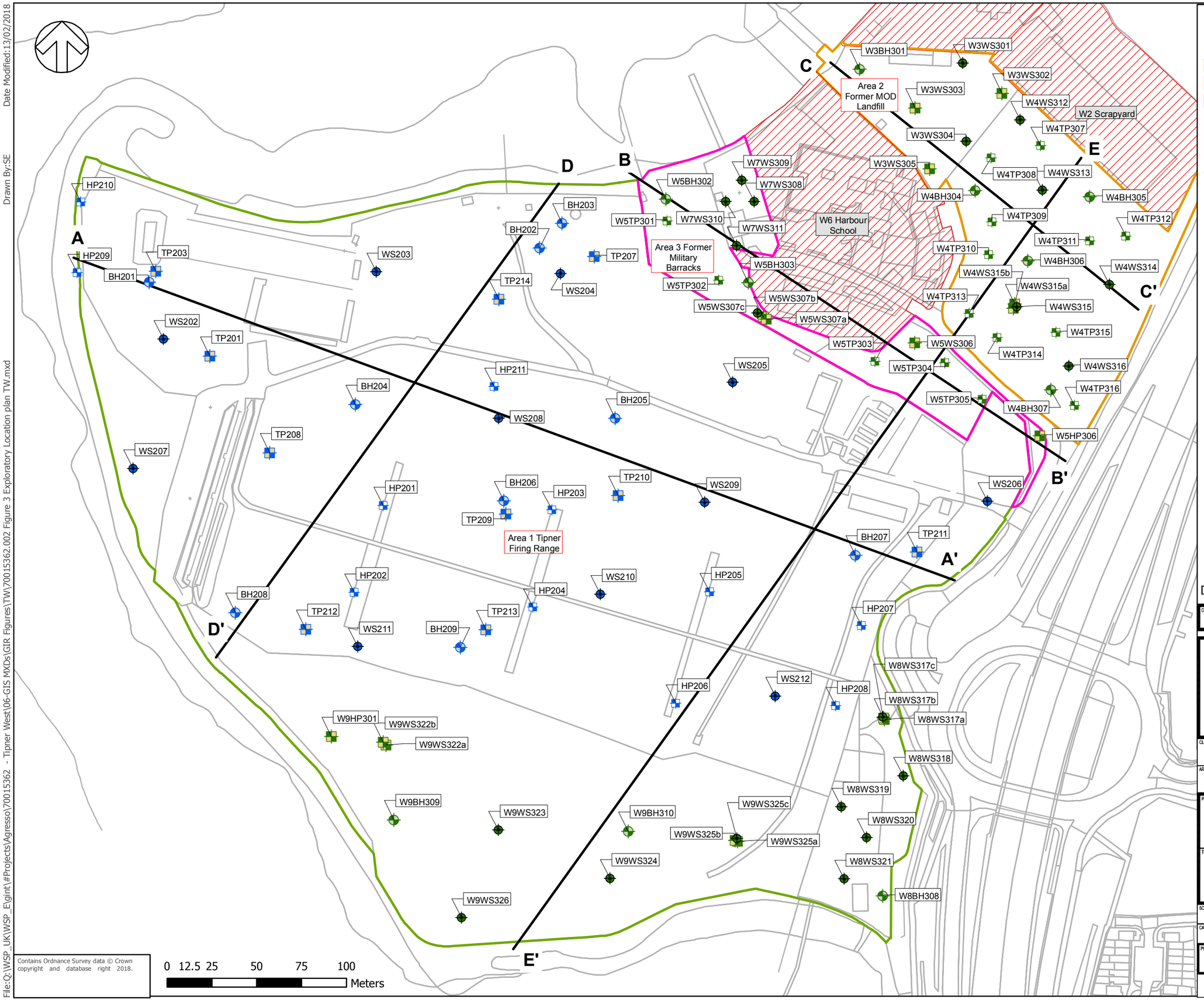
File:Q:\WSP_UK\WSP_Egint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Figure 3 Exploratory Location plan TW.mxd



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Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- W1 Excluded from Assessment
- W2 Excluded from Assessment
- W6 Excluded from Assessment
- Cross Section Alignment

WSP Exploratory Holes (2016)

- Rotary Cored
- Trial Pit/trench
- Window Sampler
- Hand Dug Inspection pit

WSP Exploratory Holes (2017)

- Window Sampler
- Hand Dug Inspection pit
- Rotary Cored
- Trial Pit/trench

DO NOT SCALE

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PROJECT No: 70015362	DRAWING No: FIGURE 3	REV:

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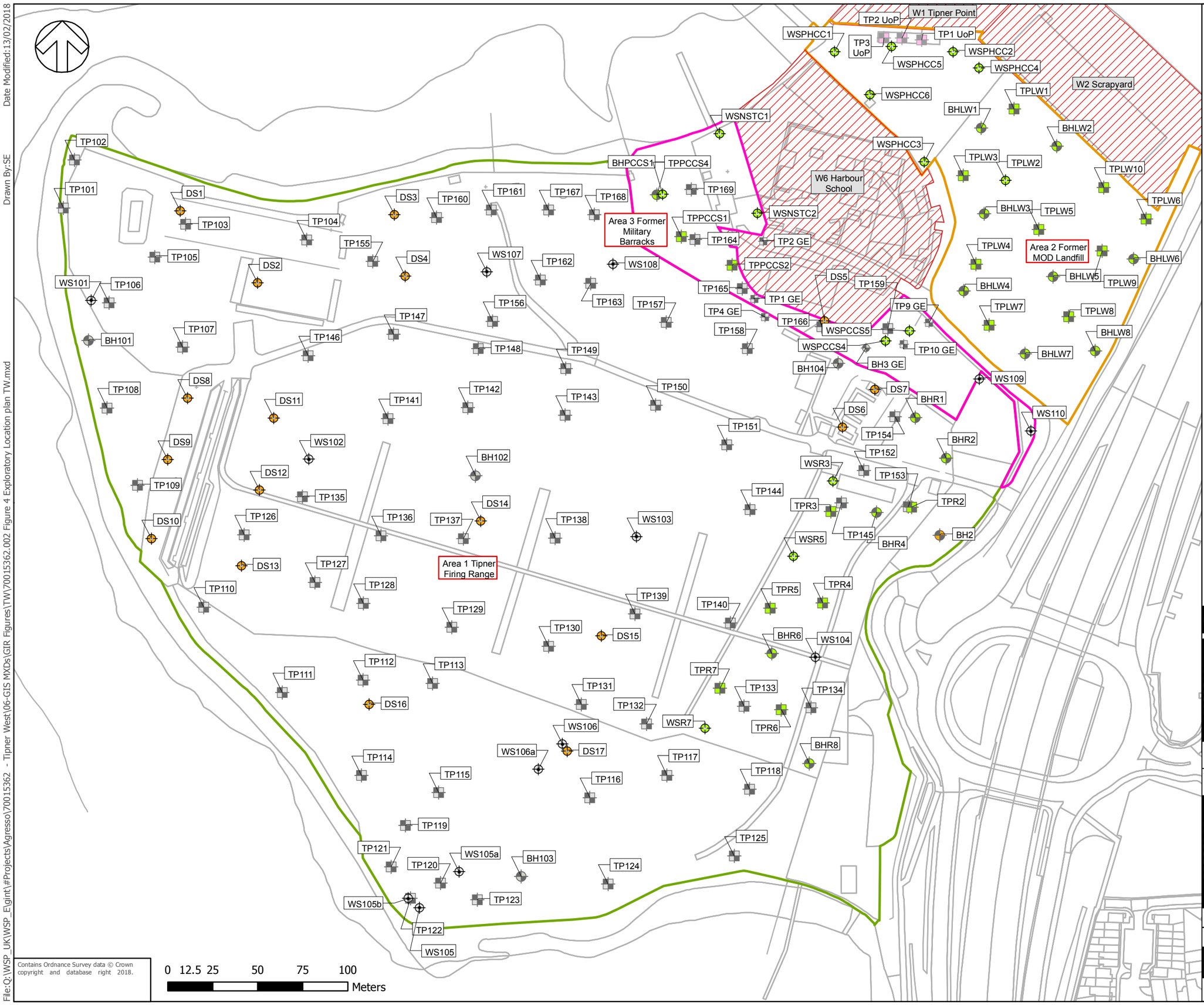
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TP101
DS1
TP103
TP104
TP155
TP105
DS2
WS101
TP106
BH101
TP107
TP108
DS8
DS11
DS9
WS102
TP109
DS12
TP135
DS10
TP126
TP136
TP137
DS14
TP138
WS103
DS13
TP127
TP128
Area 1 Tipner Firing Range
TP110
TP129
TP139
TP130
DS15
TP140
TP111
TP112
TP113
DS16
TP131
TP132
WS106
WS106a
DS17
TP114
TP115
TP116
TP117
TP118
TP119
TP121
TP120
WS105a
BH103
TP124
TP125
WS105b
TP123
TP122
WS105
TP160
TP161
TP167
TP168
DS3
DS4
WS107
TP162
WS108
TP163
TP157
TP156
TP147
TP146
TP148
TP149
TP150
TP142
TP141
TP143
TP151
BH102
BHPCCS1
TPPCCS4
TP169
Area 3 Former Military Barracks
TPPCCS1
TP164
TPPCCS2
TP165
TP1 GE
TP4 GE
TP158
TP166
WSNSTC1
WSNSTC2
TP2 GE
DS5
TP159
TP9 GE
WSPCCS5
WSPCCS4
TP10 GE
BH104
BH3 GE
DS7
DS6
TP154
TP152
TP153
WSR3
TP144
TP3 UoP
TPR3
WSR5
TP145
TP2 UoP
W1 Tipner Point
TP1 UoP
WSPHCC1
WSPHCC2
WSPHCC5
WSPHCC4
WSPHCC6
WSPHCC3
W6 Harbour School
BHLW1
TPLW1
W2 Scrapyard
BHLW2
TPLW3
TPLW2
TPLW10
TPLW6
BHLW3
TPLW5
TPLW4
Area 2 Former MOD Landfill
BHLW6
BHLW5
TPLW9
BHLW4
TPLW7
TPLW8
BHLW8
BHLW7
WS109
WS110
BHR1
BHR2
TPR2
BH2
BHR4
TPR5
TPR4
BHR6
WS104
TPR7
TP133
TP134
WSR7
TPR6
BHR8
TP155
TP157
TP158
TP163
TP164
TP165
TP166
TP167
TP168
TP169
TP170
TP171
TP172
TP173
TP174
TP175
TP176
TP177
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TP180
TP181
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TP183
TP184
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TP186
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TP190
TP191
TP192
TP193
TP194
TP195
TP196
TP197
TP198
TP199
TP200
TP201
TP202

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File:Q:\WSP_UK\WSP_Elgint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Figure 5 Areas of potential concern plan TW.mxd

Filled Ground
W1 Tipner Point
Fire
Filled Ground
Former Tank
Filled Ground
Former Static Water Tank
W2 Scrapyard
Former Fire Station
Former Tank
Diesel Tank
Former Tank
Filled Ground Former Pond
Mustard Gas Trials
Mustard Gas Trials
Filled Ground
W6 Harbour School
Area 2 Former MOD Landfill
Former Tank
Filled Ground Former Pond
Area 3 Former Military Barracks
Filled Ground
Filled Ground
Filled Drainage Ditch
Infilled Bomb Crater
Area 1 Tipner Firing Range
M275
Infilled Bomb Crater
Filled Ground Former Pond
Filled Ground

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0 15 30 60 90 120 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- W1 Excluded from Assessment
- W2 Excluded from Assessment
- W6 Excluded from Assessment

Areas of Potential Concern

- Historical Bomb Shelter
- Historical Buildings
- Historical Magazine
- Diesel Tank
- Former Tank
- Former Static Water Tank
- Filled Ground
- Raised Ground
- Firing Point (Raised Ground)
- Filled Drainage Ditch
- Filled Ground Former Pond
- Infilled Bomb Crater
- Mustard Gas Trials
- Fire

Historical features approximately located on plan from available historical records.

DO NOT SCALE

DRAWING STATUS: FINAL

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ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - AREA OF POTENTIAL CONCERN

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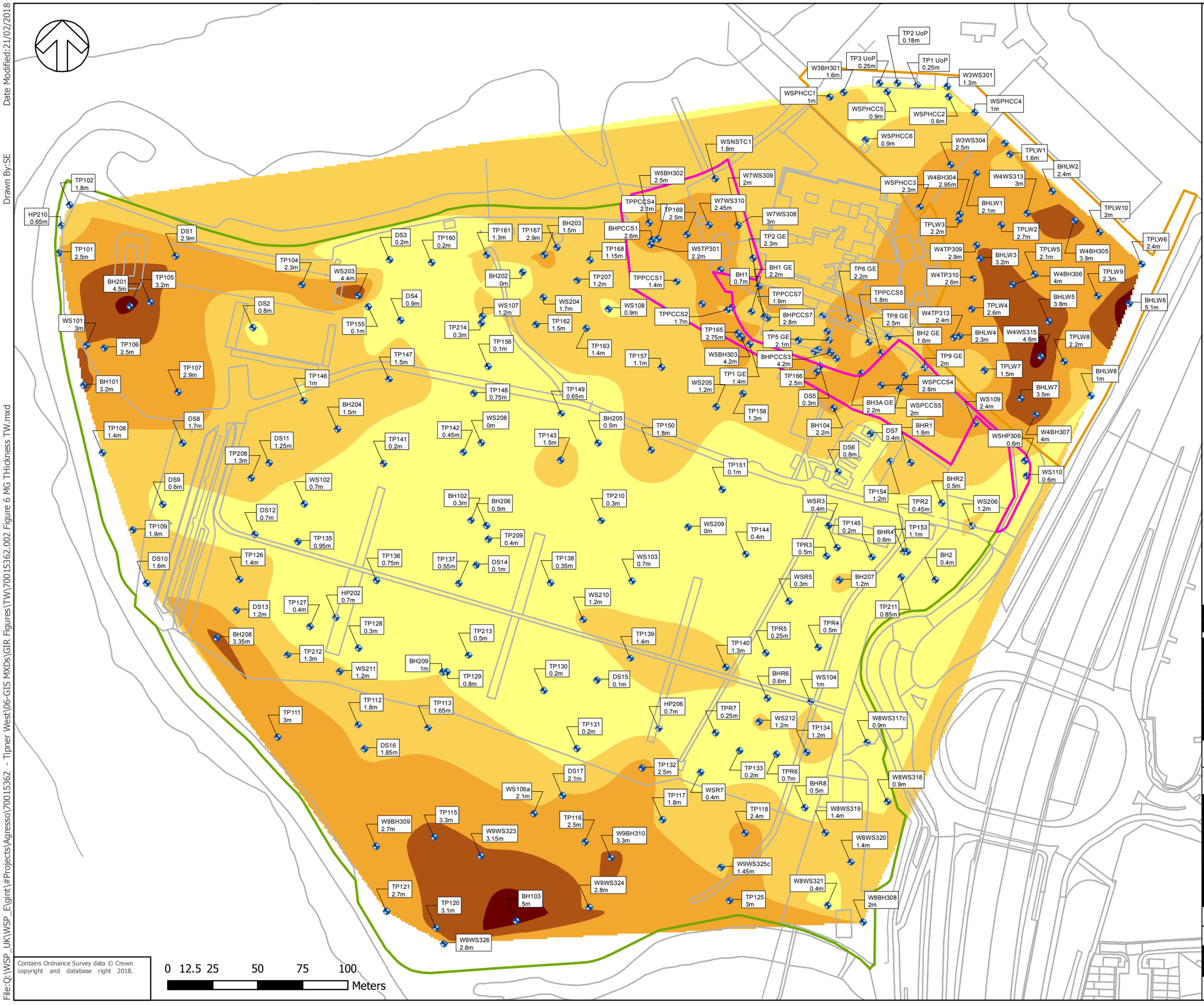
File:Q:\WSP_UK\WSP_E\gint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Figure 6 MG THickness TW.mxd



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0 12.5 25 50 75 100 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks

Made Ground Proven Thickness Contours (m)

- 0.01 - 1.01
- 1.02 - 2.01
- 2.02 - 3.01
- 3.02 - 4.01
- 4.02 - 5.01

Interpolated proven thickness of Made Ground based on available exploratory hole records.

DO NOT SCALE

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TITLE: TIPNER WEST - MADE GROUND PROVEN THICKNESS CONTOUR PLOT

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File:Q:\WSP_UK\WSP_E\gint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Figure 7 Superficial Thickness TW.mxd

WSPHCC1 1.8m
W3BH301 2.35m
WSPHCC6 2.1m
W3WS304 1.4m
BHLW1 3m
BHLW2 2.6m
W4BH304 0.55m
BHLW3 1.1m
W4BH306 2.57m
BHLW5 3.2m
BHLW4 3.2m
BHLW8 4.7m
BHLW7 3.5m
W4BH307 3.18m
WS110 1.3m
BHR2 0.8m
BHR4 1.2m
BH207 3.4m
TPR4 1m
BHR6 4.4m
TPR7 0.15m
WSR7 0.5m
BHR8 1.8m
W5BH302 1.5m
W7WS309 2.5m
W7WS308 1m
BHPCCS1 3.3m
WSNSTC2 3m
W7WS311 0.3m
W5WS307c 0.45m
BH1 1.8m
BH1 GE 5.3m
BH2 GE 4.1m
BHPCCS3 3.3m
W5BH303 2.8m
BH3A GE 5.1m
BH104 0.8m
DS7 1.3m
TP165 0.65m
TP157 0.9m
WS205 2m
BH203 1.9m
TP168 2.55m
BH202 1.15m
WS108 0.7m
TP162 1.5m
TP163 0.8m
TP156 1.5m
TP149 1.25m
BH205 2.5m
TP148 1.35m
WS208 1.3m
TP142 0.8m
TP104 0.9m
TP155 2m
DS4 0.8m
WS107 0.8m
TP147 1m
TP146 0.7m
TP108 1.7m
DS11 1.3m
TP141 1.8m
WS102 1.1m
TP109 1m
BH102 1m
TP210 1.7m
TP209 0.8m
TP126 1.1m
TP136 0.55m
TP137 1.55m
DS14 1.4m
TP138 2.35m
WS103 3m
TP127 2m
TP128 2.2m
BH209 2.8m
TP139 0.7m
TP140 0.75m
TP117 0.15m
TP116 0.7m
W9BH310 2.7m
W9WS325c 2.55m

0 12.5 25 50 75 100 Meters

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Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks

Superficial Deposits Proven Thickness Contours (m)

- 0.16 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- 5.01 - 6

Interpolated proven thickness of superficial deposits based on available exploratory hole records.

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PROJECT: CITY DEAL

TITLE: TIPNER WEST - SUPERFICIAL DEPOSITS PROVEN THICKNESS CONTOUR PLOT

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PROJECT No: 70015362	DRAWING No: FIGURE 7	REV:

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Drawn By:SE

File:Q:\WSP_UK\WSP_Egint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Figure 8 Depth to bedrockTW.mxd

WSPHCC1 0.1 m AOD
W3BH301 -2.435 m AOD
WSPHCC6 -0.22 m AOD
W3WS304 -0.941 m AOD
BHLW1 -1.85 m AOD
BHLW2 -1.67 m AOD
W4BH305 -0.48 m AOD
W4BH304 -0.64 m AOD
HP210 2.461 m AOD
W5BH302 -0.9 m AOD
BH203 1.013 m AOD
BHPCCS1 -1.38 m AOD
WSNSTC2 -0.72 m AOD
BHLW3 -0.52 m AOD
W4BH306 -2.17 m AOD
BH202 1.177 m AOD
TP104 0.294 m AOD
TP168 0.631 m AOD
BHLW6 -2.04 m AOD
BH201 0.187 m AOD
TP105 1.281 m AOD
W5BH303 -2.07 m AOD
BHLW5 -3.11 m AOD
DS4 1.66 m AOD
TP162 1.589 m AOD
WS108 2.575 m AOD
BHLW4 -1.75 m AOD
TP155 1.589 m AOD
TP165 1.279 m AOD
TP157 1.898 m AOD
TP163 1.984 m AOD
TP147 1.959 m AOD
TP156 2.061 m AOD
BH101 0.272 m AOD
WS109 1.754 m AOD
BHLW7 -3.07 m AOD
BHLW8 -2.6 m AOD
TP146 1.904 m AOD
TP148 2.03 m AOD
WS205 0.328 m AOD
TP149 1.832 m AOD
BH204 1.957 m AOD
BH104 0.092 m AOD
TP108 0.379 m AOD
WS208 1.897 m AOD
BH205 0.283 m AOD
DS7 1.56 m AOD
TP154 2.009 m AOD
W4BH307 -3.08 m AOD
TP141 1.597 m AOD
TP150 1.56 m AOD
DS11 0.82 m AOD
TP142 2.336 m AOD
TP143 1.894 m AOD
BHR2 1.92 m AOD
WS110 1.097 m AOD
TP109 0.737 m AOD
WS102 1.401 m AOD
BH102 2.252 m AOD
BH206 2.8 m AOD
TP210 1.127 m AOD
BHR4 1.5 m AOD
WS206 2.282 m AOD
TP126 0.794 m AOD
TP136 2.063 m AOD
DS14 1.91 m AOD
TP209 2.132 m AOD
WS103 -0.549 m AOD
BH207 -1.47 m AOD
TP138 0.6 m AOD
BH208 0.048 m AOD
HP202 3.039 m AOD
TP137 1.296 m AOD
TPR4 1.99 m AOD
TP139 0.892 m AOD
TP140 1.055 m AOD
TP128 0.585 m AOD
BH209 -0.535 m AOD
TP127 0.751 m AOD
WS211 1.71 m AOD
BHR6 -1.94 m AOD
TP212 1.686 m AOD
TPR7 2.53 m AOD
TPR6 2.37 m AOD
TP132 0.624 m AOD
WSR7 2.1 m AOD
BHR8 0.64 m AOD
W9BH309 1.974 m AOD
W9WS323 1.724 m AOD
TP116 1.429 m AOD
TP117 2.171 m AOD
W9BH310 -1.527 m AOD
BH103 -0.188 m AOD
W8BH308 0.628 m AOD

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0 12.5 25 50 75 100 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks

Bedrock Elevation of Srata Top Contour Plot (m AOD)

- -3.1 - -3
- -2.9 - -2
- -1.9 - -1
- -0.9 - 0
- 0.01 - 1
- 1.1 - 2
- 2.1 - 3

Interpolated elevation top of bedrock is based on available exploratory hole records.

DO NOT SCALE

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ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - ELEVATION OF TOP OF BEDROCK CONTOUR PLOT

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PROJECT No: 70015362	DRAWING No: FIGURE 8	REV:

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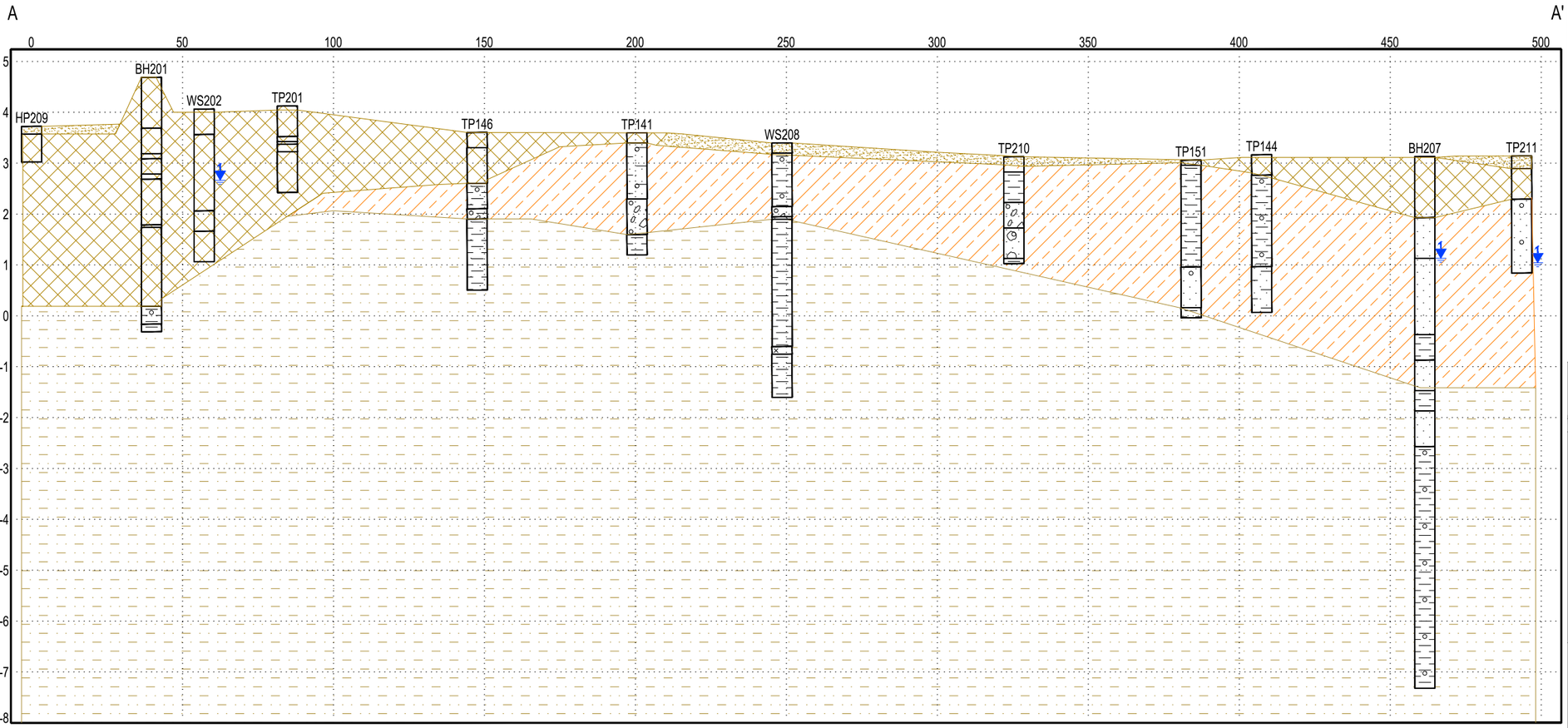
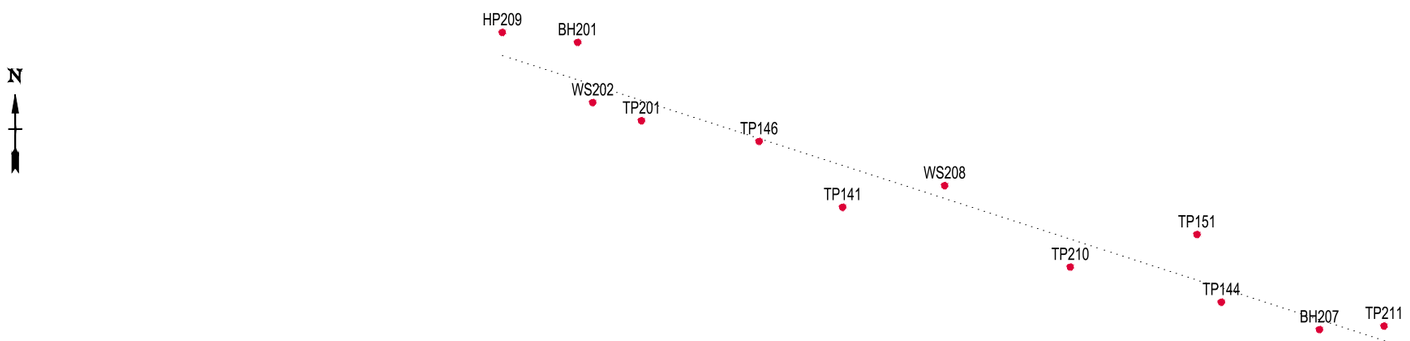
This is a generalised section based on ground conditions encountered in exploratory holes. Actual ground conditions including depths and the properties of strata may vary.

EAST

WEST





LEGEND:

- MADE GROUND
- TOP SOIL
- SUPERFICIAL DEPOSITS
- LAMBETH GROUP
- WATER STRIKE DURING DRILLING

DRAWING STATUS:

wsp

3rd Floor, Kings Orchard, 1 Queen St, Bristol, BS2 0HQ, UK
T+ 44 (0) 1179 306 200
wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - CROSS SECTION A-A' EAST TO WEST

SCALE @ A3:	CHECKED:		APPROVED:
1:1250	SE		SE
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70015362	SE	NB	January 18

DRAWING No: FIGURE 9 | REV: P01

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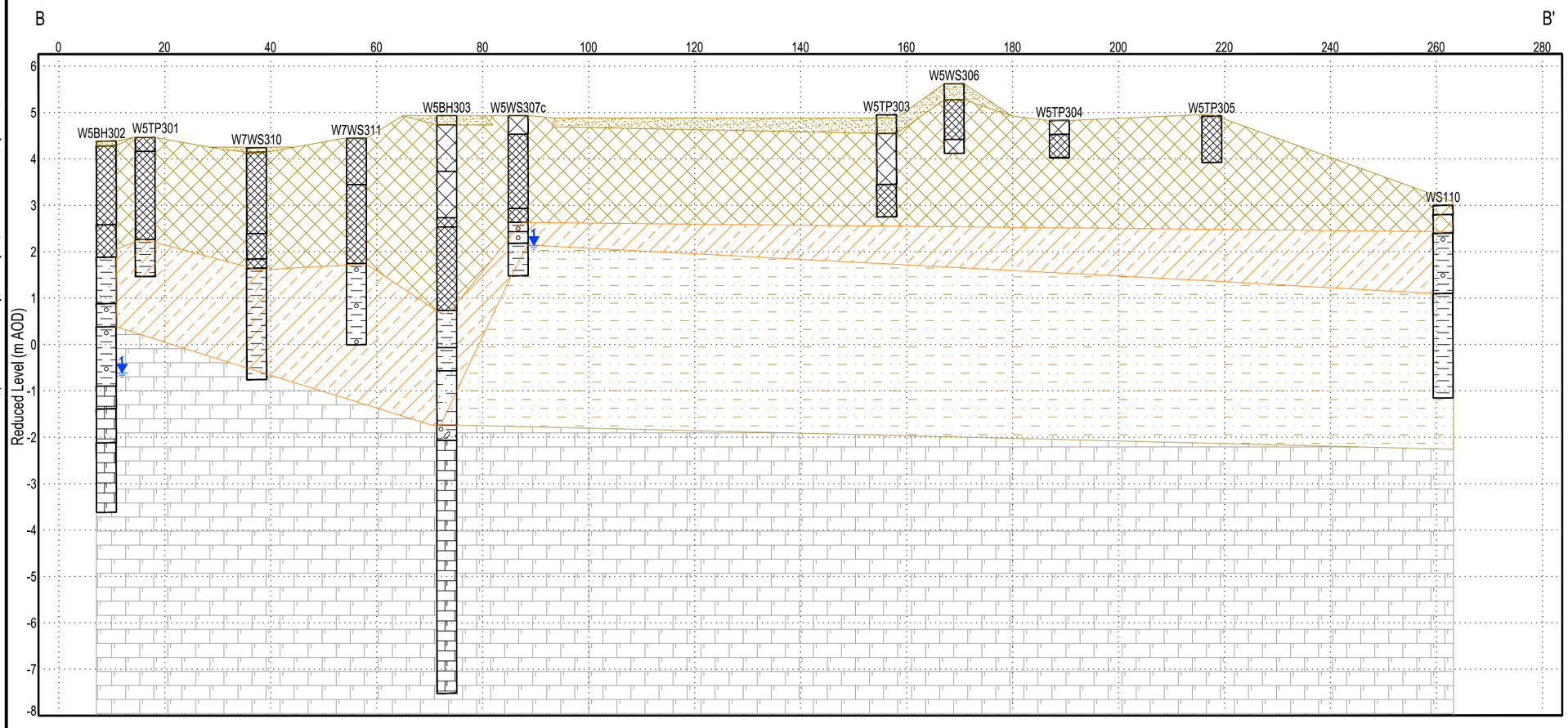
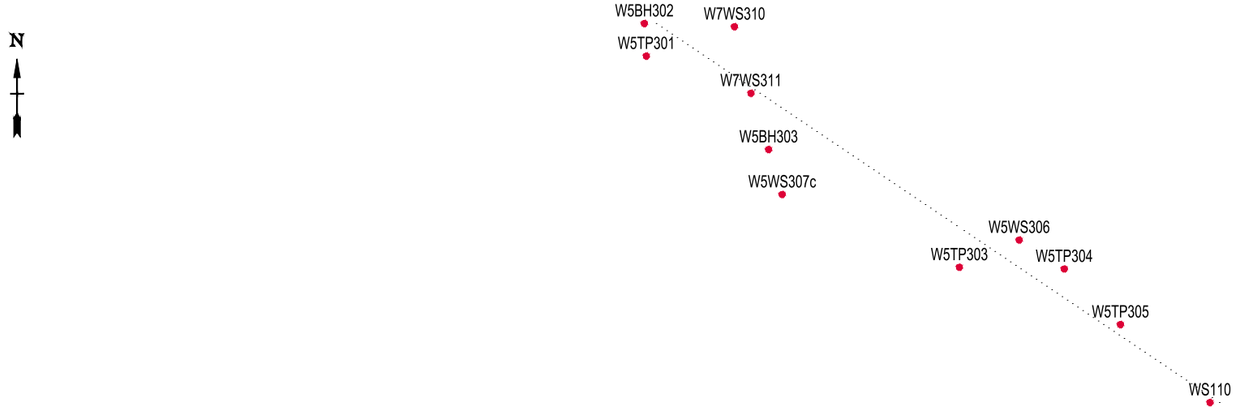
File name H:\ENVIRONMENT\171120-70015362-GL3 CITY DEAL-X SECTION\WORKING\70015362-FIGURE 9.0 CROSS SECTION A-A' EAST WEST AREA 1.DWG, printed on Thursday, January 18, 2018 5:38:26 PM, by Bharti, Neha

This is a generalised section based on ground conditions encountered in exploratory holes. Actual ground conditions including depths and the properties of strata may vary.

EAST

WEST





LEGEND:

- MADE GROUND
- TOP SOIL
- SUPERFICIAL DEPOSITS
- LAMBETH GROUP
- LEWES NODULAR CHALK
- WATER STRIKE DURING DRILLING

DRAWING STATUS:

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CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - CROSS SECTION B-B'
EAST TO WEST

SCALE @ A3:	CHECKED:		APPROVED:
1:1250	SE		SE
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70015362	SE	NB	January 18

DRAWING No: FIGURE 10 REV: P01

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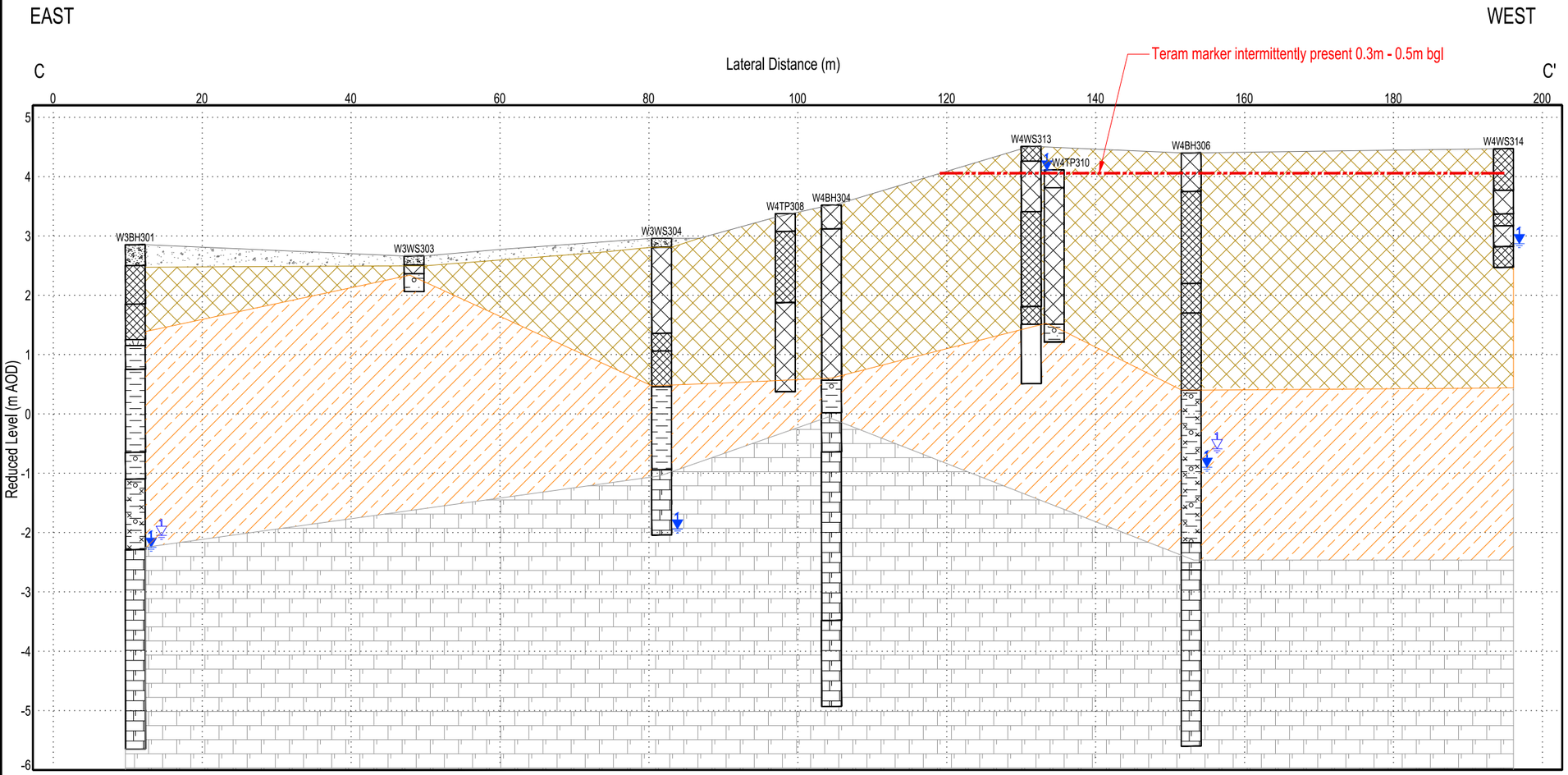
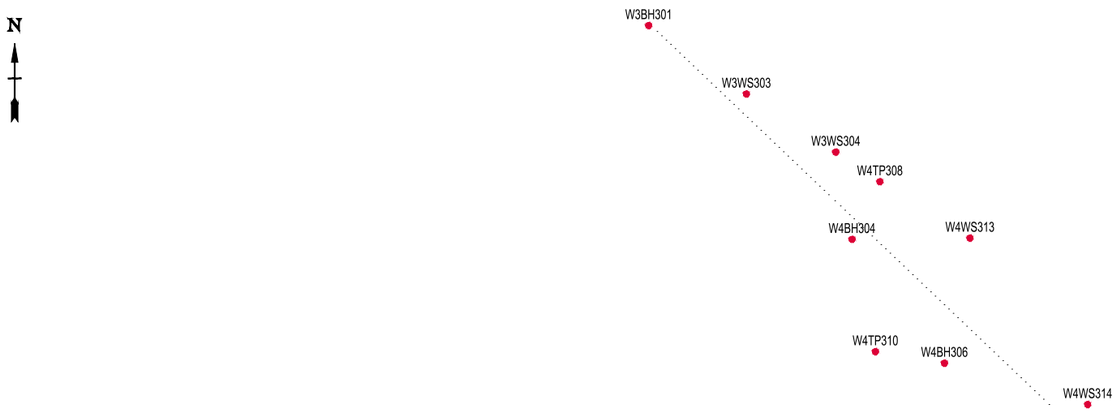
File name H:\ENVIRONMENT\171120-70015362-GL3 CITY DEAL-X SECTION\WORKING\70015362-FIGURE 10 CROSS SECTION B-B' EAST WEST AREA 3.DWG, printed on Thursday, January 18, 2018 5:37:44 PM, by Bharti, Neha

This is a generalised section based on ground conditions encountered in exploratory holes. Actual ground conditions including depths and the properties of strata may vary.





LEGEND:

- MADE GROUND
- TOP SOIL
- SUPERFICIAL DEPOSITS
- LAMBETH GROUP
- LEWES NODULAR CHALK
- WATER STRIKE DURING DRILLING

DRAWING STATUS:

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CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - CROSS SECTION C-C' EAST TO WEST

SCALE @ A3:	CHECKED:		APPROVED:
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PROJECT No:	DESIGNED:	DRAWN:	DATE:
70015362	SE	NB	January 18

DRAWING No: FIGURE 11 REV: P01

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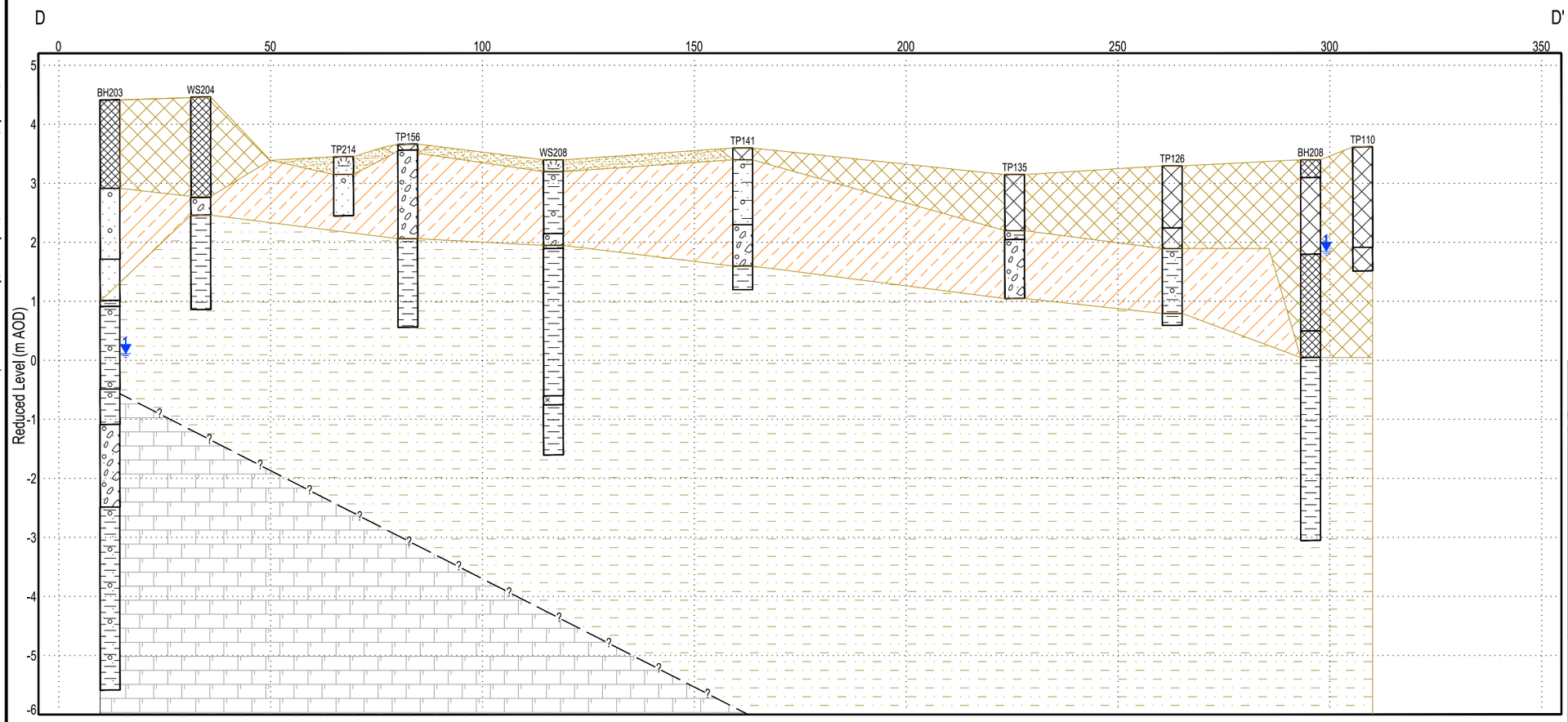
File name H:\ENVIRONMENT\171120-70015362-GL3 CITY DEAL-X SECTION\WORKING\70015362-FIGURE 11 CROSS SECTION C-C' EAS

This is a generalised section based on ground conditions encountered in exploratory holes. Actual ground conditions including depths and the properties of strata may vary.

NORTH

SOUTH



LEGEND:

- MADE GROUND
- TOP SOIL
- SUPERFICIAL DEPOSITS
- LAMBETH GROUP
- LEWES NODULAR CHALK
- WATER STRIKE DURING DRILLING

DRAWING STATUS:

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ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - CROSS SECTION D-D' NORTH TO SOUTH

SCALE @ A3:	CHECKED:		APPROVED:
1:1250	SE		SE
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70015362	SE	NB	January 18

DRAWING No: FIGURE 12 REV: P01

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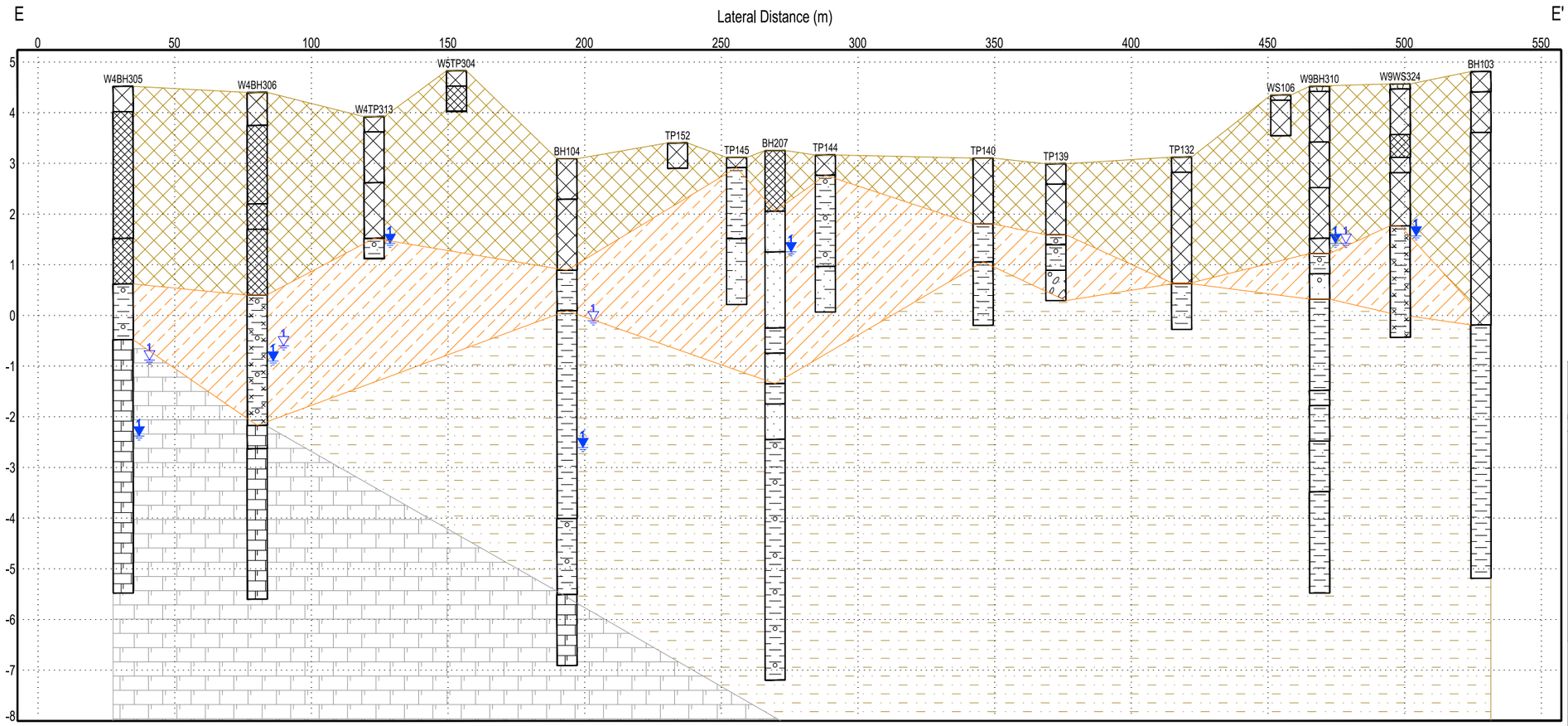
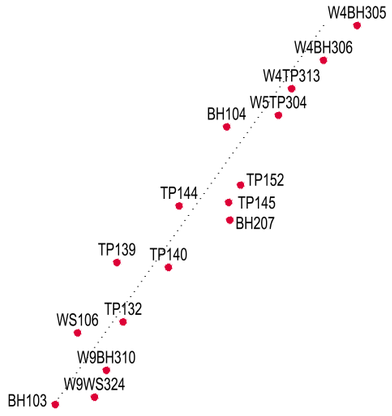
File name H:\ENVIRONMENT\171120-70015362-GL3 CITY DEAL-X SECTION\WORKING\70015362-FIGURE 12 CROSS SECTION D-D' NORTH SOUTH AREA 1.DWG, printed on Thursday, January 18, 2018 5:36:02 PM, by Bharti, Neha

This is a generalised section based on ground conditions encountered in exploratory holes. Actual ground conditions including depths and the properties of strata may vary.

NORTH

SOUTH





LEGEND:

- MADE GROUND
- TOP SOIL
- SUPERFICIAL DEPOSITS
- LAMBETH GROUP
- LEWES NODULAR CHALK
- WATER STRIKE DURING DRILLING

DRAWING STATUS:

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wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - CROSS SECTION E-E' NORTH TO SOUTH

SCALE @ A3:	CHECKED:		APPROVED:
1:1250	SE		SE
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70015362	SE	NB	January 18

DRAWING No: FIGURE 13

REV: P01

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File name H:\ENVIRONMENT\171120-70015362-GL3 CITY DEAL-X SECTION\WORKING\70015362-FIGURE 13 CROSS SECTION E-E' NORTH SOUTH AREA 1 AND AREA 2.DWG, printed on Thursday, January 18, 2018 5:35:26 PM, by Bharti, Neha

Date Modified:13/03/2018

Drawn By:SE

File:Q:\WSP_UK\WSP_Egint\#Projects\Agresso\70015362_-_Tipner_West\06-GIS MXDs\GIR Figures\TW\70015362.002.fig14 sup GW TW_v1.mxd

BH202
2.064m AOD

WS208
2.64m AOD

WS209
1.246m AOD

WS210
1.238m AOD

W8WS320
2.055m AOD

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0 12.5 25 50 75 100
Meters

Legend

Superficial Deposit Groundwater Contour Plot (m AOD)

- 1.24 - 1.4
- 1.41 - 1.6
- 1.61 - 1.8
- 1.81 - 2
- 2.01 - 2.2
- 2.21 - 2.4
- 2.41 - 2.6
- 2.61 - 2.8

Groundwater elevations interpolated from data logger readings at 16:30 on 26.07.2017
High tide at 14:01 2.01m AOD

DO NOT SCALE

DRAWING STATUS: FINAL

wsp
Mountbatten House,Basing View,Basingstoke, Hampshire
RG21 4HJ
Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - INFERRED GROUNDWATER CONTOUR PLOT SUPERFIFICAL DEPOSITS 26 JULY 2017

SCALE @ A...	CHECKED: SE	APPROVED: KB
CAD FILE:	DESIGN-DRAWN: SE	DATE: JAN 18
PROJECT No: 70015362	DRAWING No: FIGURE 14	REV:

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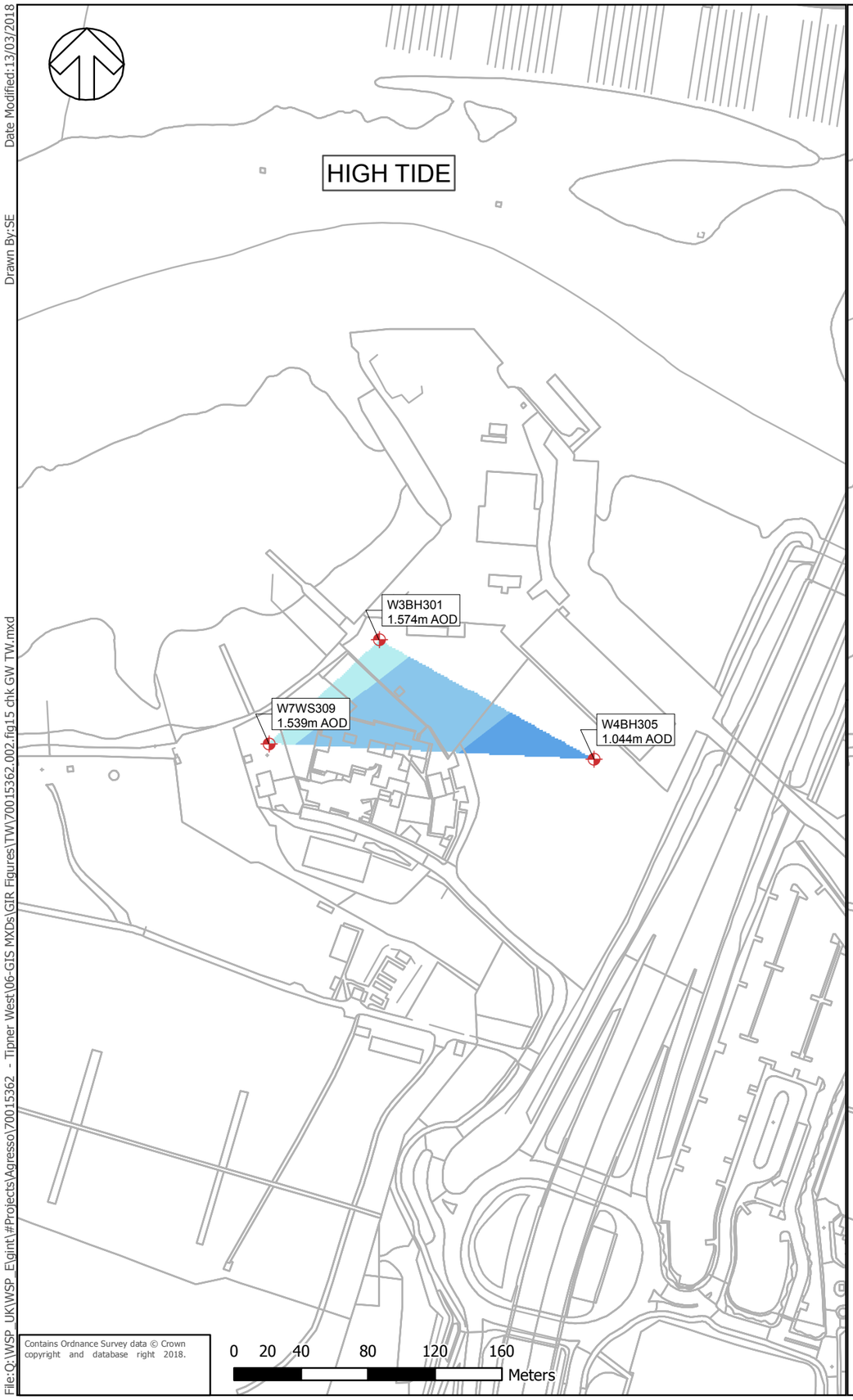
Date Modified:13/03/2018

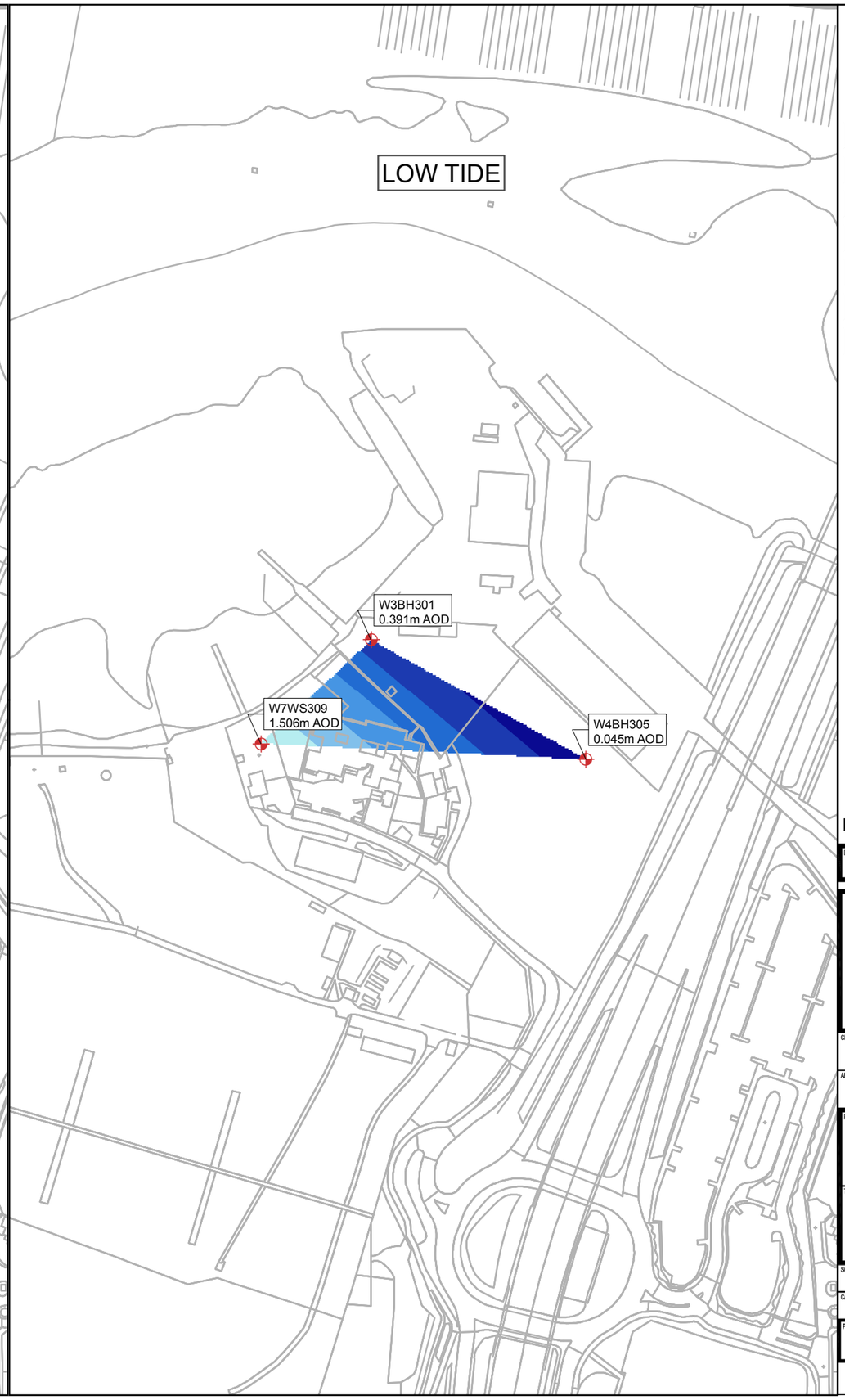
Drawn By:SE

File:Q:\WSP_UK\WSP_Eglint\#Projects\Agresso\70015362_ - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002.fig15 chk GW TW.mxd

HIGH TIME



LOW TIDE



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0 20 40 80 120 160 Meters

Legend

Groundwater Contours mAOD

- 0.05 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1.0
- 1.0 to 1.25
- 1.25 to 1.5
- 1.5 to 1.75

Groundwater elevations interpolated from data logger readings on 26 July 2017 at
'Low Tide' (09:50)
'High Tide' (16:20)

Tide times and height in Portsmouth Harbour:
Low - 07:21 (-2.22m AOD)
High - 14:01 (2.01m AOD)

DO NOT SCALE

DRAWING STATUS: FINAL

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Mountbatten House,Basing View,Basingstoke, Hampshire RG21 4HJ
Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - INFERRED GROUNDWATER CONTOUR PLOTS DEMONSTRATING TIDAL VARIATION IN CHALK 26 JULY 2017

SCALE @ A3	CHECKED:	APPROVED:
1:3,000	SE	KB
CAD FILE:	DESIGN-DRAWN:	DATE:
	SE	JAN 18
PROJECT No:	DRAWING No:	REV:
70015362	FIGURE 15	

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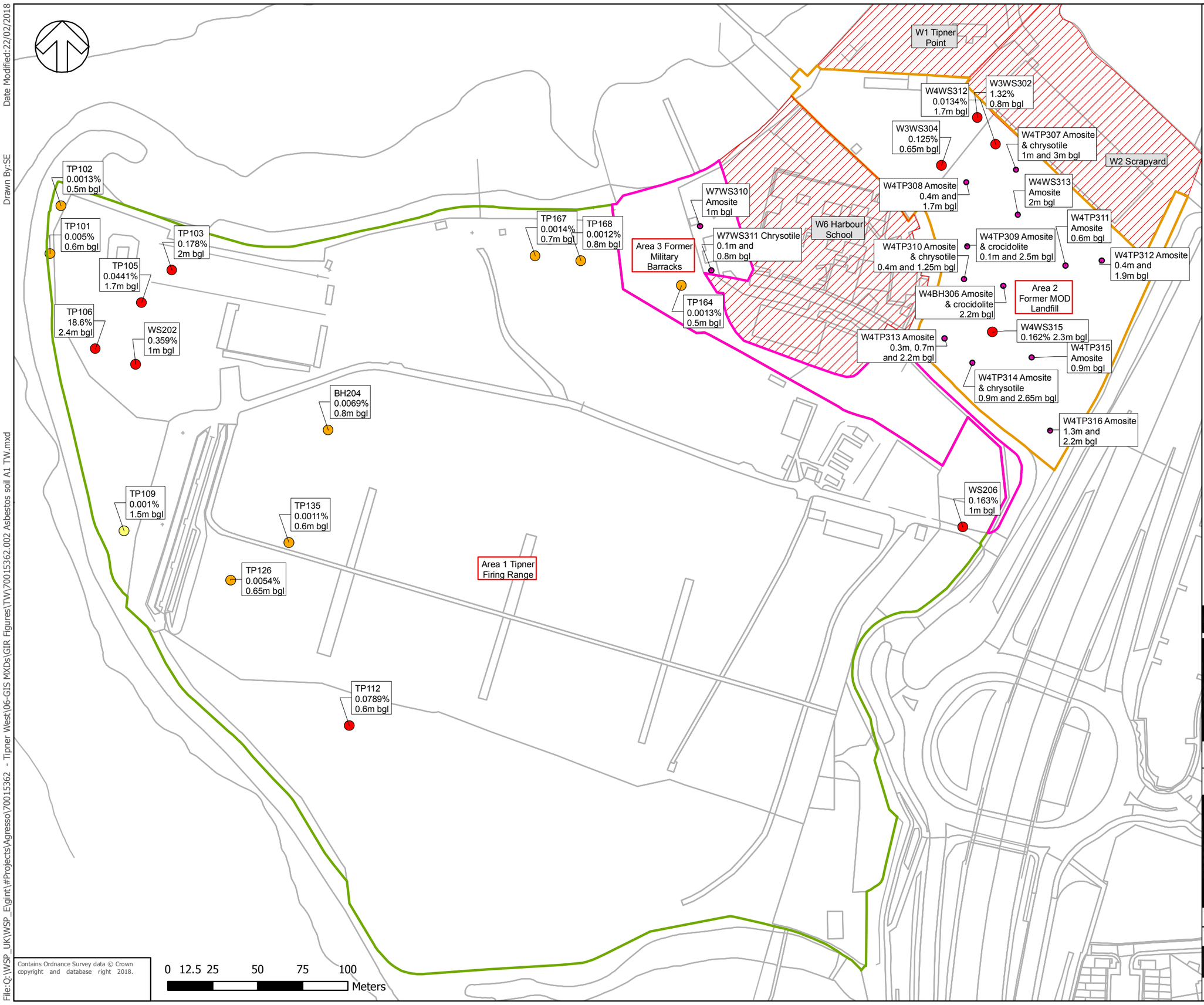
Date Modified:22/02/2018

Drawn By:SE

File:Q:\WSP_UK\WSP_E\gint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Asbestos soil A1 TW.mxd



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Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- W1 Excluded from Assessment
- W2 Excluded from Assessment
- W6 Excluded from Assessment
- Identified Asbestos Fibres (no quantification)

Max Asbestos Quantification - Total % in Soil

%

- 0.0010
- 0.0011 - 0.010
- 0.011 - 19

DO NOT SCALE

DRAWING STATUS: FINAL

Mountbatten House,Basing View,Basingstoke, Hampshire
RG21 4HJ
Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - MAXIMUM REPORTED SOIL ASBESTOS CONCENTRATIONS

SCALE @ A...	CHECKED: SE	APPROVED: KB
CAD FILE:	DESIGN-DRAWN: SE	DATE: JAN 18
PROJECT No: 70015362	DRAWING No: FIGURE 16	REV:

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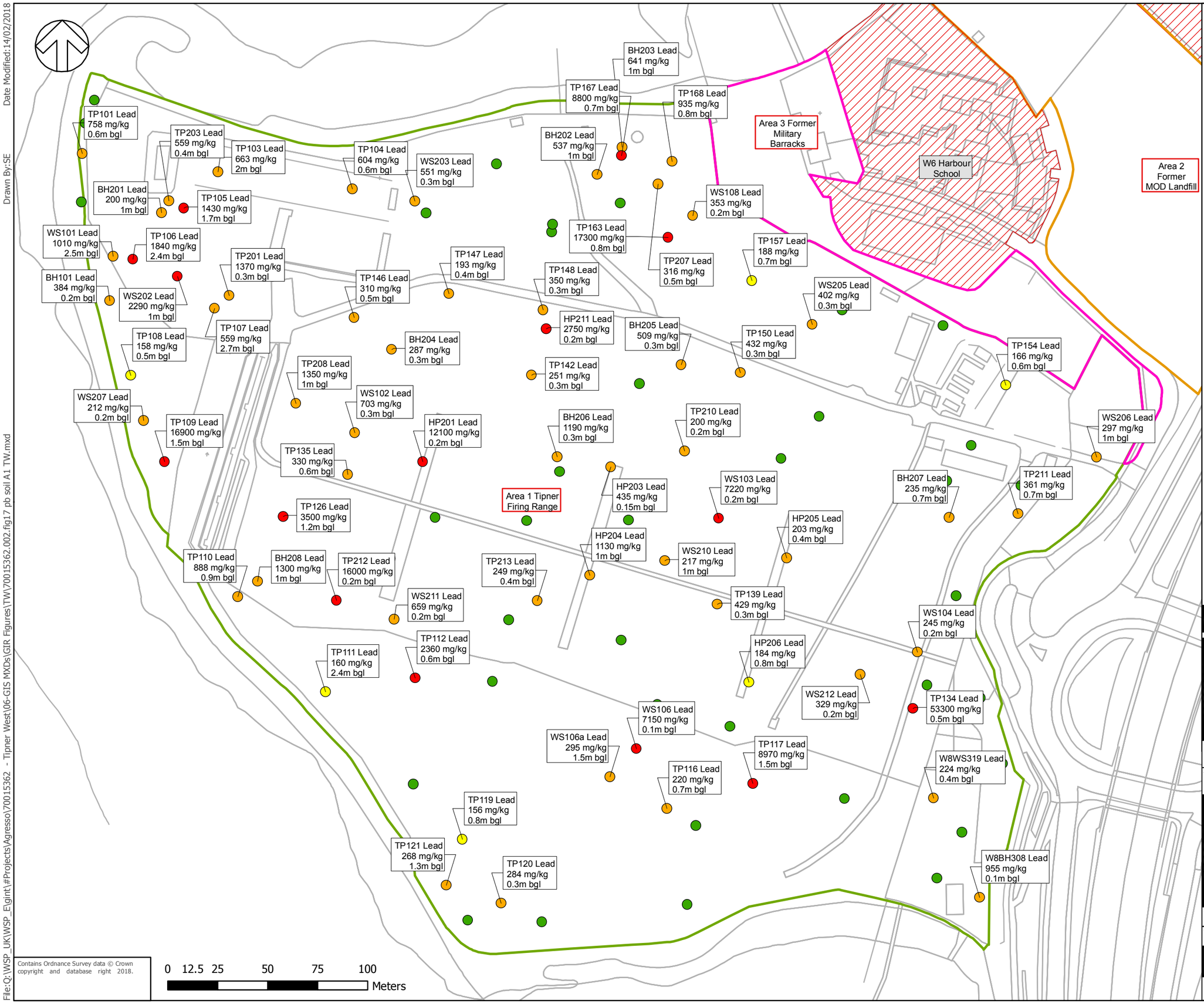

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max Lead in Soil

mg/kg

- >LOD < GAC
- >148 RWHGV
- >188 RWOHGV
- >1390 C

Generic Assessment Criteria (GAC) Scenarios
RWHGV - Residential with home grown vegetables
RWOHGV - Residential without home grown vegetables
C - Commercial

DO NOT SCALE

DRAWING STATUS: FINAL

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Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - EXCEEDANCES OF HUMAN HEALTH GACS AREA 1 LEAD

SCALE @ A...	CHECKED: SE	APPROVED: KB
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PROJECT No: 70015362	DRAWING No: FIGURE 17	REV:

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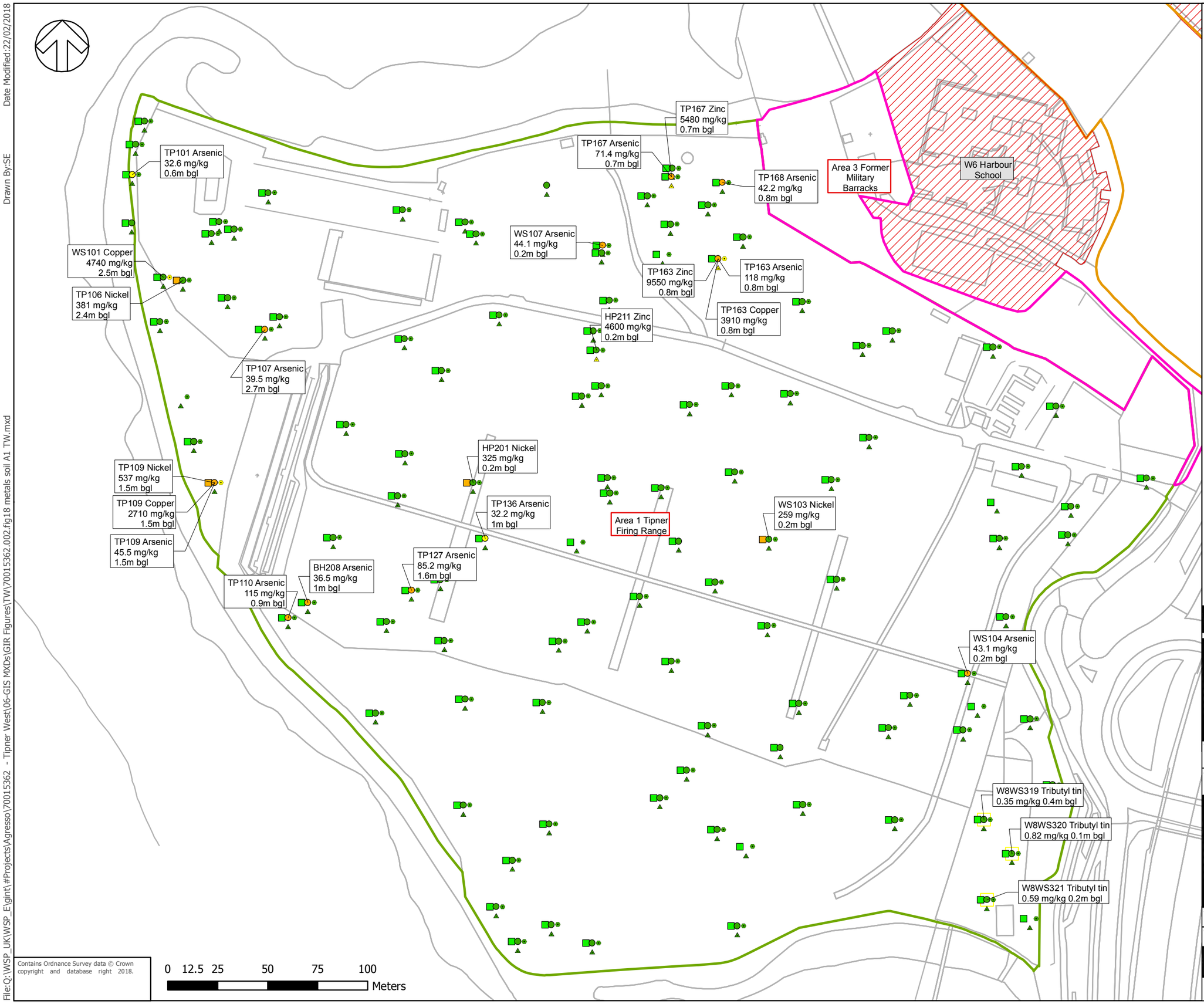

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max Arsenic in Soil mg/kg
- >LOD < GAC
- >32 RWHGV
- >35 RWOHGV
- >635 C

Max Zinc in Soil mg/kg
- >LOD < GAV
- > 3860 RWHGV
- >404000 RWOHGV

Max Copper in Soil mg/kg
- >LOD < GAC
- >2490 RWHGV
- >7520 RWOHGV
- >69800 C

Max Tributyl tin in Soil mg/kg
- >LOD < GAC
- >0.26 RWHGV
- >2 RWOHGV
- 123 C

Max Nickel in Soil mg/kg
- >LOD < GAC
- >126 RWHGV
- >181 RWOHGV
- >1710 C

Generic Assessment Criteria (GAC) Scenarios
RWHGV - Residential with home grown vegetables
RWOHGV - Residential without home grown vegetables
C - Commercial

DO NOT SCALE

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0 12.5 25 50 75 100 Meters

DRAWING STATUS: FINAL

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Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - EXCEEDANCES OF HUMAN HEALTH GACS AREA 1 METALS

SCALE @ A...	CHECKED: SE	APPROVED: KB
CAD FILE:	DESIGN-DRAWN: SE	DATE: JAN 18
PROJECT No: 70015362	DRAWING No: FIGURE 18	REV:

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Drawn By:SE
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Date Modified:22/02/2018

Drawn By:SE

File:Q:\WSP_UK\WSP_E\gint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002.fig19 organics soil A1 TW.mxd

HP210 Benzo (a) pyrene 2.48 mg/kg 0.75m bgl

TP102 Benzo(a) pyrene 5 mg/kg 0.5m bgl

TP167 Benzo(a) pyrene 4.41 mg/kg 0.7m bgl

TP101 Benzo(a) pyrene 3.36 mg/kg 0.2m bgl

TP103 Benzo (a) pyrene 5.05 mg/kg 0.5m bgl

TP168 Benzo(a) pyrene 20.9 mg/kg 0.8m bgl

W6 Harbour School

Area 3 Former Military Barracks

TP203 Benzo (a) pyrene 4.9 mg/kg 0.4m bgl

TP105 Benzo (a) pyrene 11.5 mg/kg 1.7m bgl

TP106 Benzo(a) pyrene 12 mg/kg 2.4m bgl

TP104 Benzo (a) pyrene 1.62 mg/kg 0.6m bgl

WS202 Benzo (a) pyrene 9.24 mg/kg 1m bgl

TP207 Benzo (a) pyrene 9.88 mg/kg 0.85m bgl

BH101 Benzo (a) pyrene 8.65 mg/kg 0.2m bgl

TP107 Benzo(a) pyrene 3.52 mg/kg 2.7m bgl

TP208 Benzo (a) pyrene 10.7 mg/kg 0.2m bgl

WS205 Benzo (a) pyrene 3.57 mg/kg 0.3m bgl

BH204 Benzo(a) pyrene 5.54 mg/kg 0.8m bgl

WS207 Benzo(a) pyrene 20.3 mg/kg 0.2m bgl

TP109 Benzo(a) pyrene 2.19 mg/kg 1.5m bgl

TP135 Benzo (a) pyrene 4.35 mg/kg 0.6m bgl

TP126 Benzo(a) pyrene 21.9 mg/kg 1.2m bgl

Area 1 Tipner Firing Range

BH208 Benzo(a) pyrene 63.2 mg/kg 1m bgl

TP212 Benzo (a) pyrene 10.6 mg/kg 1m bgl

W8WS317c Benzo (a) pyrene 9.92 mg/kg 0.4m bgl

WS104 Benzo(a) pyrene 11 mg/kg 0.2m bgl

BH208 AromaticEC21-EC35 1340 mg/kg 1m bgl

TP111 Benzo (a) pyrene 5.87 mg/kg 0.85m bgl

WS104 Naphthalene 7.98 mg/kg 0.2m bgl

W8WS319 Benzo(a) pyrene 1.83 mg/kg 0.4m bgl

W9BH310 Benzo (a) pyrene 2.18 mg/kg 0.8m bgl

TP119 Benzo (a) pyrene 9.1 mg/kg 0.8m bgl

TP121 Benzo(a) pyrene 3.74 mg/kg 1.3m bgl

TP120 Benzo (a) pyrene 2.68 mg/kg 2m bgl

TP124 Benzo (a) pyrene 3.38 mg/kg 0.2m bgl

W8WS321 Benzo (a) pyrene 1.74 mg/kg 0.2m bgl

TP121 Naphthalene 6.55 mg/kg 1.3m bgl

TP122 Naphthalene 4.53 mg/kg 0.7m bgl

W8WS318 Benzo (a) pyrene 2.85 mg/kg 0.1m bgl

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0 12.5 25 50 75 100 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max Benzene in Soil mg/kg		Max Naphthalene in Soil mg/kg	
>LOD < GAC		>LOD< GAC	
>0.089 RWHGV		>2.3 RWHGV	
>0.38 RWOHGV		>2.3 RWOHGV	
>27 C		>193 C	

Max Benzo (a) pyrene in Soil mg/kg		Max AromaticEC21-EC35 in Soil mg/kg	
>LOD < GAC		>LOD < GAC	
>1.6 RWHGV		>873 RWHGV	
>1.7 RWOHGV		>1340 RWOHGV	
>38 C		>28600 C	

Generic Assessment Criteria (GAC) Scenarios
RWHGV - Residential with home grown vegetables
RWOHGV - Residential without home grown vegetables
C - Commercial

DO NOT SCALE

DRAWING STATUS: FINAL

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Mountbatten House,Basing View,Basingstoke, Hampshire RG21 4HJ
Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - EXCEEDANCES OF HUMAN HEALTH GACS AREA 1 ORGANICS

SCALE @ A..	CHECKED: SE	APPROVED: KB
CAD FILE:	DESIGN-DRAWN: SE	DATE: JAN 18
PROJECT No: 70015362	DRAWING No: FIGURE 19	REV:

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Drawn By:SE

File:Q:\WSP_UK\WSP_Egint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002.fig20 lead soil A2 A3 TW.mxd

W1 Tipner Point

W3BH301 203 mg/kg 0.35m bgl

W3WS301 755 mg/kg 0.2m bgl

W3WS302 589 mg/kg 0.8m bgl

W4WS312 3670 mg/kg 0m bgl

W2 Scrapyard

W3WS304 514 mg/kg 0.65m bgl

W4TP307 55800 mg/kg 1m bgl

W4TP308 622 mg/kg 0.4m bgl

W3WS305 420 mg/kg 0.7m bgl

W7WS309 180 mg/kg 0.9m bgl

W4BH304 305 mg/kg 0.9m bgl

W4WS313 1870 mg/kg 2m bgl

TP169 863 mg/kg 2.1m bgl

W5TP301 403 mg/kg 0.5m bgl

W6 Harbour School

W4TP309 786 mg/kg 0.1m bgl

W4TP311 290 mg/kg 0.6m bgl

W4TP312 1110 mg/kg 1.9m bgl

W7WS311 155 mg/kg 0.8m bgl

TP164 436 mg/kg 1.5m bgl

W5TP302 166 mg/kg 1m bgl

W4TP310 922 mg/kg 1.25m bgl

W4BH306 2800 mg/kg 5m bgl

Area 2 Former MOD Landfill

W4WS314 492 mg/kg 0.7m bgl

TP165 586 mg/kg 2.6m bgl

W5WS307c 341 mg/kg 2m bgl

W4TP313 828 mg/kg 2.2m bgl

W4TP314 1710 mg/kg 2.65m bgl

W4TP315 584 mg/kg 0.9m bgl

TP159 347 mg/kg 0.3m bgl

W5TP303 344 mg/kg 0.7m bgl

W5TP304 374 mg/kg 0.2m bgl

W4WS316 635 mg/kg 0.1m bgl

W4BH307 152 mg/kg 0.1m bgl

Area 3 Former Military Barracks

Area 1 Tipner Firing Range

W4TP316 714 mg/kg 1.3m bgl

W5HP306 246 mg/kg 0.1m bgl

WS110 348 mg/kg 0.2m bgl

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0 5 10 20 30 40 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max Lead in Soil mg/kg

- >LOD < GAC
- >148 RWHGV
- >188 RWOHGV
- >1390 C

Generic Assessment Criteria (GAC) Scenarios
RWHGV - Residential with home grown vegetables
RWOHGV - Residential without home grown vegetables
C - Commercial

DO NOT SCALE

DRAWING STATUS: FINAL

wsp
Mountbatten House,Basing View,Basingstoke, Hampshire RG21 4HJ
Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - EXCEEDANCES OF HUMAN HEALTH GACS AREAS 2&3 LEAD

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PROJECT No: 70015362	DRAWING No: FIGURE 20	REV:

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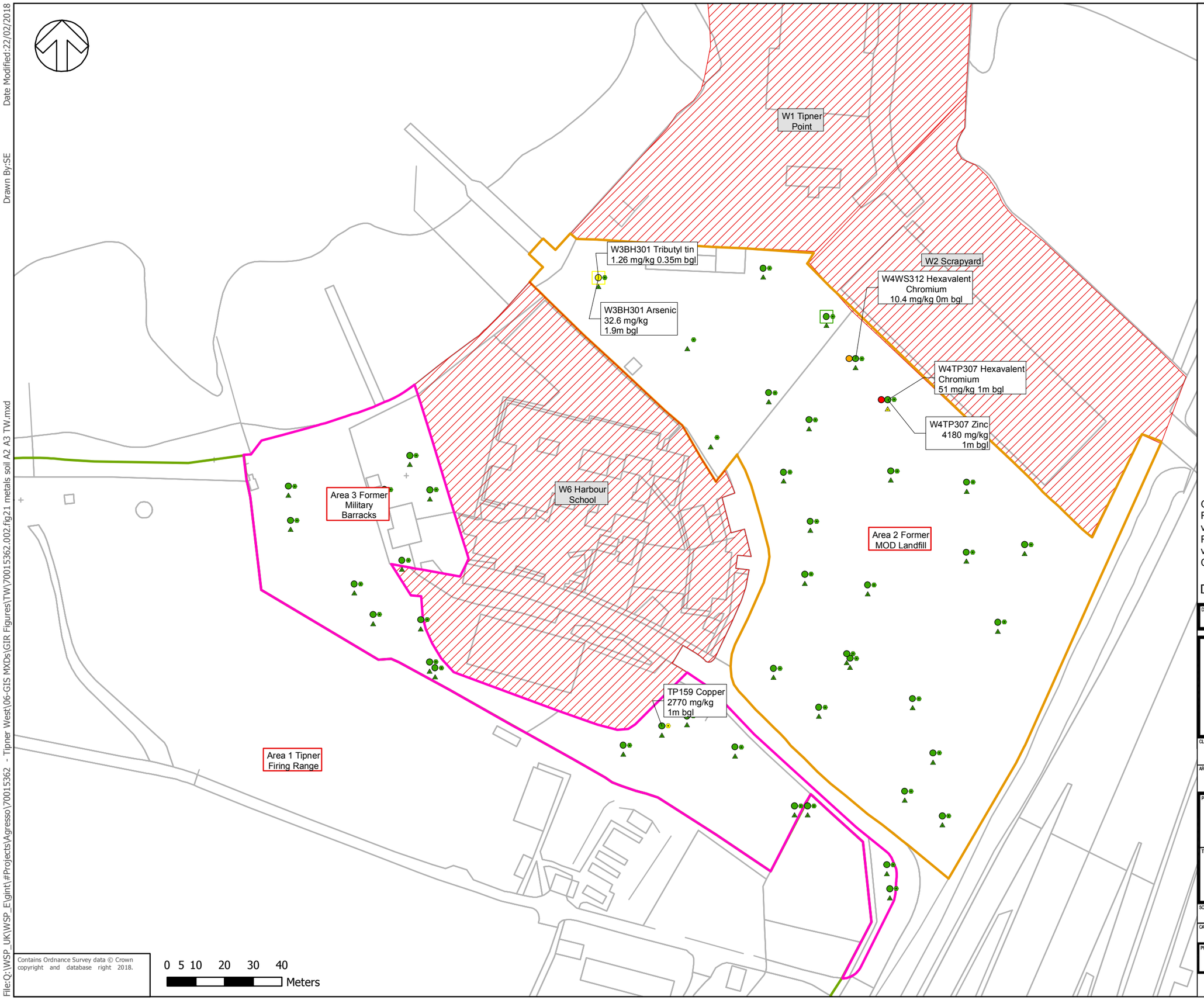

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Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max Arsenic in Soil mg/kg
- >LOD < GAC
- >32 RWHGV
- >35 RWOHGV
- >635 C

Max Tributyl tin in Soil mg/kg
- >LOD < GAC
- >0.26 RWHGV
- >2 RWOHGV
- 123 C

Max Copper in Soil mg/kg
- >LOD < GAC
- >2490 RWHGV
- >7520 RWOHGV
- >69800 C

Max Hexavalent Chromium in Soil mg/kg
- >LOD < GAC
- >4.5 RWHGV
- >4.5 RWOHGV
- >24 C

Max Zinc in Soil mg/kg
- >LOD < GAV
- > 3860 RWHGV
- >404000 RWOHGV

Generic Assessment Criteria (GAC) Scenarios
RWHGV - Residential with home grown vegetables
RWOHGV - Residential without home grown vegetables
C - Commercial

DO NOT SCALE

DRAWING STATUS: FINAL

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Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - EXCEEDANCES OF HUMAN HEALTH GACS AREA 2 &3 METALS AND ORGANOTINS

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PROJECT No: 70015362	DRAWING No: FIGURE 21	REV:

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Date Modified:22/02/2018

Drawn By:SE

File:Q:\WSP_UK\WSP_Elgint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002.fig22 organics soil A2 A3 TW.mxd

W1 Tipner Point

W3WS301 BENAP
6.93 mg/kg
0.7m bgl

W3WS302 BENAP
1.73 mg/kg
0.8m bgl

W4WS312 BENAP
3.36 mg/kg
0m bgl

W2 Scrapyard

W3WS304 BENAP
9.3 mg/kg
0.65m bgl

W4TP307 BENAP
6.42 mg/kg
3m bgl

W7WS310 BENAP
3.45 mg/kg
1m bgl

W3WS305 BENAP
25.1 mg/kg
0.7m bgl

W4TP307
Naphthalene
116 mg/kg 1m bgl

W4TP308 BENAP
18.3 mg/kg
1.7m bgl

W5BH302 BENAP
2.15 mg/kg
0.9m bgl

W7WS308 BENAP
1.78 mg/kg
0.3m bgl

W4WS313 BENAP
5.24 mg/kg
2m bgl

W4BH305 BENAP
1.78 mg/kg
0.1m bgl

W6 Harbour School

W4TP309 BENAP
7.43 mg/kg
2.5m bgl

Area 2 Former MOD Landfill

W4TP312 BENAP
7.89 mg/kg
0.4m bgl

TP169 BENAP
5.51 mg/kg
0.9m bgl

W4BH306 BENAP
9.89 mg/kg
2.2m bgl

W4TP310 BENAP
5.11 mg/kg
1.25m bgl

W4TP311 BENAP
3.99 mg/kg
0.6m bgl

Area 3 Former Military Barracks

W4WS315a BENAP
3.54 mg/kg
0.1m bgl

W4WS314 BENAP
10.9 mg/kg
1.35m bgl

W4TP313 BENAP
2.85 mg/kg
0.7m bgl

W4TP315 BENAP
4.42 mg/kg
0.9m bgl

W4TP313 Benzene
0.425 mg/kg
0.7m bgl

W4TP314 BENAP
1.99 mg/kg
2.65m bgl

W4WS316 BENAP
1.68 mg/kg
0.1m bgl

W5TP304 BENAP
3.65 mg/kg
0.2m bgl

W4BH307 BENAP
2.15 mg/kg
0.1m bgl

W4TP316 BENAP
2.2 mg/kg
1.3m bgl

W5TP305 BENAP
3.93 mg/kg
0.8m bgl

Area 1 Tipner Firing Range

WS109 BENAP
10.9 mg/kg
0.3m bgl

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0 5 10 20 30 40
Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max Benzene in Soil mg/kg

- >LOD < GAC
- >0.089 RWHGV
- >0.38 RWOHGV
- >27 C

Max Naphthalene in Soil mg/kg

- >LOD< GAC
- >2.3 RWHGV
- >2.3 RWOHGV
- >193 C

Max Benzo (a) pyrene in Soil mg/kg

- >LOD < GAC
- >1.6 RWHGV
- >1.7 RWOHGV
- >38 C

Generic Assessment Criteria (GAC) Scenarios
RWHGV - Residential with home grown vegetables
RWOHGV - Residential without home grown vegetables
C - Commercial

BENAP - Benzo(a)pyrene

DO NOT SCALE

DRAWING STATUS: FINAL

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Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - EXCEEDANCES OF HUMAN HEALTH GACS AREAS 2&3 ORGANICS

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CAD FILE:	DESIGN-DRAWN: SE	DATE: JAN 18
PROJECT No: 70015362	DRAWING No: FIGURE 23	REV:

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Drawn By:SE

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W1 Tipner Point

W3BH301 Ammoniacal Nitrogen as NH4 1990 µg/l

W2 Scrapyard

W4WS312 Ammoniacal Nitrogen as NH4 13200 µg/l

W3WS304 Ammoniacal Nitrogen as NH4 1080 µg/l

W3WS304 Lead 1290 µg/l

W4WS312 Lead 13 µg/l

W4BH305 Ammoniacal Nitrogen as NH4 2400 µg/l

W4BH304 Ammoniacal Nitrogen as NH4 3630 µg/l

W4BH305 Lead 11.4 µg/l

Area 3 Former Military Barracks

W6 Harbour School

Area 2 Former MOD Landfill

W4WS313 Ammoniacal Nitrogen as NH4 3720 µg/l

W4WS315 Ammoniacal Nitrogen as NH4 5820 µg/l

BH101 Ammoniacal Nitrogen as NH4 1410 µg/l

WS209 Lead 316 µg/l

BH207 Lead 51.2 µg/l

Area 1 Tipner Firing Range

WS210 Ammoniacal Nitrogen as NH4 1160 µg/l

WS210 Lead 89.5 µg/l

BH208 Ammoniacal Nitrogen as NH4 1130 µg/l

BH208 Lead 1010 µg/l

WS104 Ammoniacal Nitrogen as NH4 4180 µg/l

W8WS317c Lead 268 µg/l

W8WS318 Lead 104 µg/l

W9BH309 Lead 11 µg/l

W9BH309 Ammoniacal Nitrogen as NH4 1630 µg/l

W9BH310 Ammoniacal Nitrogen as NH4 1340 µg/l

W9WS325c Ammoniacal Nitrogen as NH4 3020 µg/l

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0 15 30 60 90 120 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max reported Ammoniacal Nitrogen as NH4 in groundwater

ug/l

- >LOD - <DWS
- >500 - 13200

Max reported Lead in groundwater

ug/l

- >LOD - <DWS
- >10.0 DWS

LOD - limit of detection
DWS - Statutory Instrument 2016 No.614, Water, England and Wales The Water Supply (Water Quality) Regulations 2016

DRAWING STATUS: FINAL

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Mountbatten House,Basing View,Basingstoke, Hampshire RG21 4HJ
Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - GROUNDWATER EXCEEDANCES OF DRINKING WATER ASSESSMENT CRITERIA AMMONIA AND LEAD

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PROJECT No: 70015362	DRAWING No: FIGURE 23	REV:

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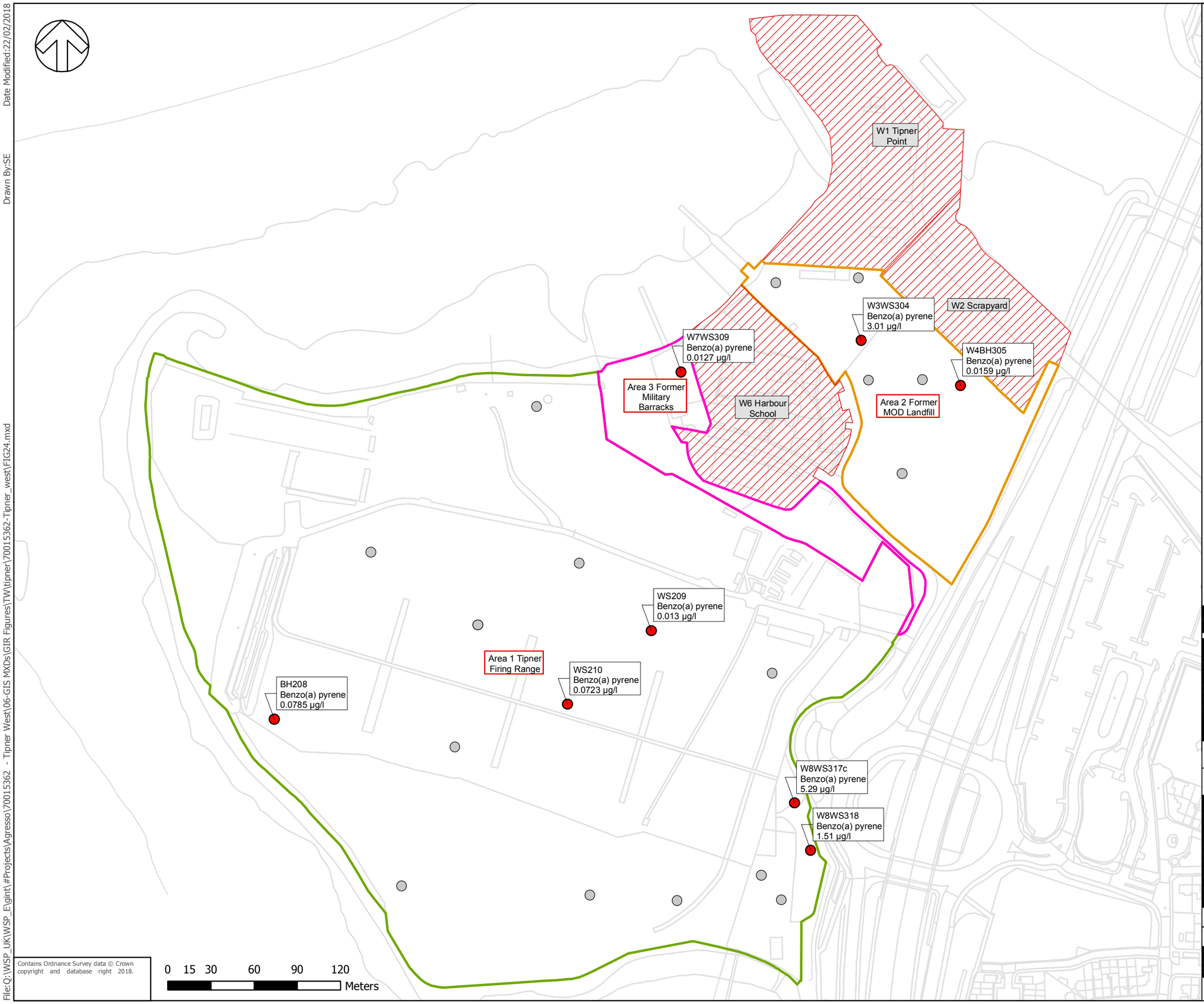

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Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max reported Benzo(a)pyrene in Groundwater

µg/l

- > 0.01 DWS
- < LOD 0.009 ug/l

LOD - Limit of detection
DWS - Statutory Instrument 2016 No.614, Water, England and Wales The Water Supply (Water Quality) Regulations 2016

DRAWING STATUS: FINAL

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Mountbatten House,Basing View,Basingstoke, Hampshire RG21 4HJ
Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - GROUNDWATER EXCEEDANCES OF DRINKING WATER ASSESSMENT CRITERIA BENZO(A)PYRENE

SCALE @ A..	CHECKED: SE	APPROVED: KB
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PROJECT No: 70015362	DRAWING No: FIGURE 24	REV:

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W1 Tipner Point

W2 Scrapyard

W3BH301 Lead 1.48 µg/l

W3WS301 Lead 2.02 µg/l

W3WS304 Lead 1290 µg/l

W4WS312 Ammoniacal Nitrogen as NH3 366.3ug/l

W4WS312 Lead 13 µg/l

W4BH305 Lead 11.4 µg/l

W4BH305 Ammoniacal Nitrogen as NH3 29.1ug/l

W7WS309 Lead 7.68 µg/l

Area 3 Former Military Barracks

W4BH304 Ammoniacal Nitrogen as NH3 31.8ug/l

W4WS313 Lead 1.57 µg/l

W4WS313 Ammoniacal Nitrogen as NH3 45.2ug/l

W6 Harbour School

W4WS315 Ammoniacal Nitrogen as NH3 51ug/l

Area 2 Former MOD Landfill

BH101 Ammoniacal Nitrogen as NH3 1330ug/l

BH101 Lead 3.39 µg/l

BH204 Lead 5.59 µg/l

BH205 Lead 8.96 µg/l

WS209 Lead 316 µg/l

BH207 Lead 51.2 µg/l

Area 1 Tipner Firing Range

WS210 Ammoniacal Nitrogen as NH3 63.1ug/l

WS210 Lead 89.5 µg/l

BH208 Ammoniacal Nitrogen as NH3 1130ug/l

BH208 Lead 1010 µg/l

BH209 Lead 3.47 µg/l

WS104 Ammoniacal Nitrogen as NH3 3950ug/l

W8WS317c Lead 268 µg/l

W8WS318 Lead 104 µg/l

W9BH309 Lead 11 µg/l

W9BH310 Lead 1.66 µg/l

W9WS325c Ammoniacal Nitrogen as NH3 21.4ug/l

W8WS320 Lead 6.05 µg/l

W9WS325c Lead 5.98 µg/l

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0 15 30 60 90 120 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max reported Ammoniacal Nitrogen as NH3 in groundwater (ug/l)

- >LOD - < EQS
- >21.1 EQS

Max reported Lead in groundwater (ug/l)

- >LOD <EQS
- >1.3 EQS

LOD - Limit of Detection
EQS – Water Framework directive (Standards and Classification) Directions (England and Wales) 2015, EQS Transitional waters – Annual Average

DRAWING STATUS: FINAL

Mountbatten House,Basing View,Basingstoke, Hampshire RG21 4HJ
Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - GROUNDWATER EXCEEDANCES OF SURFACE WATER ASSESSMENT CRITERIA AMMONIA AND LEAD

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CAD FILE:	DESIGN-DRAWN: NJ	DATE: JAN 18
PROJECT No: 70015362	DRAWING No: FIGURE 25	REV:

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W1 Tipner Point

W2 Scrapyard

W3WS304 Benzo(a) pyrene 3.01 µg/l

W3WS304 Fluoranthene 3.12 µg/l

W4BH305 Benzo(a) pyrene 0.0159 µg/l

W4BH305 Fluoranthene 0.0275 µg/l

W7WS309 Benzo(a) pyrene 0.0127 µg/l

Area 3 Former Military Barracks

W6 Harbour School

W4WS313 Fluoranthene 0.269 µg/l

Area 2 Former MOD Landfill

BH203 Fluoranthene 0.0229 µg/l

W4WS315 Fluoranthene 0.064 µg/l

BH205 Fluoranthene 0.0851 µg/l

WS209 Benzo(a) pyrene 0.013 µg/l

WS209 Fluoranthene 0.0262 µg/l

Area 1 Tipner Firing Range

WS210 Benzo(a) pyrene 0.0723 µg/l

WS210 Fluoranthene 0.114 µg/l

BH208 Benzo(a) pyrene 0.0785 µg/l

BH208 Fluoranthene 0.0905 µg/l

BH209 Fluoranthene 0.0216 µg/l

W8WS317c Benzo(a) pyrene 5.29 µg/l

W8WS317c Fluoranthene 0.616 µg/l

W8WS318 Benzo(a) pyrene 1.51 µg/l

W8WS319 Fluoranthene 0.0925 µg/l

W8WS318 Fluoranthene 0.386 µg/l

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0 15 30 60 90 120 Meters

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks
- Area W1 Excluded from Assessment
- Area W2 Excluded from Assessment
- Area W6 Excluded from Assessment

Max reported Benzo(a)pyrene in Groundwater

µg/l

- > 0.00017 EQS
- < LOD 0.009 ug/l

Max reported Fluoranthene in Groundwater

µg/l

- > 0.0063 EQS
- < LOD 0.017 ug/l

LOD - Limit of Detection
EQS – Water Framework directive (Standards and Classification) Directions (England and Wales) 2015, EQS Transitional waters – Annual Average

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ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - GROUNDWATER EXCEEDANCES OF SURFACE WATER ASSESSMENT CRITERIA PAHS

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PROJECT No: 70015362	DRAWING No: FIGURE 26	REV:

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File:Q:\WSP_UK\WSP_Egint\#Projects\Agresso\70015362 - Tipner West\06-GIS MXDs\GIR Figures\TW\70015362.002 Figure 27 Constraints plan TW.mxd

Filled Ground Contaminated with lead, PAHs and asbestos

Diesel Tank

Raised Ground Contaminated with asbestos, lead, PAHs, low ground gas risk

Filled Ground Contaminated with asbestos, lead, PAHs low ground gas risk

Firing Ranges Shallow soil contaminated with lead

Filled Ground Contaminated with asbestos, lead, PAHs, low ground gas risk

Area 2 Former MOD Landfill

Area 3 Former Military Barracks

Area 1 Tipner Firing Range

Former Landfill Contaminated with asbestos, lead, PAHs, PCBs and hydrocarbons. # Elevated CO2 and CH4

M275

Legend

Site Areas

- Area 1 Tipner Firing Range
- Area 2 Former MOD Landfill
- Area 3 Former Military Barracks

Maximum reported Lead in Soil 0-1m bgl

- >LOD
- >148.0 mg/kg RWHGV
- >188.0 mg/kg RWOHGV
- >1390 mg/kg C

Proven Made Ground Thickness (m)

- 1.0
- 1.1 - 2.0
- 2.1 - 3.0
- 3.1 - 4.0
- 4.1 - 5.0

Potential Constraints

- Diesel Tank
- Filled Ground
- Firing Range
- Former Landfill
- Raised Ground

Areas of fill shown are indicative and based on interpolated proven thickness of Made Ground.
Generic Assessment Criteria (GAC) Scenarios
RWHGV - Residential with home grown vegetables
RWOHGV - Residential without home grown vegetables
C - Commercial

DO NOT SCALE

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0 15 30 60 90 120 Meters

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Tel: +44 (0)1256 318 800
Website: www.wsp.com

CLIENT: PORTSMOUTH CITY COUNCIL

ARCHITECT:

PROJECT: CITY DEAL

TITLE: TIPNER WEST - CONSTRAINTS PLAN

SCALE @ A...	CHECKED: SE	APPROVED: KB
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PROJECT No: 70015362	DRAWING No: FIGURE 27	REV:

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Appendix B

CONSULTATION

LAND USE ENQUIRY

For

Tipner West

Draft prepared for Sam Endsor, WSPGroup only

23 February 2016

Contaminated Land Team, City Development & Cultural Services, Portsmouth City Council, Civic Offices, Guildhall Square, Portsmouth, PO1 2AU

PORTSMOUTH CITY COUNCIL
CONTAMINATED LAND TEAM LAND USE ENQUIRY

This report is a summary of the information held by the Contaminated Land Team (CLT) in their geographical information system (GIS), databases and other sources on 22 February 2016. It is produced from a search within approximately 50m of the site boundary, except where otherwise stated.

The CLT also holds the following information that has not yet been captured onto the GIS:

- Scanned copies of historic maps from the late 1940s to the current day and 1946/47 historic aerial photographs

- Trades database compiled from a search of the trades section of the directories held in the central library at approximately five-yearly intervals during the periods between 1823-2001.
  Note: the majority of larger or more potentially contaminative trades have already been captured on the GIS and are included in the trades section of this report.

- Petroleum licence database compiled from documents held by CLT dating from 1909 to the present day including petroleum licence ledgers, a Hampshire Fire Brigade derelict tank register, and files for current and recently cancelled licences. Licences for volumes ≥ 500 gallons have already been captured on the GIS and these details are included in the trades section of this report.
  Note: the records for currently licensed sites are now held by: Hampshire County Council, Trading Standards Service, Montgomery House, Monarch Way, Winchester SO22 5PW.

- Scanned or paper copies of reports submitted relating to site conditions – for example desk studies, site investigation reports etc. The boundaries, reference numbers and brief details of these reports are included in this report.

- Industrial estate registers 1983 to 2003. Later registers can be viewed on line at www.portsmouth.gov.uk. Some of this data has been captured and is included in the trades section of this report. Data capture is on-going and not complete.

  These are available to view at the Civic Offices by prior appointment.

Important Note:

It must be clarified that the information enclosed does not represent a comprehensive desk study search. The information presented is a summary of the information available on the CLT geographical information system as at 22 February 2016, and it should in no way be regarded as definitive. This service's search of archive data in the Portsmouth area is not complete. We have not researched any source of information from outside of the CLT GIS to complete this enquiry.

I would recommend that you undertake further research to verify the existence and exact nature/location of the land uses identified. The site may also have been put to additional potentially contaminative uses of which this department has no record. Further information is likely to be available by consulting deeds, contacting current/former site occupants etc. The British Standard Report BS10175:2011 - *Investigation of Potentially Contaminated Sites, Code of Practice* and Environment Agency Contaminated Land Report 11 (CLR11) - *Model Procedures for the Management of Land Contamination* provide further guidance on completing a comprehensive desk study.

If you are undertaking a development in the City it is important that the information enclosed, and that derived from your further enquiries is utilised to:

a) Complete a full and comprehensive desk study for the site to identify all potential uses of concern, and

b) Target site investigation locations.

In addition, it is important to ensure the chemical analysis scheduled during the site investigation includes the contaminants most likely to be present given the former uses of the site. To this end I would direct you to guidance given in the Industry Profiles produced by the former DoE (now DEFRA).

I would recommend that once you have completed your desk study research, that you copy the report and your site investigation design to this department for comment before commencing the investigation. This is especially important if you are seeking to discharge a planning condition in relation to site investigation. Please note that the CLT will need a minimum of 28 days to consider your report/proposals. If you proceed without agreeing your proposals, you proceed at risk. Further investigation may then be needed at a later date.

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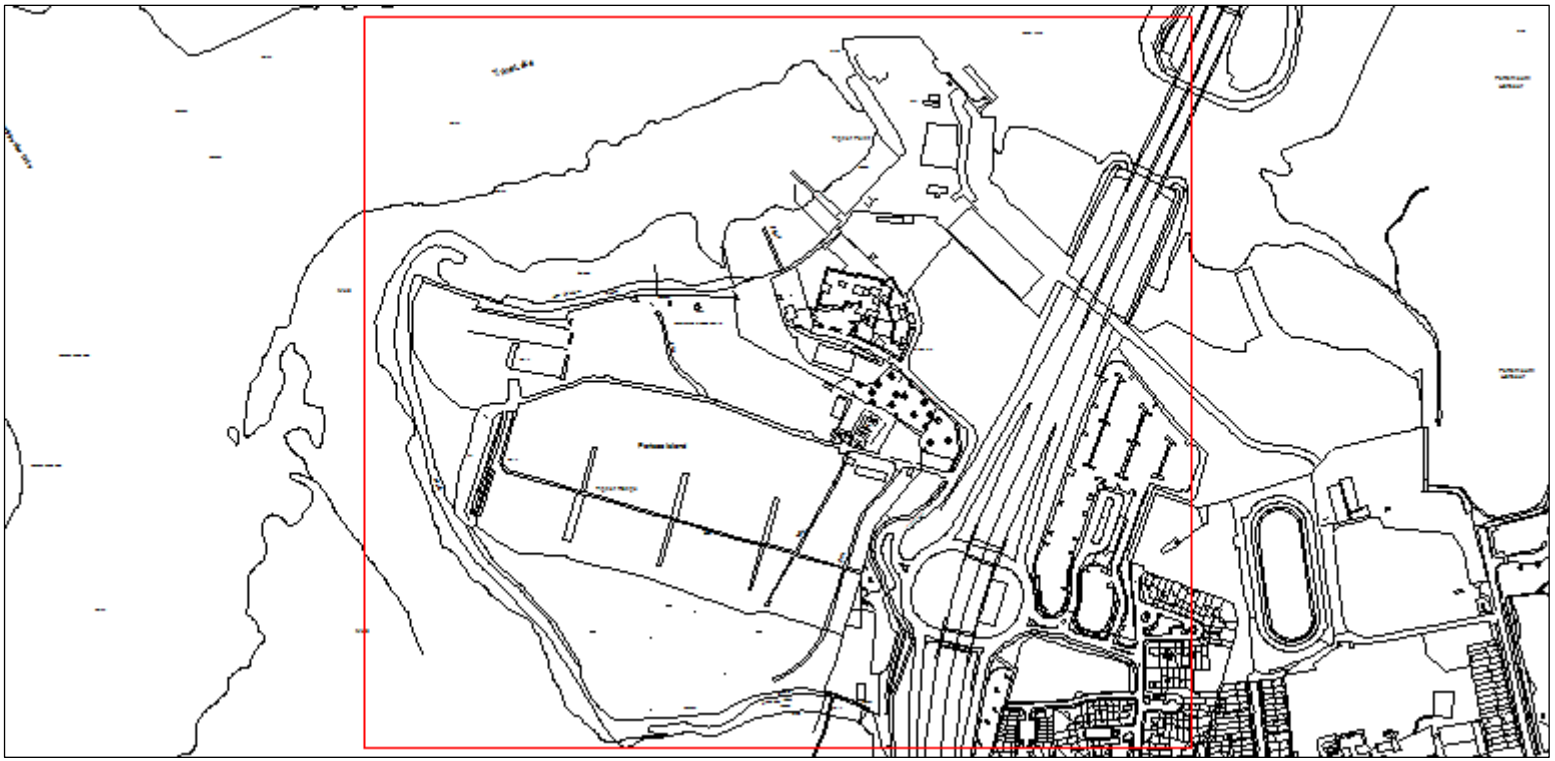
1. Site Location Map



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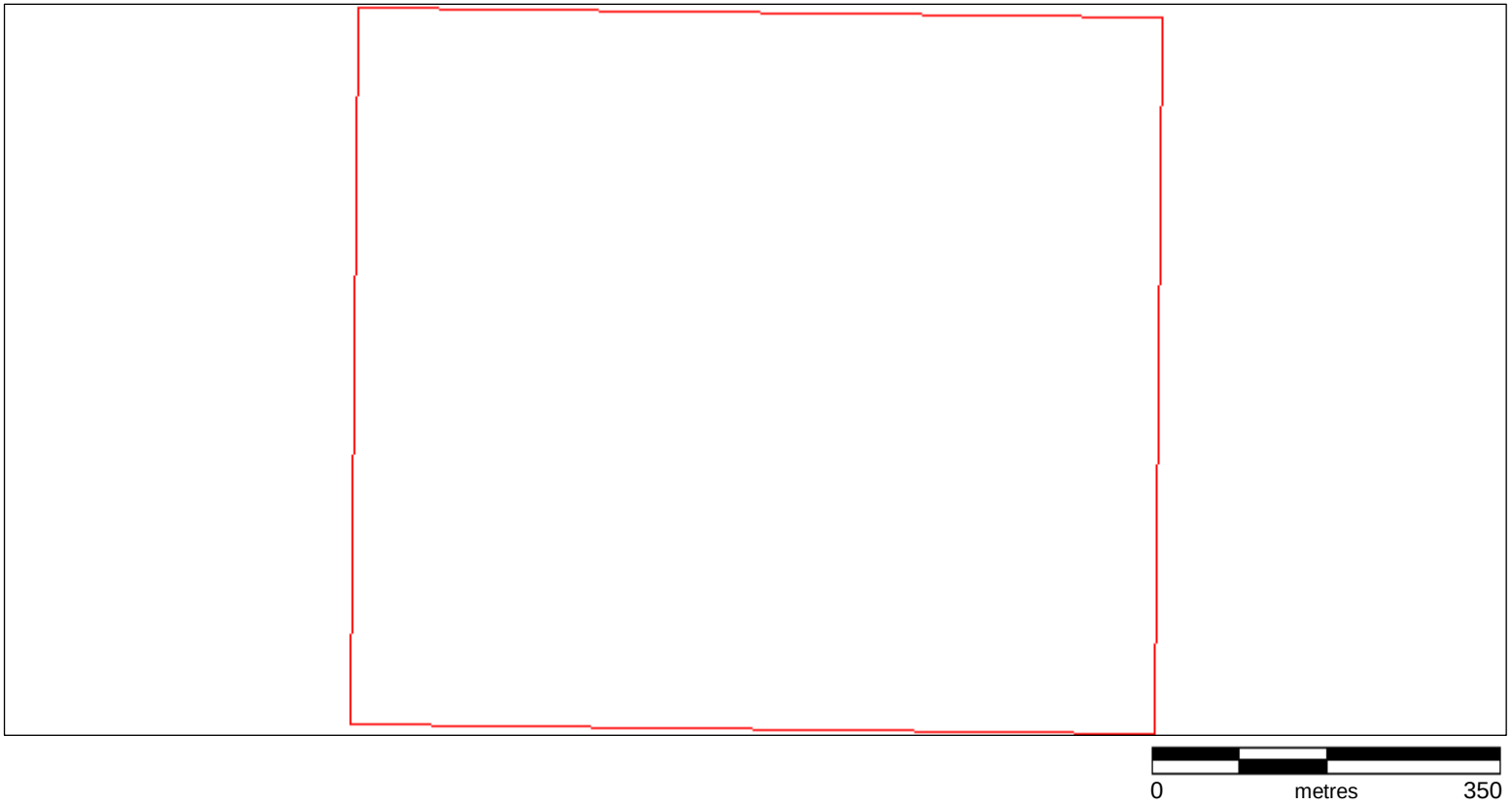
2. Historic Map c.1860



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3. Historic Map c.1870

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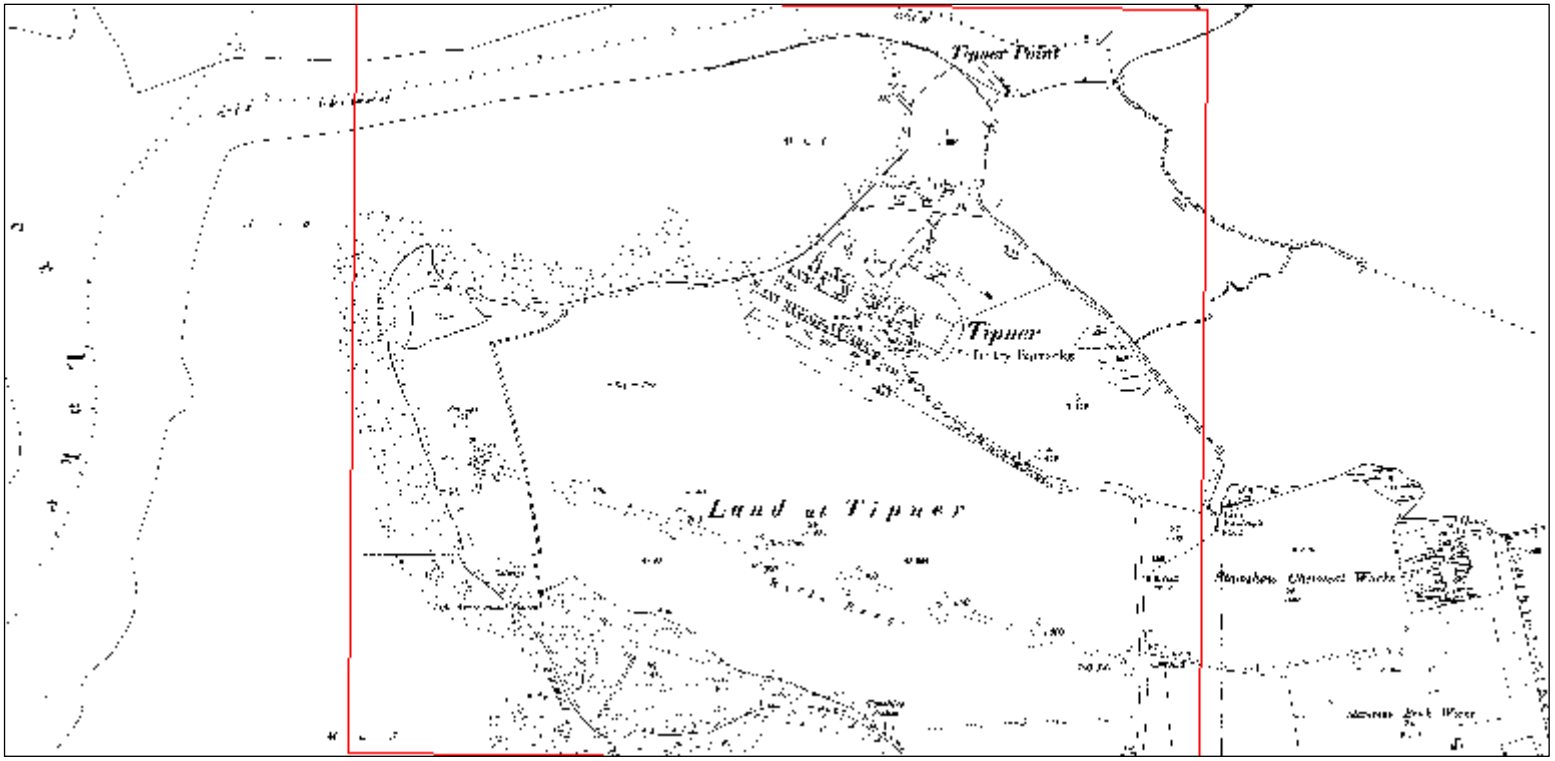
4. Historic Map c.1898



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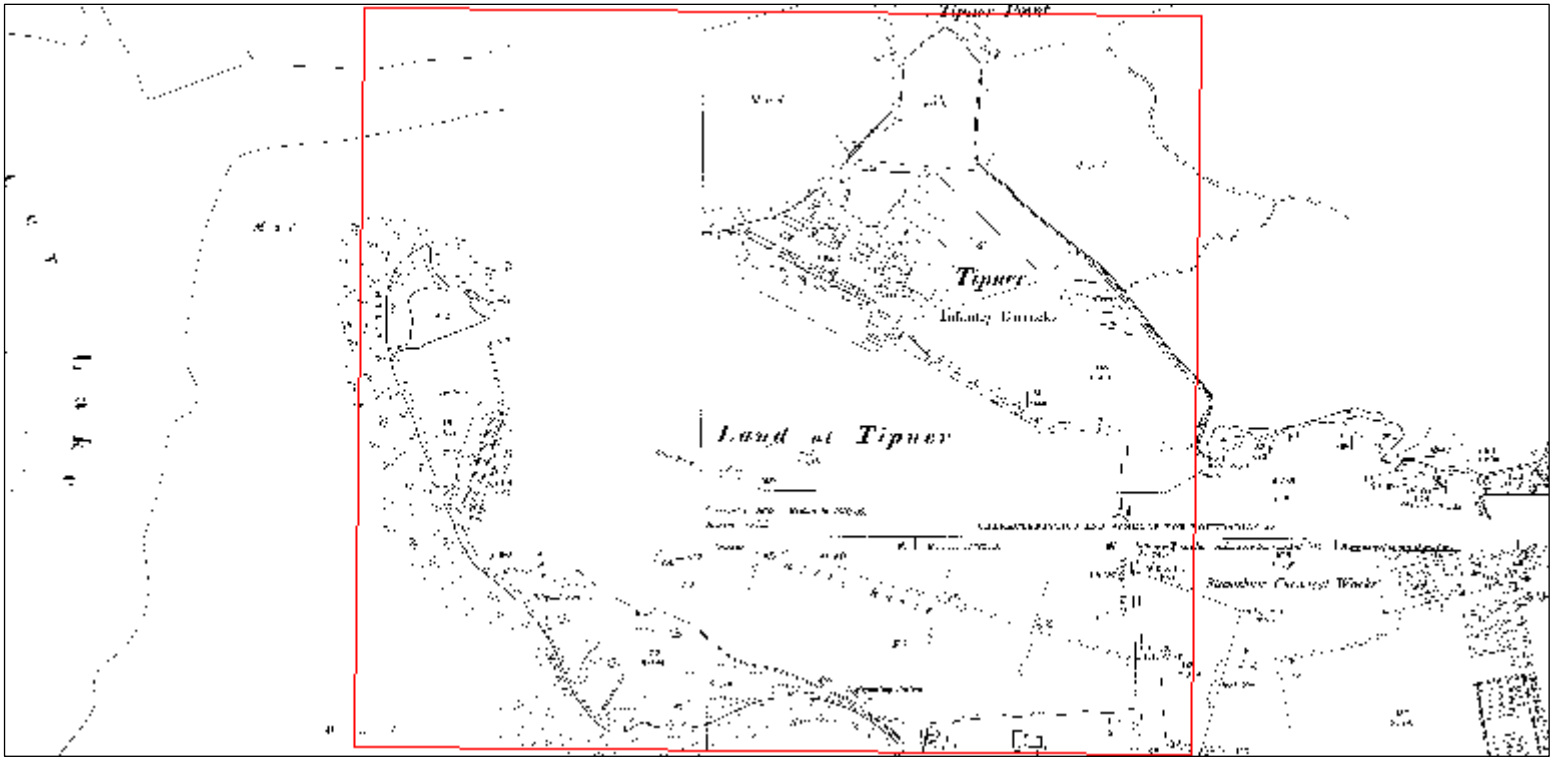
5. Historic Map c.1910



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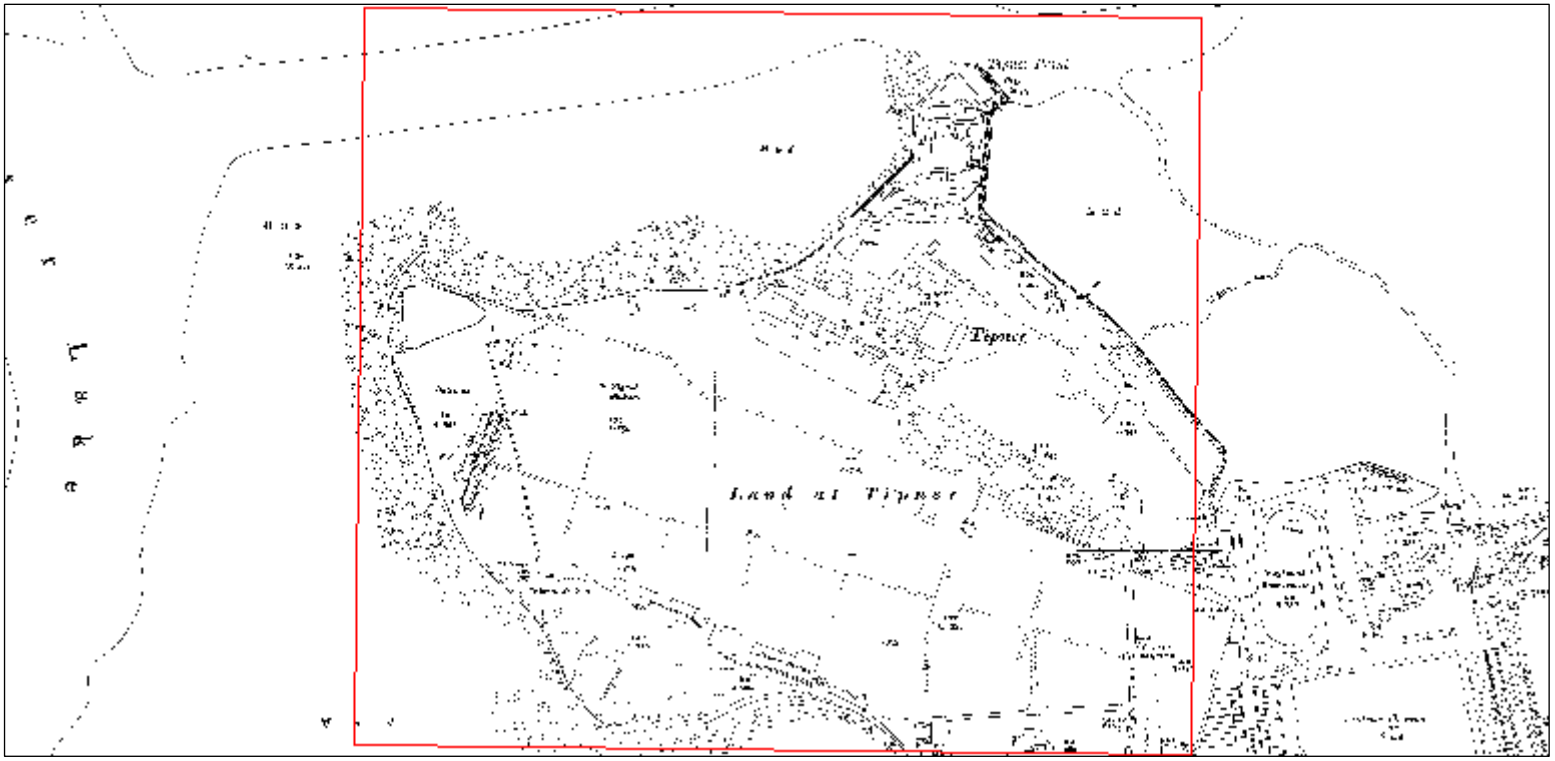
6. Historic Map c.1932



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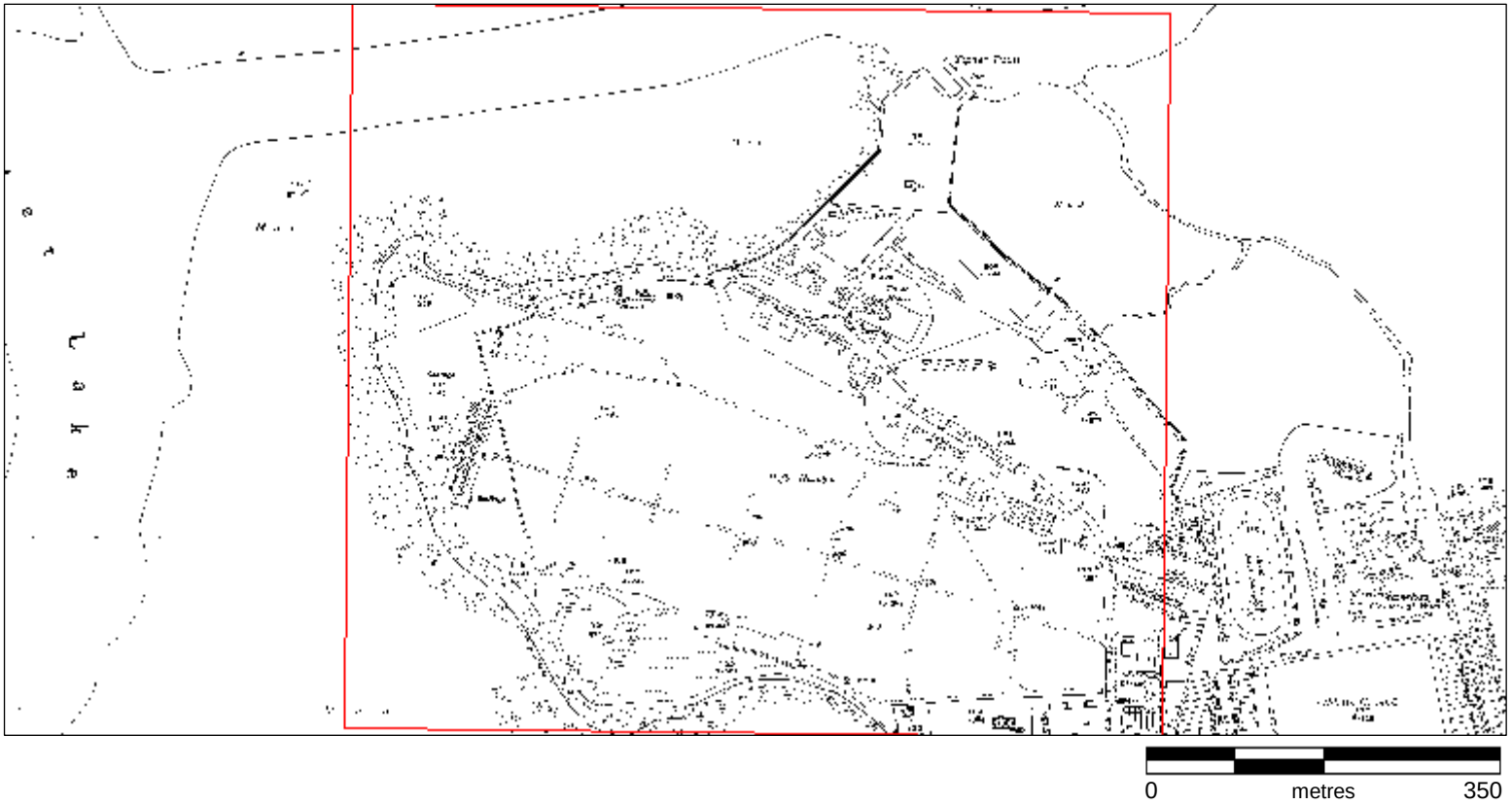
7. Historic Map c.1938



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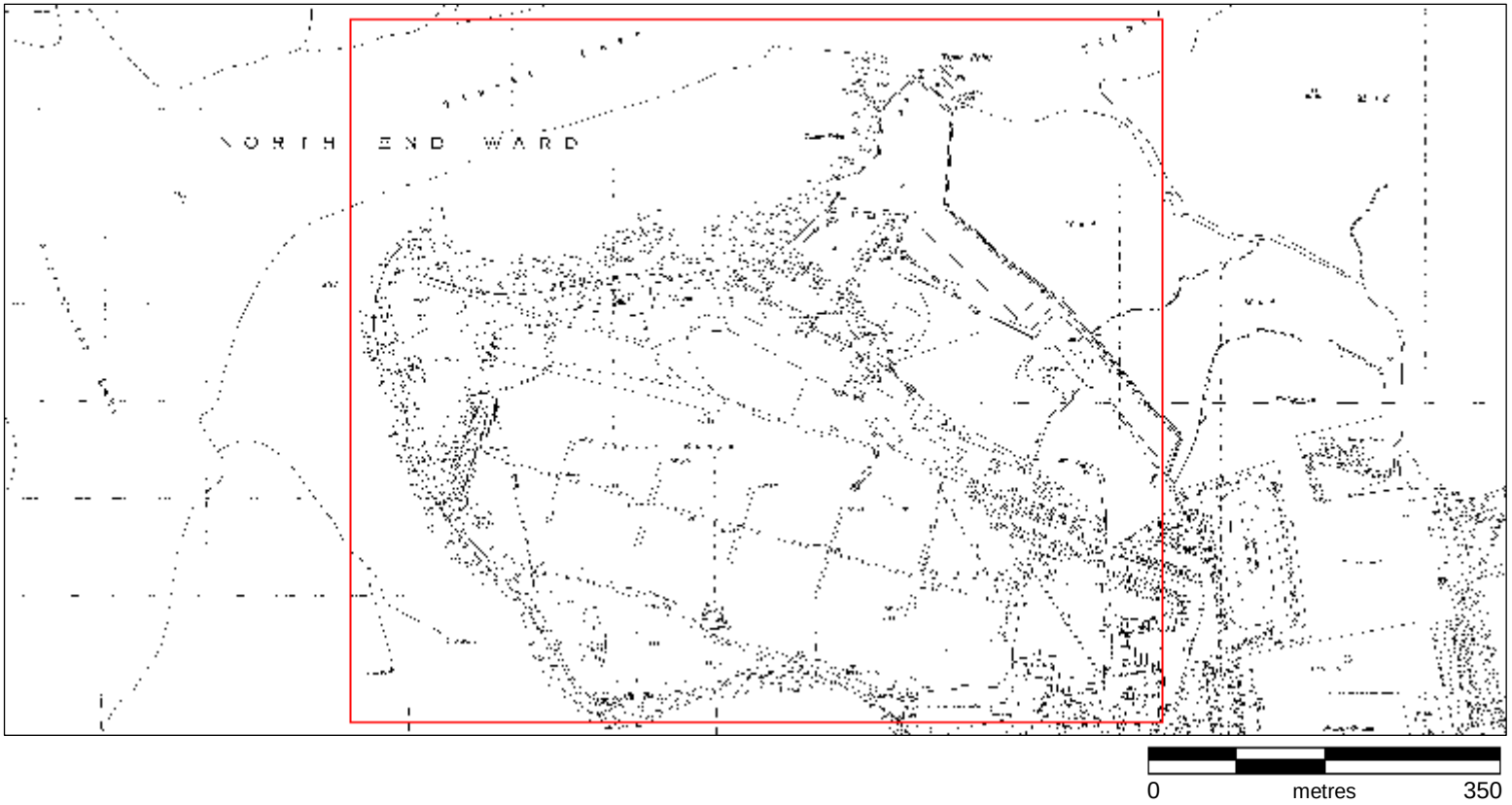
8. Historic Map c.1952



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9. Aerial Photography Post War

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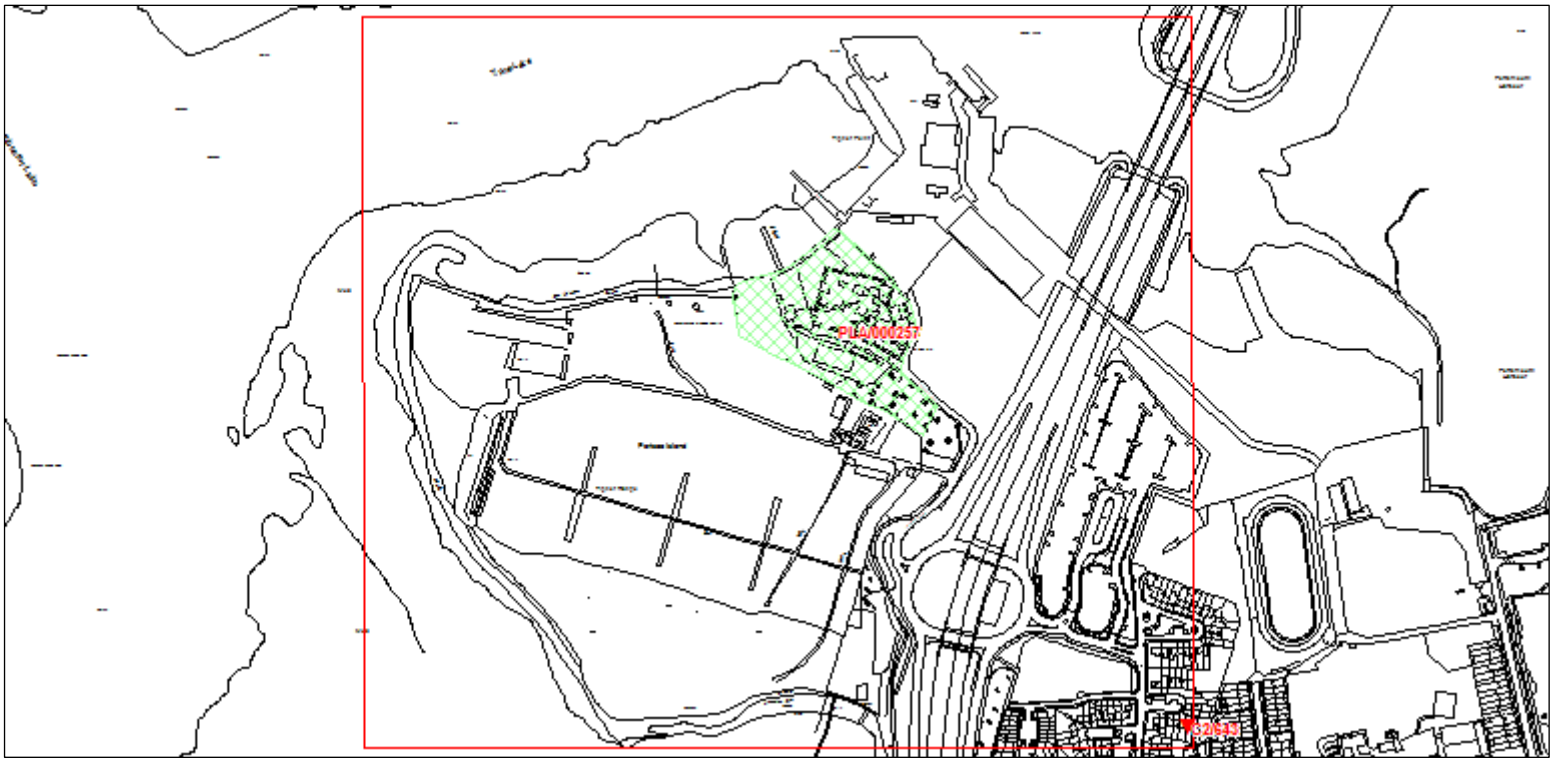
10. Summary Report Datasheet

Layer Name	Search Distance	Selected?	No. Selected
Current License Files	50 m	Yes	2
Derelict License Files	50 m	No	0
Cancelled License Files	50 m	No	0
Historical Coasts	50 m	Yes	24
Historical Streams	50 m	Yes	37
Historical Wells	50 m	Yes	3
Portsmouth Bomb Raids WWII	50 m	Yes	2
Historical Streets	50 m	No	0
Desk Study Area	50 m	Yes	5
Site Investigation Area	50 m	Yes	13
Remediation Area	50 m	No	0
Animal Products & Processing	50 m	Yes	1
Asbestos Processing	50 m	No	0
Chemical	50 m	Yes	1
Energy, Oil & Coal	50 m	Yes	3
Engineering Works	50 m	Yes	1
Metal Production & Finishing	50 m	Yes	2
Ministry of Defence Land	50 m	Yes	8
Miscellaneous	50 m	Yes	6
Transport & Infrastructure	50 m	Yes	5

Layer Name	Search Distance	Selected?	No. Selected
Textiles, Dyers, Ceramics & Glass	50 m	No	0
Waste Disposal & Unknown Infill	250 m	Yes	9
Waste Treatment Sites	50 m	No	0
Wood Processing	50 m	No	0
Industrial Estates	50 m	No	0

End of summary report

11. Current License Files



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11.1 GIS Data for Current License Files

Records identified on-site

Record 1 of 2
Site ID: PLA/000257
Site Name: Harbour School Sports Hall, Tipner Lane
Site Type: Planning Application
Licence File: CUR

Record 2 of 2
Site ID: C2/643
Site Name: L B M Removals
Site Type: Transport/Infrastructure
Licence File: CUR
Date and Source Validation: From Date - 1990
From Source - Yellow Pages
To Date - 1990
To Source - Yellow Pages
Location Validation: Property identified & boundary drawn on 2000 OS map.
Trade Details: 1990 L B M Removals, removals - business & industrial
Use Summary: Removals - business & industrial

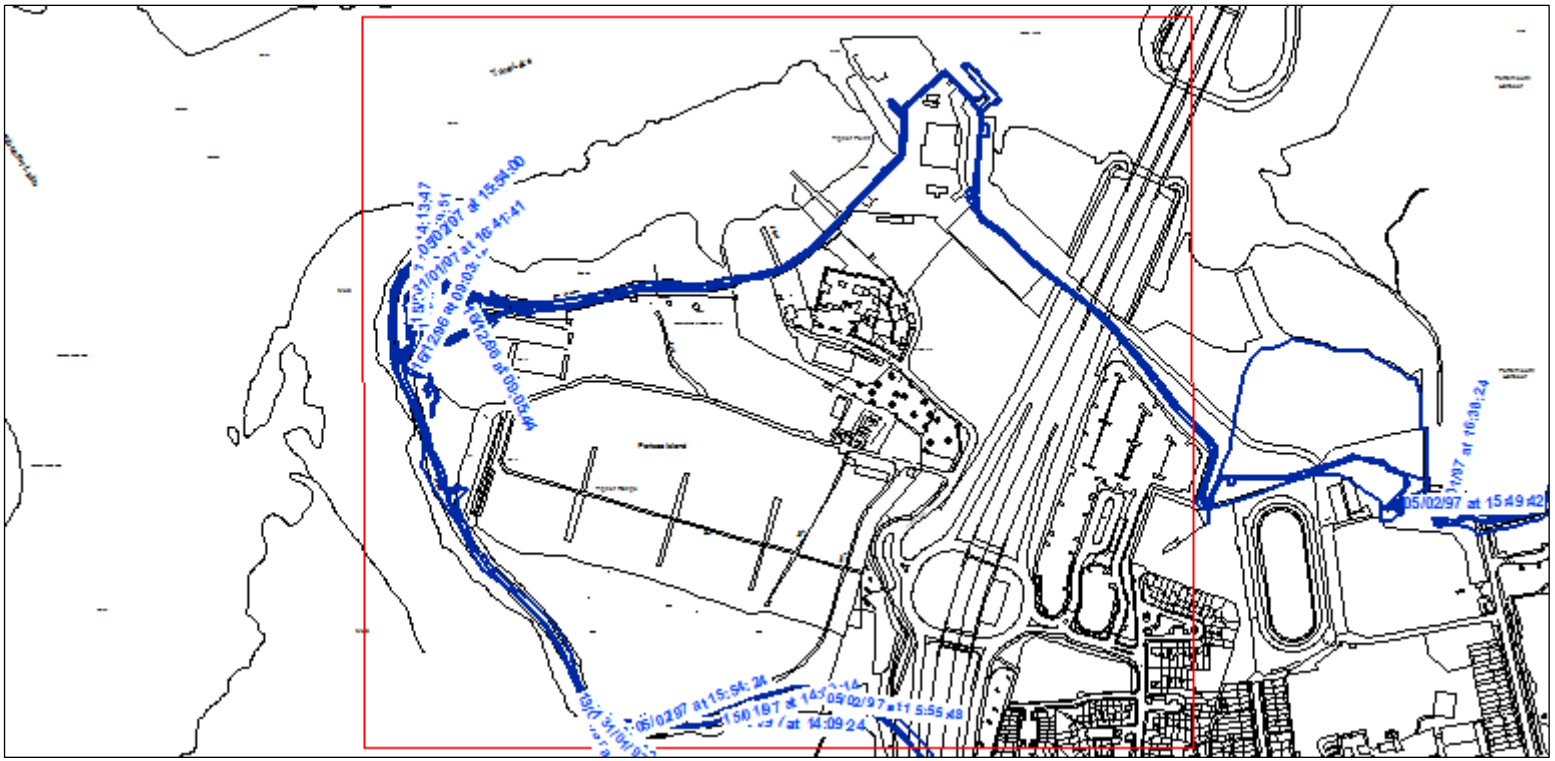
12. Derelict License Files

No records were selected on this layer.

13. Cancelled License Files

No records were selected on this layer.

14. Historical Coasts



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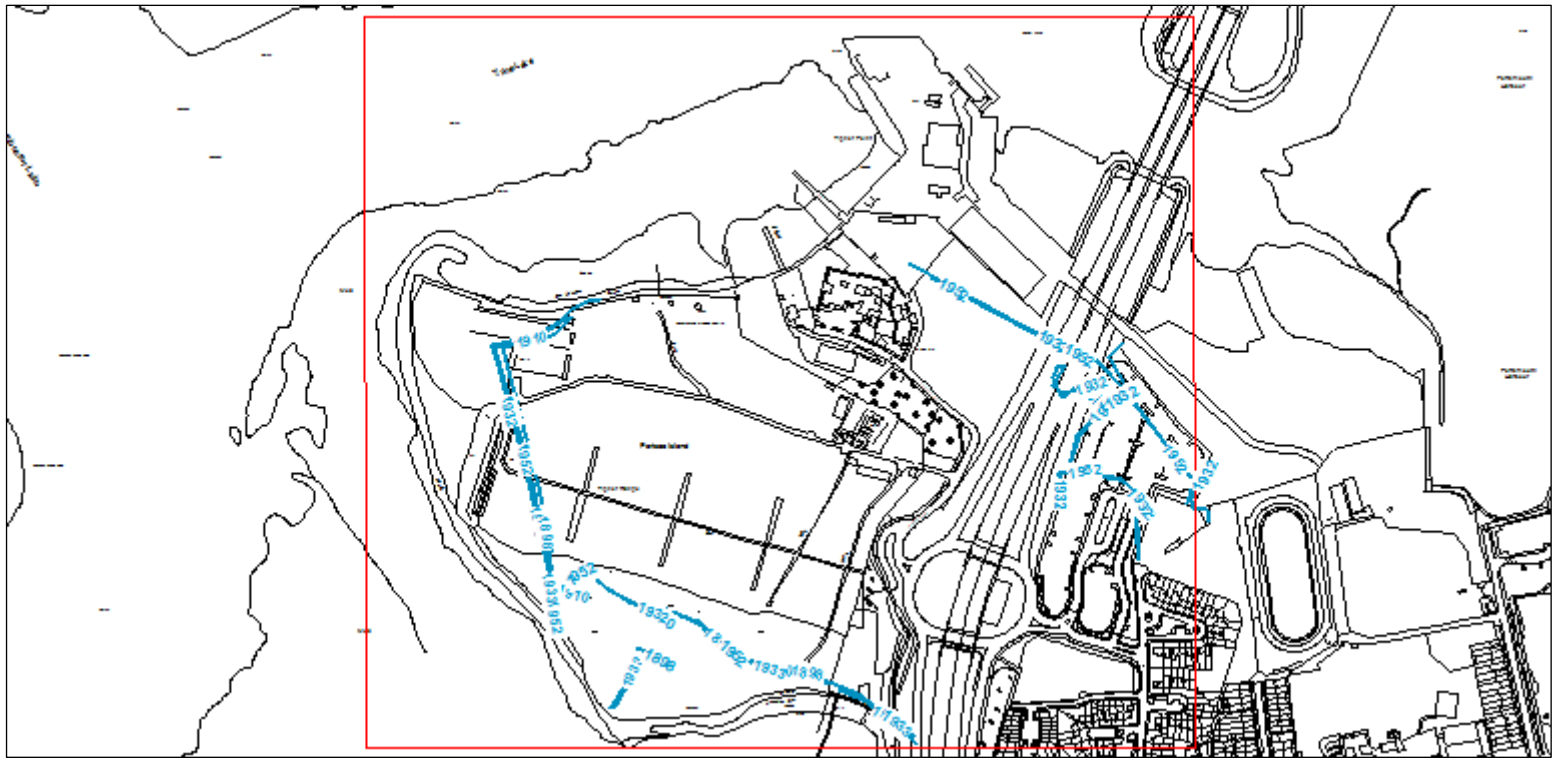
14.1 GIS Data for Historical Coasts

Coast Date	Coast Source
1878	OS County Series Sheet
1879	OS County Series Map
1898	OS County Map Series
1898	OS County Map Series
1910	OS County Map Series
1910	OS County Map Series
1932	OS County Map Series
1933	OS County Map Series
1952	OS County Map Series
1878	OS County Series Map
1878	OS County Series Map
1898	OS County Map Series
1910	OS County Map Series
1932	OS County Map Series
1910	OS County Map Series
1910	OS County Map Series
1952	OS County Map Series
1952	OS County Map Series
1952	OS County Map Series
1879	OS County Series Map
1898	OS County Map Series
1910	OS County Map Series
1933	OS County Map Series
1952	OS County Map Series
Off site - Within 50m	
None	

15. Historical Streams



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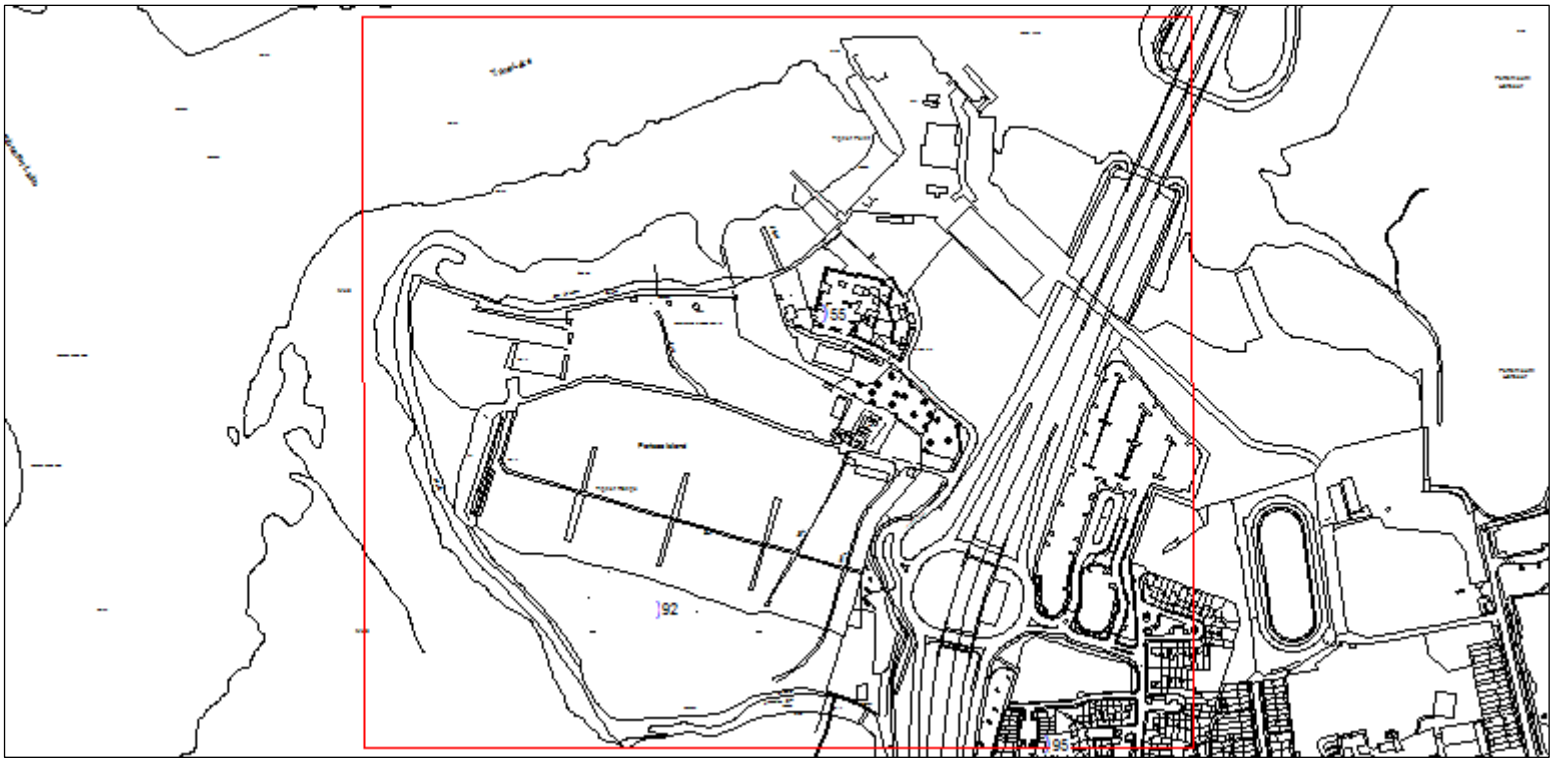
15.1 GIS Data for Historical Streams

Stream Date	Stream Source
1878	OS County Map Series
1910	OS County Map Series
1910	OS County Map Series
1910	OS County Map Series
1932	OS County Map Series
1933	OS County Map Series
1952	OS County Map Series
1952	OS County Map Series
1952	OS County Map Series
1898	OS County Map Series
1878	OS County Map Series
1932	OS County Map Series
1932	OS county Map Series
1952	OS County Map Series
1952	OS county Map Series
1952	OS county Map Series
1952	OS County Map Series
1932	OS County Map Series
1932	OS County Map Series
1932	OS County Map Series
1932	OS County Map Series
1897	OS County Map Series
1898	OS County Map Series
1910	OS County Map Series
1910	OS county Map Series
1910	OS County Map Series
1933	OS County Map Series
1933	OS County Map Series
1933	OS County Map Series
1952	OS County Map Series
1898	OS County Map Series
1879	OS County Map Series
1910	OS County Map Series

Stream Date	Stream Source
1932	OS county Map Series
1932	OS County Map Series
1952	OS County Map Series
1952	OS County Map Series
Off site - Within 50m	
None	

16. Historical Wells



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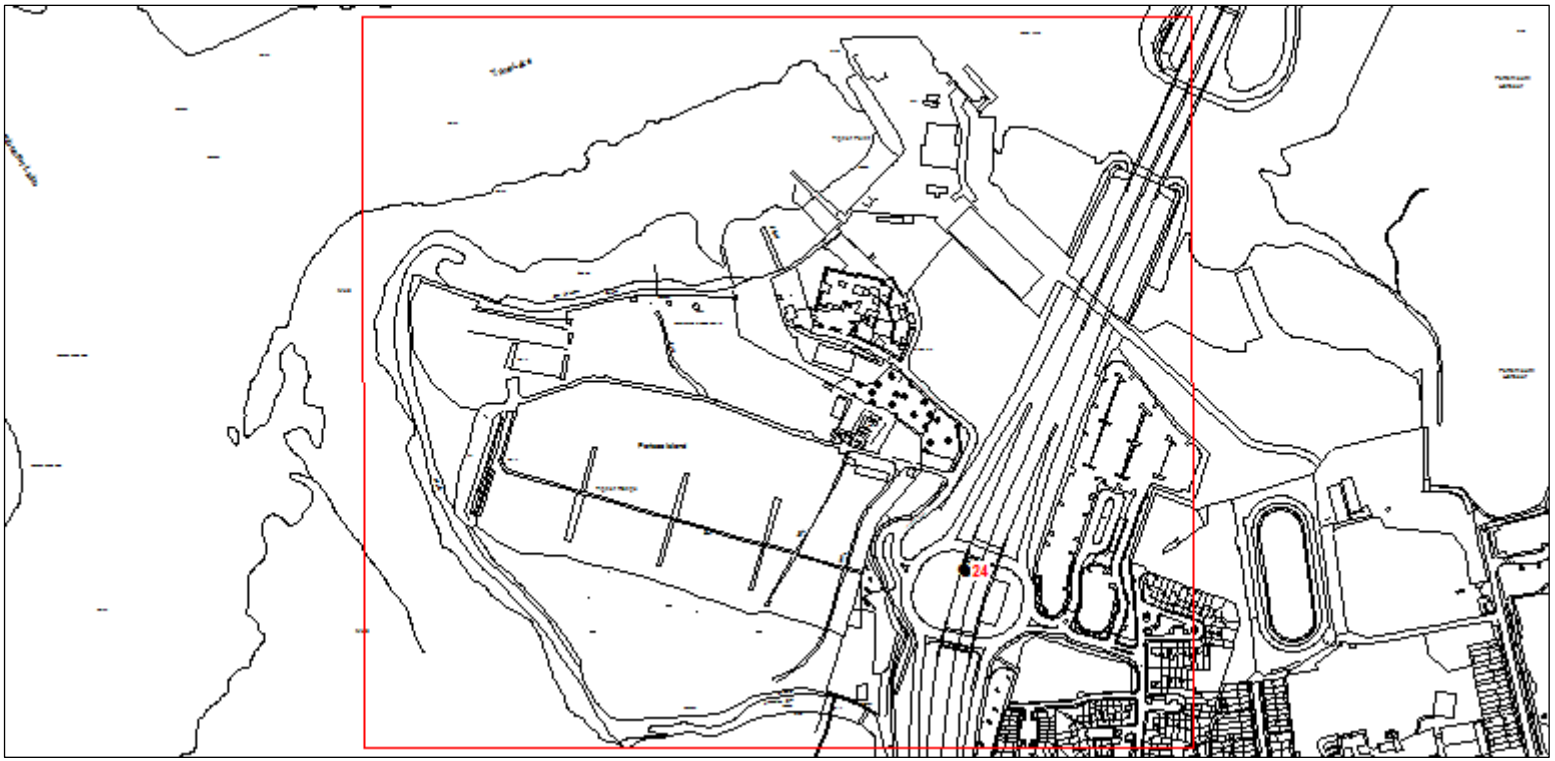
16.1 GIS Data for Historical Wells

Start Doc Date	Start Doc	End Doc Date	End Doc	Comments	Well ID
1879	1879 OS Historic Map	1879	1879 OS Historic Map	Pump	55
1879	1879 OS Historic Map	1933	1933 OS Historic Map	Pump which is changed to a well in 1898.	92
1879	1879 OS Historic Map	1879	1879 OS Historic Map	Pump	95
Off site - Within 50m					
None					

17. Portsmouth Bomb Raids WWII



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17.1 GIS Data for Portsmouth Bomb Raids WWII

Date of Raid	Record No	Raid ID	Notes
10/01/1941	804	24	No data
10/01/1941	819	24	No data
Off site - Within 50m			
None			

If date of raid is unknown, date will be displayed as 00:00:00.

18. Historical Streets

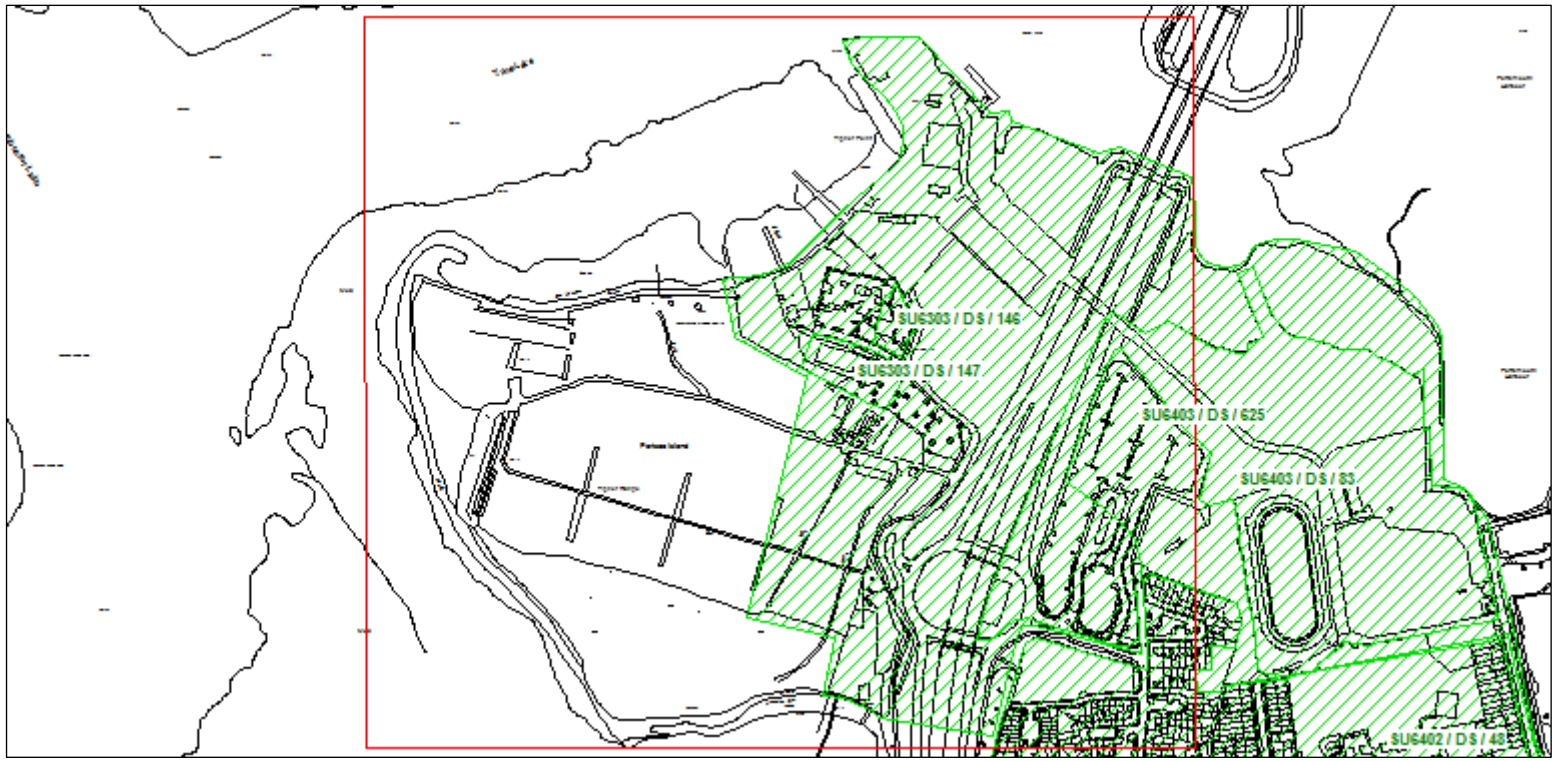
No records were selected on this layer.

Site Reports

The CLT record the location of sites for which we hold reports in three layers: Desk Study, Site Investigation and Remediation Strategies/Verification. Maps for each of these layers follow with a text summary identifying the reports. Most of the reports are now in digital format and will be copied onto CD and enclosed with this report. If reports are in paper format only they can be viewed at the Civic Offices by appointment.

Note: If records are not available within the search area for any of the above, the map will not be provided.

19. Desk Study Area



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19.1 GIS Data for Desk Study Area

Records identified on-site

Record 1 of 5
Site Name: Tipner / Stamshaw Area
Report Title: Tipner / Stamshaw Area Desk Study
Consultant: Parkman Environment
Date: Feb 1994
File Reference: SU6402 / DS / 48
Report Number: 11288/OR/1C
Approximate distance from site: 0 m
Approximate area: 314758 sq. metres

Record 2 of 5
Site Name: Tipner
Report Title: Tipner Site Desk Study Report
Consultant: IKM Consulting Ltd for Tipner Regeneration Co Ltd
Date: Sep 2005
File Reference: SU6403 / DS / 625
Report Number: 1544
Approximate distance from site: 0 m
Approximate area: 314311 sq. metres

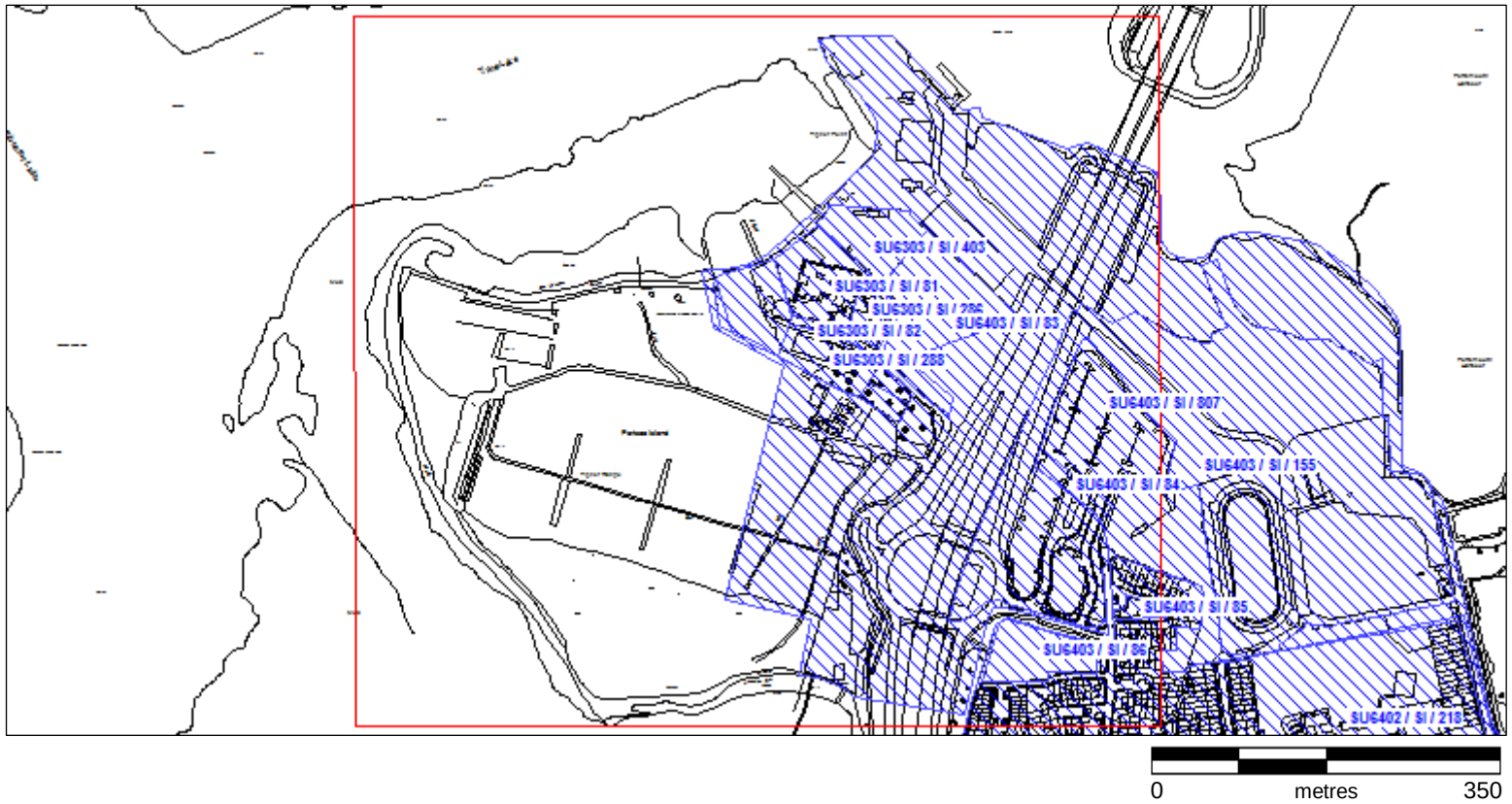
Record 3 of 5
Site Name: Waterside School
Report Title: Report on a desk study, Waterside School
Consultant: Ground Engineering
Date: Feb 2003
File Reference: SU6303 / DS / 146
Report Number: C9013
Approximate distance from site: 0 m
Approximate area: 1674 sq. metres

Record 4 of 5
Site Name: Waterside School
Report Title: Report on a desk study, Waterside School
Consultant: Ground Engineering
Date: Nov 2002
File Reference: SU6303 / DS / 147
Report Number: C8874a
Approximate distance from site: 0 m
Approximate area: 4050 sq. metres

Record 5 of 5
Site Name: Tipner Redevelopment Area
Report Title: Tipner Redevelopment Area, Portsmouth. Desk Study (Volumes 1 and 2)
Consultant: CL Associates

Date: Oct 1996
File Reference: SU6403 / DS / 83
Report Number: 8735
Approximate distance from site: 0 m
Approximate area: 119753 sq. metres

20. Site Investigation Area



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20.1 GIS Data for Site Investigation Area

Records identified on-site

Record 1 of 13
Site Name: Tipner / Stamshaw Area
Report Title: Tipner / Stamshaw Area, Ground Investigation and Risk Assessment
Consultant: Parkman Buck Ltd
Date: May 1994
Report Number: 11288/OR/2C
File Reference: SU6402 / SI / 218
Contaminant Test: Yes
Gas Test: Yes
Risk Assessment: Yes
Date1: Jun 1993
Report1: Site Investigation Stamshaw Area Portsmouth, Parkman Buck Ltd, Report No: 2675/3/SOR/D
Approximate distance from site: 0 m
Approximate area: 314760 sq. metres

Record 2 of 13
Site Name: Tipner
Report Title: Factual and Interpretative Report, Interim Report
Consultant: IKM Consulting Ltd for Tipner Regeneration Co Ltd
Date: Jul 2006
Report Number: 1544
File Reference: SU6403 / SI / 807
Contaminant Test: Yes
Gas Test: Yes
Risk Assessment: Yes
Date1: Dec 2005
Report1: Method Statement for Ground Investigation at Tipner, Portsmouth. Report No 51162. Structural Soils Ltd for Tipner Regeneration Company Ltd
Date2: Jan 2006
Report2: Tipner Regeneration, Method Statement for Twyford Avenue Intrusive Investigation. Ref 1544. IKM Consulting Ltd for Tipner Regeneration Company Ltd.
Date3: Sep 2005
Report3: Tipner Regeneration, Portsmouth. Method Statement for Twyford Avenue Intrusive Investigation. Ref 1544 - 050928 Version 1. IKM Consulting Ltd for Tipner Regeneration Company Ltd.
Date4: Nov 2005
Report4: Tipner Regeneration, Portsmouth. Method Statement for Intrusive Investigation. Ref 1544 - 051129 Version V2 and Ref 1544 - 051212 Version V3. IKM Consulting Ltd for Tipner Regeneration Company Ltd.

Approximate distance from site: 0 m
Approximate area: 313998 sq. metres

Record 3 of 13
Site Name: Waterside Special School
Report Title: Contamination Site Investigation and Assessment
Consultant: Clayton Environmental Consultants Ltd
Date: Apr 1966
Report Number: C02452
File Reference: SU6303 / SI / 81
Contaminant Test: Yes
Gas Test: No
Risk Assessment: Yes
Date1: Nov 1968
Report1: Report on Site Investigation Carried Out at Tipner Lane, by Portsmouth College of Technology.
Approximate distance from site: 0 m
Approximate area: 7971 sq. metres

Record 4 of 13
Site Name: Tipner Lane
Report Title: Interpretation of Results of Contaminated Site, Investigation of Tipner
Consultant: Southern Science Ltd
Date: Dec 1991
Report Number: 92/8/259
File Reference: SU6303 / SI / 82
Contaminant Test: Yes
Gas Test: No
Risk Assessment: No
Approximate distance from site: 0 m
Approximate area: 9563 sq. metres

Record 5 of 13
Site Name: Waterside School
Report Title: Report on a ground investigation, Waterside School
Consultant: Ground Engineering
Date: Feb 2003
Report Number: C9013
File Reference: SU6303 / SI / 286
Contaminant Test: Yes
Gas Test: Yes
Risk Assessment: No
Approximate distance from site: 0 m
Approximate area: 1674 sq. metres

Record 6 of 13
Site Name: Waterside School
Report Title: Report on a ground investigation, Waterside School
Consultant: Ground Engineering

Date: Oct 2002
Report Number: C8874
File Reference: SU6303 / SI / 288
Contaminant Test: Yes
Gas Test: Yes
Risk Assessment: No
Approximate distance from site: 0 m
Approximate area: 4050 sq. metres

Record 7 of 13
Site Name: Cruising Club, Tipner
Report Title: Site investigation for contamination status assessment at the Portsmouth Harbour Cruising Club, Tipner
Consultant: University of Portsmouth Enterprise Ltd
Date: Dec 2003
Report Number: UPEL 1408 P-352
File Reference: SU6303 / SI / 403
Contaminant Test: Yes
Gas Test: No
Risk Assessment: No
Approximate distance from site: 0 m
Approximate area: 4973 sq. metres

Record 8 of 13
Site Name: Tipner Lane
Report Title: Interpretation of Results of Contaminated Site, Investigation of Tipner
Consultant: Southern Science Ltd
Date: Dec 1991
Report Number: 92/8/259
File Reference: SU6403 / SI / 84
Contaminant Test: Yes
Gas Test: No
Risk Assessment: No
Approximate distance from site: 0 m
Approximate area: 1507 sq. metres

Record 9 of 13
Site Name: Range Green
Report Title: Interpretation of Results of Contaminated Site, Investigation of Tipner
Consultant: Southern Science Ltd
Date: Dec 1991
Report Number: 92/8/259
File Reference: SU6403 / SI / 85
Contaminant Test: Yes
Gas Test: No
Risk Assessment: No
Approximate distance from site: 0 m
Approximate area: 891 sq. metres

Record 10 of 13

Site Name: Tipner Lane
Report Title: Interpretation of Results of Contaminated Site, Investigation of Tipner
Consultant: Southern Sciences Ltd
Date: Dec 1991
Report Number: 92/8/259
File Reference: SU6403 / SI / 83
Contaminant Test: Yes
Gas Test: No
Risk Assessment: No
Approximate distance from site: 0 m
Approximate area: 10859 sq. metres

Record 11 of 13
Site Name: Tipner Lane Allotments
Report Title: Interpretation of Results of Contaminated Site, Investigation of Tipner
Consultant: Southern Science Ltd
Date: Dec 1991
Report Number: 92/8/259
File Reference: SU6403 / SI / 86
Contaminant Test: Yes
Gas Test: No
Risk Assessment: No
Approximate distance from site: 0 m
Approximate area: 5061 sq. metres

Record 12 of 13
Site Name: Tipner Redevelopment Area
Report Title: Tipner Redevelopment Site, Portsmouth. Phase 1 Investigation Factual report
Consultant: CL Associates
Date: May 1998
Report Number: 8774/1
File Reference: SU6403 / SI / 155
Contaminant Test: Yes
Gas Test: Yes
Risk Assessment: Yes
Date1: Jul 1996
Report1: Sampling information held in Appendix A2 of the CLA Phase 1 Inv. Factual Report no 8774/1 (1998) indicates ACS test locations and results for near surface sampling exercise. This sampling was only in the top 1m and there are no logs. Note; this sampling
Date2: May 1998
Report2: Tipner Redevelopment Site, Portsmouth. Phase 1 Investigation, Factual Report. Report No 8774/1.
Date3: May 1998
Report3: Tipner Regeneration Site, Portsmouth. Phase 1 Investigation, Interpretative Report. Report No: 8774/2
Date4: Jun 1998
Report4: Tipner Redevelopment Site, Portsmouth. Phase 1 Investigation, Addendum Factual Report. Report No: 8774/3

Date5: Mar 1999
Report5: Tipner Regeneration Site, Portsmouth. Phase 1 Investigation, Second Addendum Factual Report No: 8774/4
Date6: Jul 2001
Report6: Submission of the phase 1 factual SI and addendum reports with the planning application & EIA (app8) placed these documents in the public domain.
Approximate distance from site: 0 m
Approximate area: 119778 sq. metres

Record 13 of 13
Site Name: Harbour School Sports Hall
Report Title: land Contamination Assessment Report and Outline Remediation Strategy: Harbour School Sports Hall
Consultant: Entec UK Limited
Date: Feb 2010
Report Number: 26713-RR004il
Contaminant Test: Yes
Gas Test: Yes
Risk Assessment: Yes
Approximate distance from site: 0 m
Approximate area: 20062 sq. metres

21. Remediation Area

No records were selected on this layer.

GIS Trades Data

The CLT is currently in the process of transferring historical data from its Trades and Petroleum Licence Databases onto the GIS. Features shown on historic maps (for example tanks, electricity sub-stations, warehouses, timber yards, and engineering works) have been captured onto the GIS and information from the databases has been added where available.

The historic location of sites is carefully researched. The location of properties within historic streets has been determined using the Kelly's Directories' 'street' sections and relating the numbers and house names listed to the properties shown on the OS historic map for the appropriate date. Property numbers from the 1950s onwards are shown on the 1:1250 OS maps and current numbers are shown on the OS vector map on the GIS. Other historic sources such as maps in deeds held by PCC may also have been used to determine historic property numbering, however it must be noted that there could be errors in locating properties, especially for very early dates. A description of how the location was determined is included in the attributes for each boundary.

To make it easier to see the Trades boundaries on the map the data has been recorded in 13 different layers grouped according to trade type. Each boundary has a unique Site

ID which is displayed on the map and links to the text reports that follow. Where there are too many overlapping boundaries or labels to be seen clearly a more detailed map has been inserted into the report. The layers which do not have any recorded data within 50m of the enquiry site are not listed.

It is important to note that this phase of data capture is not complete and that not all of the trades with the potential to have caused ground contamination are represented spatially on the GIS.

The trade categories are as follows:

Animal Products & Processing Trades *including food processing, non-food processing, and leatherworks.*

Asbestos Trades *including manufacturing works, products, removal contractors.*

Transport Trades & Infrastructure *including garages & filling stations, haulage centres, road vehicle manufacturers, docks, railway land, airport land.*

Chemical Trades *including production, refining, bulk storage, retail/storage, industrial gases, rubber manufacturing, processing and retail.*

Textile/Dyers/Ceramics/Glass/Resin Trades *including textile and textile products manufacture, dye works, ceramic including brickworks, mineral processing, glass manufacture, fibreglass, resin, mineral fibre, rope manufacture.*

Engineering Trades *including electrical and electronic equipment works, heavy mechanical engineering, light mechanical engineering, ordnance works, railway engineering works, shipbuilding, repair and shipbreaking, aircraft works, miscellaneous works.*

Metal Production & Finishing Trades *including electroplating and other metal finishing works, iron and steel works, lead works, non-ferrous metal works, metal recycling, scrapyards, metalliferous mining.*

Energy Trades *including gas/coke works, oil refineries, bulk oil storage, power stations, nuclear facility, radiation substance licence, bulk coal storage, substations, bitumen/asphalt/tar distillation works, natural gas works/storage.*

Wood Processing Trades *including pulp and paper manufacturing works, timber products manufacturing works, treatment and storage of timber and products, charcoal works.*

Ministry of Defence Land *including miscellaneous uses, explosives testing/firing ranges, historic military sites.* **Note:** HM Naval Base is captured as **Dockland (MOD)** in the **Transport** trades category.

Miscellaneous Trades *including dry cleaners, laundries, photographic processing, printing and bookbinding, builders yards, ironmongers, miscellaneous storage and high street traders, hospitals, cemeteries, tanks.*

Waste Treatment & Disposal Sites *including, incinerators, hazardous waste treatment plant, drum and tank cleaning and recycling plant, sewage, recycling centre/ transfer stations, solvent recovery works.* **Note:** The *Landfill* and *Spoil Heaps* sub categories of this overlay are included in the Landfill part of this report.

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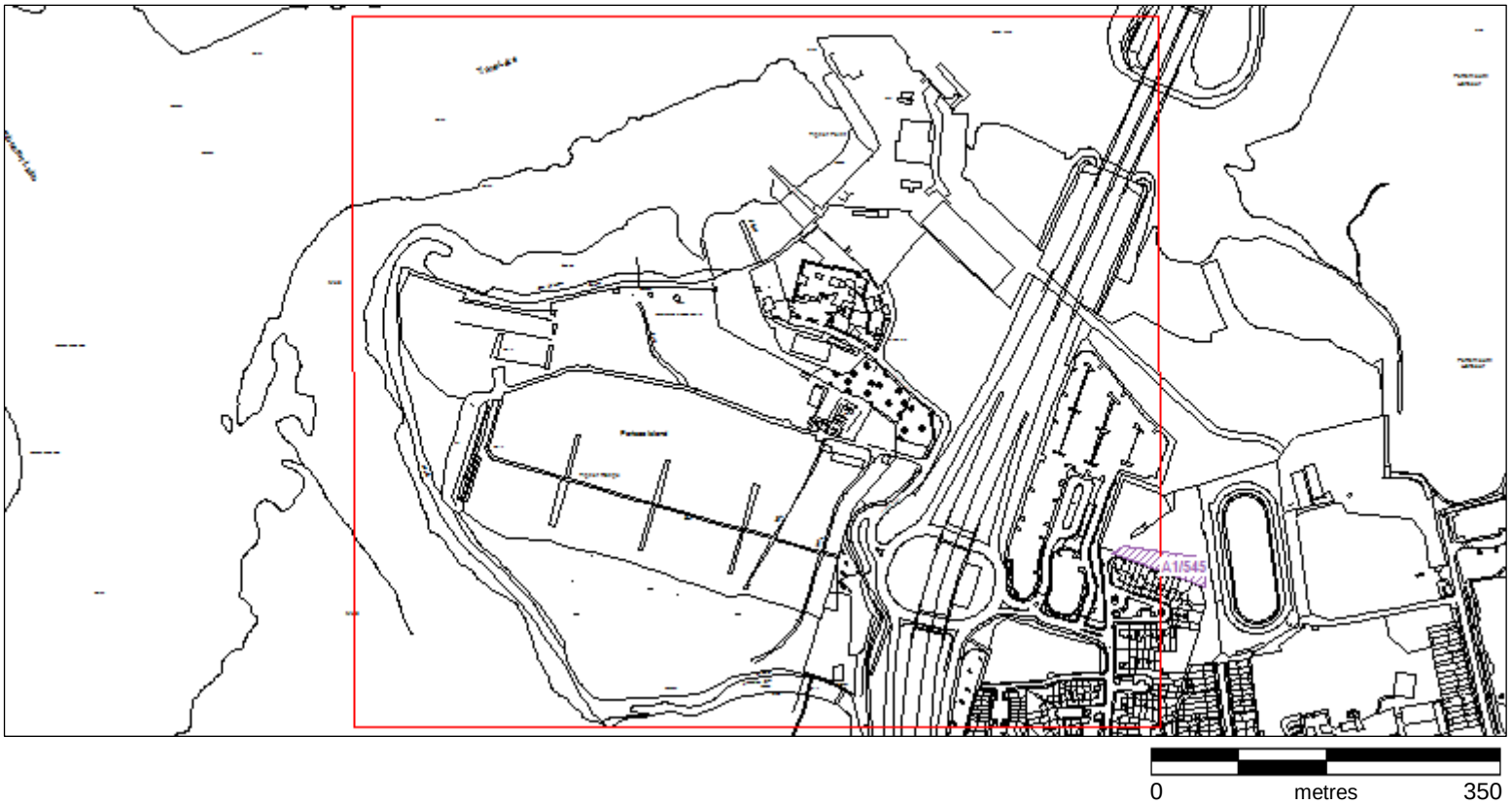
22. Animal Products & Processing



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22.1 GIS Data for Animal Products & Processing

Records identified on-site

Record 1 of 1
Site ID: A1/545
Site Name: Glue Factory
Site Address: North of Target Road
Approximate distance from site: 0 m
Approximate area: 1823 sq. metres
Date and Source Validation: From Date - 1931
From Source - Deed of Exchange (Pounds)
To Date - 1931
To Source - Deed of Exchange (Pounds)
Location Validation: Boundary line taken from the 1932 OS map on the GIS, assumed to be the same line as that shown on the Deed of Exchange Plan. Detail on deed plan vague so accuracy unclear.
Comments: Glue Factory shown on a Deed of Exchange Plan held by Pounds in relation to another site further north. The glue factory boundary appears to be hand drawn on the plan, so the accuracy is not clear. However the shape and size of the boundary corresponds well with a boundary line shown on the 1932 OS historic map on the GIS, so this boundary line was used to draw the site boundary. There is no text to indicate what the building/ site is on the historic OS map. A copy of the deed plan is held on the CLA, Phase 1 Investigation Factual Report, Appendix A2 ,1998 (Report Ref.8774/1) . The Deed of Exchange Plan is said to be dated 16th September 1931.
Use Summary: Glue Factory

23. Asbestos Processing

No records were selected on this layer.

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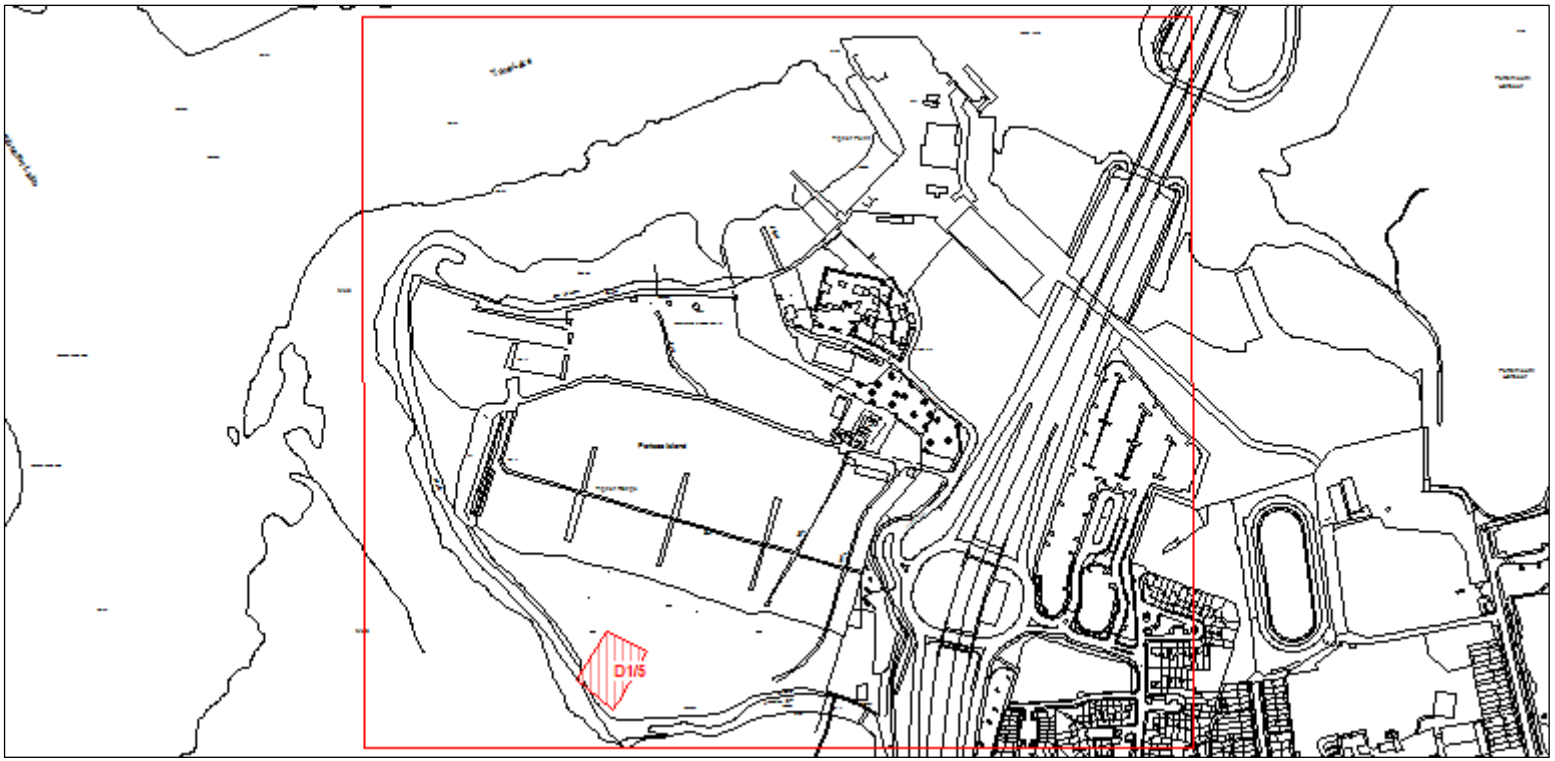
24. Chemical



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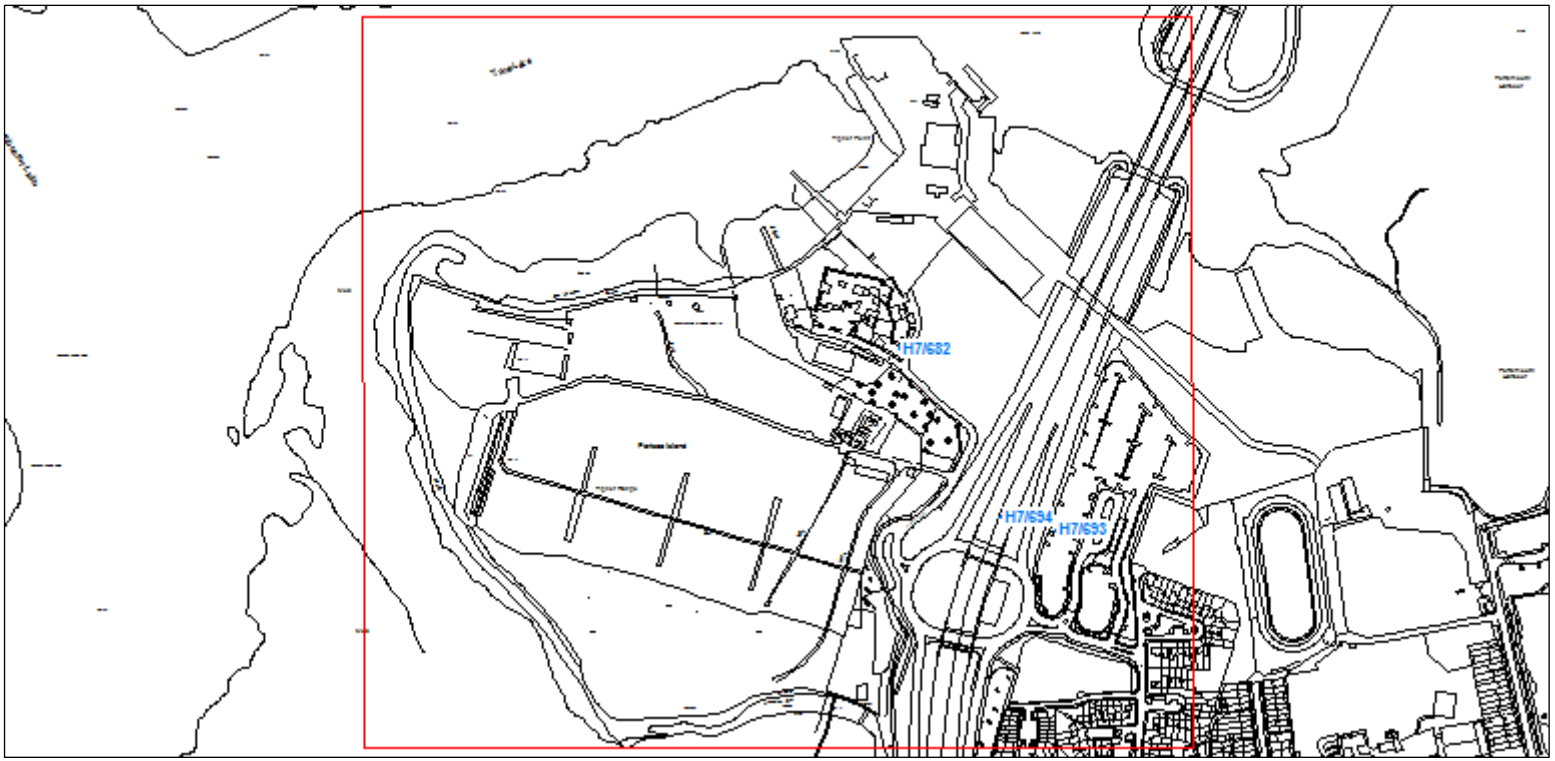
24.1 GIS Data for Chemical

Records identified on-site

Record 1 of 1
Site ID: D1/5
Site Name: Tipner Powder Works
Site Address: SW Tipner
Approximate distance from site: 0 m
Approximate area: 2711 sq. metres
Date and Source Validation: From Date - 1885
From Source - Bacons Plan of Portsmouth
To Date - 1885
To Source - Bacons Plan of Portsmouth
Location Validation: Followed boundaries of building marked on 1898 OS County map
Use Summary: Manufacture of explosives powder

25. Energy, Oil & Coal



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25.1 GIS Data for Energy, Oil & Coal

Records identified on-site

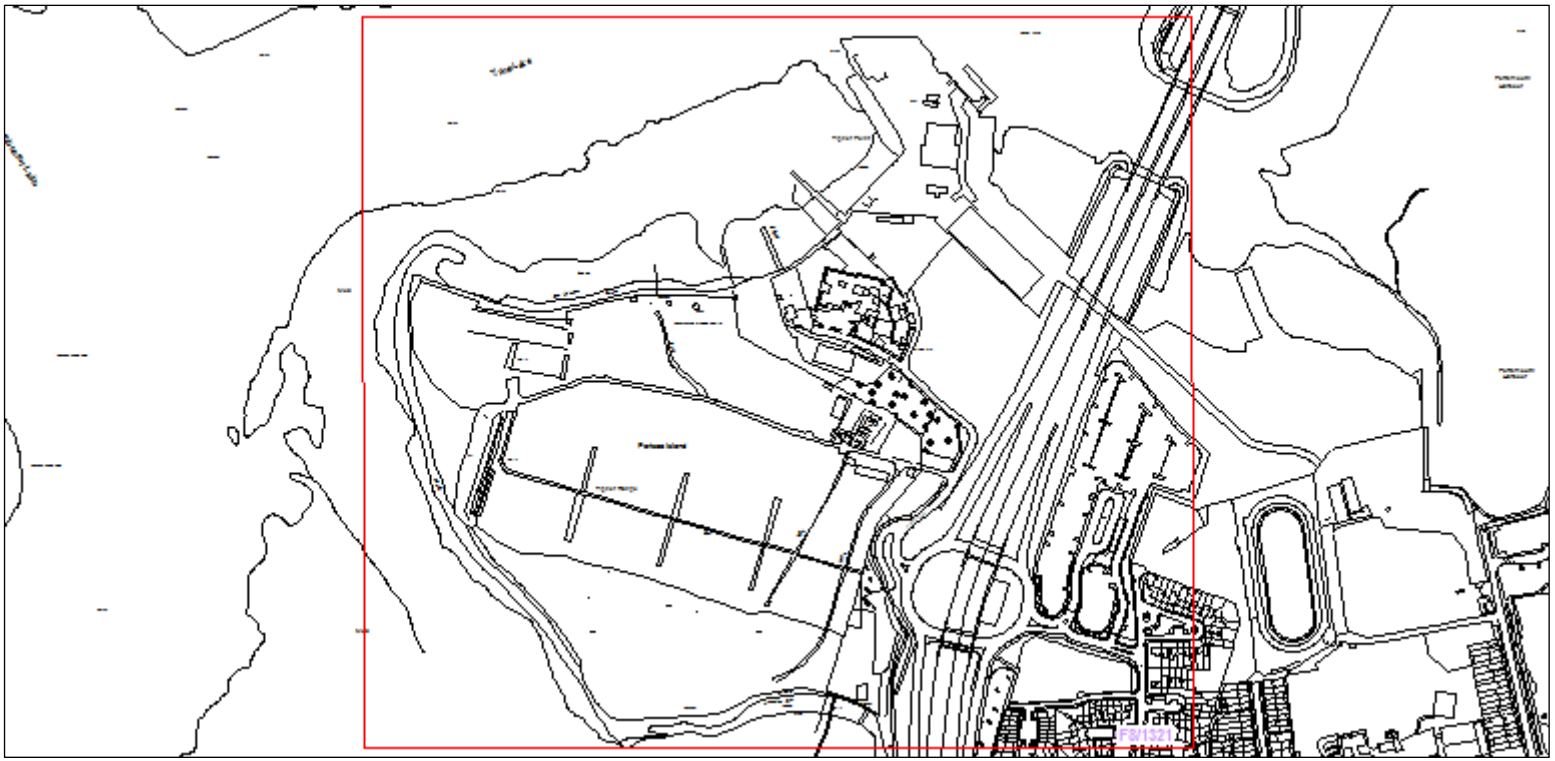
Record 1 of 3
Site ID: H7/682
Site Name: Southern Electricity Board
Site Address: Tipner Lane, Tipner
Approximate distance from site: 0 m
Approximate area: 22 sq. metres
Date and Source Validation: From Date - 0
From Source - OS map sheet SU6303 SE
To Date - 2001
To Source - OS vector map
Location Validation: Boundary drawn on OS vector map. The map sheet where this substation first appears isn´t dated.
Use Summary: Electricity substation

Record 2 of 3
Site ID: H7/693
Site Name: Southern Electricity Board
Site Address: Tipner Lane, Tipner
Approximate distance from site: 0 m
Approximate area: 13 sq. metres
Date and Source Validation: From Date - 1989
From Source - OS map sheet SU6403 SW
To Date - 1989
To Source - OS map sheet SU6403 SW
Location Validation: Drawn by eye as shown on 1989 OS map sheet SU6403 SW
Use Summary: Electricity substation

Record 3 of 3
Site ID: H7/694
Site Name: Southern Electricity Board
Site Address: Tipner Lane, Tipner
Approximate distance from site: 0 m
Approximate area: 10 sq. metres
Date and Source Validation: From Date - 1968
From Source - OS map sheet SU6403 SW
To Date - 1968
To Source - OS map sheet SU6403 SW
Location Validation: Drawn by eye as shown on 1968 OS map sheet SU6403 SW
Use Summary: Electricity substation

Portsmouth CITY COUNCIL

26. Engineering Works



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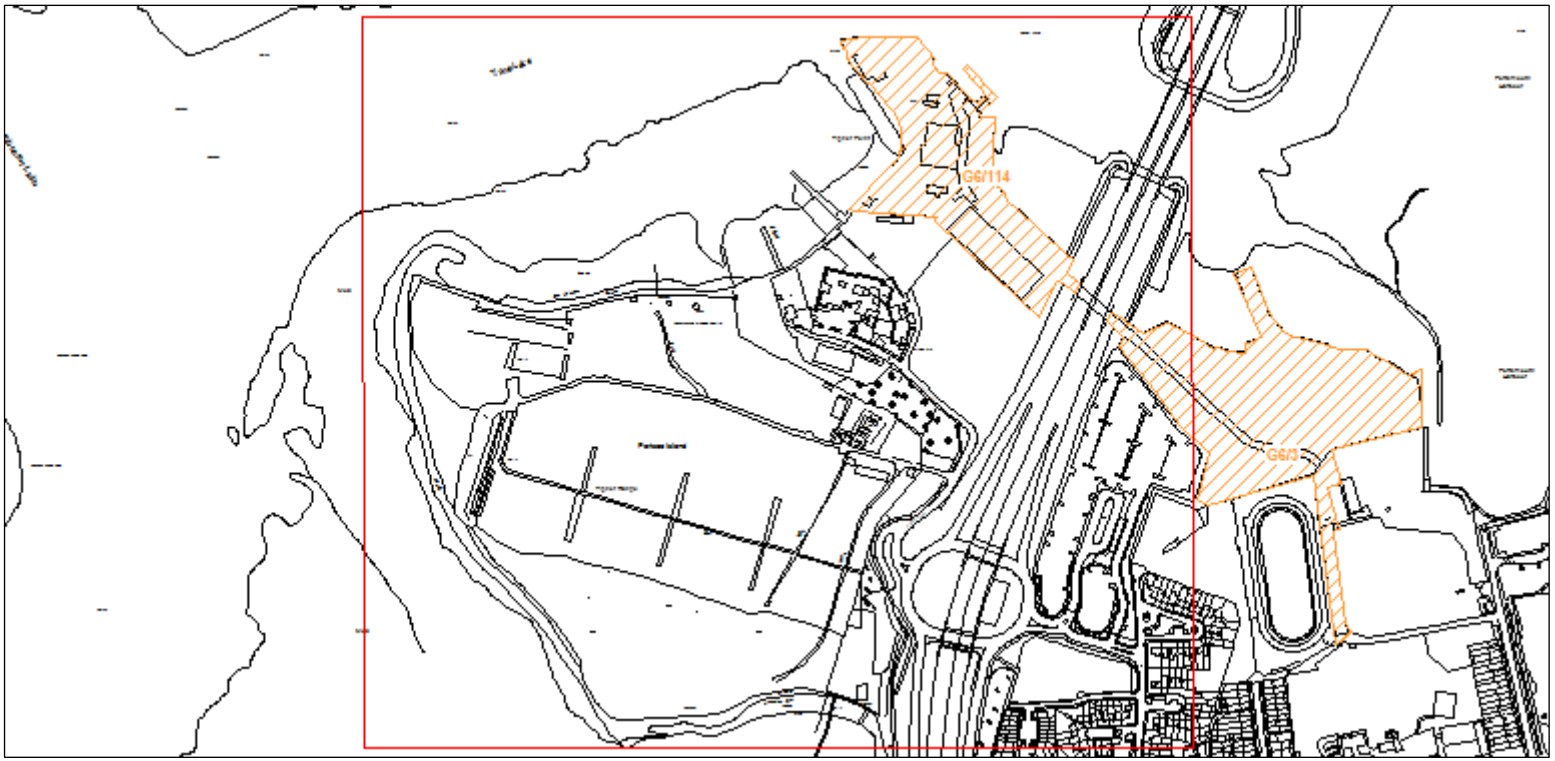
26.1 GIS Data for Engineering Works

Records identified on-site

Record 1 of 1
Site ID: F8/1321
Site Name: Pumping Station
Site Address: Somerville Place, Stamshaw
Approximate distance from site: 0 m
Approximate area: 15 sq. metres
Date and Source Validation: From Date - 1949
From Source - 1:1250 OS historic map sheet SU6402NW
To Date - 1952
To Source - OS historic map sheet SU6402
Location Validation: Pumping station named on 1949 and 1952 OS maps. Boundary drawn on 1952 OS historic map.
Use Summary: Pumping Station

27. Metal Production & Finishing



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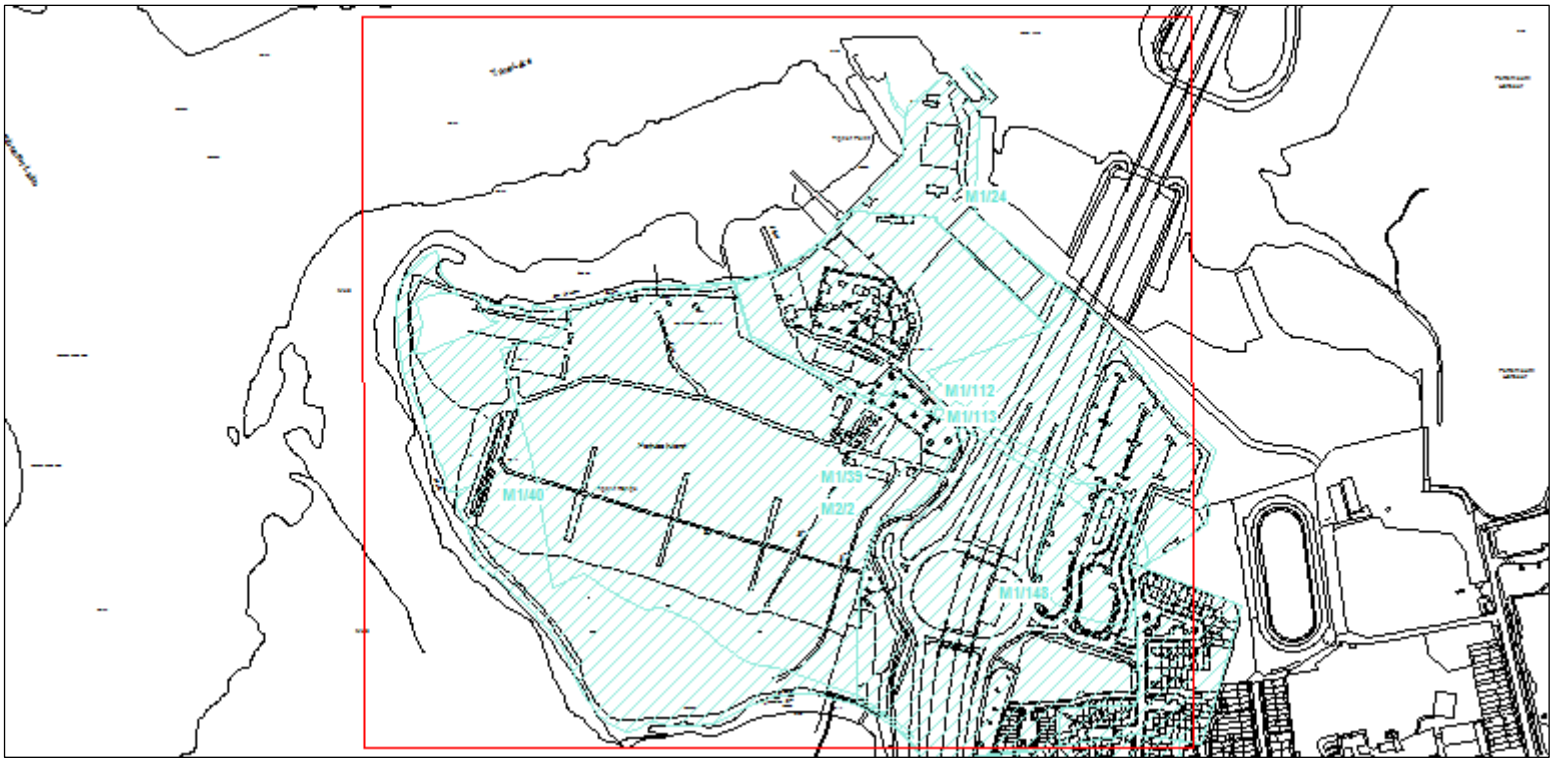
27.1 GIS Data for Metal Production & Finishing

Records identified on-site

Record 1 of 2
Site ID: G6/3
Site Name: Pounds Scrapyard
Site Address: Tipner Wharf, Tipner Point
Approximate distance from site: 0 m
Approximate area: 34060 sq. metres
Date and Source Validation: From Date - 1962
From Source - Kelly´s Directory for Portsmouth
To Date - 1997
To Source - Aerial photography, site investigations
Location Validation: Used current OS 1:1250 map for boundary along with details from planning diazos 11249 and 15254.
Trade Details: 1962-1997 Pounds Shipbreakers, Scrap metal merchants
Comments: Boundary from current map and also from maps contained on planning diazos 11249 and 15254.
Previous usage:- Timber yard
Use Summary: Scrap merchants including MOD scrap e.g. submarine & ship breakers

Record 2 of 2
Site ID: G6/114
Site Name: Pounds Marine Shipping Ltd
Site Address: Land at Tipner Wharf, Tipner Point,, Portsmouth
Approximate distance from site: 0 m
Approximate area: 24199 sq. metres
Licence Information: Licences issued :
1993 Pounds Marine Shipping Ltd, Waste Disposal Licence PT040, storage of scrap metal.
2001 Pounds Marine Shipping Ltd, Public Register of Licensed Sites (Licence no. PT040) Category A20 - Metal Recycling Site (mixed MRS´s)
Date and Source Validation: From Date - 1993
From Source - Waste Disposal Licence PT040
To Date - 2001
To Source - Public Register of Licensed Sites (Licence no. PT040)
Location Validation: Site shown on plan with Waste Disposal Licence (licensed area is part of this site). Boundary drawn on 1998 OS map.
Trade Details: 1993 Pounds Marine Shipping Ltd, storage of scrap metal.
2001 Pounds Marine Shipping Ltd, Metal Recycling Site (mixed MRS´s).
Use Summary: Storage of scrap metal

28. Ministry of Defence Land



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28.1 GIS Data for Ministry of Defence Land

Records identified on-site

Record 1 of 8
Site ID: M1/112
Site Name: Tipner Lane and former Infantry Barracks
Site Address: Tipner Lane, Tipner
Approximate distance from site: 0 m
Approximate area: 39572 sq. metres
Date and Source Validation: From Date - 1830
From Source - English Heritage ViewFinder (see Comments)
To Date - 1964
To Source - PCC deed
Location Validation: Boundary transferred from CENG GIS. Drawn as shown on deed plan.
Comments: English Heritage ViewFinder has a photograph of the Tipner Magazine just north of the barracks with a caption stating that this was built in about 1830. It is probable that the barracks was built at the same time.
A copy of the 1835 OS historic map showing the Barracks buildings and the Magazine is included in the Waterside School Desk Study SU6303/DS/147.
Transferred to PCC ownership on 31/08/1964 from Secretary of State for Defence
Use Summary: Infantry barracks and access road

Record 2 of 8
Site ID: M1/113
Site Name: Land at Tipner Lane
Site Address: Tipner Lane, Tipner
Approximate distance from site: 0 m
Approximate area: 214 sq. metres
Date and Source Validation: From Date - 1830
From Source - English Heritage ViewFinder (see Comments)
To Date - 1997
To Source - PCC deed
Location Validation: Boundary transferred from CENG GIS.
Drawn as shown in deed plan.
Comments: It is probable that this is part of the land acquired for access to the Tipner Barracks site so probably dates from that time. English Heritage ViewFinder has a photograph of the Tipner Magazine just north of the barracks with a caption stating that this was built in about 1830. It is probable that the barracks and access road were built at the same time.
A copy of the 1835 OS historic map showing the Barracks buildings, the Magazine and access road is included in the Waterside School Desk Study SU6303/DS/147.
Transferred to PCC ownership on 15/09/1997 from Secretary of State for Defence.
Use Summary: Unknown

Record 3 of 8
Site ID: M1/134
Site Name: M1/134

Site Address: Land at Tipner Range
Approximate distance from site: 0 m
Approximate area: 55633 sq. metres
Date and Source Validation: From Date -
From Source -
To Date -
To Source -
Location Validation: Transferred from CENG GIS
Comments: Transferred to PCC ownership on 16/07/1973 from Secretary of State for Defence
Use Summary: MOD

Record 4 of 8
Site ID: M2/2
Site Name: Tipner Rifle Range
Site Address: Tipner
Approximate distance from site: 0 m
Approximate area: 239042 sq. metres
Date and Source Validation: From Date - 1898
From Source - OS County Map Series
To Date - 1970
To Source - CL Associates Desk Study
Location Validation: Used 1898 and 1910 OS maps for maximum extent of boundaries.
Comments: Area of ranges has reduced in size since mid-1930´s (to exclude Range Green/Tipner Green)
Use Summary: Rifle range

Record 5 of 8
Site ID: M1/24
Site Name: MOD Dockland
Site Address: Tipner Point
Approximate distance from site: 0 m
Approximate area: 15453 sq. metres
Date and Source Validation: From Date - 1870
From Source - OS County Map and CL Associated Desk Study
To Date - 1965
To Source - CL Associated desk study
Location Validation: Traced from existing MOD boundaries and 1952 OS Map
Comments: 1/3/65 saw land sold to Trafalgar Wharves Ltd, source Fig 11.3 CLA report 8735 (10/96)
Use Summary: Dock activities

Record 6 of 8
Site ID: M1/39
Site Name: MOD at Tipner
Site Address: Incorporating all MOD land in Tipner
Approximate distance from site: 0 m
Approximate area: 347293 sq. metres
Date and Source Validation: From Date - 1886

From Source - CL Associates desk study, fig 11.3
To Date - 1997
To Source - Current maps and desk study info, fig 11.3
Location Validation: Traced specific MOD land boundaries already captured
Trade Details: 1898-1970 Tipner Rifle Ranges
1933 Landfill sold to Victory Housing Association (Victory Green/Harbour Way area)
1952-1970 Northern landfill adjacent to Pounds Scrapyard
1965 MOD Docks sold to Trafalgar Wharves Ltd
1870-1910 Tipner Infantry Barracks
Comments: Area of MOD land holding progressively reduced since 1933
Use Summary: Unspecified MOD

Record 7 of 8
Site ID: M1/40
Site Name: MOD Landfill
Site Address: Tipner west
Approximate distance from site: 0 m
Approximate area: 48430 sq. metres
Date and Source Validation: From Date - 1
From Source - MOD 1991 Map held in EH Dept.
To Date - 1
To Source - MOD 1991 map held in EH Dept.
Location Validation: Partly traced from 1898 OS County map and also overall coastal boundaries
Use Summary: Landfilling

Record 8 of 8
Site ID: M1/148
Site Name: M1/148
Site Address: see plan
Approximate distance from site: 0 m
Approximate area: 55624 sq. metres
Date and Source Validation: From Date -
From Source -
To Date -
To Source -
Location Validation: Land at Tipner Range
Trade Details: Transferred to PCC ownership on 16/07/1973 from Secretary of State for Defence
Use Summary: MOD

29. Miscellaneous

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29.1 GIS Data for Miscellaneous

Records identified on-site

Record 1 of 6
Site ID: N5/1633
Site Name: Tipner Lane
Site Address: Tipner Lane
Approximate distance from site: 0 m
Approximate area: 17 sq. metres
Date and Source Validation: From Date - 1950
From Source - 1:1250 OS historic map sheet SU6403SW
To Date - 1970
To Source - 1:2500 OS historic map sheet SU6403B6
Location Validation: Tank named and boundary drawn on 1952 OS historic map.
Use Summary: Tank

Record 2 of 6
Site ID: N2/4
Site Name: MOD Royal Navy Fleet Photographic Unit
Site Address: Tipner Lane, Tipner
Approximate distance from site: 0 m
Approximate area: 12238 sq. metres
Date and Source Validation: From Date - 1932
From Source - CL Associated desk study - MOD info
To Date - 1997
To Source - CL Assoc. Desk Study report
Location Validation: Boundary traced on current OS map as site still in existence, part under motorway drawn on 1952 OS map. Details also given in desk study of location
Trade Details: 1932-1997 Royal Navy Fleet Photographic Unit, film processing of shipping
Use Summary: Film processing for Royal Navy

Record 3 of 6
Site ID: N4/33
Site Name: P D Wharfage
Site Address: Off Twyford Avenue
Approximate distance from site: 0 m
Approximate area: 17044 sq. metres
Date and Source Validation: From Date - 1996
From Source - CL Associated report 8735 Oct 1996
To Date - 1996
To Source - CL Associated Report 8735
Location Validation: Traced from 1997 OS map
Trade Details: Storage of LPG
Storage of scaffolding
Garden machinery hire & repair
Decorating firm

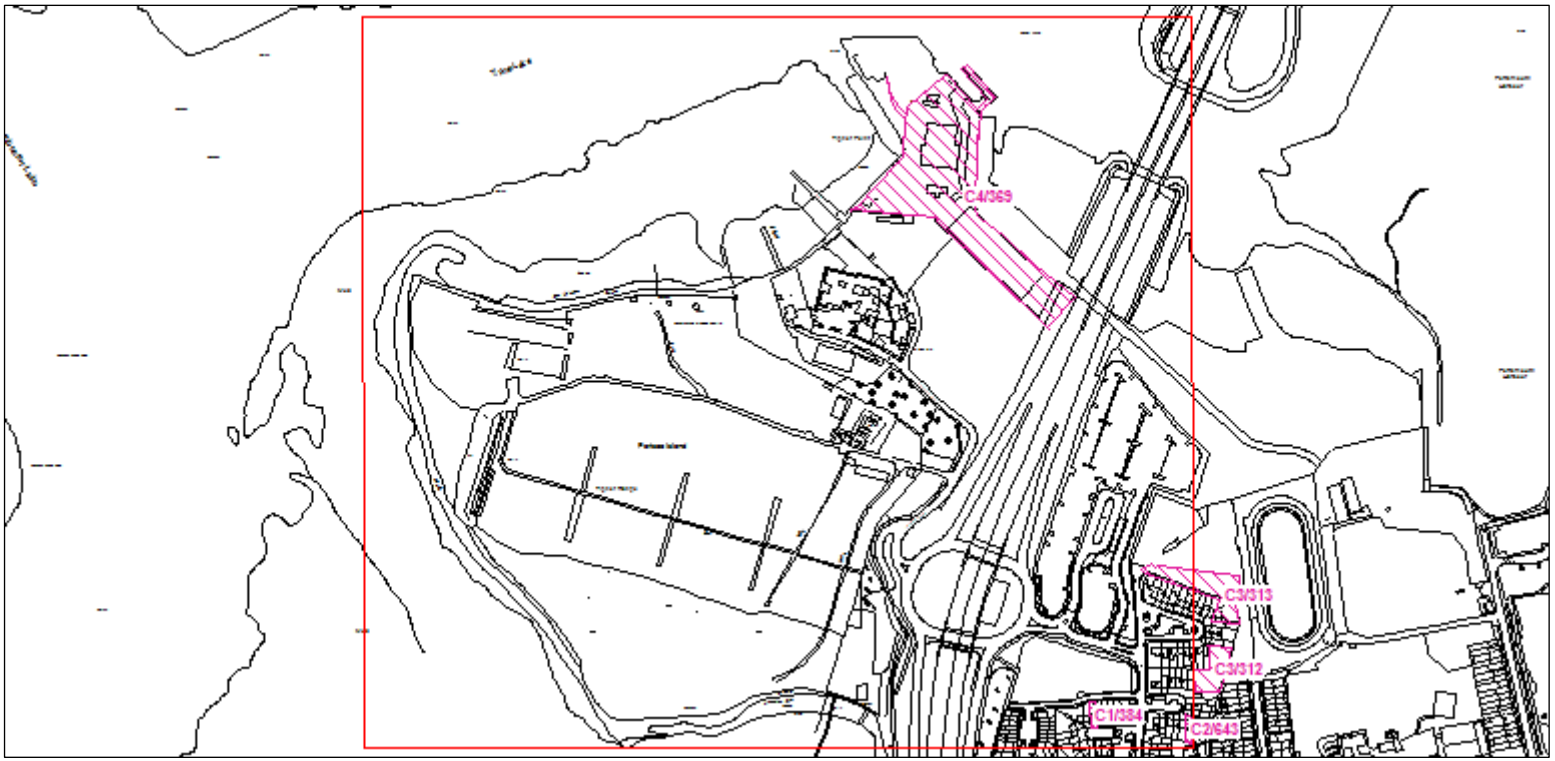
Offices of Victory Radio
Use Summary: See pop up note for comments

Record 4 of 6
Site ID: N5/20
Site Name: Tipner
Site Address: see plan
Approximate distance from site: 0 m
Approximate area: 19 sq. metres
Date and Source Validation: From Date - 1932
From Source - OS County Map
To Date - 1952
To Source - OS County Map
Location Validation: Traced from 1952 map
Use Summary: MOD land

Record 5 of 6
Site ID: N5/21
Site Name: Tipner
Site Address: Tipner Wharf
Approximate distance from site: 0 m
Approximate area: 238 sq. metres
Date and Source Validation: From Date - 1932
From Source - OS county Map
To Date - 1952
To Source - OS County Map
Location Validation: Traced from 1952 map
Use Summary: MOD land

Record 6 of 6
Site ID: N5/23
Site Name: Tipner Wharf
Site Address: Tipner
Approximate distance from site: 0 m
Approximate area: 17 sq. metres
Date and Source Validation: From Date - 1932
From Source - OS County Map
To Date - 1952
To Source - OS County Map
Location Validation: Traced from 1952 map
Use Summary: MOD Land

30. Transport & Infrastructure



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30.1 GIS Data for Transport & Infrastructure

Records identified on-site

Record 1 of 5
Site ID: C2/643
Site Name: L B M Removals
Site Address: 11 Tipner Green,, Stamshaw
Approximate distance from site: 0 m
Approximate area: 182 sq. metres
Date and Source Validation: From Date - 1990
From Source - Yellow Pages
To Date - 1990
To Source - Yellow Pages
Location Validation: Property identified & boundary drawn on 2000 OS map.
Trade Details: 1990 L B M Removals, removals - business & industrial
Use Summary: Removals - business & industrial

Record 2 of 5
Site ID: C4/369
Site Name: Trafalgar Wharves Ltd
Site Address: Tipner Point
Approximate distance from site: 0 m
Approximate area: 15465 sq. metres
Date and Source Validation: From Date - 1965
From Source - CL Associated Desk Study, fig 11.3
To Date - 1997
To Source - CL Associated Desk Study, fig 11.3
Location Validation: Traced from existing MOD boundaries and 1952 map
Use Summary: Civilian Dockland

Record 3 of 5
Site ID: C1/384
Site Name: P J Mobile Repairs
Site Address: 11 Somerville Place
Approximate distance from site: 0 m
Approximate area: 145 sq. metres
Date and Source Validation: From Date - 1994
From Source - Yellow Pages
To Date - 1994
To Source - Yellow Pages
Location Validation: Property identified & boundary drawn on 1997 OS map.
Trade Details: 1994 P J Mobile Repairs, garage services.
Use Summary: Garage services

Record 4 of 5
Site ID: C3/312
Site Name: Vickers Motor Body Co Ltd
Site Address: Target Road, Tipner

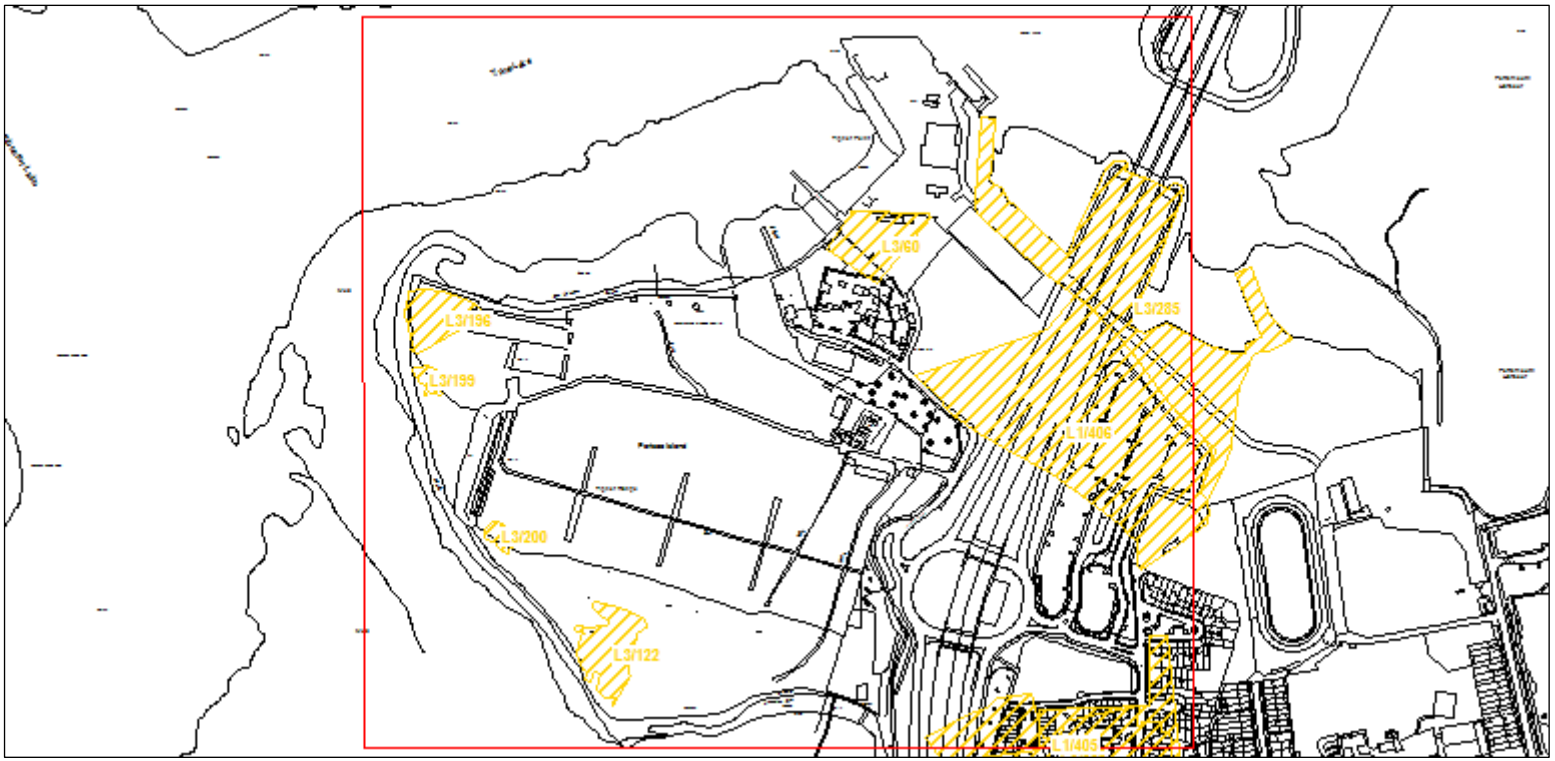
Approximate distance from site: 0 m
Approximate area: 1058 sq. metres
Date and Source Validation: From Date - 1951
From Source - Kelly´s Directory
To Date - 1982
To Source - Planning microfiche A*10095
Location Validation: Ownership & extent of site confirmed by Planning microfiche A*10095 jkt 1. Boundary drawn on 1997 OS map.
Trade Details: 1951 to 1969 Vickers Motor Body Co Ltd, motor body builders. 1972,1976 Vickers motor Body Co Ltd, motor body builders & repairers.
Comments: Planning microfiche A*10095 confirms that Vickers owned this site & that it was vacant & fenced in 7/82. A*10095F - application for permission to park vehicles on this site refused 15/2/78. PIG confirm acquisition of this & nearby site by PCC on 26/08/1982 (deed no 2/29).
Use Summary: See pop up note for comments

Record 5 of 5
Site ID: C3/313
Site Name: Vickers Motor Body Co Ltd
Site Address: Target Road, , Tipner
Approximate distance from site: 0 m
Approximate area: 2265 sq. metres
Date and Source Validation: From Date - 1951
From Source - Kellys Directory of Portsmouth
To Date - 1982
To Source - Planning microfiche A*10095
Location Validation: Ownership & extent of site confirmed by Planning microfiche A*10095. Boundary drawn on 1952 map. Discrepancy of <2m with 1997 OS map.
Trade Details: 1951,1964,1969 Vickers Motor Body Co Ltd, motor body builders. 1972,1976 Vickers Motor Body Co Ltd, motor body builders & repairers.
Comments: Planning microfiche A*10095 shows that Vickers owned site as shown on 1952 map. PCC acquisition deed 2/29 (26/08/1982) shows boundary as on 1997 OS map so assume strips of land added to gardens of 10,11 Range Green were disposed of earlier. This part of site used for parking vehicles.
Use Summary: Motor body builders & repairers

31. Textiles, Dyers, Ceramics & Glass

No records were selected on this layer.

32. Waste Disposal & Unknown Infill



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32.1 GIS Data for Waste Disposal & Unknown Infill

Records identified on-site

Record 1 of 9
Site ID: L1/406
Site Name: MOD Landfill
Site Address: Tipner Lane, Tipner
Approximate distance from site: 0 m
Approximate area: 35191 sq. metres
Date and Source Validation: From Date - 1952
From Source - MOD 1991 map held in EH Dept.
To Date - 1970
To Source - MOD 1991 map held in EH Dept.
Location Validation: Traced boundary on 1952 OS map using aerial photo10.6A in CLA report 8735 and MOD 1991 map
Comments: Land sold to PCC in 1972
Use Summary: Admiralty landfill, waste infill, raising of land

Record 2 of 9
Site ID: L1/405
Site Name: Osier Beds
Site Address: Now occupied by Victory Green and Harbour Way, Tipner Lane
Approximate distance from site: 0 m
Approximate area: 15783 sq. metres
Date and Source Validation: From Date - 1868
From Source - OS County Map Series
To Date - 1898
To Source - OS County Map Series
Location Validation: Traced from 1870 OS map and 1869 Builders Plan, boundaries clearly marked
Comments: Extract from 1860/1868 OS Historic plan 1st edition, figure 3.3 in Parkman Desk Study 11288/OR1C shows the Osier bed to extend over a slightly larger area in the NW of the area plotted. Extended areas also shown on 1869 OS Builders Plan
Use Summary: Infill of Osier beds with brick fill and some organic material

Record 3 of 9
Site ID: L3/258
Site Name: MOD Land (Victory Housing Assn)
Site Address: Victory Green/Harbour Way area
Approximate distance from site: 0 m
Approximate area: 32068 sq. metres
Date and Source Validation: From Date - 1900
From Source - MOD 1991 map held in EH Dept.
To Date - 1933
To Source - MOD 1991 map held in EH dept.
Location Validation: Used MOD 1991 map and boundaries on 1:10000 map

Comments: Land sold in 1933 to Victory Housing Association, no further details on MOD 1991 map
Use Summary: Marshland reclaimed prior to 1900

Record 4 of 9
Site ID: L3/60
Site Name: Infantry Barracks
Site Address: see plan
Approximate distance from site: 0 m
Approximate area: 4047 sq. metres
Date and Source Validation: From Date - 1878
From Source - OS County Map Series
To Date - 1932
To Source - OS County Map Series
Location Validation: Partly Traced OS Line
Use Summary: Miscellaneous Hole

Record 5 of 9
Site ID: L3/122
Site Name: Portsmouth
Site Address: see plan
Approximate distance from site: 0 m
Approximate area: 3748 sq. metres
Date and Source Validation: From Date - 1939
From Source - OS County Map Series
To Date - 1952
To Source - OS County Map Series
Location Validation: Traced OS line
Use Summary: Miscellaneous Hole

Record 6 of 9
Site ID: L3/196
Site Name: Portsmouth
Site Address: see plan
Approximate distance from site: 0 m
Approximate area: 3060 sq. metres
Date and Source Validation: From Date - 1952
From Source - OS County Map Series
To Date - 1952
To Source - OS County Map Series
Location Validation: Traced OS line
Use Summary: Pond

Record 7 of 9
Site ID: L3/199
Site Name: Saltings
Site Address: see plan
Approximate distance from site: 0 m
Approximate area: 495 sq. metres
Date and Source Validation: From Date - 1952

From Source - OS County Map Series
To Date - 1952
To Source - OS County Map Series
Location Validation: Traced OS line
Use Summary: Pond

Record 8 of 9
Site ID: L3/200
Site Name: Saltings
Site Address: see plan
Approximate distance from site: 0 m
Approximate area: 512 sq. metres
Date and Source Validation: From Date - 1952
From Source - OS County Map Series
To Date - 1952
To Source - OS County Map Series
Location Validation: Traced OS line
Use Summary: Pond

Record 9 of 9
Site ID: L3/285
Site Name: Tipner
Site Address: Tipner
Approximate distance from site: 0 m
Approximate area: 26341 sq. metres
Date and Source Validation: From Date - 1952
From Source - Historical Map
To Date - 1999
To Source - Current OS
Location Validation: Traced from the 1952 map.
Comments: Land reclaimed from the sea since 1960.
Use Summary: Land Reclaimed from the sea since 1960

33. Waste Treatment Sites

No records were selected on this layer.

34. Wood Processing

No records were selected on this layer.

35. Industrial Estates

No records were selected on this layer.

End of detailed report

Appendix C

SCOPE OF WORKS

SCOPING OF SITE INVESTIGATION

APPROACH

WSP completed a review of the existing contaminated land assessments of the site and identified data gaps in the existing information and uncertainty in the data. The findings of this assessment were presented in the Constraints and Opportunities Report (WSP, 2016). On the basis of this assessment the scope of current investigation was developed to build on the available data.

RATIONALE

The rationale for the investigation in each area of the site is summarised in Table C1 and C2. The scope of works, field methodologies, analytical suite and field measurements are discussed in the following sections. The findings are discussed within the main report.

FIELD WORKS

The intrusive fieldwork was undertaken between 11 and 19 August 2016 and between 10 April and 27 April 2017. Return visits for groundwater and gas monitoring were completed between 2 June and 29 September 2017.

The number of boreholes, window samples, trial pits and handpits completed within each area of concern and the achieved depth range is summarised in **Table 23**. Exploratory hole locations are presented in **Figure 3.**

Table 23 – Summary of Ground Investigation Works Completed

Site Area	Sub Area	Date	No. Boreholes	Depth range (m)	No. Window samples	Depth Range (m)	No. Trial / Hand Pits	Depth Range (m)
1	W8	April 2017	1	9.45	5	3.45 to 5.00	0	N/A
	W9	August 2016	9	5.00 to 10.45	11	3.00 to 5.00	21	0.20 to 2.60
		April 2017	2	10.00	5	0.70 to 5.00	1	0.60
2	W3	April 2017	1	8.50	5	0.60 to 5.00	0	N/A
	W4	April 2017	4	8.45 to 12.00	5	2.00 to 5.00	10	2.20 to 3.20
3	W5	April 2017	2	8.00 to 12.45	2	1.50 to 3.45	6	
	W7	April 2017	0	N/A	4	4.45 to 5.45	0	N/A

The works comprised the following:

- Service clearance to minimise the risk of contact with existing below ground services/utilities, was undertaken in advance of intrusive works at each exploratory location.
- Inspection pits were hand dug at all borehole and window sample locations to a depth of 1.5 m bgl, where practicable, and trial pits were scanned using a CAT and generator every 300 mm up to a depth of 1.5m bgl.
- Supervision of all excavation works by a UXO sub-contractor.
- Advancement of rotary boreholes using a Comacchio Geo 305 rig.
- Advancement of window sample holes using a Competitor Dart rig.
- Excavation of trial pits using a mechanical backhoe excavator.
- Excavation of hand pits using hand-held tools.
- Logging of arisings and observations to BS5930:2015 by WSP engineers.
- Collection of disturbed soil samples for laboratory testing.
- Installation of 50 mm diameter soil gas and groundwater monitoring wells in boreholes and window sample locations.
- Topographical measurement of x, y and z co-ordinates of all exploratory locations to Ordnance Datum.
- Development of all wells using a submersible pump where significant quantities of groundwater were encountered or disposable bailers.
- Collection of groundwater samples for laboratory testing using a low flow micropurge sampling technique on one occasion.
- Six rounds of groundwater and soil gas monitoring at monitoring wells installed by WSP.
- Collection of six soil gas samples for laboratory analysis.
- Laboratory chemical analysis of soil, soil gas and groundwater samples.

JAPANESE KNOTWEED AND VEGETATION CLEARANCE

Vegetation clearance was undertaken to enable access to selected exploratory locations on the firing range with an ecological watching brief during the clearance. Stands of Japanese Knotweed are present on the area south of the firing range. An ecological watching brief was therefore provided during mobilisation works for exploratory locations in this area so that the stands could be identified and not disturbed by the works.

RADIOLOGICAL ASSESSMENT

Given the historical military and infilling activities that are understood to have occurred on site, there is potential for the presence of radiological materials to be present associated with discarded military equipment such as luminous dials. Prior to intrusive works commencing

- Supervision of intrusive works by a Suitably Qualified Experienced Person (SQEP) Health Physics Surveyor;
- In-situ radiological reassurance monitoring across the site area to gather supplementary information and for radiation protection purposes with hand-held instrumentation (Super-Ident Rt 30, a Rotem DA3 & PM11 and an Elektra & BP19AD); and
- Soil sampling and radiochemical analysis.

The radiological assessment works were reported by the sub consultant Matom and the reports for each phase of work on site are included in **Appendix D**. **Table 24** summarises the results of radiological assessment of samples collected during the intrusive works. All of the readings recorded in all of these exploratory locations and soil samples were in line with background concentrations.

Table 24 – Summary of Soil Radiological Analysis (Matom, 2016 & 2017)

Area	Exploratory Location	Sample Depth	Sample Radiation γ	Soil Contamination βγ	Soil Contamination γ
1	W8WS319	2.0m	0.1µSv/h (γ)	<1cps	
	W8WS321	0.2m	0.1µSv/h (γ)	<1cps	30cps
	W9BH309	1.5m	0.1µSv/h (γ)	<1cps	50cps
	W9WS322a	0.2m	0.1µSv/h (γ)	<1cps	50cps
	W9WS323	0.5m	0.1µSv/h (γ)	<1cps	50cps
	W9WS326	1.2m	0.1µSv/h (γ)	<1cps	45cps
	TP201	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	TP207	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	TP209	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	HP201	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	HP204	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	HP205	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	HP208	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	BH202	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	BH204	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	BH206	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
	BH207	n/s	0.1µSv/h (γ)	6-7cps	80-120cps
2	W4BH305	0.25m	0.1µSv/h (γ)	<1cps	40-45cps
	W4TP314	0.25m, 2.0m	0.1µSv/h (γ)		40-45cps

Area	Exploratory Location	Sample Depth	Sample Radiation γ	Soil Contamination βγ	Soil Contamination γ
	W4TP316	1.0m	0.1µSv/h (γ)	<1cps	40-50cps
	W4WS314	0.25m	0.1µSv/h (γ)	<1cps	40-45cps
	W4WS315	0.3m	0.1µSv/h (γ)	<1cps	40-45cps

n/s – no depth specified

UXO CLEARANCE

Given the site UXO supervision was undertaken during the works. Records from the UXO watching brief are included in **Appendix D**.

GAS AND GROUNDWATER MONITORING WELL INSTALLATION

Gas and groundwater monitoring wells were installed in boreholes summarised below and were constructed from 50 mm perforated plastic pipe with a pea gravel surround and fitted with air tight gas valves. As a minimum requirement, each monitoring well comprised plain pipe from ground level to 1m with a bentonite pellet surround. Exact details of each installation are shown on the borehole records in **Appendix D**.

Gas monitoring installations were finished at ground level with a flush fitted lockable covers in areas of hardstanding and on the firing range (sub areas W3, W8,W9) and with upstanding covers on areas of soft ground (W4 and W9).

The achieved depths and monitoring well installation details for each exploratory location are presented in Table 25.

Table 25 – Summary of Well Installations

Area		Hole ID	Ground Level (m AOD)	Response Zone		Strata Targeted	Gas or Groundwater
Site	Sub			m bgl	m AOD		
1	W8	W8BH308	2.628	4.00 to 7.00	-1.37 to -4.37	Lambeth Group	Groundwater
	W8	W8WS317c	3.487	2.00 to 4.00	1.49 to -0.51	River Terrace Deposits	Gas and groundwater
	W8	W8WS318	3.314	1.00 to 2.00	2.31 to 1.31	River Terrace Deposits	Gas and groundwater
	W8	W8WS319	3.065	2.00 to 5.00	1.07 to -1.94	River Terrace Deposits	Gas and groundwater
	W8	W8WS320	2.895	1.50 to 3.50	1.40 to -0.61	River Terrace Deposits	Gas and groundwater
	W8	W8WS321	2.614	0.30 to 0.80	2.31 to 1.81	Made Ground	Gas and groundwater
	W9	W9BH309	4.674	4.00 to 7.00	0.67 to -2.33	Lambeth Group	Groundwater
	W9	W9BH310	4.473	5.00 to 8.00	-0.53 to -3.53	Lambeth Group	Groundwater
	W9	W9WS323	4.874	1.00 to 3.00	3.87 to 1.87	Made Ground	Gas and groundwater
	W9	W9WS324	4.49	1.00 to 2.50	3.49 to 1.99	Made Ground	Gas and groundwater

Area		Hole ID	Ground Level (m AOD)	Response Zone		Strata Targeted	Gas or Groundwater
Site	Sub			m bgl	m AOD		
	W9	W9WS325c	3.396	2.00 to 3.00	1.40 to 0.40	River Terrace Deposits	Gas and groundwater
	W9	W9WS326	4.142	1.00 to 2.50	3.14 to 1.64	Made Ground	Gas and groundwater
	W9	BH201	4.687	1.00 to 2.00	3.69 to 2.69	Made Ground	Gas and groundwater
	W9	BH202	4.527	1.50 to 2.50	3.03 to 2.03	River Terrace Deposits	Groundwater
	W9	BH203	4.413	7.00 to 10.00	-2.59 to -5.59	Lewes Nodular Chalk Formation	Groundwater
	W9	BH204	3.457	7.00 to 10.00	-3.54 to -6.54	Lambeth Group	Groundwater
	W9	BH205	3.283	8.50 to 9.90	-5.22 to -6.62	Lambeth Group / Lewes Nodular Chalk Formation	Groundwater
	W9	BH206	3.3	3.00 to 6.00	0.30 to -2.70	Lambeth Group	Groundwater
	W9	BH207	3.13	1.50 to 3.50	1.63 to -0.37	River Terrace Deposits	Groundwater
	W9	BH208	3.398	1.00 to 3.00	2.40 to 0.40	Made Ground	Gas and groundwater
	W9	BH209	3.265	1.60 to 3.80	1.67 to -0.54	River Terrace Deposits	Groundwater
	W9	WS202	4.064	1.50 to 3.00	2.56 to 1.06	Made Ground	Gas and groundwater
	W9	WS203	3.491	1.00 to 1.50	2.49 to 1.99	Made Ground	Gas and groundwater
	W9	WS204	4.46	1.00 to 1.50	3.46 to 2.96	Made Ground	Gas and groundwater
	W9	WS205	3.528	1.00 to 2.00	2.53 to 1.53	River Terrace Deposits	Gas and groundwater
	W9	WS206	3.482	1.00 to 3.00	2.48 to 0.48	Made Ground / Lambeth Group	Gas and groundwater
	W9	WS207	3.429	4.00 to 5.00	-0.57 to -1.57	Made Ground	Gas and groundwater
	W9	WS208	3.397	1.00 to 2.00	2.40 to 1.40	River Terrace Deposits	Groundwater
	W9	WS209	2.974	3.00 to 5.00	-0.03 to -2.03	River Terrace Deposits	Gas and groundwater
	W9	WS210	2.928	3.00 to 5.00	-0.07 to -2.07	River Terrace Deposits	Groundwater
	W9	WS211	2.91	1.00 to 2.00	1.91 to 0.91	Lambeth Group	Gas and groundwater

Area		Hole ID	Ground Level (m AOD)	Response Zone		Strata Targeted	Gas or Groundwater
Site	Sub			m bgl	m AOD		
	W9	WS212	2.924	1.00 to 2.00	1.92 to 0.92	River Terrace Deposits	Gas and groundwater
2	W3	W3BH301	2.705	6.00 to 8.00	-3.30 to -5.30	Lewes Nodular Chalk Formation	Groundwater
	W3	W3WS301	2.705	1.50 to 2.50	1.21 to 0.21	Tidal Flat Deposits	Gas and groundwater
	W3	W3WS304	2.959	1.00 to 2.00	1.96 to 0.96	Made Ground	Gas and groundwater
	W3	W3WS305	2.915	0.50 to 1.20	2.42 to 1.72	Made Ground	Gas
	W4	W4BH304	3.52	6.00 to 8.00	-2.48 to -4.48	Lewes Nodular Chalk Formation	Groundwater
	W4	W4BH305	4.52	8.00 to 10.00	-3.48 to -5.48	Lewes Nodular Chalk Formation	Groundwater
	W4	W4BH306	4.4	4.00 to 6.00	0.40 to -1.60	Tidal Flat Deposits	Groundwater
	W4	W4BH307	4.1	9.00 to 12.00	-4.90 to -7.90	Lewes Nodular Chalk Formation	Groundwater
	W4	W4WS312	2.99	1.00 to 2.00	1.99 to 0.99	Made Ground	Gas and groundwater
	W4	W4WS313	4.51	1.00 to 3.00	3.51 to 1.51	Made Ground	Gas and groundwater
	W4	W4WS314	4.47	1.00 to 2.00	3.47 to 2.47	Made Ground	Groundwater
	W4	W4WS315	4.64	2.00 to 4.00	2.64 to 0.64	Made Ground	Gas and groundwater
	W4	W4WS316	4.07	1.00 to 2.50	3.07 to 1.57	Made Ground	Gas
3	W5	W5BH302	4.38	6.00 to 8.00	-1.62 to -3.62	Lewes Nodular Chalk Formation	Groundwater
	W5	W5BH303	4.93	1.00 to 2.00	3.93 to 2.93	Made Ground	Gas
				10.00 to 12.00	-5.07 to -7.07	Lewes Nodular Chalk Formation	Groundwater
	W5	W5WS306	5.62	1.00 to 1.50	4.62 to 4.12	Made Ground	Gas
	W5	W5WS307c	4.93	1.00 to 2.00	3.93 to 2.93	Made Ground	Gas
	W7	W7WS308	3.43	1.00 to 2.00	2.43 to 1.43	Made Ground	
	W7	W7WS309	3.45	4.00 to 5.00	-0.55 to -1.55	Tidal Flat Deposits / Lewes Nodular Chalk Formation	

Area		Hole ID	Ground Level (m AOD)	Response Zone		Strata Targeted	Gas or Groundwater
Site	Sub			m bgl	m AOD		
	W7	W7WS310	4.24	1.00 to 2.00	3.24 to 2.24	Made Ground	
	W7	W7WS311	4.443	3.00 to 4.00	1.44 to 0.44	River Terrace Deposits	

VARIATIONS

W3WS302 and W9WS322 were terminated at 0.85 m bgl and 0.70 m bgl, respectively, due to the presence of suspected asbestos cement sheeting. W3WS303 was terminated at 0.60 m bgl due to a concrete obstruction.

Several locations had to be relocated due to obstructions encountered during hand pitting: HIWS206, W5WS307, W8WS317, W9WS325 and W4WS315.

WS201 within area W9 was not excavated as a precaution because suspected asbestos containing materials (ACMs) were encountered in the nearby BH201, WS202 and TP203 on W9.

HEADSPACE SCREENING

A portable photo-ionisation detector (PID) fitted with a 10.6 eV lamp and calibrated against a 100 ppm isobutylene standard gas was used in the field to provide a semi-quantitative indication of the presence of volatile organic compounds within soil samples through headspace measurements. Samples were taken every 0.5m or at changes in strata. The results were used to assist with sample selection for VOCs and are presented on the exploratory logs in **Appendix D**. The findings are discussed in the main report.

MONITORING WELL DEVELOPMENT

Prior to the first round of sampling, monitoring wells were developed by the removal of a minimum of three well volumes using a submersible pump where significant quantities of groundwater were encountered. In installations with limited quantities of water present, disposable bailers were used to develop the well.

GROUNDWATER SAMPLING & IN SITU GEOCHEMICAL MEASUREMENTS

Six rounds of groundwater monitoring were completed between 2 June and 29 September 2017 with one round of sampling undertaken between 2 and 4 August 2017. Groundwater and non-aqueous phase liquid (NAPL) levels (where encountered) were measured in the field using an interface probe. A low flow peristaltic pump was used to sample the groundwater from each well. Groundwater quality parameters were recorded at three minute intervals during this process and purging was completed when the readings had stabilised to within 10% of the previous readings. The monitoring records presented in **Appendix D.**

Groundwater samples were retained in appropriate containers (1 litre glass and plastic bottles and 40 ml glass vials) and transported to the testing laboratory on the same day as sampling within cooled containers.

GROUNDWATER AND GAS MONITORING

Ground gas concentrations were recorded in all boreholes using an infra-red gas analyser (GA 5000) on six occasions in conjunction with the water monitoring. Initial and steady concentrations of methane (CH4), carbon dioxide (CO2), oxygen (O2) and trace gases (including carbon monoxide, hydrogen sulphide) were recorded along with initial and steady gas flow rates. Atmospheric and borehole (differential) pressures during the monitoring were also noted to enable a quantitative gas risk assessment to be carried out in accordance with current best practice.

Confirmatory gas samples were collected in suma canisters from four monitoring wells for laboratory analysis (W3WS304, W4WS314, W8WS318 and W9WS323,). The monitoring locations for gas sampling were selected on the basis of reported moderately elevated concentrations of either methane or carbon dioxide during the gas monitoring period.

The results of the gas and groundwater monitoring are presented in **Appendix D** and laboratory analysis certificates are presented in **Appendix F**.

LONG TERM GROUNDWATER MONITORING

Long term groundwater level trend monitoring was carried out using data loggers. The locations and dates of logger deployment are summarised in **Table 26**.

Table 26 - Data Logger Deployment

Monitoring Well	Screened Response Zone	Period of Data Logger Installation	
BH201	Made Ground	24/02/17	Ongoing
BH202	Superficial Deposits	24/02/17	
BH203	Chalk	24/02/17	
BH208	Made Ground	24/02/17	
W8WS320	Superficial Deposits	12/07/17	
W9WS325	Superficial Deposits	12/07/17	
W9BH309	Lambeth Group	12/07/17	
WS202	Superficial Deposits	24/02/17	
WS208	Superficial Deposits	24/02/17	
WS209	Superficial Deposits	24/02/17	
WS210	Made Ground	24/02/17	
W3BH301	Chalk	12/07/17	
W3WS301	Superficial Deposits	12/07/17	
W4BH305	Chalk	12/07/17	
W4BH306	Superficial Deposits	12/07/17	
W4BH307	Chalk	12/07/17	
W7WS309	Superficial Deposits	12/07/17	

The results of the monitoring will be presented in the City Deal Groundwater Report (in progress) preliminary results are discussed in this report.

TESTING

CHEMICAL TESTING – SOILS & LEACHATE

Selected soil samples were submitted for chemical analysis at ALS Laboratories in Hawarden. The results of the contamination testing are presented in **Appendix D**. The soil and water analysis are summarised in the following tables.

Table 27 - Summary of Chemical Testing for Soils and Leachate

Analysis	Soils		Leachate	
	Made Ground	Natural Strata	Made Ground	Natural Strata
Ammoniacal Nitrogen	14		34	4
Cyanide	69	9	15	1
Asbestos ID	171	20	-	-
Asbestos Quantification	16		-	-
Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc)	152	53	42	10
Hexavalent chromium	152	53	34	4
pH	152	53	21	5
PAH USEPA 16 Speciated	152	53	42	10
TPH Criteria Working Group Speciation	152	53	40	10
Benzene, Toluene, Xylene, Ethylbenzene	152	53	40	10
VOCs	55	10	12	2
Soil Organic Matter	47	23		
Phenols	54	10	10	
Organo Tins	26	3		
Dioxins and Furans	11	1		
PCBs (12 congeners)	20	2	6	-
Explosive compounds	7	-	-	-
Mustard compounds	4	-	-	-

Table 28 - Summary of Chemical Testing for Groundwater Samples

Analysis	Groundwater Samples
Ammoniacal Nitrogen	22
Cyanide	14
Chloride	16
Hardness (as CaCO3)	16
Nitrate	22

Analysis	Groundwater Samples
Nitrite	22
Sulphate	22
Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc)	25
pH	25
PAH USEPA 16 Speciated	25
TPH Criteria Working Group Speciation	25
Benzene, Toluene, Xylene, Ethylbenzene	25
VOCs	25
Phenols	25
Organo Tins	25
Dioxins and Furans	
PCBs (12 congeners)	14

In addition to the above analysis, two samples of product were analysed from well W4BH307 for whole oil finger print analysis and density. Four soil gas samples were subject to bulk gas, determination of C_1 to C_7 hydrocarbons and odourant gas analysis.

Table C.1: Rationale for Ground Contamination Investigation

Site Area	Sub Area	Site Name	Area / ha	Confidence in Current Data Set	Proposed Future End Use	Potential Sources of Contamination	Ground Conditions Previously Encountered	Key Data Gaps	Sampling Rationale	Rotary Borehole	Window Sample Borehole	Trial Pits	Soil Analytical Suite	Soil Leachate / Groundwater Analytical Suite	Potential Constraints to Investigation
	W8	Boat and angling club	0.5	Low	Not Allocated	- part of firing range - currently used as boating and angling club Contaminants of concern include: - asbestos - metals - petroleum hydrocarbons - PAHs - solvents - antifouling paints - soil gases	No data	- No investigation to date.	- Characterise and determine full thickness of fill, to supplement existing data. - Create network of wells to determine soil gas regime of fill and superficial deposits. - Create network of wells to determine water quality in the fill, superficial deposits and Chalk.	1 No. (up to 10m)	5	N/A	- Suite A - Asbestos in fill - VOCs - Organotins	- Suite A - VOCs - Organotins	- Asbestos watching brief - UXO - Radiological - Ecological - Work in vicinty of sea defences
1	W9	MOD Firing Range	15	High	Not Allocated	- firing range - areas of historical infilling including ponds, bomb craters and drainage ditches. Source and nature of fill not known, but reportedly contained whole planes. - areas of mounding behind firing range and butts. Source and nature of fill not known. - anecdotal evidence of demolition waste from former Royal Portsmouth Hospital being deposited in the north-west (potential for asbestos). - anecdotal evidence of wastes from Stamshaw Chemical Works being deposited south of range. - anecdotal evidence of wastes from construction of M275 being deposited to north and south of range (potentially part of MOD landfill in Tipner East). - historical powder works on south-western shore. - mustard gas trials on north-western beach. - electrical sub-station. Contaminants of concern include: - asbestos - metals - elemental mercury - petroleum hydrocarbons - PAHs - solvents - radium and decay products associated with instrumentation/dials - PCBs, dioxins and furans - nitrate, nitrite, sulphate, lead and silver azides - soil gases	Geology: Made Ground varies across the firing range, with thickness being greatest in areas of filled ground and backfilled ponds in the southern, western and northern edges of the range. In the centre of the range thickness of Made Ground is typically <1m whilst in the filled ground areas thickness was proven to ~5.0m, although some previous exploratory locations did not prove the full thickness. Superficial deposits across the Range thicken to the east (up to 4.0m). The underlying bedrock in this area comprises Lambeth Group which thickens to >13m in the south over Chalk. In the north of this area Chalk is as shallow as 3m bgl. The depth to bedrock will also locally increase in areas of deeper Made Ground around the perimeter of the firing range. Hydrogeology: Groundwater typically 2m bgl. Groundwater levels in the Chalk varied by up to 0.5 m with the tidal cycle and were at approximately 1m AOD. Whislt groundwater in the Lambeth Group Secondary Aquifer did not fluctuate with tidal cycles standing levels in this unit were recorded between 0.1 and 2.6m AOD. Water levels in the superficial deposits and Made Ground were reported to vary between 0.1 and 2.4m AOD Contamination: Moderate contamination identified comprising asbestos, metals and PAHs in Made Ground. Highest reported concentrations typically associated with areas of fill around the perimeter of the area. Metal, ammonia, PAH and petroleum hydrocarbon contamination in the groundwater in the Superficial Deposits, Lambeth Group and Chalk. Ground gas reported highest concentrations of carbon dioxide (7.4%) in areas of filled ground in the northern edge of the range.	- No radiological survey undertaken to date. - Limited investigation of the quality of groundwater in the Chalk. - Full thickness of fill in the southern and northern areas of the range has not been determined. - Lack of gas monitoring data required for building design. - No investigation of mounds or bomb craters. - Radiological survey undertaken not to current guidance. - No intrusive radiological survey undertaken.	- Characterise and determine full thickness of fill, to supplement existing data. - Trial trench where possible to observe materials. - Investigate specific areas of potential fill including: - bomb craters - powder works - filled ground in north-western area - mounds on rifle range - Create network of wells to determine soil gas regime of fill and superficial deposits. - Create network of wells to determine water quality in the fill, superficial deposits and Lambeth Group (south) and Chalk (north).	10 No. (5 to 6m and 5 up to 10m)	17	20	- Suite A - Asbestos in fill - Elemental mercury (if observed) - VOCs - SVOCs - PCBs, dioxins and furans - Cyanides - Organotins - Trace Explosives - Chemical weapons agents - Nitrate, nitrite, sulphate	- Suite A - VOCs - SVOCs - PCBs, dioxins and furans - Cyanides - Organotins - Ammonium - Trace explosive compounds - Chemical weapons agents - Nitrate, nitrite, sulphate	- Asbestos watching brief - UXO - Radiological - Ecological - Work in vicinty of sea defences
	W3	Portsmouth Harbour Cruising Club	0.5	Moderate	Housing & Employment	- Boat yard - Refuelling area on northern side of boatyard - Fill associated with the demolition of the barracks and elsewhere. Contaminants of concern include: - asbestos - metals - petroleum hydrocarbons - solvents - antifouling paints - soil gases	Underlying geology: Made Ground typically <1m thick, but locally >2.0m thickin the east, adjacent to the former MOD Landfill (W4). Raised Marine Deposits were proven to 2.1m thickness but were locally greater than 4.4m in the north. Underlying Chalk was encountered between 2.8m in the south and not proven in the north at 5.3m depth. Hydrogeology: Standing groundwater levels across all strata between 0 and 2.24mAOD. Contamination: Localised PAH contamination in Made Ground on the eastern half of the area. Metals, petroleum hydrocarbons and ammonia exceeded assessment criteria in groundwater. Ground gas monitoring reported elevated methane (>1%) and carbon dioxide (>5.0%) at the boundary with MOD landfill.	- Lack of spatial distribution of locations in centre of site to date. - Limited gas monitoring data required for building design. - Data over 10 years old.	- Target refuelling area and other areas of current operation. - Characterise and determine full thickness of fill, to supplement existing data. - Create network of wells to determine soil gas regime of fill and superficial deposits. Create network of wells to determine water quality in the fill, superficial deposits and Chalk. - Confirm absence of NAPL.	1 No. (up to 8m)	4	N/A	- Suite A - Asbestos in fill - VOCs - Organotins	- Suite A - VOCs - Organotins	- Asbestos watching brief - UXO - Work in vicinty of sea defences
2	W4	MOD Landfill	1.6	Low	Employment	- Accepted waste from scrapyard and the Admiralty from dockyards and the repair and refurbishment of vessels. - Recently accepted asbestos-containing spoil from the construction of the Tipner East park and ride. Contaminants of concern include: - asbestos - metals - elemental mercury - petroleum hydrocarbons - PAHs - solvents - radium and decay products associated with ship instrumentation/dials - PCBs, dioxins and furans - antifouling paints - cyanide (used in pickling processes) - CFCs (from refrigerants) - soil gases	Underlying geology: Prior to additional recent landraising, Made Ground typically 2-3m thick across the area of landfilling, locally between 3.8m and 5.0m thick in the east near the M275. Underlying superficial deposits (Raised Marine and River Terrace Deposits) generally 1 to 3m thick but locally 4.7m to the east where Made Ground was shallower. Depth to top of Chalk 4.3m and 7.0m bgl. Hydrogeology: Standing groundwater levels 1.15 to 1.81 mAOD in Made Ground and 0.43 and 1.28m AOD in Superficial Deposits and Chalk. Contamination: Asbestos present throughout the Made Ground as well as moderate metals and PAH. Ammonia, metals, PAH and petroleum hydrocarbons identified in the groundwater. Ground gas monitoring reported elevated methane (up to 5.5%) and carbon dioxide (up to 59%).	- No investigation since the spoil from Tipner East park and ride was deposited. - Lack of gas monitoring data required for building design. - Radiological walkover survey undertaken not to current guidance. - No intrusive radiological survey undertaken.	- Trial pitting to observe the nature of the waste. - Spatial coverage of whole site. - Characterise and determine full thickness of fill, to supplement existing data. - Create network of wells to determine soil gas regime of fill and superficial deposits. - Create network of wells to determine water quality in the fill, superficial deposits and Chalk.	4 No. (up to 10m)	5	9	- Suite A - Asbestos in fill - Elemental mercury (if observed) - VOCs - SVOCs - PCBs, dioxins and furans - Cyanides - Organotins	- Suite A - VOCs - SVOCs - PCBs, dioxins and furans - Cyanides - Organotins - Ammonium	- Full asbestos control required - UXO - Radiological
	W5	PCC scrubland and sports hall	1	Low	Housing & Employment	- part of military fire station (fuel storage and potential for fire training). - Deep fill from unknown source(s). Contaminants of concern include: - asbestos - metals - petroleum hydrocarbons - PAHs - solvents - Perfluorooctanesulfonate (PFOS) and perfluorooctanesulfonic acid (PFOA) associated with fire-fighting foams - dioxins and furans associated with burning - soil gases	Underlying geology: Made Ground typically 1.5 to 2.5m thick in the centre, thinning to the east. Thickest Made Ground (4.2m) was reported in a location beneath the current Sports Hall associated with Harbour School. River Terrace Deposits beneath the Made Ground vary in thickness across this area with greatest thickness (3.3m) in the centre and western edges of the area. The underlying Chalk dips to the south with depth to this strata varying between 5.9m to 7.5m below ground level (-1.38 to -5m AOD). Hydrogeology: Standing groundwater levels between 0.09m and 3.05m AOD in Superficial Deposits and -1.15m and 0.92m AOD in Chalk and Superficial Deposits. Contamination: Elevated metalsin Made Ground across the area. Metal and PAH contamination were identified in the groundwater. Ground gas reported elevated carbon dioxide, associated with the areas of deeper	-Lack of coverage in densely vegetated area adjacent to Tipner Lane in the east. - Lack of gas monitoring data required for building design.	- Assume that the recent construction of the Sports Hall has resulted in suitable remediation within its footprint. - Trial pitting, particularly within densely vegetated eastern area. - Characterise and determine full thickness of fill, to supplement existing data. - Create network of wells to determine soil gas regime of fill and superficial deposits. - Create network of wells to determine water quality in the fill, superficial deposits and Chalk.	2 No. (up to 10m)	2	6	- Suite A - Asbestos in fill - VOCs - Dioxins and furans - PFOS and PFOA	- Suite A - VOCs - Dioxins and furans - PFOS and PFOA	- Asbestos watching brief - UXO - Ecological - Work in vicinty of sea defences
3	W7	Seamanship training centre	0.2	Low	Housing & Employment	- part of military fire station (fuel storage and potential for fire training). - Boat yard (potential for maintenance and refuelling) Contaminants of concern include: - asbestos - metals - petroleum hydrocarbons - PAHs - solvents - antifouling paints - PFOS and PFOA associated with fire-fighting foams - dioxins and furans associated with burning - soil gases	Underlying geology: Limited intrusive investigation in this area identified a variable thickness of Made Ground which is thicker towards the coast (1.8m) overlying River Terrace Deposits which were unproven in thickness in one location and Chalk at 4.0m depth in the second. Hydrogeology: Groundwater levels between 0.94 and 1.54m AOD in Superficial Deposits. No data on tidal influence available. Contamination: No soil contamination concentrations were reported above adopted assessment criteria. Metal and PAH contamination win the groundwater in Superficial Deposits. No ground gas data is available for this area.	-Lack of coverage. - Lack of gas monitoring data required for building design.	- Characterise and determine full thickness of fill, to supplement existing data. - Create network of wells to determine soil gas regime of fill and superficial deposits. - Create network of wells to determine water quality in the fill, superficial deposits and Chalk.	0	4	N/A	- Suite A - Asbestos in fill - VOCs - Organotins - Dioxins and furans - PFOS and PFOA	- Suite A - VOCs - Organotins - Dioxins and furans - PFOS and PFOA	- Asbestos watching brief - UXO - Work in vicinty of sea defences

Table C2. Exploratory Hole Location Rationale

Area	Sub Area	Exploratory Location	Monitoring Well Target	Potential Contamination Source Targeted
Area 1	W8	W8BH308	Lambeth Group	Fuel storage
		W8WS317 - W8WS320	Superficial Deposits	Boat yard
		W8WS321	Superficial Deposits	Fuel storage
	W9	BH201	Made Ground	Filled/raised ground west of range
		BH202	River Terrace Deposits	Infilled area on northern boundary of range
		BH203	Lewes Nodular Chalk Formation	Former tank
		BH204	Lambeth Group	Firing range
		BH205	Lambeth Group	Firing range
		BH206	Lambeth Group	Former bomb crater
		BH207	River Terrace Deposits	Off site contamination from Tipner East
		BH208	Made Ground	Infilled pond
		BH209	River Terrace Deposits	Former bomb crater
		HP201 - HP208	-	Raised firing points
		HP209 - HP210	-	Former Mustard Gas Trial Area
		HP211	-	Area of burned ground
		TP201, TP203	-	Filled/raised ground west of range
		TP207	-	Infilled area on northern boundary of range
		TP208	-	Infilled former drainage ditch
		TP209	-	Former bomb crater
		TP210	-	Firing range
		TP211	-	Firing range
		TP212	-	Infilled former drainage ditch
		TP213	-	Former bomb crater
		TP214	-	WS107
		W9BH309-W9BH310	Lambeth Group	Filled ground south of range
		W9WS322 - W9WS326	Made Ground or River Terrace Deposits	Filled ground south of range
		WS202	Made Ground	Filled/raised ground west of range
		WS203	Made Ground	Firing range
		WS204	Made Ground	Infilled area on northern boundary of range
		WS205	River Terrace Deposits	Firing range
		WS206	Lambeth Group	Former structures near site entrance
		WS207	Made Ground	Filled/raised ground west of range
		WS208 - WS212	Made Ground, Superficial Deposits or Lambeth Group	Firing range
Area 2	W3	W3BH301	Lewes Nodular Chalk Formation	Filled ground in W3
		W3WS301	Tidal Flat Deposits	Fuel storage in W3
		W3WS302 - W3WS304	Made Ground or Superficial Deposits	Filled ground in W3
		W3WS305	Made Ground	Chemical storage in W3
	W4	W4BH304 -W4BH307	Superficial Deposits or Lewes Nodular Chalk	Landfill in W4
		W4TP307 - W4TP316	-	Landfill in W4
		W4WS312 - W4WS316	Made Ground	Landfill in W4
Area 3	W5	W5BH302 - W5BH303	Lewes Nodular Chalk Formation	Raised ground in W5
		W5TP301 - W5TP302	-	Raised ground in W5
		W5TP303 - W5TP306	-	Former barracks
		W5HP306	-	Former barracks
		W5WS306	Made Ground	Raised ground in W5
		W5WS307	Made Ground	Former barracks
	W7	W7WS308 -W7WS311	Made Ground, Superficial Deposits or Lewes Nodular Chalk	Former barracks and fire station

Appendix D

FACTUAL INFORMATION

Appendix D.1

CONTAMINANT DISTRIBUTION

AREA 1

Field observations and analytical data are available from the WSP 2017 and ESI 2015 site investigations for Area 1. Although investigation was undertaken by IKM in 2006, the laboratory data has not been included in this assessment as the conditions on site have changed since the intrusive works were completed.

Both the WSP and ESI investigations encountered very little visual or olfactory evidence of impact and PID readings were all less than 10 ppm in this area. Made Ground was found to contain pieces of demolition materials, plastic, wood, asbestos containing materials, chalk and coal. Staining and a strong hydrocarbon odour was noted in ESI TP107 between 1.9 m and 2.9 m bgl in Made Ground to the west of the main rifle range and a black residue was noted in TP110 in Made Ground between 1.7 m and 2.1 m bgl adjacent to the butt on the rifle range. Black staining was also reported in BH202 in the Lambeth Group at depths between 3.9 m and 4.9 m bgl.

Groundwater concentrations have been evaluated from the WSP 2017 investigation only. ESI's data has not been re-evaluated due to the age of the data and the wells were not re-sampled because a number of locations were cross-installed across aquifer which prevents a robust assessment of separate aquifers being possible.

UXO, RADIOLOGICAL AND EXPLOSIVE RESIDUES

Radiological on-site screening and confirmatory analysis did not encounter gross gamma counts in excess of normal background levels.

Unexploded ordnance specialist supervision was provided during all of the intrusive works on Area 1. No unexploded ordnance was encountered in any of the exploratory holes investigated, although a number of spent bullet casings were encountered at surface in the range area and some spent bullets were encountered in near surface soils in the range area.

The areas identified through previous desk studies to be infilled bomb craters were not readily identified and significant thicknesses of Made Ground were not found. It was anecdotally reported by a former range manager[4] that the voids would most likely have been filled in with the material that was generated from the bomb crater, rather than imported fill. This would render the craters difficult to distinguish from the surrounding natural ground.

No explosives residues were detected in the two samples analysed from WS207 in an area where hand grenade testing was reported to have been historically undertaken.

Chemical weapons screening in the locations of the historical suspected mustard gas trials (HP209 and HP210) did not detect the presence of mustard gas, and no mustard gas was detected in the soil samples analysed from this area. This is as anticipated, based on the age of the trials and that significant land raising had been conducted in the area following WWII.

SOILS

The highest concentrations of all the contaminants analysed was generally in the Made Ground with no significant sources of contamination being identified within the natural strata.

Asbestos in Made Ground

During drilling works suspected ACMs were encountered in BH201, TP203 and WS202 to the rear of the target butts. Samples were collected by a WSP asbestos specialist and sent for analysis. The samples were proven to be non-asbestos containing, with the exception of degraded asbestos cement in BH201. ESI recorded suspected asbestos cement tile in Made Ground in TP105 (1.0 m to 2.0 m bgl) and TP167 (GL to 1.2 m bgl) however no confirmatory sampling was undertaken. Some pieces of cement bound asbestos (corrugated roofing tile) were also observed in sand banks to the south of the main target butts.

[4] Lieutenant Commander Witt (curator of HMS Excellent historical records)

A plan showing asbestos quantifications in soil across the site is presented in **Figure 16**. Asbestos was positively identified through analysis in eight Made Ground samples from 89 samples analysed across Area 1 in the WSP 2016 and 2017 investigations and 25 out of 95 in the ESI 2015 investigation, as follows:

- Chrysotile and amosite fibres in the area of filled ground behind the target butt in the north-western corner of the firing range (WSP locations BH201, WS202 and TP201 and ESI locations TP101 to TP106). In five samples the fibres were present at concentrations that allowed quantification to a maximum concentration of 0.359%. In this area of the site, the near-surface (0.3 to 0.5 m) Made Ground samples did not detect any asbestos fibres, indicating that the core of the filled ground is more likely to contain asbestos than the near-surface with positive asbestos identifications recorded between 1.0 and 3.0 m bgl (1.37 m to 3.17 m AOD). The top of the mound in this area was recorded on the topographic survey at levels between 4.7 m and 6.2 m AOD so the recorded asbestos is buried at some depth below the highest parts of the mound. This area is recorded in the SWK Land Quality Assessment (1997) as having received fill comprising spoil from dockyard and bomb damage. The Made Ground included brick and concrete fragments. As such identified asbestos is likely to be associated with the demolition materials deposited.

- North of the first raised rifle mound (BH204) chrysotile was quantified to 0.0069% at 0.8 m bgl (2.66 m AOD).

- Around the infilled drainage ditch behind the first target butt (WSP location TP212 and ESI locations TP110, TP126 and TP135) chrysotile and amosite were recorded in samples taken between 0.6m and 1.2m bgl. Where present at quantifiable levels, the maximum recorded was 0.005%.

- An area in the north-west (WS203 and TP104) where crocidolite and chrysotile fibres were encountered near-surface (0.3 and 0.6 m bgl respectively) but were absent from the 1.5 m bgl sample. Concentrations were below the quantifiable limit.

- A localised area of infilling on the northern boundary where chrysotile and amosite fibres were encountered in the ESI investigation (TP167 and TP168) at 0.001% in samples taken between 0.7 and 1.4 m bgl;

- Two areas to the north and south of the former Stamshaw Powder works within the SSSI area in the south-west of Area 1 where amosite and chrysotile were encountered in the ESI investigation (TP112, TP113, TP121 and TP123) to a maximum depth of 3.1 m bgl and with a maximum quantified level of 0.0789%.

- Two localised areas of filled ground close to the entrance gate in the east:
  - WSP location WS206 where crocidolite fibres were quantified to 0.163% at 1.0 m bgl (the 0.3 m bgl sample did not contain fibres).
  - ESI location TP152 where chrysotile fibres were not quantifiable and were present near-surface (0.35 m bgl).

No asbestos was positively identified in the Tipner Boating and Angling Club area of Area 1 during the WSP 2017 investigation.

Metal Contaminants

The findings from the WSP 2016 and 2017 investigations were that metals were present at low concentrations throughout all strata. Metal concentrations in Area 1 are presented in **Figure 18** where they exceed Generic Assessment Criteria. Arsenic was often lower in the River Terrace Deposits and there was some evidence that chromium was higher in some of the Lambeth Group samples but the differences between the strata were not pronounced.

The most elevated concentrations were found to be in lead within Made Ground. Concentrations of lead in soil in Area 1 are shown in **Figure 17**:

- In three of the four firing points the concentrations ranged from 15 to 12,100 mg/kg with a mean concentration of 1,120 mg/kg.

- Within the north-western corner, lead concentrations within the deep fill were more elevated than near-surface at depths ranging from approximately 1 to 2 m bgl and concentrations between 200 and 2,290 mg/kg with a mean concentration of 917 mg/kg.

- Within the deep infilled area on the northern boundary at location TP207, concentrations of up to 316 mg/kg in the top metre of soil were reported.

- Throughout the deeper Made Ground (which extended up to 3.3 m bgl in BH208) and infilled drain on the western boundary adjacent to the most westerly butt and wall concentrations ranged from 286 to 16,000 mg/kg and with a mean concentration of 2,994 mg/kg.

Across the firing range and the Tipner Boating and Angling Club areas the most elevated concentrations were encountered near-surface. The concentrations of lead in near-surface Made Ground across the firing range were ranged between 12.80 and 53,300mg/kg whereas on the Tipner Boating and Angling Club the concentrations in Made Ground were typically around 100 mg/kg, although a maximum concentration of 955 mg/kg was encountered in W8BH308 0.1-0.3 m bgl. Lead concentrations in the superficial deposits were generally lower (average of 40 mg/kg) with the exception of one sample of River Terrace Deposits in TP208 at 2.3 m bgl (500 mg/kg).

Copper was present at low concentrations although it was generally highest within soil samples coincident with elevated lead.

The WSP findings with respect to lead in soils reflect the findings of the ESI 2015 investigation.

Made Ground samples taken from the Tipner Boating and Angling Club were analysed for organotins to assess the potential for ground contamination associated with boat maintenance activities in this area. Dibutyl and tributyl tin were encountered in near-surface Made Ground at three locations (W8WS319, W8WS320 and W8WS321). Triphenyl tin was also encountered in W8WS320. No deeper samples were analysed for organotins so a vertical distribution cannot be ascertained at this time.

Organics Contaminants

Polycyclic Aromatic Hydrocarbons

Selected concentrations of organic contaminants in Area 1 are presented in **Figure 19**.

Concentrations of total USEPA 16 PAHs were generally higher in the Made Ground within both the WSP and ESI investigations, particularly towards the western and southern boundaries of Area 1. Across the firing range area the analytical results were generally less than 10 mg/kg. The more elevated concentrations towards the western boundary were largely associated with the deeper areas of infilled ground in the north-west corner, the south-west corner of the firing range, in the vicinity of the infilled drain and within the SSSI area to the south where the former Stamshaw Powder Works was located. More elevated concentrations were also encountered in the small area of infilling on the northern boundary. Within these areas the concentrations of total USEPA 16 PAHs was ranged between 0.118 and 796mg/kg and the PAHs were detected throughout the full thickness of the Made Ground although the concentrations reduced at depth. The maximum concentrations are as follows:

- North-western corner: 103 mg/kg at 1.7m bgl (TP105)
- Northern filled area: 80.6 mg/kg at 0.85 m bgl (TP207)
- South-western corner of firing range: 796 mg/kg at 1 m bgl (BH208)
- Western part of range: 99.9 mg/kg at 0.2 m bgl (TP208)
- SSSI/former Stamshaw Powder Works: 115 mg/kg at 0.8 m bgl (TP119)

Within the Tipner Boating and Angling Club area, WSP encountered total concentrations of USEPA 16 PAHs within the near-surface Made Ground at a maximum concentration in the southern area of 13.8 mg/kg (W8WS319 at 0.4 m bgl). Along the eastern edge, more elevated concentrations were detected in two samples: 21.1 mg/kg (W8WS318 at 0.1 m bgl) and 116 mg/kg (W8WS317c at 0.4 m bgl). Gravel including asphalt was recorded in the description of the Made Ground in this area, which may be attributable to the locally higher PAH concentrations.

Petroleum Hydrocarbons

Petroleum hydrocarbons were detected at low levels across the firing range area of Area 1 including the firing points. Typical concentrations were below 100 mg/kg both within Made Ground and natural strata, but generally were higher in the Made Ground. Elsewhere, and associated with areas of infilling, the concentrations were higher, particularly in Made Ground. At most locations, the nature of the petroleum hydrocarbon fractions that were detected were middle to heavy end and more aromatic than aliphatic, indicating that the results were likely to be reflective of the PAHs that were detected. The concentrations in each area are as follows:

- Tipner Boating and Angling Club - total concentrations of petroleum hydrocarbons in Made Ground ranged from 161 to 2,610 mg/kg with a mean of 1,017 mg/kg, which may be attributable to asphalt fragments recorded in the Made Ground in this area.
- The SSSI area -- total concentrations detected by ESI in 2015 and WSP in 2017 in the Made Ground ranged from 32.6 to 1,040 mg/kg with a mean concentration of 344 mg/kg.
- Within the north-western corner, the western boundary and the western side of the firing range in the area of the infilled drain, the total concentrations of petroleum hydrocarbons in Made Ground detected by ESI in 2015 and WSP in 2016 ranged from 3 to 2,660 mg/kg with a mean concentration of 429 mg/kg.. At most locations in these areas, the concentrations increased with depth through the Made Ground.
- Within the infilled area on the northern boundary, concentrations of petroleum hydrocarbons in Made Ground detected by ESI in 2015 and WSP in 2016 ranged from 1.71 to 1,410 mg/kg with a mean concentration of 239 mg kg-1.

PCBs, Dioxins and Furans

PCBs, dioxins and furans were analysed during the WSP investigations within the infilled areas on the northern boundary and within the north-western corner. Within these areas PCBs were not detected in the Made Ground samples analysed. Dioxins and furans were however detected with a maximum total concentration of 0.001567 mg/kg in the north-western corner (TP204 at 0.4 m bgl).

PCBs were also analysed in the area of infilling on the south-western corner of the firing range. No PCBs were detected.

SVOCs, VOCS, Mustard Gas Residues and Explosive Residues

No other significant SVOCs or VOCs were detected in the soil samples analysed in the WSP or ESI investigations. Explosive testing was completed on samples at varying depths from locations WS207, W9BH209, W9WS322-W9WS324 and W9WS326. Analysis did not report any concentrations of explosives above limits of detection.

No mustard residues were detected in the soil samples analysed in the north-western corner of the site in the area reportedly used for mustard gas trials during World War II in the WSP or ESI investigations. In BH102, RDX (cyclo-1,3,5-trimethylene-2,4,6-trinitramine) was detected in the groundwater at 1.2 µg/l marginally above limits of detection in the ESI investigation in 2015.

GROUNDWATER

Metals Contaminants

Concentrations of metals were generally an order of magnitude lower in the Lambeth Group and Chalk aquifers compared to the groundwater collected from the superficial deposits and Made Ground. The highest concentrations of metals were consistently detected in the perched groundwater collected from the area of infilling on the south-western corner of the firing range (BH208) and in particular chromium, copper, lead, nickel and zinc. Higher concentrations of similar metals were also detected within the groundwater collected from the superficial deposits in the northern area of the Tipner Boating and Angling Club.

Organic Contaminants

PAHs were detected in groundwater within the superficial deposits of the Tipner Boating and Angling Club at concentrations of approximately two to three orders of magnitude higher than groundwater sampled from the remainder of the site. The concentrations of total USEPA 16 PAHs ranged from 2.3 to 25.6 µg/l where detected. The highest concentrations were detected in the northern part of the Tipner Boating and Angling Club.

Across the firing range, total USEPA 16 concentrations ranged from 0.757 to 0.916 µg/l within perched groundwater. The highest concentrations were detected within the deep fill on the south-west of the firing range (BH208). Concentrations of groundwater collected from the natural strata across the wider firing range area (W9) were at or below detection limits and are considered to be indicative of natural organic materials.

The highest petroleum hydrocarbon concentrations within the groundwater samples that were analysed generally reflected the distribution of PAHs. The highest concentration ranges were detected in the water collected from the superficial deposits beneath the Tipner Boating and Angling Club (46 to 686 6 µg/l total petroleum hydrocarbons, where detected) and the perched groundwater in the Made Ground on the firing range area (66 to 462 µg/l total petroleum hydrocarbons, where detected). Petroleum hydrocarbons were generally at or below detection limit within the natural strata across the wider firing range area (W9) with the exception of the groundwater collected from superficial deposits on the western boundary of the firing range at one location (BH207) where a total petroleum hydrocarbon concentration of 236 µg/l was detected. Across all samples in Area 1, where petroleum hydrocarbons were detected, the groundwater samples predominantly composed of heavy carbon fractions evenly split between aliphatic and aromatic compounds.

bis(2-Ethylhexyl)phthalate was detected in the two most northerly groundwater samples collected from the superficial deposits on the Tipner Boating and Angling Club (2.1 to 9.61 µg/l). No other SVOCs, VOCs or PCBs were detected in the groundwater samples analysed from across Area 1.

Inorganics Contaminants

Ammoniacal nitrogen was detected in the perched groundwater collected from Made Ground in the area of infilling on the south-west corner (BH208) and in centre of range (WS210) at concentrations of 1.13 and 1,16 mg/l, respectively. Ammoniacal nitrogen was also detected within the groundwater collected from the natural strata (superficial and Lambeth Group) across the SSSI area of Area 1 and ranged from 1.34 to 3.02 mg/l where detected. Ammoniacal nitrogen was not detected in any of the other groundwater samples analysed across the firing range of Tipner Boating and Angling Club.

Groundwater chloride concentrations greater than 200 mg/l and conductivity readings greater than 1 mg/l are indicative of saline intrusion in an aquifer5. Reported chloride and conductivity concentrations in the groundwater in both the Lambeth Group and Chalk aquifers were greater than these thresholds in wells BH203 (Chalk) and BH204 (Lambeth Group) in the north and west parts of Area 1. ESI wells which screened the Lambeth group and were not installed across strata included BH101, BH102 and BH103 were also reported with high chloride concentrations in the groundwater. The highest chloride concentrations were reported in BH101 (8,490 mg/l) and BH203 (5,150 mg/l) near the coast indicating that saline impacts is more prevalent in close proximity to Portsmouth Harbour.

Cyanide was not detected in any of the groundwater samples analysed across Area 1.

SOIL GAS

Ground gas monitoring on Area 1 reported variable gas conditions in the screened strata. In monitoring wells screening the Made Ground gas flow rates were typically below instrumental detection limits and concentrations of carbon dioxide moderately elevated up to 10%v/v, methane concentrations were all below limits of detection. In the superficial deposits both methane and carbon dioxide were detected up to 9.4% and

[5] Washington State Department of Ecology (2005). Water Resource Inventory Area 06 Islands. Seawater Intrusion Topic Paper.

20.2%, respectively, in well W8WS318 screening the River Terrace Deposits. Flow rates were highest in well W9Ws325c (106 l/hr). This location was flooded and as such the flow rate is not considered representative. In the non-flooded wells in the superficial deposits the gas flow rates were below detection limits. In the Lambeth Group there were moderate carbon dioxide concentrations (up to 10%v/v) and low methane concentrations recorded (up to 0.2% v/v). Flow rates in these wells were highest in BH206 (maximum of 19.5l/hr). However, all monitoring wells were either flooded or partially flooded during monitoring as such the flow rate is not considered representative.

AREA 2

Field observations and analytical data are available from the WSP 2017 and IKM 2006 site investigations for Area 2. Although investigation was undertaken by IKM in 2006, the W4 MOD landfill area has been subject to modification in the form of groundworks and capping since that time. As such, the IKM data has been included in this section to support the WSP investigation but it is not appropriate to use the data for accurate vertical and lateral evaluation.

The WSP investigation encountered thicknesses of Made Ground between 1.0 m and 4.6 m across the former MOD landfill area. The IKM investigation encountered similar thicknesses prior to the recent groundworks. The landfill material comprised building materials and a wide range of other wastes including coal, glass, metal, rope, plastic, plastic bags, ash, ACMs, general refuse, bottles, drums, wire, tins, paint, ceramics textiles, rubber, batteries, asbestos lagging and timber.

Groundwater concentrations have been evaluated from the WSP 2017 investigation only. IKM's data has not been re-evaluated due to the age of the data and it was not possible to resample the wells because they were destroyed by recent groundworks across the former MOD landfill area.

UXO AND RADIOLOGICAL

Radiological specialist attendance was provided during exploratory works in area W4 within Area 2. Radiological on-site screening and confirmatory analysis did not encounter gross gamma counts in excess of normal background levels.

Unexploded ordnance specialist supervision was provided during all of the intrusive works on Area 2. No unexploded ordnance was encountered in any of the exploratory holes investigated.

SOILS

Asbestos

Asbestos was found to be widespread across Area 2 in both the WSP and IKM investigations. A plan showing asbestos quantifications in soil across the site is presented in **Figure 16**. Asbestos was encountered during the ground investigation as visible ACMs by IKM and WSP, and was detected as loose fibres in the laboratory in 17 of the 25 locations in the WSP investigation. Asbestos as fibres and ACMs including woven fabric, lagging and cement-bound tiles were distributed throughout the full thickness of deep Made Ground within the former MOD landfill area across W4 and the eastern half of W3 where the maximum depth of fill was 4.8 m bgl and was generally 3.3 m thick. The loose asbestos fibres, where detected, were reported to be present predominantly in the form of amosite, with some chrysotile and occasional crocidolite fibres also detected; the maximum quantification was recorded as 1.32% in Made Ground at 0.80 - 0.85 m bgl in the eastern corner of W3 (W3WS302). IKM undertook limited asbestos analysis and appear to have selected suspected ACMs for asbestos identification as well as loose fibres in the soil. The analysis determined that the asbestos encountered at that time was predominantly chrysotile with some amosite. Given the limited data set it is not considered appropriate by WSP to determine a distribution within the landfill area based on IKM's data.

'Clean' materials were deposited across W4 as part of wider construction works on Tipner East that have occurred since the IKM investigation of 2006. However, asbestos fibres and visible ACMs were detected near-surface (<0.5 m) across the western side and eastern corner of W4 during the WSP 2017 investigation; they were absent from the samples collected from the centre of the area. The laboratory reported that the near-surface asbestos comprised predominantly amosite although crocidolite was detected in two of the seven locations.

Metal Contaminants

The purpose of the WSP 2017 investigation was to build on the IKM investigation and further assess the contaminant status of the landfill materials and to determine depth profiles, if present, following the placement of capping materials over the last decade. As such, the majority of the soil samples analysed were collected from Made Ground. Where natural strata was sampled, there was no obvious difference in the concentrations when compared to Made Ground for the majority of the metals. Lead and other metal concentrations in soil in Area 2 and 3 are presented in **Figure 20** and **21**, respectively.

The key metal of interest was determined to be lead with concentrations in the Made Ground. Elevated concentrations were detected at 0.0 – 0.5 m bgl ranging from 10 to 3,670 mg/kg, with an average of 465 mg/kg. The majority of this material was placed as a 'clean' capping layer following completion of construction works on Tipner East. Lead was also detected at depth, particularly within the central and northern parts of the landfill across W4. Excluding a statistical outlier of 55,800 mg kg-1 in the north of the area (W4TP307 at 1.0 m bgl), the concentrations ranged between 6.7 and 1,870 mg/kg within the deeper Made Ground with an average of 490 mg/kg. Concentrations within the underlying natural strata were typically less than 100 mg/kg.

The other metals of note were copper, mercury and zinc.

Copper was generally encountered at low concentrations although it was often more elevated within soil samples coincident with elevated lead.

Mercury was generally encountered at low concentrations <2 mg/kg, although more elevated concentrations, with a maximum of 15.3 mg/kg were encountered typically towards the western side of the former MOD landfill and the eastern corner of the Portsmouth Harbour Cruising Club. Elevated concentrations of Mercury were recorded in both shallow and deep samples.

Zinc was generally present within the Made Ground across Area 2 with the maximum concentration of 4,180 mg/kg located in the north of the area (W4TP307 at 1.0 m bgl) and was coincident with the lead outlier of 55,800 mg/kg. The varying concentrations of zinc tended to follow the concentration profile of lead.

For the other metals that were analysed, their concentrations were low and consistent across the Made Ground and natural samples that were analysed.

Made Ground samples taken from across Area 2 were analysed for organotins to assess for potential contamination associated with any boat maintenance activities or landfilling of naval equipment which is understood to have occurred in this area. Organotins were typically not detected in the samples that were analysed, with the exception of dibutyl and tributyl tin which were detected at two locations on the Portsmouth Harbour Cruising Club site (W3BH301 and W3WS302) and dibutyl tin at a single location (W4BH305 0.07mg/kg 0.9 mbgl) in the former MOD landfill area. With the exception of the maximum tributyl tin concentration of 1.26 mg/kg in W3BH301, the concentrations of organotins only marginally exceeded the detection limits.

The IKM findings closely reflect WSP findings with respect to metals in the soil and Made Ground.

Organics Contaminants

Selected organic analytes in soil in Area 2 and 3 are presented in **Figure 22**.

Polycyclic Aromatic Hydrocarbons

Concentrations of total USEPA 16 PAHs within the Made Ground ranged between 1.21 to 318 mg/kg across Area 2 and were largely not detected in the few natural samples collected. Reported concentrations were higher in the former MOD landfill with a maximum concentration of 318 mg/kg detected in the southern corner of the Portsmouth Harbour Cruising Club (W3WS305 0.7-0.8 m bgl) and concentrations over 100mg/kg were reported in samples from W3WS305, W4BH306, W4TP307 and W4TP308. The high concentrations of PAHs could be attributable to ash and/or asphalt fragments observed in the Made Ground. There was no clear pattern of vertical distribution; concentrations increased with depth at some locations and decreased with depth at others.

The IKM findings closely reflect WSP findings with respect to PAHs in the soil and Made Ground.

Petroleum Hydrocarbons

Petroleum hydrocarbons were detected throughout the full thickness of Made Ground across Area 2 in the WSP 2017 investigation. Aromatic hydrocarbons were consistently present at higher concentrations than aliphatic hydrocarbons and middle to heavy carbon fractions dominated. There was no clear pattern of vertical distribution which reflects the anecdotal records of uncontrolled filling. The recorded concentrations in the WSP investigation ranged between 0.81 and 5,380mg/kg, with the highest concentrations tended to be located towards the eastern, western and northern areas of the former MOD landfill but not exclusively. Five of the samples recorded total petroleum hydrocarbons of >1000 mg/kg with a maximum concentration of 5,380 mg/kg in the north of the area (W4TP307 at 1.0 m bgl). 24 samples were <100 mg/kg and 33 were between 100 and 1,000 mg/kg.

At the eastern border of the filled area beneath area W3, staining and a hydrocarbon odour were noted in the Made Ground in W3WS302, near an existing above ground fuel tank. Hydrocarbon concentrations in the shallow Made Ground in this location and in locations to the north (W3WS301) and southwest (W3WS304) were moderately elevated and were composed of predominantly longer chain aromatic hydrocarbons. The hydrocarbons could either be associated with the above ground fuel tank or landfilling in this area.

The IKM findings closely reflect WSP findings with respect to petroleum hydrocarbons in the soil and Made Ground.

PCBs, Dioxins and Furans

PCBs, dioxins and furans were analysed for in Made Ground during the WSP investigation within the former MOD landfill area in W4. Twelve samples were analysed for PCBs and five for dioxins and furans. No dioxins and furans were detected in any of the samples analysed. PCBs were detected in seven samples with concentrations ranging from 0.0874 to 0.678 mg/kg total WHO 12 PCBs and with a mean concentration of 315ug/kg. Samples were focussed on the deeper original landfill materials within the central belt of the landfill. This was intended to complement the testing that IKM focussed on the eastern and western boundaries of W4 where PCBs (as Arochlor 1254) were detected in 2006.

SVOCs and VOCs

No other significant SVOCs or VOCs were detected in the soil samples analysed in the WSP or IKM investigations. Occasionally SVOCs including phthalates, methylphenols, 2-methylnaphthalene, dibenzofuran, carbazole and 4-chloroaniline were detected within the Made Ground. Isolated VOCs were also detected, most significantly in one sample from the north of W4 (W4TP307 1.0 m bgl) where elevated concentrations of alkylated benzenes were detected associated with the maximum total petroleum hydrocarbon concentration detected.

Inorganics Contaminants

No significant ammonia or cyanide concentrations were detected in the Made Ground samples collected from W4 during WSP's 2017 investigation. Occasional concentrations at or close to the detection limit were reported, with cyanide exclusively present as complex cyanide. The maximum concentration of exchangeable ammonia as NH_{4+} was 123 mg/kg and for complex cyanide was 2.66 mg/kg.

GROUNDWATER

Metal Contaminants

When compared to the concentrations in the underlying Chalk aquifer, concentrations of metals were generally not elevated in the perched groundwater collected from the Made Ground within the main former MOD landfill area in W4. Arsenic and lead were an order of magnitude higher in the perched groundwater in the northern corner (W4WS312) and the Chalk aquifer on the north-eastern boundary (W4BH305). The perched groundwater within the Made Ground on the south-eastern boundary of W3 within the landfill material reported metals as an order of magnitude higher than the remainder of the samples tested. Of particular note were chromium (40.0 µg/l), copper (255 µg/l), lead (1,290 µg/l) and zinc (615 µg/l). Selenium concentrations within the superficial deposit and Chalk aquifers in W3 were an order of magnitude higher than the remainder of the

samples tested in Area 2 (12.0 µg/l and 32.6 µg/l respectively) which may be associated with intrusion of saline water from the harbour.

With respect to organo tins, a single detect of tributyl tin of 0.00956 µg/l was recorded in the superficial deposits on the northern boundary of W3 (W3WS301).

Organic Contaminants

PAHs were detected in groundwater within most of the groundwater samples at low concentrations which are considered to be reflective of natural organic materials. The locations of note are as follows:

- Perched groundwater within Made Ground on the north-western boundary of the landfill – 23.7 µg/l total USEPA 16 (W3WS304).
- Chalk aquifer on the northern boundary of Area 2 – 0.432 µg/l total USEPA 16 (W3BH301).
- Perched groundwater within the landfill – 1.32 µg/l total USEPA 16 (W4WS313).

Petroleum hydrocarbons were only detected in two samples, both from perched groundwater within Made Ground. In the northern corner of the landfill (W4WS312) total petroleum hydrocarbons were detected at a marginal concentration of 27 µg/l. On the north-western boundary of the landfill, a total concentration of 157 µg/l was reported, comprising middle and heavy carbon fraction aromatic compounds which reflect the elevated PAHs detected at this location. Dimethyl phthalate was also detected at this location at a concentration of 2.24 µg/l.

Between the completion of the installation of a monitoring well at borehole W4BH307 and the subsequent monitoring visit to develop the well, the installation was subject to vandalism. The headworks on the well were damaged, a bung in the standpipe removed. During a subsequent visit to monitor this location a measurable thickness of free product was recorded on the groundwater. Sampling of this product was undertaken and results are included in **Appendix F**. The laboratory analysis indicates that the product comprised 'fresh diesel' (less than 2 years old) which was visibly red when extracted from the borehole. At the time of the return visit when the product was recorded, an empty fuel can was located near the borehole. This suggests that the observed product in the well was a result of an act of vandalism and the deliberate introduction of diesel into the monitoring well.

Localised marginal detects of chlorinated VOCs were detected in the perched groundwater in the northern corner of the landfill (W4WS312). This comprised trichloroethene (1.34 µg/l) and chlorobenzene (2.14 µg/l). No other VOCs were detected in any other groundwater samples that were collected.

No PCBs were detected in the two groundwater samples that were analysed.

Inorganics Contaminants

Ammoniacal nitrogen was detected in the perched groundwater collected from Made Ground and in the Chalk aquifer across Area 2. Concentrations were typically in the range of 1.08 to 5.82 mg/l in these samples with one higher result of 13.2 mg/l recorded in the perched groundwater within the landfilled material in the northern corner of W4 (W4WS312). The one groundwater sample collected from the superficial deposits in W3 did not detect ammoniacal nitrogen above the limit of detection.

Sulphate, chloride and hardness were recorded within the groundwater samples across all strata in the order of tens to hundreds of mg/l across Area 2, with concentrations increasing towards the coast. Both monitoring locations screening the chalk (W3BH301 and W4BH305) which were sampled in Area 2 reported concentrations of choride and conductivity in excess of 200mg/l and 1000µs/cm respectively, indicating saline intrusion may be prevalent in the chalk aquifer in this area. Reported concentrations of sulphate 1,130 mg/l and chloride 3,460 mg/l were greatest in W3BH301, which suggests the saline intrusion is more prevalent towards the coast.

Cyanide was not detected in any of the groundwater samples analysed across Area 2.

SOIL GAS

Ground gas conditions on Area 2 appear to be influenced by the landfilling in this area. In monitoring wells screening the Made Ground gas flow rates were typically below instrumental detection limits in wells which were not flooded. Concentrations of carbon dioxide and methane were moderately elevated in the former landfill up to 18.7% v/v and 33.7% v/v, respectively. This indicates there is some gas being generated in the landfilled material in this area.

Two wells screening the superficial deposits in this area were recorded with moderate carbon dioxide and low methane concentrations were detected up to 12.8% and 0.8%, respectively. Flow rates in both locations were below detection limits.

In the chalk monitoring well network there were moderate carbon dioxide concentrations (up to 12.9% v/v) and methane concentrations recorded (up to 12.2% v/v). These higher concentrations were both detected in well W4BH307 which had detectable free product present on the groundwater. Concentrations in the other wells were lower with highest carbon dioxide and methane concentrations of 6.2% and 3.1%, respectively. Flow rates in these wells were highest in W4BH305 (maximum of 14.6 l/hr), however, all monitoring wells were either flooded or partially flooded wells which would influence flow rates with water level change in the monitoring wells with the tidal cycle. The highest flow rate was recorded during an incoming tide, indicating that tidal change in water level may be influencing flow rates observed in the wells.

AREA 3

Field observations and analytical data are available from the WSP 2017 and ESI 2015 site investigations for Area 3. Although investigation was undertaken by IKM in 2006, the analytical data has not been made available to WSP for this review.

The WSP 2017 and ESI 2015 site investigations encountered limited contamination in the ground across Area 3. This is in line with the limited historical use of the site (fire station and barracks). Both the WSP and ESI investigations encountered limited visual or olfactory evidence of contamination and PID readings were generally low with a peak of 9 ppm recorded in W5BH302 (1.0 m bgl). Made Ground was found to contain pieces of demolition materials, plastic, glass, cloth, wood, wire, chalk and coal potentially associated with the demolition materials from the former barracks.

Groundwater concentrations have been evaluated from the WSP 2017 investigation only. ESI's data has not been re-evaluated due to the age of the data and the wells were not re-sampled because they had generally been cross-installed across aquifers which prevent a robust assessment of separate aquifers being possible.

UXO

Unexploded ordnance specialist supervision was provided during all of the intrusive works on Area 3. No unexploded ordnance was encountered in any of the exploratory holes investigated.

SOILS

Asbestos fibres were detected in Made Ground samples during both the WSP and ESI investigations. A plan showing asbestos quantifications in soil across the site is presented in **Figure 16**. Limited visual evidence of ACMs was recorded in the exploratory logs, but fibres of chrysotile and occasionally amosite, at concentrations below the quantifiable laboratory limit, were recorded in samples across the area both within the raised ground in the south-eastern corner of the area and the more level areas in the north-west.

Metals were generally detected at low concentrations throughout all strata. The most pronounced reduction in concentrations of metals between Made Ground samples and natural strata was displayed by lead. In the north-western corner of the area the concentrations increased with depth within the Made Ground (W5WS307c, W5TP301 and W5TP302). Lead and metal concentrations in soil in Area 2 and 3 are presented in **Figure 20** and **21**, respectively. The highest concentration of lead across Area 3 recorded from the WSP 2017 investigation was 403 mg/kg from a sample of Made Ground at 0.5 m bgl located towards the north-western corner of the area (W5TP301). Similar concentrations and distribution of metals, including lead, were reported in the ESI 2015 assessment.

Made Ground samples taken from the National Seamanship Training were analysed for organotins to assess for potential contamination associated with boat maintenance activities that may have occurred in this area.

No organotins were detected in the samples that were analysed. Ammonia and cyanides were also included in soil analysis in this area in both natural and Made Ground deposits. No concentrations above the laboratory limit of detection were recorded.

Selected organic analytes in soil in Area 2 and 3 are presented in **Figure 22**. In the WSP 2017 investigation, petroleum hydrocarbons and PAHs were detected at low concentrations within the soil samples that were analysed across all strata. Petroleum hydrocarbons were middle to heavy aliphatic and aromatic fractions with totals predominantly lower than 100 mg/kg. Slightly higher concentrations in some Made Ground samples were detected with a maximum of 404 mg/kg in W5WS307c being recorded adjacent to the western side of the Harbour School sports centre. Total USEPA 16 PAHs were predominantly lower than 10 mg/kg. No other SVOCs or VOCs were detected in the soil samples that were analysed. The ESI investigation encountered similar concentrations of petroleum hydrocarbons and PAHs across Area 3.

One Made Ground sample was analysed for PCBs within the raised ground area in the south-east of Area 3 (W5TP304 at 0.5m). No PCBs were detected.

GROUNDWATER

Only one groundwater sample was collected from Area 3 during the WSP 2017 investigation from north-eastern corner of the site (W7WS309). The monitoring well was screened in the Chalk and the analytical results indicate that the concentrations in the groundwater in this unit were consistent with regional water quality across the Tipner Peninsula as reported by IKM in 2006. The chloride concentrations in groundwater (197 mg/l) were similar to levels indicative of saline intrusion (200 mg/l). Concentrations of sulphate and chloride (78.6 mg/l and 197 mg/l respectively) were however, an order of magnitude less than concentrations detected across other areas of the site. The concentrations of metals were similar to those detected across the firing range and Horsea Island and, with the exception of benzo(a)pyrene which was reported at a concentration of 0.0127 µg/l. No other organic compounds were detected.

SOIL GAS

Ground gas monitoring was completed in eight wells in Area 3 which screened Made Ground, the superficial deposits or Chalk. The conditions recorded in the Made Ground and superficial deposits comprised low carbon dioxide concentrations (up to 4.8%), very low methane concentrations (0.1%) and no measurable flow rates.

In the Chalk, observed gas concentrations were higher with carbon dioxide detected up to 12% and methane up to 0.5% (W5BH302). The associated gas flow rates were also higher in flooded or partially flooded wells in the Chalk with a maximum recorded flow of 90 l/hr in W5BH303. The maximum flow rate was recorded in this flooded monitoring well during an incoming tide, which suggests that the flow was driven by groundwater rise with the tide. Flows of this magnitude were not sustained in the well, as the stabilised flow reading was 0 l/hr after the initial flow of 90. This also suggests that the observed gas flow is driven by a change in water level in the well, rather than a sustained gas source in the ground.

Appendix D.2

BOREHOLE LOGS

Table D.2.1. – Summary of In-Situ Observations and Obstructions (PID readings>1 ppm)

Exploratory Hole	Depth (mbgl)	PID Results	Obstructions	Visual / Olfactory Observations
HP201	0.2			Rare bullets (no casing).
W3WS302	0.3	2.2		Weak hydrocarbon odour
W3WS303	0.6		Concrete obstruction	
W3WS304	1.9	2		
W3WS304	2.5	2		
W4BH304	1.95		obstruction of concrete.	
W4BH305	2.5			Greyish black staining
W4BH306	2.2	9		
W4BH307	0.8	2		
W4BH307	2.4	85		
W4BH307	4	2		
W4WS313	1.7	2		
W4WS313	2	2		
W4WS313	2.7	17		
W4WS314	1.35	9		
W4WS315a	0.5		Concrete obstruction	
W4WS315b	0.4		Concrete obstruction	
W4WS316	1.9	8.1		
W4WS316	2.5		Obstruction	
W5BH302	0.9	9		
W5TP305	1		Concrete obstruction and redundant clay drainage pipe.	
W5WS306	1.5		Obstruction	
W5WS307a	0.6		Concrete obstruction	
W5WS307b	1		Concrete obstruction	
W8BH308	0.1	5		
W8WS317a	0.2		Concrete obstruction	
W8WS317b	0.2		Concrete obstruction	
W8WS317c	2.45	6		
W9BH309	0.7	3		
W9WS322a	0.4		Concrete obstruction	
W9WS325a	0.4		Concrete obstruction	
W9WS325b	0.3		Concrete obstruction	
WS202	3		Concrete obstruction	

Table D.2.2 – Asbestos Observations During Site Works

Exploratory Hole	Depth (m bgl)	Observations on Site
BH201	2	Possible asbestos containing material encountered.
BH201	2.9	Fibreboard sheet
WS202	1.7	Possible asbestos containing material
TP203	2.2	Possible asbestos containing material comprising fibrous insulation material.
W3WS302	0.85	Piece of cement bound asbestos
W9WS322b	0.70	Piece of asbestos cement board

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TRIAL PIT LOG

Hole No. **HP201**

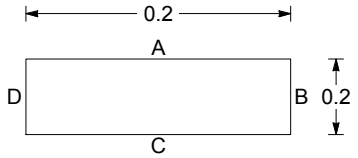
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463653.459 N 103243.530	3.900

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.20	ES						(0.60)	Grass over stiff light brown gravelly clay. Gravel is fine to coarse sub-rounded to angular flint. (MADE GROUND) 0.20 m bgl Occasional wood fragments. Rare bullets (no casing).		MG	
						3.30	0.60				
0.90	ES						(0.40)	Soft dark brown gravelly clay with wood fragments, metal fragment and bullet casing and occasional brick fragments. Gravel is fine to coarse sub-rounded to angular of flint. (MADE GROUND)		MG	
						2.90	1.00				
								Hand pit terminated at 1.00 m bgl.		END	



Length	Shoring/Support:
0.20m	None
Width	
0.20m	
Orientation	**Stability:**
degrees from north	Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP202**

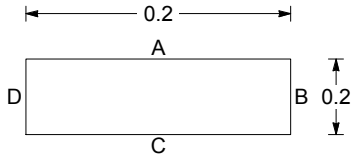
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463637.181 N 103195.093	3.739

SAMPLES & TESTS					Water	STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
								Grass over firm light brown silty gravelly clay. Gravel is fine to coarse sub-angular to sub-rounded of flint, concrete, slate and brick. (MADE GROUND)			
0.30	ES	0					(0.70)	0.30 m bgl rare clay pipe		MG	
0.50		0.5						0.50 m bgl increasing brick fragment content			
						3.04	0.70				
0.70	ES	0					(0.30)	Stiff reddish brown CLAY. [LAMBETH GROUP]		LMBE	
						2.74	1.00				
								Hand pit terminated at 1.00 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP203**

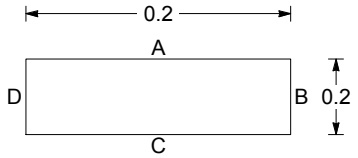
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463747.477 N 103241.004	4.005

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								Grass over firm brown gravelly clay with occasional wood fragments. Gravel is fine to coarse rounded to angular flint. (MADE GROUND)			
0.15	ES	0									
								0.30 m bgl becoming pale orangish grey.			
							(0.80)			MG	
								0.55 m bgl rare glass fragments.			
0.70	ES	0									
						3.21	0.80				
								Hand pit terminated at 0.80 m bgl.		END	



Length	Shoring/Support:
0.20m	None
Width	
0.20m	**Stability:**
Orientation	Stable to base
degrees from north	

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.8 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP204**

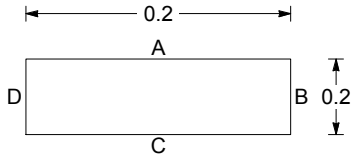
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	GD	E 463736.941 N 103186.710	3.844

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						3.54	(0.30) 0.30	Grass over soft light reddish brown clay. (TOPSOIL)		TS	
0.30	ES	0				2.84	(0.70) 1.00	Light brownish orange gravelly clay. Gravel is fine and medium subangular of brick, concrete and limestone aggregate. (MADE GROUND)		MG	
1.00	ES	0						Hand pit terminated at 1.00 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP205**

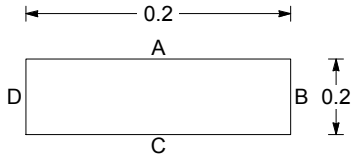
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463835.395 N 103195.340	3.975

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								Grass over stiff light brown gravelly clay. Gravel is fine to coarse angular to sub-angular flint. (MADE GROUND)			
								0.20 m bgl Rare clinker and rare brick gravels			
								0.30 m bgl more frequent flint gravel.			
0.40	ES	0					(0.80)			MG	
								0.50 m bgl rare coal gravel.			
								0.60 m bgl concrete rubble			
0.70	ES	0									
						3.18	0.80				
								Hand pit terminated at 0.80 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.8 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP206**

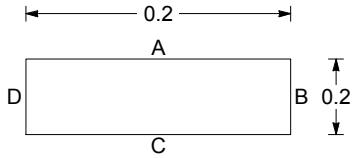
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463816.506 N 103133.229	4.089

SAMPLES & TESTS					Water	STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.30	ES	0					(0.70)	Grass over stiff light brown gravelly clay. Gravel is fine to coarse rounded to angular of flint, chalk, brick and concrete. Rare sub-rounded to rounded slate fragments. (MADE GROUND) 0.45 m bgl black woven textile membrane. 0.60 m bgl rare subrounded to subangular cobble of chalk.		MG	
						3.39	0.70				
						3.29	(0.10) 0.80	Stiff brown to dark brown gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
0.80	ES	0						Hand pit terminated at 0.80 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.8 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

Hole No. **HP207**

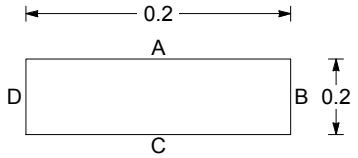
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	19-08-16 19-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	GD	E 463920.126 N 103176.484	4.615

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						4.32	(0.30) 0.30	Soft light brownish yellow gravelly clay. Gravel is medium and coarse subangular of brick, plastic and concrete. (MADE GROUND)		MG	
0.30	ES	0						Firm light brownish yellow clay. (MADE GROUND)			
0.60	ES	0					(0.70)			MG	
						3.62	1.00				
								Hand pit terminated at 1.00 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

Hole No. **HP208**

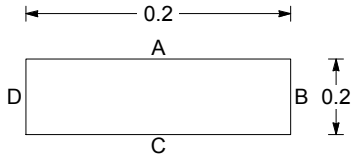
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463905.727 N 103131.787	4.173

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.15	ES	0					(0.70)	Grass over firm sandy gravelly clay. Sand is fine and medium. Gravel is fine to coarse rounded to angular of flint and brick. (MADE GROUND) 0.55 m bgl bullet 0.60 m bgl occasional chalk gravel		MG	
						3.47	0.70				
						3.37	(0.10) 0.80	Firm light brown and black slightly gravelly clay. Gravel is fine to coarse sub-rounded to sub-angular of flint and ash. (MADE GROUND)		MG	
0.80	ES	0						Hand pit terminated at 0.80 m bgl.		END	



Length	Shoring/Support:
0.20m	None
Width	
0.20m	
Orientation	**Stability:**
degrees from north	Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.8 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

Hole No. **HP209**

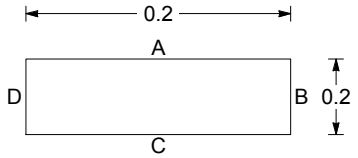
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463482.780 N 103373.411	3.723

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						3.57	(0.15) 0.15	Grass over stiff light brown clay with numerous rootlets. (TOPSOIL)		TS	
0.30	ES	0						Light brown gravelly fine sand. Gravel is fine to coarse rounded to sub-rounded of flint. (MADE GROUND) 0.30 m bgl breeze block.			
0.65	ES	0				3.02	(0.55) 0.70	0.40 m bgl Occasional timber, plastic, and asphalt gravel. Numerous bricks.		MG	
								Hand pit terminated at 0.70 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Hole terminated at 0.7 m bgl. Hand pit positioned over approximate position of historic mustard gas trials. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP210**

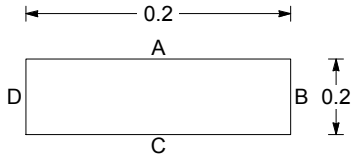
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463484.752 N 103412.790	3.111

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.25	ES	0					(0.65)	Grass over clayey gravel with numerous sub-angular to angular cobbles of flint, brick, plastic, barbed wire. Gravel is fine to coarse rounded to angular of flint, glass, plastic and brick. (MADE GROUND)		MG	
						2.46	0.65				
0.75	ES	0				2.31	(0.15) 0.80	Firm grey mottled brown gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (LAMBETH GROUP)		LMBE	
								Hand pit terminated at 0.80 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Hole terminated at 0.8 m bgl. Hand pit positioned over approximate position of historic mustard gas trials. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP211**

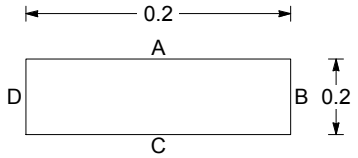
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	19-08-16 19-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	SS	E 463715.228 N 103309.949	3.613

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						3.41	(0.20) 0.20	Dark grey slightly clayey gravelly fine sand with frequent metal screws. Gravel is fine to coarse rounded to angular of flint. (MADE GROUND)		MG	
0.20	ES							Hand pit terminated at 0.20 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Hole terminated at 0.2 m bgl. Hand pit dug within an area of black ground surrounded by grassland indicating potential vegetation stress. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

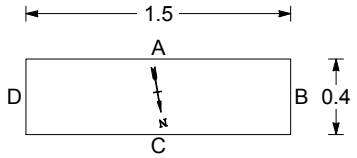
Hole No. **TP201**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463556.676 N 103326.550	4.124

SAMPLES & TESTS					Water	STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.30	ES	0				3.52	(0.60) 0.60	Light grey slightly gravelly medium and coarse sand with frequent rootlets. Gravel is fine rounded to angular of flint. (MADE GROUND)		MG	
						3.42	0.70	Light orange slightly gravelly fine sand. Gravel is fine rounded to angular of flint. (MADE GROUND)		MG	
						3.37	0.75	Dark greyish brown slightly gravelly fine and medium sand with occasional decayed roots. Gravel is fine to coarse rounded to angular of flint. (MADE GROUND)		MG	
						3.22	(0.15) 0.90	Light orange slightly gravelly fine sand. Gravel is fine rounded to angular of flint. (MADE GROUND)		MG	
1.00	ES	0				2.42	(0.80) 1.70	Medium dense dark greyish brown medium and coarse sand and fine to coarse rounded to angular gravel of flint, brick, concrete and occasional plastic fragments. Occasional subangular to angular cobbles and boulders of brick and concrete. (MADE GROUND)		MG	
								Trial pit terminated at 1.70 m bgl.		END	



Length	Shoring/Support:
1.50m	None
Width	
0.40m	**Stability:**
Orientation	
10 degrees from north	Poor from 1.7m

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.7m due to encountering a possible metal obstruction.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

Hole No. **TP203**

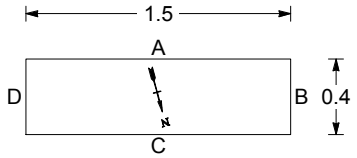
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463526.493 N 103373.991	4.825

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.40	ES	0						Dark brown very clayey gravelly medium and coarse sand with numerous cobbles and boulders of concrete, brick, metal, breeze block, steel wire cable, bitumen, limestone slabs, clay pipe fragments. Gravel is fine to coarse rounded to angular of flint, brick, clinker, ash, metal, plastic tape, concrete and glass. (MADE GROUND)			
1.20	ES	0					(2.20)			MG	
						2.63	2.20				
							(0.40)	Dark brownish black clayey gravelly medium and coarse sand. Gravel is fine to coarse rounded to angular of flint, metal, brick and wood. (MADE GROUND) 2.20 - 2.60 m bgl Possible asbestos containing material comprising fibrous insulation material.		MG	
						2.23	2.60				
								Trial pit terminated at 2.60 m bgl.		END	



Length	Shoring/Support:
1.50m	None
Width	
0.40m	
Orientation	**Stability:**
15 degrees from north	Poor from 2.6m

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 2.6m due to instability and on encountering asbestos.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **TP207**

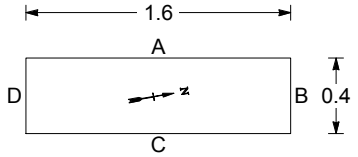
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463771.036 N 103382.379	4.298

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						4.15	(0.15) 0.15	Grass over firm dark brown slightly sandy slightly gravelly clay. Gravel is fine to coarse rounded to angular of flint, brick and concrete. (TOPSOIL)		TS	
						3.90	(0.25) 0.40	Greyish brown slightly clayey very gravelly fine to coarse sand with occasional cobbles and boulder sized fragments of flint, brick, concrete. Gravel is fine to coarse rounded to angular of flint, brick, concrete. (MADE GROUND)		MG	
0.50	ES	0				3.55	(0.35) 0.75	Brown clayey slightly gravelly fine and medium sand with occasional cobbles of flint. Gravel is fine to coarse rounded to angular of flint. (MADE GROUND)		MG	
0.85	ES	0				3.10	(0.45) 1.20	Black gravelly fine to coarse sand with occasional cobbles and boulder sized fragments of brick and concrete. Gravel is fine to coarse rounded to angular of flint, ash, brick, granite, chalk and bitumen. (MADE GROUND)		MG	
1.50	ES	0				2.20	(0.90) 2.10	Orangish brown medium and coarse SAND and fine to coarse rounded to angular GRAVEL of flint with occasional cobbles of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
2.10	ES	0						Trial pit terminated at 2.10 m bgl.		END	



Length	Shoring/Support:
1.60m	None
Width	
0.40m	**Stability:**
Orientation	
100 degrees from north	Good to base of pit

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 2.1m.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

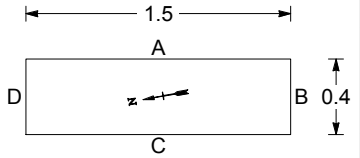
Hole No. **TP208**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463590.040 N 103272.692	3.263

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						3.11	(0.15) 0.15	Grass over firm dark brown slightly sandy slightly gravelly clay. Gravel is fine and medium rounded to angular of flint. (TOPSOIL)		TS	
0.20	ES						(0.75)	Dark brown occasionally black clayey gravelly fine and medium sand with numerous cobbles and boulder sized fragments of brick, concrete, wood and ceramic. Gravel is fine to coarse rounded to angular of flint, brick, concrete, metal, wood and plastic. (MADE GROUND)		MG	
						2.36	0.90				
1.00	ES				1	1.96	(0.40) 1.30	Dark brownish black clay with numerous decayed roots. (MADE GROUND)		MG	
						0.96	(1.00) 2.30	Light greyish blue mottled light brown SAND and GRAVEL with frequent cobbles of rounded to aungular flint. Sand is medium and coarse. Gravel is fine to coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
2.30	ES							Trial pit terminated at 2.30 m bgl.		END	



Length	Shoring/Support:
1.50m	None
Width	
0.40m	**Stability:**
Orientation	Poor from 2.3m
280 degrees from north	

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks
16-08-16		1.30			

General Remarks
Hole terminated at 2.3m due to instability.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

Hole No. **TP209**

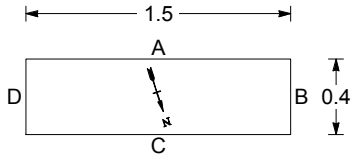
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463721.867 N 103238.487	3.332

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						2.93	(0.40) 0.40	Grass over firm dark brown slightly sandy slightly gravelly clay. Gravel is fine to coarse rounded to subangular of flint. (TOPSOIL)		TS	
0.40	ES	0				2.43	(0.50) 0.90	Stiff orange slightly gravelly very sandy CLAY. Gravel is fine to coarse rounded to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
1.00	ES					2.13	(0.30) 1.20	Medium dense light greyish brown clayey SAND and GRAVEL with frequent rounded to angular cobbles of flint. Sand is medium and coarse. Gravel is fine to coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
						1.33	(0.80) 2.00	Stiff light greyish blue mottled reddish brown CLAY. (LAMBETH GROUP)		LMBE	
2.00	ES	0						Trial pit terminated at 2.00 m bgl.		END	



Length	Shoring/Support:
1.50m	None
Width 0.40m	**Stability:**
Orientation 18 degrees from north	Good to base of pit

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 2.0m.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

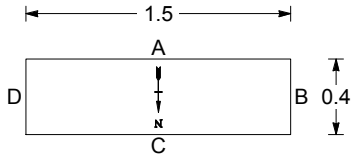
Hole No. **TP210**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463784.421 N 103248.865	3.127

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.20	ES	0				2.83	(0.30) 0.30	Grass over firm dark brown slightly sandy slightly gravelly clay. Gravel is fine to coarse rounded to angular of flint. (TOPSOIL)		TS	
0.80	ES	0				2.23	(0.60) 0.90	Stiff orangish brown CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
						1.73	(0.50) 1.40	Orangish brown SAND and GRAVELwith abundant rounded to subangular cobbles of flint. Sand is medium and coarse. Gravel is fine to coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
1.90	ES	0				1.13	(0.60) 2.00	Orangish brown gravelly medium and coarse SAND with occasional subangular cobbles of flint. Gravel is fine to coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
						1.03	2.10	Stiff light greyish blue mottled reddish brown CLAY. (LAMBETH GROUP)		LMBE	
								Trial pit terminated at 2.10 m bgl.		END	



Length	Shoring/Support:
1.50m	None
Width	
0.40m	**Stability:**
Orientation	
0 degrees from north	Good to base of pit

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 2.1m.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **TP211**

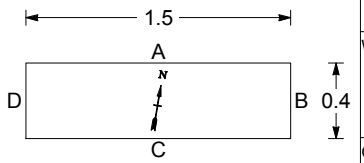
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463951.053 N 103217.543	3.142

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						2.89	(0.25) 0.25	Grass over firm dark brown sandy gravelly clay. Gravel is fine to coarse rounded to angular of flint and brick. (TOPSOIL)		TS	
0.20	ES										
						2.29	(0.60) 0.85	Brown sandy clay with numerous subangular to angular cobble and boulder sized fragments of flint, brick, concrete, chalk and limestone. (MADE GROUND)		MG	
0.70	ES	0									
						0.84	(1.45) 2.30	Orange slightly gravelly medium and coarse SAND. Gravel is medium rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
1.50	ES	0			1						
2.30	ES	0						Trial pit terminated at 2.30 m bgl.		END	



Length	Shoring/Support:
1.50m	None
Width	
0.40m	**Stability:**
Orientation	
170 degrees from north	Poor from 2.3m

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks
18-08-16		2.10			

General Remarks
Hole terminated at 2.3m due to instability.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

Hole No. **TP212**

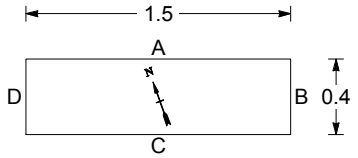
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463610.254 N 103174.146	2.986

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						2.89	0.10	Grass over firm dark brown sandy gravelly clay. Gravel is fine to coarse subrounded to subangular of flint. (TOPSOIL)		TS	
						2.74	(0.15)	Orange medium sand. (MADE GROUND)		MG	
0.20	ES	0					0.25				
								Dark brown and black sandy gravelly clay with frequent cobble and boulder sized fragments of brick, concrete, metal, limestone. Gravel is fine to coarse rounded to angular of flint, brick, concrete, metal and ash. Occasional boulder sized fragments of organic clay and decayed wood. (MADE GROUND)			
							(1.05)			MG	
1.00	ES	0									
					1	1.69	1.30				
								Light blue mottled orangish brown CLAY. (LAMBETH GROUP)			
							(0.70)			LMBE	
						0.99	2.00				
2.00	ES	0						Trial pit terminated at 2.00 m bgl.		END	



Length	Shoring/Support:
1.50m	None
Width	
0.40m	**Stability:**
Orientation	
200 degrees from north	Good to base of pit

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks
16-08-16		1.30			

General Remarks
Hole terminated at 2.0m.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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Fax:

TRIAL PIT LOG

Hole No. **TP213**

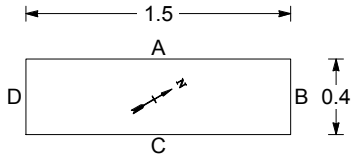
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463710.719 N 103173.969	3.409

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						3.01	(0.40) 0.40	Grass over brown slightly sandy slightly gravelly clay with rare bullet casings. Gravel is fine to coarse rounded to angular of flint and brick. (MADE GROUND)		MG	
0.40	ES	0				2.91	0.50	Brown slightly sandy slightly gravelly clay. Gravel is fine to coarse rounded to angular of flint and brick (MADE GROUND)		MG	
1.00	ES	0					(1.50)	Orange clayey gravelly medium and coarse SAND with occasional subrounded to subangular cobbles of flint. Gravel is fine to coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
2.00	ES	0				1.41	2.00	Trial pit terminated at 2.00 m bgl.		END	



Length	Shoring/Support:
1.50m	None
Width	
0.40m	
Orientation	**Stability:**
120 degrees from north	Good to base of pit

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 2.0m.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **TP214**

Project: City Deal Portsmouth

Sheet: 1 of 1

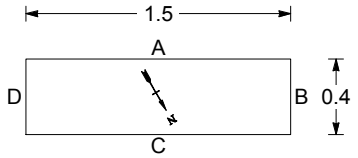
Job No: 70015362

Client: PCC

Date: 19-08-16
19-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	JCB-3CX	SS	E 463717.844 N 103358.458	3.449

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						3.15	(0.30) 0.30	Grass over brown gravelly clay. Gravel is medium and coarse rounded to angular of flint. (TOPSOIL)		TS	
0.30	ES					2.45	(0.70) 1.00	Pale yellow slightly gravelly medium and coarse SAND. Gravel is fine to coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
1.00	ES							Trial pit terminated at 1.00 m bgl.		END	



Length: 1.50m

Width: 0.40m

Orientation: 30 degrees from north

Shoring/Support: None

Stability: Good to base of pit

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0m.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

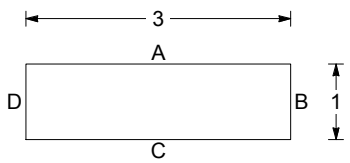
Hole No. **W4TP307**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 464019.991 N 103444.288	4.187

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						3.79	(0.40) 0.40	Light brown very sandy gravel with occasional rootlets. Gravel is fine to coarse very angular to well rounded of brick, concrete, glass and various lithologies. (MADE GROUND)		MG	
0.35	ES	0									
						2.69	(1.10) 1.50	Dark brown slightly clayey very gravelly sand. Gravel is fine to coarse very angular to rounded of brick, concrete, flint with inclusions of 1m long metal pipe, rods, cobbles of concrete kerb stone, black stained timber, fabric, mdf, black plastic bags, foam, carpet, bath mat and asbestos lagging. (MADE GROUND)		MG	
1.00	ES										
						1.09	(1.60) 3.10	Dark brown mottled black slightly clayey very gravelly sand with numerous cobbles of red brick. Gravel is fine to coarse angular to rounded of brick, concrete, flint, asphalt with inclusions of timber, metal, glass and various materials. (MADE GROUND)		MG	
3.00	ES										
								Trial pit terminated at 3.10 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial Pit complete at 3.1 m bgl.
No groundwater encountered.
Asbestos lagging present at depth in trial pit.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

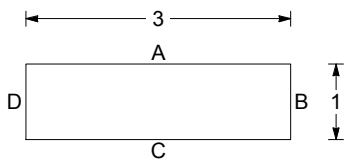
Hole No. **W4TP308**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 463992.494 N 103437.347	3.376

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						3.08	(0.30) 0.30	Light brown very gravelly fine sand with occasional rootlets. Gravel is fine to coarse very angular to well rounded of brick, concrete, glass and various lithologies. (MADE GROUND)		MG	
0.40	ES	0						Brown slightly gravelly sandy clay. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies. (MADE GROUND)			
							(1.20)			MG	
						1.88	1.50				
1.70	ES							Dark brown mottled black slightly clayey very gravelly sand with numerous cobbles of red brick. Gravel is fine to coarse angular to rounded of brick, concrete, flint, asphalt and inclusions of timber, metal, glass and various materials. (MADE GROUND)			
							(1.50)			MG	
						0.38	3.00				
								Trial pit terminated at 3.0 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial Pit complete at 3.0 m bgl.
No groundwater encountered.
Trial Pit backfilled upon completion.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

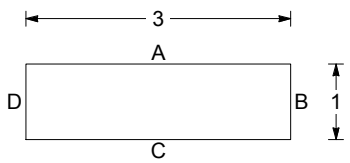
Hole No. **W4TP309**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 463992.940 N 103401.838	4.233

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.10	ES	0				3.93	(0.30) 0.30	Light brown slightly clayey gravelly sand with occasional rootlets. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies. (MADE GROUND)		MG	
								0.30 m bgl Teram.			
						3.33	(0.60) 0.90	Brown slightly gravelly sandy clay. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies. (MADE GROUND)		MG	
1.00	ES	0				2.73	(0.60) 1.50	Orangish brown slightly clayey sand. (MADE GROUND)		MG	
2.50	ES					1.33	(1.40) 2.90	Dark brown mottled black slightly clayey very gravelly sand with cobbles of red brick and concrete with inclusions of timber, metal, glass, shells, asphalt / tarmacadam and asbestos cement. (MADE GROUND)		MG	
						1.03	(0.30) 3.20	Firm grey slightly gravelly slightly sandy CLAY. Gravel is fine and medium angular to rounded of various lithologies. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
								Trial pit terminated at 3.20 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Trial Pit complete at 3.2 m bgl.
No groundwater encountered.
Trial Pit backfilled upon completion.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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Fax:

TRIAL PIT LOG

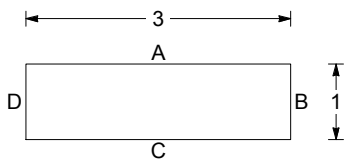
Hole No. **W4TP310**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 463991.065 N 103383.446	4.112

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						3.81	(0.30) 0.30	Light brown slightly gravelly clayey sand with rootlets. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies. (MADE GROUND)		MG	
								0.30 m bgl Teram.			
0.40	ES	0						Dark brown mottled black slightly clayey very gravelly sand with cobbles of red brick and inclusions of metal pipe, metal oil can, glass, timber, plastic bags, concrete, asphalt / tarmacadam, timber and various materials. (MADE GROUND)			
1.25	ES						(2.30)			MG	
						1.51	2.60				
						1.21	(0.30) 2.90	Firm grey slightly gravelly slightly sandy CLAY. Gravel is fine and medium angular to rounded of various lithologies. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
2.80	ES										
2.90	ES							Trial pit terminated at 2.90 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial Pit complete at 2.9 m bgl.
No groundwater encountered.
Trial Pit backfilled upon completion.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

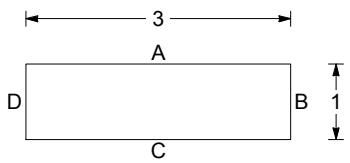
Hole No. **W4TP311**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 464047.413 N 103391.118	4.741

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						4.34	(0.40) 0.40	Light brown very gravelly sand with occasional rootlets. Gravel is fine to coarse angular to well rounded of flint, brick and various lithologies. (MADE GROUND)		MG	
								0.40 m bgl Teram.			
0.60	ES	1						Dark brown mottled black very gravelly slightly clayey sand with inclusions of metal, pipe, brick, glass, tape, timber, concrete and various materials. (MADE GROUND)			
1.70	ES						(2.60)			MG	
						1.74	3.00				
3.00	ES	1						Trial pit terminated at 3.00 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial Pit complete at 3.0 m bgl.
No groundwater encountered.
Contamination encountered within landfill material.
Trial Pit backfilled upon completion.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

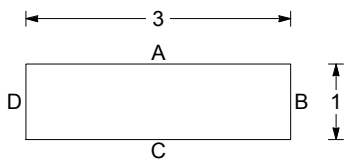
Hole No. **W4TP312**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 464067.640 N 103393.842	4.756

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.40	ES	0				4.16	(0.60) 0.60	Greyish brown gravelly sand. Gravel is fine to coarse very angular to well rounded of brick, concrete, glass and various lithologies. (MADE GROUND)		MG	
						3.26	(0.90) 1.50	Brown sandy gravel with inclusions of metal, fabric, orange plastic bags, glass and wire. (MADE GROUND)		MG	
1.90	ES	0				2.16	(1.10) 2.60	Dark brown mottled black slightly clayey very gravelly sand. Gravel is fine to coarse angular to rounded of brick, concrete, flint, asphalt / tarmacadam with inclusions of timber, metal, glass, fabric and various materials. (MADE GROUND)		MG	
								Trial pit terminated at 2.60 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Trial Pit complete at 2.6 m bgl.
No groundwater encountered.
Trial Pit backfilled upon completion.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

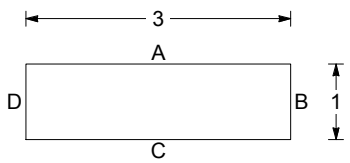
Hole No. **W4TP313**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 463980.170 N 103350.642	3.921

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						3.62	(0.30) 0.30	Reddish brown slightly gravelly clayey sand with rootlets. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies. (MADE GROUND)		MG	
0.30	ES							0.30 m bgl Teram.			
0.70	ES					2.62	(1.00) 1.30	Brown gravelly sand with cobbles of red brick. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies with inclusions of brick, glass bottles, metal oil cans, plastic, rubber, timber, rope, metal wire, plastic bags. (MADE GROUND)		MG	
2.20	ES				1	1.52	(1.10) 2.40	Dark brown gravelly sand. Gravel is fine to coarse very angular to well rounded of brick, concrete, flint and various lithologies, occasional angular to rounded cobbles and boulders of concrete and curb stone with inclusions of brick, glass bottles, metal oil cans, plastic, rubber, timber, rope, metal wire, plastic bags. (MADE GROUND) 1.50 m bgl Metal can containing bright yellow possibly paint.		MG	
						1.12	(0.40) 2.80	Firm light brown slightly gravelly slightly sandy CLAY. Gravel is fine and medium angular to rounded of various lithologies. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
								Trial pit terminated at 2.80 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	**Stability:**
Orientation	
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks
		2.50			Seepage.

General Remarks
Trial Pit complete at 2.8 m bgl.
Groundwater at 2.5 m bgl.
Trial Pit backfilled upon completion.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

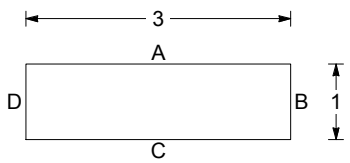
Hole No. **W4TP314**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 463995.879 N 103337.120	4.353

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.25	ES	0				3.45	(0.90) 0.90	Light brown slightly clayey gravelly sand with rootlets. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies. (MADE GROUND)		MG	
0.90	ES					3.05	(0.40) 1.30	Brown gravelly sand with rootlets. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies and occasional angular to rounded cobbles and boulders of concrete and asphalt / tarmacadam. (MADE GROUND)		MG	
1.50	ES					1.95	(1.10) 2.40	Soft locally firm yellowish brown mottled reddish brown slightly gravelly slightly sandy clay. Gravel is fine and medium angular to rounded of various lithologies. (MADE GROUND)		MG	
2.65	ES					1.15	(0.80) 3.20	Dark brown mottled black gravelly clayey sand with inclusions of glass, plastic, metal pipe, wire, brick and concrete. (MADE GROUND)		MG	
								Trial pit terminated at 3.20 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial Pit complete at 3.2 m bgl.
No groundwater encountered.
Trial Pit backfilled upon completion.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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Fax:

TRIAL PIT LOG

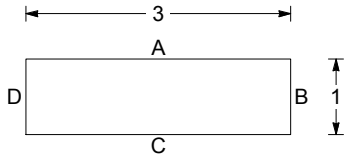
Hole No. **W4TP315**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 464028.640 N 103340.018	4.600

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.10	ES	0					(0.45)	Light brown gravelly silty gravelly fine sand with occasional rootlets. Gravel is fine to coarse very angular to well rounded of brick, concrete, flint and various lithologies. (MADE GROUND)		MG	
						4.15	0.45	0.45 m bgl Teram.			
0.90	ES	1					(0.85)	Dark brown mottled black sandy gravel. Gravel is fine to coarse angular to well rounded of flint and various lithologies with inclusions of brick, plastic, metal, wire, fabric, tape and occasional boulders of concrete. (MADE GROUND)		MG	
						3.30	1.30				
1.70	ES	0					(0.90)	Firm light greyish brown slightly gravelly slightly sandy clay. Gravel is fine to coarse angular to subrounded of flint, brick and various lithologies. (MADE GROUND)		MG	
						2.40	2.20				
								Trial pit terminated at 2.20 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial Pit complete at 2.2 m bgl.
No groundwater encountered.
Contamination encountered within landfill material.
Trial Pit backfilled upon completion.

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

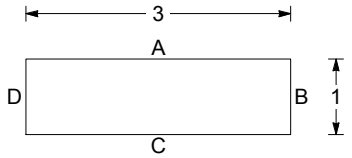
Hole No. **W4TP316**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 464039.021 N 103299.229	3.870

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50)	Light brown gravelly silty sand. Gravel is fine to coarse angular to rounded of predominantly brick, flint, concrete and chalk. (MADE GROUND)		MG	
0.40	ES	0				3.37	0.50				
							(0.70)	Brown very gravelly sand. Gravel is fine to coarse very angular to rounded of brick, concrete, flint and various lithologies with inclusions of concrete, tape, brick, plastic, metal and various materials. (MADE GROUND)		MG	
						2.67	1.20				
1.30	ES	0					(1.20)	Dark brown sandy gravel with inclusions of glass bottles, black timber, metal wires, pipes, fabric and various materials. (MADE GROUND)		MG	
2.20	ES	1				1.47	2.40				
								Trial pit terminated at 2.40 m bgl.		END	



Length	Shoring/Support:
3.00m	None
Width	
1.00m	
Orientation	**Stability:**
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial Pit terminated at 2.4 m bgl.
No groundwater encountered.
Contamination encountered within landfill material.
Asbestos lagging present at depth in trial pit.
Trial Pit backfilled upon completion.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

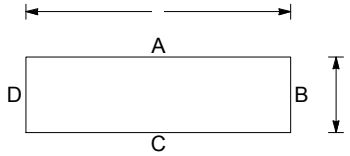
Hole No. **W5TP301**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 463811.813 N 103402.146	4.462

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.15	ES					4.16	(0.30) 0.30	Brown slightly gravelly slightly sandy silty clay with frequent roots and rootlets. Gravel is fine to coarse angular to subrounded of predominantly flint and brick. (MADE GROUND)		MG	
0.50	ES							Brown gravelly silty sand with occasional cobbles of brick. Gravel is fine to coarse very angular to well rounded of brick, concrete and various lithologies (MADE GROUND). 1.10 m bgl; Plastic pipes (not in situ).			
						2.26	(1.90) 2.20			MG	
2.50	ES					1.46	(0.80) 3.00	Soft light brown slightly sandy very silty CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
								Trial pit terminated at 3.00 m bgl.		END	



Length
m

Width
m

Orientation
degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Trial pit terminated at 3.0 m bgl. Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

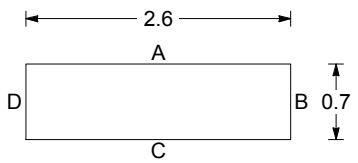
Hole No. **W5TP302**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	12-04-17 12-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	MT	E 463840.512 N 103369.364	4.420

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.30	ES							Dark brown silty gravelly clay with frequent roots and rootlets. Gravel is fine to coarse angular to subrounded of flint and brick. (MADE GROUND)			
0.30	ES	1						0.30 m bgl Plastic netting and geotextile layer			
1.00	ES										
1.00	ES	0					(2.20)			MG	
2.00	D										
2.00	ES										
2.00	ES	0				2.22	2.20				
			30				(0.60)	Soft light brown slightly sandy CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
						1.62	2.80				
2.80	ES							Trial pit terminated at 2.80 m bgl.		END	
2.80	ES	1									



Length	Shoring/Support:
2.60m	
Width	
0.70m	
Orientation	Stability:
degrees from north	Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Trial pit terminated at 2.8 m bgl. Trial pit logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

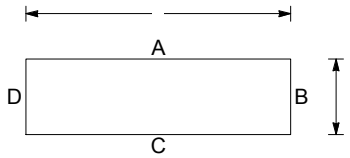
Hole No. **W5TP303**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	12-04-17 12-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	MT	E 463927.814 N 103323.906	4.950

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								Dark brown sandy gravelly clay. (TOPSOIL)			
							(0.40)			TS	
0.30	ES										
0.30	ES	0				4.55	0.40	0.30 m bgl Plastic netting and geotextile layer			
								Grey gravelly fine to coarse sand. Gravel is fine to coarse angular to subrounded of flint, cermamics, bricks and iron rods. (MADE GROUND)			
0.70	ES										
0.70	ES	0									
							(1.10)			MG	
1.10	ES	0									
						3.45	1.50				
1.50	ES							Light brown slightly gravelly sandy clay. Gravel is fine to coarse angular of bricks and concrete with frequent plastic fragments. (MADE GROUND)			
1.80	B		30				(0.70)			MG	
						2.75	2.20				
2.20	ES							Trial pit terminated at 2.20 m bgl.		END	
2.20	ES	0									



Length
m

Width
m

Orientation
degrees from north

Shoring/Support:

Stability:
Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 2.2 m bgl. Trial pit logged in accordance with BS5930 (2015).

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

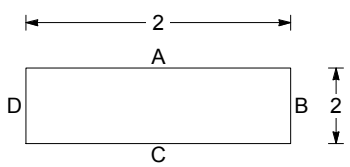
Hole No. **W5TP304**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	SM	E 463966.675 N 103323.282	4.826

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
							(0.30)	Brown gravelly silty sand with occasional rootlets. Gravel is fine to coarse very angular to well rounded of brick, concrete and various lithologies (MADE GROUND).		MG	
0.20	ES	0				4.53	0.30				
							(0.50)	Brown gravelly very sandy clay with yellowish sand bands and occasional cobbles of paving slabs. Gravel is fine to coarse angular to well rounded of brick, concrete, glass, metal and various lithologies (MADE GROUND).		MG	
0.50	ES	0				4.03	0.80				
								Trial pit terminated at 0.80 m bgl.		END	



Length: 2.00m

Width: 2.00m

Orientation: degrees from north

Shoring/Support:

Stability: Unstable

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial Pit terminated at 0.8 m bgl due to gradient of the slope.
No groundwater encountered.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

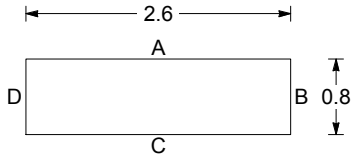
Hole No. **W5TP305**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	12-04-17 12-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
One Way Ltd	JCB 3CX	MT	E 463987.493 N 103302.696	4.922

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.30	ES							Light brown silty gravelly clay with frequent rootlets. Gravel is fine to coarse angular to subrounded of flint, brick, concrete and rare chalk. Occasional concrete slabs, bricks and metal rods. (MADE GROUND)			
0.30	ES	0									
							(1.00)			MG	
0.80	ES										
0.80	ES	0									
						3.92	1.00				
1.00	D							1.00 m bgl Concrete obstruction and redundant clay drainage pipe.		END	
								Trial pit terminated at 1.00 m bgl.			



Length	Shoring/Support:
2.60m	
Width	
0.80m	Stability:
Orientation	
degrees from north	

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Trial pit terminated at 1.0 m bgl due to concrete and suspected redundant drain pipe.
Trial pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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Fax:

WINDOW SAMPLE LOG

Hole No. **W3WS301**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	11-04-17 12-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463976.607 N 103490.181	2.705

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.					2.51	0.20	CONCRETE. 0.09 m bgl Angular brick cobble		CONC	
0.20-0.30	ES	.							Dark brownish grey gravelly very sandy clay. Gravel is fine to coarse angular to subrounded of flint, asphalt / tarmacadam, slate, concrete and brick. (MADE GROUND)			
0.20-0.30	ES	.	0									
0.70-0.80	ES	.						(1.10)			MG	
0.70-0.80	ES	.	0									
1.00-1.45	D (S)	1,2,1 2,2,3 N=8.					1.41	1.30				
1.30-1.45	ES	.							Soft locally firm dark grey occasionally black slightly gravelly CLAY with rare decayed plant matter and black speckling. Gravel is fine to coarse angular of flint. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))			
1.30-1.45	ES	.	0									
1.55-1.70	D	.							1.90 - 2.30 m bgl Angular flint gravel and cobbles. Becoming firm			
2.00-2.45	D (S)	1,1,1 1,1,2 N=5.		24								
2.40-2.55	D	.						(2.50)	2.50 - 2.65 m bgl Becoming very soft dark bluish grey with no gravel		TFD	
2.55-2.65	ES	.		18					2.65 - 2.80 m bgl Firm and slightly gravelly. Gravel is fine and medium coarse flint			
2.55-2.65	ES	.	0						2.90 m bgl Becoming very soft with no gravel Decayed plant matter. Organic odour			
3.00-3.45	D (S)	1,0,0 1,0,1 N=2.										
3.40-3.60	D	.					-1.10	3.80	3.40 - 3.80 m bgl Becoming dark bluish grey and light brown. Very soft			
3.90-4.00	D	.							Firm locally stiff light grey and light brown occasionally yellowish brown CLAY with occasional brown spots and fine chalk gravel. Gravel is fine and medium angular of chalk. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))			
4.00-4.45	D (S)	1,0,1 1,2,3 N=7.				1			3.80 - 4.00 m bgl Gravelly. Gravel is angular fine and medium white flint			
4.50-4.60	ES	.						(1.20)			TFD	
4.50-4.60	ES	.	0									
4.70-4.90	D	.					-2.30	5.00				
									5.00 m bgl Becoming very gravelly. Gravel is angular fine to coarse chalk		END	
									Borehole terminated at 5.00 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						12-04-17		4.20			

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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Telephone: 0117 930 2000
Fax:

WINDOW SAMPLE LOG

Hole No. **W3WS302**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	11-04-17 11-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463998.566 N 103473.319	2.723

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology		Dia. mm
							2.57	(0.15) 0.15	CONCRETE.		CONC		
0.20-0.25	ES	.	1						Reddish brown very gravelly clayey fine to coarse sand with rare fragments of plastic and pottery with low cobble content. Cobbles are angular of brick. Gravel is fine to coarse angular to subrounded of flint, brick, slate, chalk and concrete. (MADE GROUND)				
0.30		.	2.2					(0.45)	0.30 m bgl Becoming dark brownish black Weak hydrocarbon odour		MG		
0.50-0.60	ES	.	0				2.12	0.60					
0.80-0.85	ES	.					1.87	(0.25) 0.85	Dark greyish brown gravelly sandy clay. Gravel is fine to coarse angular to subrounded of flint and brick. (MADE GROUND)		MG		
									0.85 m bgl Piece of cement bound asbestos Borehole terminated at 0.85 m bgl.		END		

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.85m due to encountering piece of cement bound asbestos. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W3WS303**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	12-04-17 12-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463950.133 N 103465.156	2.662

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill Dia. mm
								(0.15)	CONCRETE.		CONC	
							2.51	0.15				
0.15-0.30	ES	.							Black very sandy fine to coarse gravel of flint brick and asphalt with rare metal and angular brick cobbles. Gravel is fine to coarse angular of flint and brick. (MADE GROUND)			
0.15-0.30	ES	.	0					(0.15)			MG	
							2.36	0.30				
0.30-0.50	ES	.							Brown gravelly slightly clayey fine to coarse sand. Gravel is fine to coarse angular to subrounded of flint, asphalt / tarmacadam, chalk, concrete and brick. (MADE GROUND)			
0.30-0.50	ES	.	0					(0.30)			MG	
							2.06	0.60				
									0.60 m bgl Concrete obstruction		END	
									Borehole terminated at 0.60 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.6m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP Kings Orchard, 1 Queen St, Bristol, BS2 0HQ Telephone: 0117 930 2000 Fax:	**WINDOW SAMPLE LOG**	Hole No. **W3WS304**
	Project City Deal Portsmouth	Sheet 1 of 1
Job No 70015362	Client PCC	Date 11-04-17 11-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463978.499 N 103446.732	2.959

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.					2.81	0.15	CONCRETE.		CONC	
0.15-0.25	ES	.							Brownish black very gravelly clayey fine to coarse sand with rare rope, metal, pieces of clay pipe, pottery fragments, textile and glass. Low cobble content. Cobbles are angular of brick. Gravel is fine to coarse angular to subrounded of flint, slate, concrete, chalk, asphalt / tarmacadam and brick. (MADE GROUND)			
0.15-0.25	ES	.	0						0.60 m bgl Whole brick and piece of metal pipe (25 mm diameter, 200 mm long)			
0.65-0.70	ES	.										
0.65-0.70	ES	.	0					(1.45)	0.65 m bgl Rope in side wall		MG	
1.00	(S)	3,3,3 6,4,3 N=16.										
1.30-1.40	ES	.										
1.30-1.40	ES	.	0				1.36	1.60	1.40 m bgl Cobbles of brick and concrete			
1.70-1.90	D	.					1.06	(0.30)	Brown gravelly slightly sandy clay. Gravel is fine to coarse angular to subrounded of flint, asphalt / tarmacadam, chalk and brick. (MADE GROUND)		MG	
1.90-2.00	ES	.										
1.90-2.00	ES	.	2	21					Brown occasionally yellowish brown mottled grey slightly gravelly slightly sandy clay. Gravel is fine and medium subangular to subrounded of flint and occasional chalk. (MADE GROUND)			
2.00-2.45	D (S)	1,2,1 2,1,1 N=5.						(0.60)			MG	
							0.46	2.50	2.30 - 2.40 m bgl Becoming grey with fine to coarse white flint gravel 2.40 - 2.50 m bgl Very soft dark brownish grey with piece of pottery			
2.50-2.60	ES	.		28					Firm brown mottled grey CLAY with occasional fine angular flint gravel. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))			
2.50-2.60	ES	.	2									
2.65-2.80	D	.							2.80 m bgl Becoming soft to very soft			
3.00-3.45	D (S)	1,2,3 2,3,3 N=11.						(1.40)			TFD	
3.50-3.60	D	.										
3.60-3.70	ES	.		38					3.56 m bgl Becoming firm light grey mottled light orangish brown with rare chalk gravel			
3.60-3.70	ES	.	0				-0.94	3.90				
									Structureless CHALK composed of white gravelly sandy silt. Gravel is weak to medium strong medium-density white and angular. Occasional coarse subrounded flint gravel. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm)			
								(1.10)	3.90 m bgl Becoming sandy gravelly and wet. Gravel is fine and medium chalk 4.00 - 4.60 m bgl Poor recovery		LECH	
						1			4.80 - 5.00 m bgl Clast dominated band. Blocky structure			
							-2.04	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						11-04-17		4.90			

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W3WS305**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	10-04-17 10-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463958.201 N 103431.040	2.915

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. mm
								(0.25)	CONCRETE.		CONC	
							2.67	0.25				
0.25-0.30	ES	.							Brown very sandy slightly clayey fine to coarse angular to subrounded gravel of flint, concrete, asphalt / tarmacadam and brick with low cobble content. Cobbles are angular of brick and concrete. (MADE GROUND)			
0.25-0.30	ES	.	0						0.30 m bgl Occasional clumps of soft brown sandy clay			
0.40		.	0.3						0.40 m bgl Becoming brownish grey			
									0.50 m bgl Reddish brown. Increasing brick content			
0.70-0.80	ES	.						(0.95)			MG	
0.70-0.80	ES	.	0									
									0.95 m bgl Small metal pole (10mm diameter, 250mm long)			
									1.00 m bgl Occasional fragments of slate			
							1.72	1.20				
									Borehole terminated at 1.20 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 1.2 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W4WS312**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 464008.746 N 103458.554	2.990

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.10	ES	.										
0.00-0.10	ES	.	0					(0.40)	Brown gravelly clayey fine sand with frequent rootlets and rare plastic. Gravel is fine to coarse angular to subrounded of flint, brick, asphalt / tarmacadam and concrete. (MADE GROUND)		MG	
0.00-0.00	EW	.					2.59	0.40				
0.80-1.20	ES	.	0					(1.20)	Brown gravelly slightly sandy clay with rare metal pipe and wood fragments occasional angular brick cobbles and angular concrete cobbles and boulders. Gravel is fine to coarse angular to subrounded of brick, concrete and chalk. (MADE GROUND)		MG	
						▼1	1.39	1.60				
1.60	(C)	2,2,3 5,2,2 N=12.							Brownish grey very sandy clayey fine to coarse angular gravel of flint, concrete, brick and asphalt / tarmacadam with rare plastic fragment. (MADE GROUND)			
1.70-2.00	ES	.						(0.80)			MG	
1.70-2.00	ES	.	0									
2.00	(C)	1,2,1 2,2,3 N=8.					0.59	2.40				
2.75-2.90	D	.							Firm locally soft light orangish brown mottled grey silty CLAY. Occasional black specks. Organic odour. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated)			
2.90-3.00	ES	.							2.40 - 2.60 m bgl Occasional fine to coarse subangular and subrounded flint gravel			
2.90-3.00	ES	.	0									
3.00	(S)	2,2,2 2,2,2 N=8.						(2.60)			TFD	
3.85-4.00	D	.										
4.00	(S)	1,2,3 2,1,2 N=8.							3.95 m bgl Becoming gravelly. Gravel is fine and medium subangular of flint and chalk 4.00 - 4.50 m bgl Possible material fell in from above during drilling			
4.70-4.85	D	.							4.60 - 4.80 m bgl Becoming very gravelly and light grey			
							-2.01	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						21-04-17		1.60			

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W4WS313**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	18-04-17 18-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 464021.060 N 103419.458	4.510

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.25	ES	.	1									
0.00-0.00	EW	.						(0.25)	Brown gravelly very sandy clay with occasional plastic and pottery fragments, rare glass and wire and low cobble content. Cobbles are angular to subrounded of flint and concrete. Gravel is fine to coarse angular to subrounded of flint, concrete, chalk and brick. (MADE GROUND)		MG	
0.10-0.25	ES	.					4.26	0.25				
						▼1			Greyish black sandy fine to coarse angular gravel of asphalt and occasional to frequent brick, chalk, flint and concrete with rare small glass fragments. (MADE GROUND)			
0.40-0.60	ES	.										
0.40-0.60	ES	.	1					(0.85)			MG	
									0.90 m bgl Angular brick cobble			
							3.41	1.10	1.00 m bgl Piece of wooden stake			
1.20	(S)	3,3,6 12,8,8 N=34.							Brown gravelly slightly sandy clay with rare decayed plant matter, glass fragments and plastic bag. Gravel is fine to coarse angular to subangular of flint, brick and occasional asphalt / tarmacadam and chalk. (MADE GROUND)			
1.70-1.80	ES	.										
1.70-1.80	ES	.	2					(1.60)			MG	
2.00-2.20	D	2,4,6	2						1.90 m bgl Small fragment of glass			
	(S)	10,8,9 N=33.										
2.00-2.20	ES	2,4,6							2.20 m bgl Angular brick cobble			
	(S)	10,8,9 N=33.										
									2.50 m bgl Piece of metal wire			
							1.81	2.70	2.50 - 2.60 m bgl Stiff layer of pale grey clay			
									2.60 - 2.70 m bgl Piece of wood			
2.70-2.85	ES	.	17						Dark greyish black mottled light brown slightly gravelly silty clay. Gravel is fine and medium angular to subrounded of flint, asphalt / tarmacadam and brick. Organic odour. (MADE GROUND)			
									2.75 m bgl Pieces of brick			
									2.80 m bgl Piece of electrical wire			
									2.90 m bgl Fragments of wood and piece of metal			
								(1.30)	3.00 - 4.00 m bgl NO RECOVERY. Assumed Made Ground.		MG	
							0.51	4.00				
									Borehole terminated at 4.00 m bgl.		END	

Hole Diameter			Recovery		
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery

Water Strikes					
Date	Time	Strike	Minutes	Standing	Casing
18-04-17		0.40			

General Remarks
Hole terminated at 4.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W4WS314**

Project	Sheet
City Deal Portsmouth	1 of 2

Job No	Client	Date
70015362	PCC	19-04-17 19-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 464058.413 N 103366.685	4.470

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.20 0.00-0.20	ES ES	. .	 1						Brown very gravelly sandy clay with rare textile, clinker and fragments of pottery and occasional plastic, glass and small tree branches. Gravel is fine to coarse angular to subrounded of flint, chalk, asphalt / tarmacadam, concrete and brick. (MADE GROUND)			
								(0.70)			MG	
									0.50 m bgl Black textile membrane. Becoming dark brown			
							3.77	0.70				
0.70-0.90 0.70-0.90	ES ES	. .	 1						Dark grey gravelly fine and medium sand with occasional glass, rare pottery fragments, plastic and metal. Gravel is fine to coarse angular to rounded of flint and occasional asphalt / tarmacadam. (MADE GROUND)			
								(0.40)	0.70 m bgl Concrete cobble		MG	
1.00	(S)	1,13,7 8,5,23 N=43.					3.37	1.10	1.05 m bgl Piece of textile			
								(0.20)	Brown and black gravelly slightly sandy clay with occasional glass fragments. Gravel is medium and coarse angular to subangular of flint, concrete, brick and asphalt / tarmacadam. (MADE GROUND)		MG	
							3.17	1.30				
1.35-1.50 1.35-1.50	ES ES	. .	 9						Dark grey gravelly fine to coarse sand. Gravel is fine to coarse angular of concrete, brick and asphalt / tarmacadam. (MADE GROUND)			
						▼1		(0.35)			MG	
									1.55 m bgl Becoming light grey			
							2.82	1.65	1.55 - 1.65 m bgl Concrete cobbles			
1.65-1.80	D	.	0						Brown gravelly clay with occasional pieces of plastic bag. Gravel is fine to coarse angular of brick, flint, concrete and asphalt / tarmacadam. (MADE GROUND)			
								(0.35)			MG	
1.85-2.00	ES	.	0									
							2.47	2.00				
2.00	(C)	5,7,18 21,11.							2.00 m bgl Concrete cobble		END	
									Borehole terminated at 2.00 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
								1.60			

General Remarks
Hole terminated at 2.0 m bgl due to collapse. Borehole logged in accordance with BS5930 (2015).

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W4WS314**

Project	Sheet
City Deal Portsmouth	2 of 2

Job No	Client	Date
70015362	PCC	19-04-17 19-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 464058.413 N 103366.685	4.470

SAMPLES & TESTS						Water	STRATA				Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
3.00-3.45	D	.										
4.00-4.45	D	.										

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 2.0 m bgl due to collapse. Borehole logged in accordance with BS5930 (2015).

Scale 1:18.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W4WS315**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	21-04-17 21-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	CN	E 464006.875 N 103354.176	4.640

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.							Brown gravelly slightly sandy clay with occasional angular cobbles and boulders of concrete and asphalt and rare metal rod. Gravel is fine to coarse angular to subangular of flint, brick, asphalt / tarmacadam, chalk and concrete. (MADE GROUND) 0.50 - 0.60 m bgl Large slab of black asphalt / tarmacadam			
								(2.00)			MG	
							2.64	2.00				
2.00-2.45	D (S)	1,0,1 2,1,2 N=6.							Light orangish brown mottled grey slightly gravelly silty clay with occasional black pockets and layers. Gravel is fine to coarse angular to subrounded of flint, brick, chalk and asphalt / tarmacadam. (MADE GROUND)			
2.30-2.40	ES	.						(0.75)	2.10 - 2.15 m bgl Pocket of fine yellowish brown sand		MG	
2.30-2.40	ES	.	0									
2.40-2.55	D	.		34					2.50 - 2.53 m bgl Pocket of peat			
							1.89	2.75				
3.00-3.45	D (S)	2,2,3 2,3,2 N=10.							Dark greyish brown gravelly clay with rare fragment of glass and occasional decayed rootlets. Gravel is fine and medium angular of brick, flint and asphalt / tarmacadam. (MADE GROUND) 2.85 - 2.90 m bgl Subangular cobble of brick 3.10 - 3.30 m bgl Very gravelly and wet with wood fragments			
3.30-3.40	ES	.						(1.25)	3.30 - 3.60 m bgl Becoming slightly gravelly with rare metal. Gravel is fine to coarse flint and brick. Pockets of yellowish brown and black		MG	
3.30-3.40	ES	.	0									
3.45-3.60	D	.							3.60 m bgl Subangular cobble of flint 3.65 - 3.75 m bgl Very soft 3.75 - 4.00 m bgl Firm light orangish brown mottled grey slightly gravelly clay. Gravel is fine and medium of subrounded flint. Possibly natural			
							0.64	4.00	3.90 - 4.00 m bgl Subrounded cobble of flint			
4.00-4.45	D (S)	2,2,1 2,3,2 N=8.						(0.50)	Light orangish brown mottled light grey sandy silty clay with rare flint gravel. (PROBABLE MADE GROUND)		MG	
4.20-4.40	ES	.										
4.20-4.40	ES	.	0				0.14	4.50	4.00 - 4.20 m bgl No recovery due to SPT 4.30 - 4.40 m bgl Dark grey			
4.50-4.80	B	.						(0.30)	Light grey and light orangish brown slightly silty fine and medium sand. (PROBABLE MADE GROUND)		MG	
							-0.16	4.80	4.60 - 4.70 m bgl Piece of green plastic and wire			
							-0.36	5.00			RT	
									Firm light orangish brown mottled light grey slightly sandy silty CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated)) 4.90 - 5.00 m bgl Becoming gravelly. Gravel is fine to coarse of subangular and subrounded flint		END	
									Borehole terminated at 5.00 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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WINDOW SAMPLE LOG

Hole No. **W4WS315a**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	19-04-17 19-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 464005.699 N 103355.779	4.391

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.10-0.30 0.10-0.30	ES ES	. .	0					(0.40)	Brown very gravelly sandy clay. Gravel is fine to coarse angular to rounded of flint, brick, chalk and asphalt / tarmacadam. (MADE GROUND) 0.10 m bgl Metal nail		MG	
							3.99	0.40				
							3.89	(0.10) 0.50	Dark brown very gravelly fine to coarse sand. Gravel is fine and medium angular of asphalt / tarmacadam. (MADE GROUND)		MG	
									0.50 m bgl Concrete obstruction		END	
									Hand pit terminated at 0.50 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.5 m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W4WS315b**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	19-04-17 19-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 464004.933 N 103353.493	4.471

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. mm
								(0.40)	Brown gravelly sandy clay with rare pottery fragments. Gravel is fine to coarse angular to subrounded of flint, asphalt / tarmacadam, concrete, chalk and brick. (MADE GROUND)			MG	
							4.07	0.40	0.40 m bgl Concrete obstruction			END	
									Hand pit terminated at 0.4 m bgl.				

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.4 m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W4WS316**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	20-04-17 20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN/SM	E 464035.715 N 103321.171	4.070

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology		Dia. 50 mm
0.10-0.20	ES	.					3.87	0.20	Light brown very gravelly silty sand. Gravel is fine to coarse very angular to rounded of flint, brick, plastic, metal, glass, concrete and various lithologies. (MADE GROUND)		MG		
0.10-0.20	ES	.	0						Brown very gravelly silty sand. Gravel is fine to coarse very angular to rounded of flint, brick, fabric, plastic, metal, glass, concrete and various lithologies. (MADE GROUND)				
								(1.55)			MG		
							2.32	1.75					
1.75-1.90	ES	.					2.17	1.90	Light orangish brown gravelly slightly sandy clay with rare piece of rubber. Gravel is fine to coarse angular of flint, asphalt / tarmacadam, brick and chalk. (MADE GROUND)		MG		
1.75-1.90	ES	.	0										
1.90		.	8.1					(0.30)	Dark brownish black gravelly fine and medium sand with occasional wire, plastic bag and clinker and rare, wood and nails and possible ash. Gravel is fine and medium angular of asphalt / tarmacadam and brick. (MADE GROUND)		MG		
							1.87	2.20					
2.30-2.40	ES	.						(0.30)			MG		
2.30-2.40	ES	.	1				1.57	2.50	Dark grey occasionally light brown slightly gravelly sandy clay with rare glass, wood and textile. Gravel is fine to coarse angular of asphalt / tarmacadam, chalk and flint. (MADE GROUND) 2.50 m bgl Obstruction		END		
									Borehole terminated at 2.50 m bgl.				

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 2.5 m bgl due to obstruction. Borehole logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W5WS306**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	12-04-17 13-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463949.979 N 103334.012	5.620

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology		Dia. mm
0.00-0.30	ES	.							Grass over dark brown slightly gravelly silty fine and medium sand with numerous rootlets. Gravel is fine to coarse subangular to rounded of flint. (TOPSOIL)				
0.00-0.30	ES	.	0					(0.35)			TS		
							5.27	0.35	0.30 - 0.35 m bgl Yellow plastic netting and pink geotextile layer				
									Brown gravelly slightly sandy silty clay with rare cobbles of concrete and brick and rare pieces of glass and pottery. Gravel is fine to coarse angular to rounded of flint, brick and chalk. (MADE GROUND)				
									0.60 m bgl Piece of red and white plastic tape and fragment of pottery				
									0.70 m bgl Piece of metal wire				
								(0.85)			MG		
0.90-1.10	ES	.											
0.90-1.10	ES	.	0										
									1.10 m bgl Piece of slate and white polystyrene				
							4.42	1.20	Brownish yellow very gravelly medium and coarse sand. Gravel is fine to coarse angular to subrounded of flint and brick. (MADE GROUND)				
1.30-1.45	ES	.							1.30 m bgl Piece of wood				
1.30-1.45	ES	.	0					(0.30)			MG		
							4.12	1.50	1.45 m bgl Large piece of clay pipe				
									1.50 m bgl Obstruction		END		
									Borehole terminated at 1.50 m bgl.				

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 1.5 m bgl due to obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W5WS307a**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	13-04-17 13-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463867.140 N 103347.401	4.278

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. mm
0.10-0.30	ES	.	0				3.93	(0.35) 0.35	Grass over dark brown slightly gravelly silty slightly clayey fine and medium sand with occasional rootlets. Gravel is fine to coarse angular to subrounded of flint, brick and chalk. (MADE GROUND)			MG	
							3.68	(0.25) 0.60	Brown and brownish orange slightly gravelly clay with occasional rootlets and rare plastic. Gravel is fine to coarse angular to subrounded of flint and brick. (MADE GROUND) 0.40 m bgl Tree root			MG	
									0.60 m bgl Concrete obstruction Hand pit terminated at 0.60 m bgl.			END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.6 m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W5WS307b**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	13-04-17 13-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463865.342 N 103348.703	4.301

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. mm
								(0.35)	Grass over dark brown slightly gravelly silty slightly clayey fine and medium sand with occasional rootlets. Gravel is fine to coarse angular to rounded of flint, chalk and brick. (MADE GROUND)		MG	
							3.95	0.35	0.30 - 0.35 m bgl Yellow plastic netting and pink geotextile membrane			
								(0.65)	Brown and brownish orange slightly gravelly clay with rare plastic, occasional tree roots and numerous rootlets. Gravel is medium and coarse angular to rounded of flint and brick and rare asphalt / tarmacadam. (MADE GROUND) 0.35 m bgl Piece of concrete 0.50 m bgl Metal nail (200 mm long) 0.70 m bgl Becoming brown and more gravelly. Gravel is fine to coarse angular to subrounded of flint and brick		MG	
0.80-0.90 0.80-0.90	ES ES	. .	 0									
							3.30	1.00	1.00 m bgl Concrete obstruction Hand pit terminated at 1.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 1.0 m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W5WS307c**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	13-04-17 13-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463862.140 N 103350.865	4.930

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.20	ES	.							Brown slightly gravelly slightly clayey silty fine and medium sand with occasional rootlets and rare plastic. Gravel is fine and medium angular to subrounded of flint, chalk and brick. (MADE GROUND)			
0.00-0.20	ES	.	0					(0.40)			MG	
							4.53	0.40	0.30 m bgl Becoming gravelly to very gravelly			
									Brownish orange and brown slightly gravelly slightly sandy clay with rare pottery fragment and rare tree root. Gravel is fine to coarse angular to rounded of flint, brick, concrete and chalk. (MADE GROUND)			
									0.60 m bgl Becoming very gravelly and sandy. Gravel is fine to coarse angular to rounded of flint, chalk and brick			
0.80-0.90	ES	.										
0.80-0.90	ES	.	0						0.90 m bgl Concrete cobble			
								(1.60)			MG	
1.20-1.30	ES	.										
1.20-1.30	ES	.	0									
1.30-1.75	D (S)	3,3,1 1,1,2 N=5.							1.50 - 1.65 m bgl Layer of very soft dark bluish grey clay			
							2.93	2.00				
2.00-2.10	ES	.							Dark brown and orangish brown mottled grey slightly gravelly clay. Gravel is fine to coarse angular to subangular of flint, asphalt / tarmacadam and brick. (MADE GROUND)			
2.00-2.10	ES	.	0					(0.30)			MG	
2.10-2.20	D	.					2.63	2.30				
2.30-2.75	D (S)	3,2,5 2,3,4 N=14.					2.43	2.50	Soft locally firm brownish orange mottled grey occasionally black slightly gravelly CLAY. Gravel is fine to coarse angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
2.50-2.70	D	.						(0.25)	2.30 m bgl Angular flint cobble		RMD	
2.50-2.70	ES	.										
2.50-2.70	ES	.	0			1	2.18	2.75	Brownish orange gravelly fine and medium SAND. Gravel is fine to coarse angular to subangular of flint. (RAISED MARINE DEPOSITS)			
				46.33					2.50 - 2.60 m bgl Very gravelly and wet			
3.00-3.45	D (S)	1,2,2 2,3,4 N=11.						(0.70)	Soft brownish orange mottled light grey mottled reddish brown CLAY. (WEATHERED LAMBETH GROUP, Reading Beds)		LMBE	
							1.48	3.45				
									Borehole terminated at 3.45 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
								2.80			

General Remarks
Hole terminated at 3.45 m bgl due to hole collapse. Borehole logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W7WS308**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	20-04-17 20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Smith Drilling	Dart 352	MT	E 463860.396 N 103412.888	3.430

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
							3.13	(0.30) 0.30	Light brown slightly sandy gravelly clay with frequent roots and rootlets. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of flint and bricks. (MADE GROUND)		MG	
0.30 0.30	ES ES	. .	0						Dark brown gravelly clay. Gravel is fine to coarse angular to subrounded of flint, brick and concrete. Occasional angular cobbles of brick. (MADE GROUND)			
0.80 0.80 1.00-1.45	ES ES D (S)	. . 3,3,3 4,7,7 N=21.	0					(1.60)			MG	
1.70 1.70	ES ES	. .	0				1.53	1.90				
2.00-2.45	D (S)	1,1,1 4,18,5 N=28.							Light brown and grey slightly gravelly clay with lenses of gravel. Gravel is fine to coarse angular to subrounded of flint and brick. (MADE GROUND)			
2.40 2.40	ES ES	. .	0					(1.10)			MG	
2.90 3.00-3.45	D D (S)	. 4,4,3 3,5,7 N=18.					0.43	3.00				
3.50 3.50 3.60	ES ES B	. . .	0					(1.00)	Firm dark grey gravelly CLAY. Gravel is fine to coarse angular to subrounded of flint. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated)) 3.00 - 3.80 m bgl Layer of gravel		TFD	
4.00-4.45	D (S)	1,1,2 3,3,2 N=10.					-0.57	4.00	Structureless CHALK composed of white silt. (WEATHERED CHALK) 4.00 - 5.00 m bgl Poor Recovery. 4.20 - 5.00 m bgl Top of the chalk			
							-1.57	(1.00) 5.00			LECH	
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W7WS309**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	20-04-17 20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Smith Drilling	Dart 352	MT	E 463853.343 N 103424.841	3.450

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.							Dark greyish brown slightly sandy gravelly CLAY. Sand is fine. Gravel is angular to subrounded fine to coarse of flint, brick and concrete. (MADE GROUND)			
0.30	ES	.						(0.70)			MG	
0.30	ES	.	0				2.75	0.70				
									Light brown gravelly sandy clay. Gravel is fine to coarse angular to subrounded of flint, brick, concrete and occasional chalk. Frequent cobbles of brick. (MADE GROUND)			
0.90	ES	.										
0.90	ES	.	0									
1.00-1.45	D	2,11,12										
	(S)	9,6,4						(1.30)			MG	
		N=31.										
1.70	ES	.										
1.70	ES	.	0				1.45	2.00				
2.00-2.45	D	2,1,2		15					Firm to stiff light brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of flint. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))			
	(S)	3,2,2										
		N=9.										
2.40	ES	.										
2.40	ES	.	0									
3.00-3.45	D	1,2,3		62								
	(S)	5,4,2						(2.50)			TFD	
		N=14.										
3.50	D	.										
3.50	ES	.										
3.50	ES	.	0									
4.00-4.45	D	2,2,2		34								
	(S)	2,4,3										
		N=11.					-1.05	4.50				
4.50	D	.							Structureless CHALK composed of white slightly sandy clayey silt. (WEATHERED CHALK)			
4.70	ES	.										
4.70	ES	.	0									
								(0.95)			LECH	
5.00-5.45	D	2,6,4										
	(S)	3,4,6										
		N=17.					-2.00	5.45				
									Borehole terminated at 5.45 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.45 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W7WS310**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	20-04-17 20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463844.466 N 103413.025	4.240

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.20	ES	.					4.14	0.10	Grass over dark brown slightly gravelly slightly sandy clay with numerous rootlets. Gravel is fine to coarse angular to rounded of flint. (TOPSOIL)		TS	
									Light orangish brown mottled light grey slightly gravelly sandy clay with rare tile fragments. Gravel is fine to coarse angular to rounded of flint, brick and asphalt / tarmacadam. (MADE GROUND)			
								(1.75)			MG	
1.00-1.10	ES	.										
1.20-1.65	D (S)	1,2,1 2,3,3 N=9.										
1.50-1.60	D	.										
							2.39	1.85	1.70 - 1.85 m bgl Band of sandy gravel and cobbles of concrete, asphalt / tarmacadam, flint and brick with rare piece of wood			
1.85-1.90	ES	.							Dark brownish black gravelly sandy clay. Gravel is fine to coarse angular of brick, asphalt / tarmacadam, chalk and flint. (MADE GROUND)			
2.00-2.45	D (S)	1,1,2 1,2,2 N=7.		22				(0.55)	1.90 m bgl Cobble of chalk 2.20 Becoming light brown		MG	
							1.84	2.40				
							1.64	2.60	Light orangish brown mottled grey slightly gravelly silty clay. Gravel is fine of flint and brick. (MADE GROUND)		MG	
				52					2.50 - 2.60 m bgl Pocket of gravel of brick, asphalt / tarmacadam and concrete			
2.65-2.80	D	.							Firm light orangish brown mottled brownish cream silty CLAY. Occasional black specks. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.80-2.90	ES	.		41					3.00 m bgl Becoming slightly gravelly. Gravel is subangular fine to coarse of flint			
3.00-3.45	D (S)	1,2,2 3,3,4 N=12.							3.30 - 3.60 m bgl No recovery			
								(2.40)			RT	
3.85-4.00	D	.										
4.00-4.45	D (S)	1,2,3 3,2,3 N=11.							4.30 - 4.80 m bgl No recovery			
							-0.76	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W7WS311**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	20-04-17 20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463850.584 N 103388.369	4.443

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.10-0.30	ES	.							Brown gravelly sandy clay with occasional fragments of tile and numerous rootlets and roots. Gravel is fine to coarse angular to well rounded of flint, brick, concrete and occasional asphalt / tarmacadam. (MADE GROUND)			
0.10-0.30	ES	.	0						0.05 m bgl Cobble of concrete 0.20 - 0.40 m bgl Cobbles and boulders of flint			
								(1.00)	0.50 m bgl Cobbles and boulders of brick and piece of clay pipe		MG	
									0.70 m bgl Cobble of concrete			
0.80-0.90	ES	.										
0.80-0.90	ES	.	1				3.44	1.00				
									Brown mottled orangish brown occasionally black gravelly clay. Gravel is fine to coarse angular to subrounded of flint, brick and asphalt / tarmacadam. (MADE GROUND) 1.05 m bgl Boulder of concrete 1.15 m bgl Boulder and cobbles of concrete			
1.40-1.95	D (S)	1,2,1 1,1,1 N=4.										
1.50-1.60	ES	.										
1.50-1.60	ES	.	1									
								(1.70)	1.75 - 1.80 m bgl Pocket of gravelly fine and medium sand. Gravel is angular of brick and subrounded of flint 1.80 m bgl Becoming slightly gravelly		MG	
2.00-2.45	D (S)	1,2,1 1,1,2 N=5.										
				28					2.45 - 2.70 m bgl Band of concrete and brick gravel and cobbles			
				51			1.74	2.70				
2.80-2.90	ES	.							Firm light orangish brown mottled light grey slightly gravelly CLAY. Gravel is fine and medium subangular to rounded of white flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.80-2.90	ES	.	0									
2.90-3.00	D	.							3.00 - 4.45 m bgl No recovery, assumed River Terrace Deposits.			
3.00-3.45	D (S)	1,2,2 2,2,3 N=9.										
								(1.75)			RT	
4.00-4.45	D (S)	1,2,3 3,4,5 N=15.										
							-0.01	4.45				
									Borehole terminated at 4.45 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 4.45 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W8WS317a**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	24-04-17 24-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463932.930 N 103124.085	3.368

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. mm
0.10-0.20 0.10-0.20	ES ES	. .	0				3.17	(0.20) 0.20	Brown gravelly slightly clayey fine and medium sand with numerous rootlets. Gravel is fine to coarse angular to rounded of flint, breeze block, concrete and brick. (MADE GROUND)		MG	
									0.20 m bgl Concrete obstruction		END	
									Hand pit terminated at 0.20 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.2 m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W8WS317b**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	24-04-17 24-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463932.467 N 103124.768	3.361

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. mm
0.10-0.20 0.10-0.20	ES ES	. .	0				3.16	(0.20) 0.20	Brown gravelly slightly clayey fine and medium sand with occasional angular cobbles of concrete, numerous rootlets and rare glass. Gravel is fine to coarse angular to subrounded of flint, concrete and brick. (MADE GROUND)		MG	
									0.20 m bgl Concrete obstruction		END	
									Hand pit terminated at 0.20 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.2 m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W8WS317c**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	24-04-17 24-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463932.168 N 103125.450	3.487

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.					3.19	(0.30) 0.30	Brown very gravelly slightly clayey fine and medium sand. Gravel is fine to coarse angular to rounded of flint, brick, concrete and asphalt / tarmacadam. (MADE GROUND) 0.20 m bgl Bullet casing and piece of metal		MG	
0.40-0.50	ES	.					2.89	(0.30) 0.60	Black sandy fine to coarse angular gravel of asphalt / tarmacadam and concrete. (MADE GROUND) 0.50 - 0.60 m bgl Boulder of concrete		MG	
0.40-0.50	ES	.	0				2.59	(0.30) 0.90	Light brown slightly gravelly silty clay. Gravel is fine to coarse angular of flint, brick and asphalt / tarmacadam. (MADE GROUND)		MG	
0.90-1.00	ES	.							Firm light orangish brown mottled light grey silty CLAY. Frequent black specks. (RIVER TERRACE DEPOSITS (Undifferentiated))			
0.90-1.00	ES	.	0									
1.00-1.45	D (S)	1,1,1 1,1,2 N=5.										
1.30-1.40	D	.		51.67				(1.05)			RT	
1.55-1.75	ES	.										
1.55-1.75	ES	.	0									
						1	1.54	1.95	1.80 - 2.00 m bgl Occasional medium and coarse subangular flint gravel			
2.00-2.45	D (S)	1,3,4 5,5,6 N=20.							Medium dense light brownish orange occasionally light grey medium SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.45-3.00	B	.										
2.45-3.00	ES	.										
2.45-3.00	ES	.	6						2.70 m bgl Becoming creamish brown			
								(2.05)			RT	
3.00-4.00	B (S)	1,2,3 3,4,6 N=16.										
3.00-3.45	D (S)	1,2,3 3,4,6 N=16.										
									3.80 - 4.00 m bgl Occasional black specks			
							-0.51	4.00				
									Borehole terminated at 4.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						24-04-17		2.00			

General Remarks
Hole terminated at 4.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W8WS318**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	24-04-17 24-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463943.432 N 103092.578	3.314

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.20 ES 0.00-0.00 EW 0.10-0.20 ES		.	0				2.91	(0.40) 0.40	Brown very gravelly medium and coarse sand with occasional angular cobbles of brick and asphalt and rare whole bricks. Gravel is fine to coarse angular to subangular of flint, brick, asphalt / tarmacadam and concrete. (MADE GROUND)		MG	
0.60-0.80 ES 0.60-0.80 ES		.	0				2.41	(0.50) 0.90	Dark brownish black slightly gravelly clay with rare ceramic fragment. Gravel is fine and medium angular of brick and asphalt / tarmacadam. (MADE GROUND)		MG	
1.00-1.45 D (S)		1,2,1 2,3,4 N=10/ 0.					1.81	(0.60) 1.50	Soft brown and orangish brown slightly gravelly CLAY. Gravel is fine and medium angular to subrounded of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
1.20-1.40 ES 1.20-1.40 ES		.	0									
1.60-2.00 ES 1.60-2.00 ES 1.70-1.85 D 1.80-1.95 D		.	0						Firm orangish brown mottled light bluish grey gravelly CLAY. Gravel is fine to coarse subrounded to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.00-2.60 B (S)		1,2,3 3,3,5 N=14/ 0.						(1.10)	2.00 - 2.60 m bgl Sand blown up casing. Sand encased by clay		RT	
2.00-2.45 D (S)		1,2,3 3,3,5 N=14/ 0.				▼1	0.71	2.60				
2.70-2.80 ES 2.70-2.80 ES		.	0						Medium dense brownish orange medium SAND. (RIVER TERRACE DEPOSITS (Undifferentiated)) 2.60 - 2.70 m bgl Slightly gravelly. Gravel is fine to coarse subangular to subrounded of flint			
3.00-3.45 D (S)		1,2,3 4,5,5 N=17/ 0.					-0.14	(0.85) 3.45			RT	
									Borehole terminated at 3.45 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
								2.60			

General Remarks
Hole terminated at 3.45 m bgl due to blowing sands. Borehole logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W8WS319**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	24-04-17 25-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463908.960 N 103075.222	3.065

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.					2.77	(0.30) 0.30	Greyish brown slightly gravelly fine to coarse sand with rare boulder of concrete and cobbles of brick. Gravel is fine to coarse angular to subrounded of flint, concrete and brick. (MADE GROUND)		MG	
0.40-0.60	ES	.							Dark brown gravelly clayey fine to coarse sand. Gravel is fine to coarse angular to subrounded of flint, concrete and brick. (MADE GROUND)			
0.40-0.60	ES	.	0				2.27	(0.50) 0.80			MG	
0.80-1.00	ES	.							Orangish brown slightly gravelly clay. Gravel is fine to coarse angular to subrounded of flint and clinker. (MADE GROUND)			
0.80-1.00	ES	.	0									
1.00-1.45	D (S)	1,1,1 1,2,2 N=6.					1.67	(0.60) 1.40	1.25 - 1.30 m bgl Becoming mottled grey and gravelly		MG	
1.50-1.60	ES	.							Soft light bluish grey mottled orangish brown very sandy slightly gravelly CLAY. Gravel is coarse subrounded of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
1.50-1.60	ES	.	0				1.37	(0.30) 1.70			RT	
1.70-1.90	D	.							Soft orangish brown occasionally light grey slightly gravelly silty CLAY with frequent bands of shell. Gravel is fine to coarse angular to rounded of flint and chalk. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.00-2.45	D (S)	1,2,3 2,2,3 N=10/ 0.		43			0.87	(0.50) 2.20			RT	
2.40-2.50	D	.							Firm orangish brown occasionally light grey silty CLAY with lenses of very sandy clay. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.50-2.60	ES	.							2.40 - 4.00 m bgl Occasional lenses of sandy clay			
2.50-2.60	ES	.	0									
2.60-3.00	B	.										
3.00-3.45	D (S)	1,2,3 4,4,4 N=15/ 0.										
3.25-3.40	D	.						(2.80)			RT	
4.00-5.00	B	.										
4.50-4.70	D	.							4.50 - 5.00 m bgl Very sandy			
4.50-4.70	ES	.					-1.94	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W8WS320**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	24-04-17 25-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463923.007 N 103058.168	2.895

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.										
0.10-0.30	ES	.						(0.30)	Pinkish brown very gravelly fine to coarse sand with occasional angular cobbles and rare boulder of concrete. Gravel is fine to coarse angular to subrounded of flint, brick and concrete. (MADE GROUND)		MG	
0.10-0.30	ES	.	0				2.60	0.30				
									Light brown and orangish brown mottled grey slightly gravelly clay. Gravel is fine to coarse angular to subrounded of flint, brick and asphalt / tarmacadam. (MADE GROUND)			
								(1.10)			MG	
0.90-1.00	ES	.										
0.90-1.00	ES	.	0									
1.00-1.45	D (S)	1,2,1 2,2,3 N=8.										
							1.50	1.40	1.20 - 1.40 m bgl Pocket of orangish brown medium sand. Becoming very gravelly. Gravel is fine to coarse angular to rounded of flint			
									Firm orangish brown mottled light grey CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))			
									1.40 - 1.55 m bgl Very gravelly. Gravel is medium and coarse subangular to subrounded of flint			
1.70-1.80	ES	.										
1.70-1.80	ES	.	0						1.40 - 2.00 m bgl Frequent shell bands			
1.85-2.00	D	.										
								(1.20)			RT	
2.00-2.45	D (S)	1,2,3 3,4,4 N=14.										
									2.30 - 2.60 m bgl Very sandy			
							0.30	2.60				
2.60-3.00	B	.							Orangish brown occasionally light grey fine and medium SAND. Occasional grey laminations. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.65-2.75	ES	.										
2.65-2.75	ES	.	0									
3.00-4.00	B (S)	1,2,4 4,5,6 N=19.				▼1						
								(1.40)			RT	
3.00-3.45	D (S)	1,2,4 4,5,6 N=19.										
3.40-3.50	ES	.										
3.40-3.50	ES	.	0									
							-1.11	4.00				
									Borehole terminated at 4.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						25-04-17		3.20			

General Remarks
Hole terminated at 4.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W8WS321**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	25-04-17 25-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463910.499 N 103035.171	2.614

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology		Dia. 50 mm
0.20-0.30	ES	.						(0.40)	Dark brown very gravelly medium and coarse sand. Gravel is fine to coarse angular to subrounded of flint, concrete and brick. (MADE GROUND)		MG		
0.20-0.30	ES	.	0				2.21	0.40					
0.60-0.80	ES	.						(0.40)	Soft greyish brown occasionally orangish brown very gravelly slightly sandy CLAY. Gravel is fine to coarse angular to subrounded of flint. (HEAD)		RT		
0.60-0.80	ES	.	0				1.81	0.80					
1.00-1.45	D (S)	1,1,1 2,3,4 N=10.							Firm orangish brown mottled light grey slightly gravelly silty CLAY. Gravel is coarse subrounded of flint. Frequent black specks. (RIVER TERRACE DEPOSITS (Undifferentiated))				
1.20-1.40	ES	.						(0.90)			RT		
1.20-1.40	ES	.	0										
							0.91	1.70	1.60 - 1.70 m bgl Very gravelly silty clay. Gravel recovered as subangular flint				
1.90-2.00	D	.							Soft orangish brown occasionally light grey silty CLAY with occasional lenses and pockets of very sandy clay. (RIVER TERRACE DEPOSITS (Undifferentiated))				
2.00-2.45	D (S)	1,2,3 4,4,7 N=18.		49					1.85 - 1.90 m bgl Very sandy 2.10 - 2.20 m bgl Light bluish grey very sandy clay				
								(1.25)			RT		
2.60-2.70	ES	.							2.60 - 2.70 m bgl Very sandy				
2.60-2.70	ES	.	0										
2.80-2.95	D	.											
							-0.39	3.00	2.85 - 2.95 m bgl Very sandy				
3.00-3.45	D (S)	2,5,4 5,6,6 N=21.				▼1			Soft brown occasionally light grey sandy CLAY with occasional pockets and lenses of fine sand. Rare grey and pinkish red marbling. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))				
									3.00 - 3.40 m bgl Very sandy clay with pockets of fine sand.				
3.50-3.60	ES	.											
3.50-3.60	ES	.	0										
3.70-3.90	D	.											
								(2.00)			TFD		
4.00-4.45	D	.							4.00 - 4.50 m bgl Fine sand				
4.60-4.80	D	.											
							-2.39	5.00					
									Borehole terminated at 5.00 m bgl.		END		

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						25-04-17		3.20			

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W9WS322a**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	26-04-17 26-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463654.958 N 103109.897	4.877

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. mm
0.10-0.20	ES	.	0					(0.40)	Light orangish brown slightly gravelly fine to coarse sand with numerous rootlets. Gravel is medium and coarse angular to subrounded of flint and concrete. (MADE GROUND)		MG	
							4.48	0.40	0.40 m bgl Concrete obstruction		END	
									Hand pit terminated at 0.40 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.4 m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W9WS322b**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	26-04-17 26-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463653.445 N 103111.148	4.875

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. mm
								(0.70)	Light orangish brown gravelly fine to coarse sand with rare cobbles of angular brick and concrete. Gravel is fine to coarse angular to subrounded of flint, brick and concrete. (MADE GROUND)			MG	
0.50-0.60	ES	.	0										
							4.18	0.70	0.70 m bgl Piece of asbestos cement board			END	
									Hand pit terminated at 0.70 m bgl.				

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.7 m bgl due to presence of piece of asbestos cement board. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W9WS323**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	26-04-17 26-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463717.551 N 103062.451	4.874

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.10-0.20	ES	.	0				4.47	(0.40) 0.40	Light brown gravelly clayey fine to coarse sand with frequent rootlets. Gravel is fine to coarse angular to subrounded of flint and concrete. Low cobble content. Cobbles are angular of concrete. (MADE GROUND)		MG	
1.00-1.20 1.00 1.20-1.65	ES EW D (S)	. . 1,2,1 1,1,1 N=4.	0				3.02	(1.45) 1.85	Orangish brown slightly gravelly silty clay with rare roots. Gravel is fine to coarse angular to subangular of flint and brick. (MADE GROUND) 1.62 - 1.75 m bgl Band of gravel of clinker and asphalt / tarmacadam and fragments of glass 1.75 m bgl Slightly gravelly		MG	
2.00-2.45	D (S)	1,2,1 1,3,1 N=6.							Dark greyish brown gravelly slightly sandy clay with rare glass fragments. Gravel is fine to coarse angular of flint, slate, brick, asphalt / tarmacadam, clinker and ash. (MADE GROUND)			
2.50-2.60	ES	.	1					(1.30)			MG	
3.00-3.45	D (S)	1,2,3 2,3,2 N=10.					1.72	3.15	3.04 - 3.12 m bgl Subrounded cobble of flint			
3.60-3.70 3.70-3.80	ES D	. .	0	59					Firm locally stiff orangish brown mottled light grey occasionally reddish brown silty CLAY. Occasional black specks. (LAMBETH GROUP) 3.15 - 3.35 m bgl Slightly gravelly. Gravel is fine to coarse angular to subrounded of flint 3.80 m bgl Becoming stiff to very stiff			
4.00-4.45	D (S)	1,3,3 6,7,8 N=24.						(1.85)			LMBE	
4.55-4.65	D	.		113			-0.13	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W9WS324**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	27-04-17 27-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463779.848 N 103035.416	4.490

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.10	ES	.					4.39	0.10	Dark brown gravelly clay with frequent rootlets. Gravel is fine to coarse angular to rounded of flint. (TOPSOIL)		TS	
0.40-0.50	ES	.						(0.90)	Brown very gravelly medium and coarse sand with rare glass fragments. Gravel is fine to coarse angular to subrounded of flint, brick and asphalt / tarmacadam. (MADE GROUND)		MG	
1.00-1.45	D (S)	1,2,3 3,5,6 N=17.					3.49	1.00	Light brown and orangish brown slightly gravelly clay. Gravel is fine to coarse angular to subrounded of flint and brick. (MADE GROUND)		MG	
1.10-1.30	ES	.					3.04	(0.45) 1.45				
1.50-1.60	ES	.					2.74	(0.30) 1.75	Pale grey fine and medium SAND. (MADE GROUND)		MG	
2.00-2.45	D (S)	1,1,0 1,2,4 N=7.							Black slightly sandy fine to coarse angular to subangular gravel of asphalt / tarmacadam with frequent brick and flint with occasional pockets of very soft clay. (MADE GROUND) 1.78 - 1.86 m bgl Cobble of brick			
2.20-2.50	ES	.						(1.05)			MG	
2.80-2.90	D	.				1	1.69	2.80	2.60 - 2.70 m bgl Orange with fragment of glass 2.70 - 2.80 m bgl Grey fine and medium sand with flat subrounded cobble of flint			
3.00-3.45	D (S)	2,3,5 6,6,8 N=25.							Soft light grey mottled orangish brown silty CLAY. Gravel is fine to coarse angular to subrounded of flint. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated)) 2.80 - 3.00 m bgl Slightly gravelly. Gravel is fine to coarse subrounded of flint 3.00 - 3.60 m bgl Band of flint gravel 3.60 - 4.00 m bgl Slightly gravelly slightly sandy clay. Occasionally reddish brown			
3.80-4.00	ES	.						(2.20)			TFD	
4.00-4.45	D (S)	2,3,6 6,7,8 N=27.							4.40 - 5.00 m bgl Becoming firm with occasional slightly sandy lenses			
4.55-4.75	D	.		81			-0.51	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						27-04-17		3.00			

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W9WS325a**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	26-04-17 26-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CM	E 463851.009 N 103055.979	3.402

SAMPLES & TESTS						Water	STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. mm
0.00-0.10	ES	.	0					(0.40)	Grass over dark brown clayey fine sand with numerous rootlets and rare rounded flint cobble. (TOPSOIL) 0.10 m bgl Becoming light brown		TS	
							3.00	0.40	0.40 m bgl Concrete obstruction		END	
									Hand pit terminated at 0.40 m bgl.			

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.4 m bgl due to reinforced concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W9WS325b**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	27-04-17 27-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463849.674 N 103056.742	3.405

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. mm
							3.31	(0.10) 0.10	Dark brown clayey fine sand with numerous rootlets. (TOPSOIL)			TS	
0.10-0.20	ES	.	0				3.21	(0.10) 0.20	Light brown silty fine sand with frequent rootlets. (MADE GROUND)			MG	
							3.11	(0.10) 0.30	Brown gravelly very clayey fine to coarse sand. Gravel is fine to coarse angular to subrounded of flint and concrete. (MADE GROUND)			MG	
									0.30 m bgl Concrete obstruction Hand pit terminated at 0.30 m bgl.			END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 0.3 m bgl due to concrete obstruction. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W9WS325c**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	27-04-17 27-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463850.646 N 103057.727	3.396

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.					3.30	0.10	Grass over dark brown slightly gravelly clayey sand with frequent rootlets. Gravel is medium and coarse angular to subrounded of flint and brick. (MADE GROUND)		MG	
								(0.30)			MG	
							3.00	0.40	Light brown silty slightly clayey fine sand. (MADE GROUND)			
0.50-0.70	ES	.	0					(0.40)	Brown very gravelly medium and coarse sand. Gravel is fine to coarse angular to rounded of flint and brick. (MADE GROUND)		MG	
							2.60	0.80				
1.00-1.45	D (S)	1,1,1 2,1,1 N=5.						(0.65)	Dark brown slightly gravelly sandy clay with occasional angular cobbles of brick and concrete. Gravel is fine to coarse angular to rounded of flint, concrete, asphalt / tarmacadam and brick. (MADE GROUND) 0.90 m bgl Half a brick		MG	
1.20-1.30	ES	.	0			1	1.95	1.45	1.10 - 1.45 m bgl Sand absent. Occasional gravel			
									Soft orangish brown mottled light grey slightly gravelly silty CLAY. Gravel is medium and coarse subrounded of flint. Bands of sand and gravel. (RIVER TERRACE DEPOSITS (Undifferentiated))			
1.75-1.90	D	.										
1.90-2.00	ES	.	0						1.90 m bgl Becoming gravelly and slightly sandy			
2.00-2.45	D (S)	1,1,2 2,1,1 N=6.										
2.00	EW (S)	1,1,2 2,1,1 N=6.						(1.95)	2.40 - 2.70 m bgl Becoming sandy and gravelly		RT	
									2.70 - 2.75 m bgl Band of orange and reddish orange medium sand 2.75 m bgl Becoming firm			
2.80-3.00	D	.										
3.00-3.45	D (S)	1,2,3 3,2,3 N=11.							3.00 - 3.40 m bgl Band of orangish brown sand and gravel. Sand is medium and coarse. Gravel is fine to coarse subrounded and rounded of flint			
							0.00	3.40				
									Soft locally firm light bluish grey CLAY. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))			
3.60-3.70	ES	.	0					(0.60)			TFD	
3.70-3.80	D	.		53					3.80 m bgl Becoming dark grey and firmer			
							-0.60	4.00				
4.00-4.45	D (S)	2,2,1 2,3,4 N=10.							NO RECOVERY. 4.00 - 5.00 m bgl Poor recovery			
								(1.00)			NR	
							-1.60	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						27-04-17		2.00	20	1.50	

General Remarks
Hole terminated at 5.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **W9WS326**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	26-04-17 26-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Dart 352	CN	E 463697.053 N 103013.548	4.142

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. mm
0.10-0.20	ES	.	0				3.74	(0.40) 0.40	Light orangish brown silty clay. (MADE GROUND)		MG	
0.50-0.70	ES	.	0						Brown gravelly clay. Gravel is fine to coarse angular to subrounded of flint, brick and chalk. (MADE GROUND)			
1.00-1.45	D (S)	1,1,1 2,2,1 N=6.					2.64	(1.10) 1.50			MG	
1.60-1.70	ES	.	0						Dark greyish brown very gravelly fine to coarse sand. Gravel is fine to coarse angular to subrounded of flint, brick, concrete and asphalt / tarmacadam. (MADE GROUND)			
2.00-2.45	D (S)	1,2,3 2,3,2 N=10.					1.64	(1.00) 2.50			MG	
							1.34	(0.30) 2.80	Greyish brown very gravelly clay. Gravel is fine and medium angular and subangular of flint, brick and chalk. (MADE GROUND)		MG	
3.00-3.45	D (S)	2,3,6 6,2,3 N=17.				1			Soft orangish brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is fine and medium angular to subrounded of flint. (RIVER TERRACE DEPOSITS (Undifferentiated)) 2.80 - 3.00 m bgl Flint band recovered as fine to coarse very angular to subrounded flint gravel			
3.40-3.50	D	.						(1.65)			RT	
3.80-4.00	ES	.	0									
4.00-4.45	D (S)	2,3,3 3,5,5 N=16.					-0.31	4.45	4.00 - 4.45 m bgl No recovery			
									Borehole terminated at 4.45 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						26-04-17		3.00			

General Remarks
Hole terminated at 4.45 m bgl due to hole collapse. Borehole logged in accordance with BS5930 (2015).

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS202**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	CN	E 463530.803 N 103336.184	4.064

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. 50 mm
								(0.50)	Dark brown slightly sandy gravelly clay. Gravel is fine to coarse rounded to angular of flint and brick. (MADE GROUND)			MG	
0.30	ES	.	0				3.56	0.50					
0.50		.	0						Dark brown sandy gravelly clay with rare metal nails. Gravel is fine to coarse rounded to angular of flint, brick and chalk. (MADE GROUND)				
1.00	ES	.	0			1		(1.50)				MG	
									1.70 m bgl Possible asbestos containing material				
							2.06	2.00					
2.00	ES	.	0					(0.40)	Dark brown gravelly fine to coarse sand. Gravel is fine to coarse rounded to angular of flint and brick. (MADE GROUND)			MG	
2.30	ES	.	0				1.66	2.40					
2.50		.	0						Dark brown gravelly clay with occasional wood fragments. Gravel is fine to coarse rounded to angular of flint. (MADE GROUND)				
2.70	ES	.	0					(0.60)				MG	
							1.06	3.00					
3.00		.	11						Borehole terminated at 3.00 m bgl.			END	
									m bgl Concrete obstruction				

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
								1.40			

General Remarks
Hole terminated at 3.0m bgl due to refusal on concrete obstruction. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS203**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	SS	E 463649.485 N 103373.869	3.491

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill Dia. 50 mm
							3.29	0.20	Grass over dark brown slightly sandy gravelly clay. Gravel is fine to coarse rounded to angular of flint. (TOPSOIL)		TS	
0.30	ES	.	0					(1.40)	Light yellow slightly gravelly medium and coarse sand. Gravel is fine to coarse rounded to angular of flint. (REWORKED NATURAL)		MG	
1.50	ES	.	0				1.89	1.60				
							1.79	1.70	Light yellow gravelly medium and coarse sand. Gravel is fine to coarse rounded to angular of flint. (REWORKED NATURAL)		MG	
						▼1	1.29	(0.50) 2.20	Light greenish blue mottled orange slightly gravelly sandy clay. Gravel is fine to coarse rounded to angular of flint. (REWORKED NATURAL)		MG	
2.50	ES	.	0	66					Light greenish blue mottled reddish brown clay. (REWORKED NATURAL)			
2.90		.		98				(1.50)			MG	
3.50		.		92			-0.21	3.70				
4.00	ES	.	0					(0.70)	Light grey slightly sandy slightly gravelly clay. Gravel is fine and medium subangular of chalk. (REWORKED NATURAL)		MG	
							-0.91	4.40				
							-1.21	(0.30) 4.70	Light grey silty fine SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							-1.51	(0.30) 5.00	Light yellowish grey fine SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
5.00	ES	.	0						Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
								2.00			

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS204**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	GD	E 463752.261 N 103372.850	4.460

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill Dia. 50 mm
0.20	ES	.						(1.70)	Grass over soft dark brownish black slightly gravelly clay. Gravel is medium and coarse angular of brick and concrete. (MADE GROUND)		MG	
1.00	ES	.										
1.40	D	.										
1.50	ES	.	0	30								
1.60		.		30			2.76	1.70				
							2.46	(0.30) 2.00	Medium dense light yellowish brown slightly sandy coarse rounded GRAVEL of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
								(1.60)	Soft light yellowish brown CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated)) 2.50 m bgl Poor recovery due to encountering a cobble of flint.		RT	
2.90	ES	.	0									
3.20	D	.		140								
3.40		.		130								
3.50	ES	.	0	130			0.86	3.60				
									Borehole terminated at 3.60 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 3.6m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS205**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	JH	E 463848.292 N 103312.125	3.528

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.30	ES	.	0					(1.20)	Grass over brown slightly gravelly sandy clay. Gravel is fine to coarse rounded to angular of flint, brick, and concrete. (MADE GROUND)		MG	
1.00	ES	.	0				2.33	1.20				
							2.09	1.44	Brown slightly gravelly slightly silty CLAY. Gravel is fine to coarse subangular to subrounded of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
								(0.56)	Light brown mottled red sandy slightly silty fine to coarse angular to subangular GRAVEL of flint and chert. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
						1	1.53	2.00				
								(1.20)	Orangish brown slightly gravelly slightly silty SAND. Gravel is fine to coarse subangular to subrounded of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							0.33	3.20				
								(1.80)	Grey mottled red slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of flint. (LAMBETH GROUP)		LMBE	
							-1.47	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						18-08-16		3.10			

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS206**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	GD	E 463990.392 N 103245.823	3.482

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.30	ES	.	0					(1.20)	Light brownish black gravelly clay. Gravel is medium and coarse angular of brick, concrete, and plastic fragments. (MADE GROUND)		MG	
1.00	ES	.	0				2.28	1.20				
1.30		.		28				(0.80)	Soft light orangish brown CLAY. (LAMBETH GROUP)		LMBE	
1.50	ES	.	0	32								
1.80	D	.		28			1.48	2.00				
2.30		.		60				(1.00)	Soft to firm light brownish red CLAY. (LAMBETH GROUP)		LMBE	
2.50	ES	.	0	90								
2.80		.		140			0.48	3.00				
3.50	ES	.	0					(2.00)	Firm to stiff light greyish brown slightly sandy CLAY. Sand is medium to coarse. (LAMBETH GROUP)		LMBE	
4.50	ES	.	0				-1.52	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS207**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	CN	E 463513.894 N 103264.113	3.429

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.20	ES	.	0						Grass over light brown slightly sandy gravelly clay. Gravel is fine to coarse rounded to angular of flint, brick and chalk. (MADE GROUND)			
0.30	ES	.	0									
0.50	ES	.	0					(1.20)			MG	
0.70	ES	.	0									
1.00	ES	.	0				2.23	1.20				
1.30	ES	.	0						Dark brownish black organic gravelly clay with frequent decayed roots and rare flint cobble. Gravel is fine to coarse rounded to angular of flint. (REWORKED NATURAL)			
1.50	ES	.	0					(0.80)			MG	
1.70	ES	.	0									
							1.43	2.00				
2.20	ES	.	0	48					Light greyish blue mottled yellowish brown clay with frequent decayed rootlets. (REWORKED NATURAL)			
3.00	ES	.	0									
3.50		.	0					(3.00)			MG	
3.60		.		45								
3.80	ES	.	0									
4.00		.	0									
4.50		.	0									
4.70		.		95								
							-1.57	5.00				
5.00	ES	.	0						Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS208**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	15-08-16 15-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	DW	E 463717.698 N 103292.092	3.397

SAMPLES & TESTS							STRATA						
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill	Dia. 50 mm
							3.20	0.20	Grass over light brownish orange clay with frequent rootlets. (TOPSOIL)		TS		
0.20	ES	.	0						Light brownish grey gravelly CLAY. Gravel is fine and medium subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))				
0.30	ES	.	0										
0.70	ES	.	0					(1.05)			RT		
1.00	ES	.	0										
							2.15	1.25					
							1.95	1.45	Light brown very sandy GRAVEL. Gravel is fine to coarse subangular to subrounded of flint. Sand is fine to medium. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT		
							1.90	1.50			RT		
1.50	ES	.	0						Orange fine and medium SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))				
									Red mottled grey fissured CLAY. Fissures are medium spaced. (LAMBETH GROUP)				
2.00	ES	.	0						2.10 m bgl Fissures becoming widely spaced.				
2.50		.		>140					2.50 m bgl Becoming stiff with white mottling for approx. 400mm.				
								(2.50)			LMBE		
3.00	ES	.	0										
							-0.60	4.00					
4.00	ES	.	0				-0.75	4.15	Fine brown SILT. (LAMBETH GROUP)		LMBE		
									Very stiff red mottled grey CLAY. Fissures are medium spaced. (LAMBETH GROUP)				
4.50		.		>140				(0.85)			LMBE		
							-1.60	5.00					
5.00	ES	.	0						Borehole terminated at 5.00 m bgl.		END		

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS209**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	DW	E 463832.706 N 103245.070	2.974

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.							Grass over dark brown clay. (TOPSOIL)			
0.30	ES	.	0									
0.50	ES	.	0					(1.50)			TS	
1.00	ES	.	0									
							1.47	1.50	1.30 m bgl cobble of flint.			
1.50	ES	.						(0.40)	Light brown mottled grey CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							1.07	1.90				
								(0.40)	Yellowish brown gravelly SAND. Gravel is fine to coarse angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							0.67	2.30				
2.50	ES	.						(0.90)	Orangish brown SAND and GRAVEL. Sand is medium to coarse. Gravel is fine to coarse angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							-0.23	3.20				
								(0.50)	Slightly gravelly medium to coarse SAND. Gravel is fine to medium angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							-0.73	3.70				
3.60	ES	.						(0.80)	Cream sandy gravelly CLAY. Gravel is fine to coarse angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							-1.53	4.50				
								(0.50)	Light yellowish brown slightly sandy clayey medium to coarse GRAVEL. Sand is medium to coarse. Gravel is subangular to rounded of chalk and flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							-2.03	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS210**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	15-08-16 15-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	DW	E 463774.500 N 103193.977	2.928

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. 50 mm
0.00-0.00	EW	.					2.63	(0.30) 0.30	Light brown gravelly medium sand. Gravel is fine to coarse rounded to angular of flint. (MADE GROUND)			MG	
0.30	ES	.	0						Light brown slightly gravelly clayey medium sand. Gravel is fine and medium rounded to angular of flint and brick. (MADE GROUND)			MG	
1.00	ES	.	0				1.73	(0.90) 1.20					
							1.53	1.40	Dark brown CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))			RT	
1.60	ES	.	0	50/20			1.18	(0.35) 1.75	Firm brown CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))			RT	
							0.98	1.95	Brown slightly clayey sandy GRAVEL. Gravel is fine to coarse angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			RT	
2.50	ES	.	0				0.28	(0.70) 2.65	Brown CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))			RT	
							0.23	2.70	Orangish brown slightly sandy GRAVEL. Gravel is fine to coarse angular to subangular of flint. Sand is medium to coarse. (RIVER TERRACE DEPOSITS (Undifferentiated))			RT	
3.00	EW	.					-0.77	(1.00) 3.70	Orangish brown gravelly medium to coarse SAND. Gravel is fine to coarse angular to subangular flint. (RIVER TERRACE DEPOSITS (Undifferentiated)) 2.90 m bgl Cobble of flint.			RT	
						▼1	-0.97	3.90	Light brown SAND and GRAVEL. Gravel is fine to coarse angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			RT	
3.80	ES	.	0				-1.47	(0.50) 4.40	Light brown sandy CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))			RT	
							-2.07	(0.60) 5.00	Light brown SAND and GRAVEL. Sand is fine to medium. Gravel is fine to coarse angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			RT	
5.00	ES	.	0						Borehole terminated at 5.00 m bgl.			END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						16-08-16		3.70			

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS211**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	DW	E 463639.154 N 103164.672	2.910

SAMPLES & TESTS							STRATA						Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description		Legend	Geology	Dia. 50 mm
							2.61	(0.30) 0.30	Brown slightly sandy slightly gravelly clay. Gravel is fine to coarse rounded to angular of flint and brick. (MADE GROUND)			MG	
0.20	ES	.	0										
0.30	ES	.	0						Light reddish brown gravelly sand. Gravel is fine to coarse rounded to angular flint and brick. (MADE GROUND)				
0.65	ES	.	0					(0.90)				MG	
1.00	ES	.	0				1.71	1.20					
1.40		.		59/20					Firm light brown mottled grey CLAY. (LAMBETH GROUP)				
								(0.70)				LMBE	
							1.01	1.90					
									Stiff light brown mottled grey fissured CLAY. Fissures are widely spaced. (LAMBETH GROUP)				
								(0.60)				LMBE	
							0.41	2.50					
2.70		.		94/29					Stiff reddish brown mottled grey fissured CLAY. Fissures are widely spaced. (LAMBETH GROUP)				
3.00	ES	.	0						3.00 m bgl Fissures becoming closely spaced.				
									3.40 m bgl Becoming very stiff. Fissures closely spaced.				
								(2.40)				LMBE	
4.00	ES	.	0	>140					4.00 m bgl Becoming hard. Fissures becoming medium spaced.				
							-1.99	4.90					
							-2.09	5.00	Very stiff grey mottled brown CLAY. (LAMBETH GROUP)			LMBE	
5.00	ES	.	0						Borehole terminated at 5.00 m bgl.			END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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WINDOW SAMPLE LOG

Hole No. **WS212**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Competitor Dart	CN	E 463872.096 N 103137.175	2.924

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.20	ES	.							Brown slightly sandy slightly gravelly clay. Gravel is fine to coarse rounded to angular of flint and brick. (MADE GROUND)			
0.30	ES	.	0									
0.65	ES	.						(1.20)			MG	
							1.72	1.20				
1.20	ES	.	0						Brown gravelly CLAY with rare subangular cobbles of flint. Gravel is medium and coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
1.40	ES	.	0					(0.50)			RT	
							1.22	1.70				
						▼1			Light yellowish brown slightly silty fine and medium SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.50	ES	.	0									
								(3.30)			RT	
3.50	ES	.	0									
							-2.08	5.00				
									Borehole terminated at 5.00 m bgl.		END	

Hole Diameter			Recovery			Water Strikes					
Depth	Diameter (mm)	Remarks	Core Top (m)	Core Base (m)	% Recovery	Date	Time	Strike	Minutes	Standing	Casing
						15-08-16		2.00			

General Remarks
Hole terminated at 5.0m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:37.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP WINDOW SAMPLE LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **BH201**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	15-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	SS	E 463522.786 N 103368.133	4.687

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
									Firm dark brown slightly sandy slightly gravelly clay. Gravel is fine to coarse rounded to angular of flint, brick, concrete, metal. (MADE GROUND)			
0.30	ES		0					(1.00)			MG	
							3.69	1.00				
1.00	ES		0					(0.50)	Firm dark brown sandy gravelly clay. Gravel is fine to coarse rounded to angular of flint, brick, concrete. (MADE GROUND)		MG	
							3.19	1.50				
1.50	SPT	2,3,5 5,4,3 N=17(S)					3.09	1.60	Firm reddish brown mottled light greyish blue slightly gravelly clay. Gravel is medium and coarse rounded to angular of flint. (REWORKED NATURAL)		MG	
1.80	ES		0				2.79	1.90	Firm dark brown and black sandy gravelly clay. Gravel is fine to coarse rounded to angular of flint, brick, concrete, wood. (MADE GROUND)		MG	
							2.69	2.00	Firm reddish brown mottled light greyish blue slightly gravelly clay. Gravel is medium and coarse rounded to angular of flint. (REWORKED NATURAL)			
2.00	SPT	2,1,2 2,2,2 N=8(S)						(0.90)	Medium dense dark brown and black slightly clayey slightly gravelly coarse sand. Gravel is fine to coarse rounded to angular of flint, brick, concrete, metal, ash. (MADE GROUND) 2.00 - 2.90 Possible asbestos containing material encountered.		MG	
							1.79	2.90				
							1.74	2.95	Firm dark brown organic clay. Possible compressed compost. (MADE GROUND)		MG	
3.00	SPT	2,2,2 2,3,3 N=10(S)	0						2.90 m bgl Fibreboard sheet			
3.00	ES								Stiff dark grey slightly gravelly slightly sandy clay. Gravel is fine to coarse rounded to angular of flint and brick. (MADE GROUND)			
								(1.55)			MG	
4.00	SPT	1,2,2 4,4,5 N=15(S)										
							0.19	4.50				
								(0.35)	Very soft reddish brown slightly gravelly CLAY. Gravel is medium and coarse rounded to angular of flint. (LAMBETH GROUP)		LMBE	
							-0.16	4.85				
							-0.31	5.00	Very soft reddish brown mottled light greyish blue CLAY. (LAMBETH GROUP)		LMBE	
5.00	ES		0						Borehole terminated at 5.00 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing

General Remarks

Hole terminated at 5.0 m bgl due to encountering asbestos. Borehole logged in accordance with BS5930 (2015).

Scale 1:43.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP Kings Orchard, 1 Queen St, Bristol, BS2 0HQ Telephone: 0117 930 2000 Fax:	**BOREHOLE LOG**	Hole No. **BH202**
	Project City Deal Portsmouth	Sheet 1 of 1
Job No 70015362	Client PCC	Date 18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	CN/JH	E 463740.661 N 103387.081	4.527

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
												Dia. 50 mm
0.30	ES		0						Firm brown gravelly clay. Gravel is medium and coarse rounded to angular flint. (TOPSOIL)			
								(1.50)			TS	
1.00	ES		0									
							3.03	1.50				
1.50	SPT	4,4,5 6,6,5 N=22(S)							NO RECOVERY			
								(0.70)			NR	
							2.33	2.20				
							2.03	2.50	Medium dense orangish grey slightly sandy fine to coarse subrounded to subangular GRAVEL of flint. Sand is medium to coarse. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
2.50	SPT	6,6,6 7,6,5 N=24(S)										
							1.63	(0.40) 2.90	Medium dense yellowish grey medium to coarse subangular to subrounded GRAVEL of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							1.18	(0.45) 3.35	Medium dense yellowish brown slightly sandy fine to coarse GRAVEL of flint. Gravel is subangular to subrounded. Sand is fine to medium. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							1.03	3.50	Firm to stiff light orangish brown mottled grey sandy CLAY. Sand is fine. (LAMBETH GROUP)		LMBE	
3.50	SPT	1,1,1 1,1,1 N=4(S)					0.78	3.75	NO RECOVERY		NR	
							0.60	3.93	3.50 m bgl some black micaceous staining.		LMBE	
									Firm brown mottled grey sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded of flint. Sand is fine to coarse. (LAMBETH GROUP)			
						▼1		(0.97)	Medium dense orange mottled grey silty slightly gravelly SAND with black staining throughout. Gravel is fine to medium subrounded of flint. Sand is medium to coarse. (LAMBETH GROUP)		LMBE	
4.50	SPT	5,4,4 4,5,7 N=20(S)					-0.37	4.90	4.60 m bgl some organic detritus (plant leaves)			
									Loose to medium dense light yellow mottled orange slightly gravelly SAND. Gravel is medium to coarse subangular to subrounded of flint. Sand is fine to coarse. (LAMBETH GROUP)			
5.50	SPT	2,5,3 3,2,2 N=10(S)						(1.45)			LMBE	
							-1.82	6.35				
							-1.97	6.50	Yellow mottled orange gravelly SAND. Gravel is fine to coarse angular to subangular of flint. Sand is fine to coarse. (LAMBETH GROUP)		LMBE	
									Borehole terminated at 6.50 m bgl.		END	

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
						16-08-16		4.50			

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole terminated at 6.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:43.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **BH203**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	CN	E 463753.135 N 103400.842	4.413

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW											
0.30	ES		0						Firm brown slightly sandy gravelly clay with rare plastic sheeting and rare cobbles of subrounded flint. Gravel is fine to coarse rounded to angular of flint, brick and chalk. (MADE GROUND)			
								(1.50)			MG	
1.00	ES		0									
							2.91	1.50				
1.50	SPT	5,5,7 7,8,9 N=31(S)							Dense light brown gravelly fine to coarse SAND. Gravel is fine to coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.00	ES		0					(1.20)			RT	
2.50	SPT	5,17,14 15,13,8 N=50/ 0.285(S)	0				1.71	2.70				
			0					(0.70)	Very dense orangish brown slightly gravelly fine to coarse SAND. Gravel is coarse rounded to angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
3.00	ES						1.01	3.40				
3.50	SPT	4,2,3 3,4,6 N=16(S)	0	45			0.91	3.50	Stiff light orangish brown mottled light bluish grey CLAY. (LAMBETH GROUP)		LMBE	
3.50	ES		0			1			Firm light orangish brown mottled light bluish grey gravelly CLAY. Gravel is fine to coarse rounded to angular of flint. (LAMBETH GROUP)			
4.00	ES							(1.40)			LMBE	
4.50	SPT	4,3,4 3,4,4 N=15(S)	0				-0.49	4.90				
5.00	ES		0					(0.60)	Structureless CHALK composed of greyish white gravelly silt. Clasts are weak to medium strong subrounded to angular of chalk. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Grade Dm)		LECH	
5.50	SPT	2,1,1 N=1/ 0.3(S)	0				-1.09	5.50				
			0					(1.40)	Structureless CHALK composed of greyish white silty sandy fine to coarse angular to rounded gravel of chalk and flint. Occasional subangular chalk cobbles. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Grade Dc)		LECH	
6.50	SPT	2,2,1 2,3,4 N=10(S)					-2.49	6.90				
			0						Structureless CHALK composed of light greyish white slightly sandy gravelly silt. Clasts are weak to medium strong angular of chalk. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Grade Dm)			
7.50	SPT	3,3,4 7,6,3 N=20(S)	0									
8.00	ES		0						8.10 m bgl Occassional chalk cobbles			
								(3.10)			LECH	
8.50	SPT	6,7,4 5,6,7 N=22(S)										
9.50	SPT	5,4,4 6,8,11 N=29(S)	0				-5.59	10.00				
9.50	ES								Borehole terminated at 10.00 m bgl.		END	

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
								4.30			

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole terminated at 10.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:68.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **BH204**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	12-08-16 15-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 205	GD	E 463637.858 N 103299.648	3.457

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.00-0.00	EW						3.16	0.30	Grass over soft light brownish orange gravelly clay with frequent rootlets. Gravel is fine and medium subangular of flint. (TOPSOIL)		TS	Dia. 50 mm
0.30	ES		0						Loose dark brownish black sandy fine to coarse subangular gravel of brick, concrete, limestone and flint. (MADE GROUND)			
0.80	ES		0					(1.20)			MG	
1.50	SPT	1,1,1 2,1,1 N=5(S)		70			1.96	1.50	Soft light reddish brown slightly gravelly CLAY. Gravel is fine to coarse subangular of flint. (LAMBETH GROUP)			
2.00	D			118				(1.00)			LMBE	
2.30	ES		0	118			0.96	2.50	Firm to stiff light reddish brown CLAY. (LAMBETH GROUP)			
2.50	SPT	2,3,4 4,5,7 N=20(S)		42								
3.00	ES		0									
3.30	D			50								
3.50	SPT	3,3,4 4,5,8 N=21(S)		122 92								
3.80	D		0	130								
4.00	ES			120								
4.50	SPT	3,5,7 8,8,9 N=32(S)		32								
5.00	ES		0	60		1						
5.30	D			140								
5.50	SPT	4,4,5 5,7,7 N=24(S)										
5.90	D		0	140								
6.10	ES							(7.85)	6.10 m bgl Becoming very stiff. 6.10 - 10.35 m bgl Open holed		LMBE	
7.00	SPT	5,8,8 7,8,9 N=32(S)										
7.00	EW					1						
8.50	SPT	9,10,19 23,8 N=50/ 0.19(S)							8.50 m bgl Becoming hard.			
10.00	SPT	10,14,19 24,7 N=50/ 0.2(S)					-6.89	10.35				
									Borehole terminated at 10.35 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
15-08-16	10.30	8.20	20	5.30	

General Remarks

Hole terminated at 10.35 m bgl. Open holed from 6.1 m bgl due to refusal. Borehole logged in accordance with BS5930 (2015).

Scale 1:68.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **BH205**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	15-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 205	GD	E 463782.770 N 103292.024	3.283

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW						3.18	0.10	Grass over soft light brownish orange clay. (TOPSOIL)		TS	
0.30	ES		0				2.78	0.50	Soft dark brownish black gravelly clay. Gravel is fine and medium subangular of flint, brick and concrete. (MADE GROUND)		MG	
0.70	ES						2.08	(0.70) 1.20	Soft light brownish yellow slightly gravelly CLAY. Gravel is subangular fine and medium of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
1.20	SPT	1,1,2 2,3,3 N=10(S)	0	72				(0.80)	Firm light brownish yellow slightly gravelly CLAY. Gravel is medium angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
1.50	ES			122								
1.70	D			140			1.28	2.00				
2.00	SPT	2,2,4 4,4,4 N=16(S)	0	70				(1.00)	Stiff light brownish yellow CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
2.50	ES			70								
2.70	D			72			0.28	3.00				
3.00	SPT	3,5,4 6,2,7 N=19(S)	0					(1.00)	Stiff light reddish brown slightly gravelly CLAY. Gravel is medium angular of flint. (LAMBETH GROUP)		LMBE	
3.50	ES											
3.80	D						-0.72	4.00				
4.00	SPT	2,3,3 4,5,6 N=18(S)		50					Stiff light reddish brown CLAY. (LAMBETH GROUP)			
4.50	ES			90								
4.60	D			138								
5.00	SPT	2,4,5 5,8,8 N=26(S)		82								
5.50	ES		0	122								
5.80	D			140								
6.30	ES		0									
6.40	D											
6.50	SPT	3,4,7 8,10,11 N=36(S)						(5.90)	7.00 m bgl Becoming very stiff		LMBE	
8.00	SPT	7,10,20 25,5 N=50/ 0.15(S)										
							-6.62	9.90				
10.00	SPT	19,6,50 N=50/ 0.07(S)					-6.72	10.00	Structureless CHALK composed of white SILT. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Grade Dm)		LECH END	
									Borehole terminated at 10.00 m bgl.			

1

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
						16-08-16		7.50			

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole terminated at 10.45 m bgl. Open holed from 6.5 m bgl due to refusal. Borehole logged in accordance with BS5930 (2015).

Scale 1:68.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **BH206**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 205	GD	E 463720.709 N 103245.961	3.300

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
			0					(0.50)	Soft light brownish red gravelly clay. Gravel is fine and medium angular of limestone. (TOPSOIL)		TS	
0.30-0.40	ES		0				2.80	0.50				
0.60-0.70	ES		0					(1.00)	Soft light brownish red slightly gravelly CLAY. Gravel is fine and medium subrounded of mudstone. (LAMBETH GROUP)		LMBE	
1.50	SPT	1,1 1,1,1 N=4(S)		126.67			1.80	1.50				
1.90-2.00	ES		0						Firm light reddish brown slightly gravelly CLAY. Gravel is fine and medium subangular of flint. (LAMBETH GROUP)			
2.00	D											
2.50	SPT	1,1,2 3,4,4 N=13(S)		38				(2.00)			LMBE	
3.00	D		0	128								
3.00-3.10	ES						-0.20	3.50				
3.50	SPT	2,2,4 4,5,6 N=19(S)		138 58					Stiff light reddish brown CLAY. (LAMBETH GROUP)			
4.00	D		0	128								
4.00-4.10	ES											
4.50	SPT	4,5,7 8,10,13 N=38(S)		138								
4.70	D		0									
4.70-4.80	ES							(3.15)	5.00 - 6.65 m bgl Open holed		LMBE	
6.20	SPT	3,3,5 6,6,8 N=25(S)					-3.35	6.65				
									Borehole terminated at 6.65 m bgl.		END	

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
				50							

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole terminated at 6.65 m bgl. Open holed from 5.0 m bgl due to refusal. Borehole logged in accordance with BS5930 (2015).

Scale 1:43.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **BH207**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 205	GD	E 463916.736 N 103215.673	3.130

SAMPLES & TESTS								STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology		Dia. 50 mm
0.00-0.00	EW								Soft light brownish grey slightly gravelly clay. Gravel is medium and coarse subangular of brick, concrete, plastic and limestone aggregate. (MADE GROUND)		MG		
0.30	ES		0										
0.70	ES		0				1.93	(1.20) 1.20					
1.20	SPT	2,2,3 3,4,5 N=15(S)							Loose pale yellow medium and coarse SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT		
1.50	ES					1	1.13	(0.80) 2.00					
1.80	D								Loose light reddish yellow medium and coarse SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT		
2.00	SPT	2,3,4 5,5,3 N=17(S)											
2.50	ES							(1.50)					
2.80	D												
3.00	SPT	2,2,2 2,3,2 N=9(S)		130			-0.37	3.50					
3.80	ES			130			-0.87	4.00	Firm light reddish brown slightly gravelly CLAY. Gravel is medium angular flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT		
4.00	SPT	1,1,1 2,3,3 N=9(S)		140			-1.47	(0.60) 4.60	Loose light brownish yellow medium and coarse SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT		
4.00	D												
4.30	D		0	110			-1.87	5.00	Firm light reddish brown CLAY. (LAMBETH GROUP)		LMBE		
4.70	ES												
5.00	SPT	2,1,4 4,6,7 N=21(S)	0	120			-2.57	(0.70) 5.70	Medium dense light reddish brown medium and coarse SAND. Becoming more clayey with depth. (LAMBETH GROUP)		LMBE		
5.30	ES		0										
5.60	ES			140					Stiff light reddish brown CLAY with occasional angular gravel of flint. (LAMBETH GROUP) 6.00 - 7.00 m bgl Open holed. Colour is reddish grey				
6.50	SPT	7,9,9 11,12,18 N=50/ 0.29(S)							7.00 - 8.50 m bgl Open holed. Colour is yellow				
8.00	SPT	6,9,11 15,20,4 N=50/ 0.225(S)						(4.75)	8.50 m bgl Open holed. Colour is grey		LMBE		
10.00	SPT	7,11,10 9,9,11 N=39(S)					-7.32	10.45					
									Borehole terminated at 10.45 m bgl.		END		

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
17-08-16		2.00			

General Remarks

Hole terminated at 10.45 m bgl. Open holed from 6.0 m bgl due to refusal. Borehole logged in accordance with BS5930 (2015).

Scale 1:68.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

BOREHOLE LOG

Hole No. **BH208**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	12-08-16 15-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	SS	E 463570.880 N 103183.677	3.398

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW						3.10	0.30	Firm dark brown slightly sandy slightly gravelly clay with rare cobbles of flint and concrete. Gravel is fine to coarse subangular of flint, concrete, brick. (MADE GROUND)		MG	
0.30	ES		0									
								(1.30)	Medium dense dark brownish black slightly clayey sandy fine to coarse subrounded to very angular gravel of flint, concrete, brick, ash and metal with rare boulders of granite. (MADE GROUND)		MG	
1.00	SPT	5,1 N=1/ 0.375(S)							1.00 m bgl Metal bar encountered.			
1.00	ES											
1.00	EW					▼1	1.80	1.60				
								(1.30)	Soft dark brownish black slightly sandy slightly gravelly clay with rare brick cobble. Gravel is fine to coarse rounded to angular of flint, brick and ash. (MADE GROUND)		MG	
2.00	SPT	1,1 1,1(S)										
2.00	ES						0.50	2.90				
								(0.45)	Firm reddish brown mottled light bluish grey slightly gravelly clay with rare large metal nails. Gravel is medium and coarse of flint. (MADE GROUND)		MG	
3.00	SPT	1,1,1 1,3,3 N=8(S)		124			0.05	3.35				
3.00	ES			140					Firm reddish brown mottled light greyish blue CLAY. (LAMBETH GROUP)			
				140								
4.00	SPT	2,1,2 2,3,4 N=11(S)	0									
4.00	ES											
								(3.10)			LMBE	
5.00	SPT	3,2,4 5,6,7 N=22(S)	0						5.00 m bgl Becoming stiff			
5.00	ES											
6.00	SPT	3,4,5 6,7,9 N=27(S)	0									
6.00	ES						-3.05	6.45				
									Borehole terminated at 6.45 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
12-08-16		1.55			

General Remarks

Hole terminated at 6.45 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:43.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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Fax:

BOREHOLE LOG

Hole No. **BH209**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No: 70015362

Client: PCC

Date: 11-08-16
11-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	SS	E 463696.400 N 103164.404	3.265

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.00-0.00	EW								Grass over firm dark brown slightly gravelly sandy CLAY with occasional rootlets. Gravel is medium and coarse rounded to subangular of flint. (TOPSOIL)			Dia. 50 mm
0.30	ES		0	83.33				(1.00)			TS	
							2.27	1.00				
1.00	SPT	6,5,2 3,2,2 N=9(S)	0	60					Loose dark brown clayey sandy fine to coarse rounded to subangular GRAVEL of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
1.00	ES							(0.55)			RT	
							1.72	1.55				
1.60	EW								Medium dense brown clayey gravelly medium SAND with rare subrounded to subangular cobbles of flint. Gravel is fine to coarse rounded to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
						▼1		(0.50)			RT	
							1.22	2.05				
2.00	SPT	9,7,16 15,10,8 N=49(S)	0						Dense light grey medium SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))			
2.10	ES							(0.45)			RT	
							0.77	2.50	2.40 m bgl becoming orange.			
									Loose orange coarse SAND and fine to coarse rounded to angular GRAVEL of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
								(0.40)			RT	
							0.37	2.90				
3.00	SPT	2,2,2 3,4,4 N=13(S)	0						Medium dense orange coarse SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))			
3.00	ES							(0.50)			RT	
							-0.14	3.40				
							-0.24	3.50	Medium dense orange slightly gravelly coarse SAND. Gravel is medium rounded to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
							-0.39	3.65			RT	
							-0.54	3.80			RT	
4.00	SPT	2,2,3 4,5,7 N=19(S)	0						Medium dense orange sandy medium and coarse rounded to angular GRAVEL of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))			
									Medium dense orange very clayey fine SAND. (RIVER TERRACE DEPOSITS (Undifferentiated))			
									Very stiff light blue mottled light brown CLAY. (LAMBETH GROUP)			
5.00	SPT	2,2,4 4,5,5 N=18(S)	0					(2.65)			LMBE	
5.00	ES											
6.00	SPT	2,3,5 5,7,8 N=25(S)	0.2				-3.19	6.45				
									Borehole terminated at 6.45 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
11-08-16		2.00			

General Remarks

Hole terminated at 6.45 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:43.75

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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Fax:

BOREHOLE LOG

Hole No. **W3BH301**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	10-04-17 11-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 463919.139 N 103486.881	2.705

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW						2.36	0.35	CONCRETE.		CONC	
0.35-0.50	ES		0					(0.65)	Dark brown slightly sandy gravelly clay with rare decaying rootlets and rare metal fragments. Gravel is fine to coarse angular to subrounded of brick fragments and mixed lithologies. (MADE GROUND)		MG	
0.80-1.00	D		0				1.71	1.00				
0.90-1.00	ES							(0.60)	Brown sandy gravelly clay with rare decaying rootlets. Gravel is fine and medium angular to subrounded of brick fragments and mixed lithologies. (MADE GROUND)		MG	
1.20	SPT	1,0,1 0,1,0 N=2(S)					1.11	1.60				
1.20-1.65	D						1.01	1.70	Soft dark brownish black fibrous PEAT. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
1.90-2.00	ES		0				0.61	2.10	Firm bluish grey CLAY with numerous fine to medium gravel sized brownish grey mottle and numerous decaying rootlets. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
2.00	SPT	1,0,1 1,1,1 N=4(S)		30	45				1.79 m bgl Occasional pockets of black peat.			
2.00-2.45	D			26	7			(1.40)	Soft bluish grey CLAY with rare fine and medium gravel sized brownish black mottle. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
3.00-3.50	U100			61	17				2.28 - 2.29 m bgl Black fibrous peat.			
3.50	SPT	2,2,1 1,2,1 N=5(S)	0	24	7		-0.80	3.50	2.80 - 3.00 m bgl Fine laminae observed, 1 to 2mm thick. Occasional shell fragments.			
3.50-3.95	D						-1.25	3.95	Firm bluish grey silty gravelly CLAY. Gravel is fine and medium subangular to subrounded of moderately weak to moderately strong chalk. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
3.50-3.65	ES											
3.60-3.80	ES							(1.19)	Firm locally stiff light brown silty very gravelly CLAY. Gravel is fine and medium angular to subangular of moderately weak chalk with rare coarse angular flint. (Weathered LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated) / HEAD DEPOSITS)		LECH	
4.50	SPT	1,2,3 3,3,4 N=13(S)				1						
4.50-4.95	D						-2.44	5.14				
5.50	SPT	1,0,1 0,1,1 N=3(S)							Structureless CHALK composed of white sandy gravelly silt. Clasts are low to medium density very weak chalk. Occasional rounded coarse sized flint with chalk rind. Matrix is soft white. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm)			
5.50-5.95	D											
6.50	SPT	2,3,3 2,3,2 N=10(S)	0					(3.36)			LECH	
6.50-6.95	D											
6.50-6.70	ES											
7.50	SPT	2,4,3 2,3,4 N=12(S)							7.50 m bgl Chalk clasts becoming medium dense.			
7.50-7.95	D											
							-5.80	8.50	8.20 m bgl Slight orange staining within matrix.			
									Borehole terminated at 8.50 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
11-04-17		5.10	20	4.90	5.00

General Remarks

Hole terminated at 8.5 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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Fax:

BOREHOLE LOG

Hole No. **W4BH304**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-04-17 18-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	SM	E 463983.653 N 103419.056	3.520

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW											
0.30	ES						3.12	0.40	Brown very gravelly clayey sand with rootlets and occasional cobbles of brick and concrete. (MADE GROUND)		MG	
0.90	ES								Medium brown slightly clayey very gravelly sand with occasional cobbles of concrete and brick. Gravel is fine to coarse very angular to well rounded of brick, concrete, metal, flint and various lithologies. (MADE GROUND)			
1.50	SPT	5,6,5 5,6,5 N=21(S)						(2.55)	1.50 m bgl handpit complete at 1.5m bgl.		MG	
1.50-1.95	D								1.95 m bgl obstruction of concrete.			
2.50	SPT	2,2,1 1,1,1 N=4(S)					0.57	2.95				
2.50-2.95	D								Very soft light brown cream chalky sandy CLAY.			
2.95	ES						0.02	(0.55) 3.50	(WEATHERED LEWES NODULAR CHALK FORMATION/ HEAD DEPOSITS)		LECH	
3.50	SPT	3,3,4 3,4,4 N=15(S)							2.95 m bgl wet sandy clay possibly groundwater.			
3.50-3.95	D						-0.64	(0.66) 4.16	Structureless CHALK composed of brown mottled white gravelly silt. Clasts are angular to subrounded very weak low density chalk. Matrix is brown silt. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm)		LECH	
4.50	SPT	3,4,3 3,4,4 N=14(S)							Structureless CHALK composed of white mottled light brown gravelly silt. Clasts are very weak low to medium density with occasional orange brown staining. Matrix is white silt. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm)			
4.50-4.95	D								4.40 - 4.50 m bgl angular cobble of flint			
4.60	ES								4.90 - 5.10 m bgl recovered brown gravelly silt of brick and chalk fragments. Possibly borehole collapse and material falling in from above.			
6.00	SPT	N=SWP(S)						(2.84)	5.10 m bgl becomming mottled brown and orange brown.		LECH	
6.45	SPT	2,3 1,1,1 N=5/ 0.15(S)							5.50 m bgl occasional fine to medium gravel of black flint.			
6.45-6.90	D						-3.48	7.00				
8.00	SPT	3,4,4 4,5,4 N=17(S)						(1.45)	Structureless CHALK composed of white silty gravel. Clasts are very weak, low to medium density white chalk. Matrix is white silt. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dc)		LECH	
8.00-8.45	D						-4.93	8.45	7.90 - 8.00 m bgl cobble of chalk.			
									Borehole terminated at 8.45 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing

General Remarks

Hole terminated at 8.45 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP Kings Orchard, 1 Queen St, Bristol, BS2 0HQ Telephone: 0117 930 2000 Fax:	**BOREHOLE LOG**	Hole No. **W4BH305**
	Project City Deal Portsmouth	Sheet 1 of 2
Job No 70015362	Client PCC	Date 19-04-17 19-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 464047.441 N 103415.496	4.520

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00	EW											
0.10-0.30	ES						4.02	(0.50) 0.50	Brownish grey sandy fine to coarse angular to subrounded gravel of various lithologies including brick and concrete. Occasional angular cobble sized bricks decaying rootlets and wood fragments. (MADE GROUND)		MG	
0.90-1.00	ES								Light greyish orange slightly sandy gravelly clay with occasional decaying wood fragments and rare ash and clinker. Gravel is fine to coarse angular to subrounded of concrete brick chalk and flint. (MADE GROUND)			
1.00-1.20	D											
1.50	SPT	2,2,2 3,2,3 N=10(S)						(2.50)			MG	
1.50-1.95	D											
1.85-2.00	ES											
2.50	SPT	4,6,6 7,10,12 N=35(S)							2.50 - 3.00 m bgl Greyish black staining			
2.50-2.95	D						1.52	3.00				
2.50-3.00	ES								Light greyish brown silty clay with grey mottle rare decaying rootlets and rare metal fragments. (MADE GROUND)			
3.00-3.50	D			8	12			(0.90)			MG	
3.50	SPT	3,4,5 4,5,5 N=19(S)					0.62	3.90				
3.50-3.95	D								Firm light yellowish brown slightly sandy gravelly CLAY. Gravel is medium and coarse subangular to rounded of flint and fine to medium subrounded chalk. (Weathered LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated))			
4.00-4.50	U100							(1.10)			LECH	
4.50-4.60	ES						-0.48	5.00				
5.00-5.50	ES					1			Structureless CHALK composed of white mottled light brown gravelly silt. Clasts are very weak low density chalk with occasional yellowish brown staining. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm)			
5.50	SPT	4,4,4 5,4,4 N=17(S)										
5.50-5.95	D											
6.20-6.50	ES											
6.50	SPT	1,0,0 0,1,0 N=1(S)				1			6.50 - 10.00 m bgl No recovery			
7.50	SPT	1,0,1 0,1,0 N=2(S)						(5.00)			LECH	
8.50	SPT	2,2,2 3,2,2 N=9(S)										
8.50-8.95	D											
9.50	SPT	2,3,3 3,3,3 N=12(S)					-5.48	10.00				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
						19-04-17		6.90	20	5.40	

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks

Hole terminated at 10.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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BOREHOLE LOG

Hole No. **W4BH305**

Project: City Deal Portsmouth

Sheet: 2 of 2

Job No	Client	Date
70015362	PCC	19-04-17 19-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 464047.441 N 103415.496	4.520

SAMPLES & TESTS						Water	STRATA				Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
9.50-9.95	D								Borehole terminated at 10.00 m bgl.		END	

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole terminated at 10.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **W4BH306**

Project: City Deal Portsmouth

Sheet: 1 of 2

Job No: 70015362

Client: PCC

Date: 20-04-17
20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 464012.972 N 103379.792	4.400

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.10-0.30	ES						3.75	(0.65) 0.65	Brown slightly clayey sandy fine to coarse subrounded to angular gravel of various lithologies including brick and concrete with frequent decaying rootlets. (MADE GROUND)		MG	
0.90-1.00	ES								Light orangish brown slightly silty gravelly clay. Gravel is fine to coarse angular to subangular of concrete brick flint and chalk. Rare decaying rootlets and orange mottle. (MADE GROUND)			
1.00-1.50	D											
1.50	SPT	3,5,4 3,3,3 N=13(S)					2.20	(1.55) 2.20			MG	
2.20-2.50	ES		9									
2.50	SPT	2,3,3 4,4,4 N=15(S)		8	12		1.70	(0.50) 2.70	Grey gravelly sandy clay. Gravel is of concrete brick and flint. Frequent decaying wood fragments rare rubber and glass fragments. (MADE GROUND)		MG	
3.50	SPT	2,3,3 3,3,3 N=12(S)		28	42		0.40	(1.30) 4.00	Orangish brown slightly sandy gravelly clay. Gravel is fine and medium angular to subangular of chalk and flint. Grey mottle and occasional decaying wood fragments. (PROBABLE MADE GROUND)		MG	
3.50-4.00	D								Firm locally stiff very light orangish brown slightly silty gravelly CLAY. Gravel is of coarse angular flint and fine to medium subangular chalk. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))			
3.50-3.80	ES											
4.50	SPT	3,4,3 2,3,3 N=11(S)				1						
5.00-5.30	ES		1			1		(2.57)			TFD	
5.50	SPT	2,2,1 0,2,3 N=6(S)		43	64							
6.00-6.50	D											
6.50	SPT	2,3,2 3,3,2 N=10(S)					-2.17	6.57				
							-2.63	7.03	Structureless CHALK composed of white mottled brown and oranged gravelly silt. Clasts are subangular to subrounded, fine to coarse, very weak, low density chalk. Matrix is white mottled brown and orange. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm)		LECH	
7.50	SPT	1,0,1 1,1,1 N=4(S)	1						Structureless CHALK composed of white gravelly silt. Clasts are white angular to subrounded, fine to coarse, very weak, low to medium density chalk. Matrix is white mottled orange. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm) 8.03 - 8.11 m bgl flint cobble and flint fragments, black with white chalk rind. Matrix is orange silt. 8.20 m bgl matrix becoming white mottled orange. Occasional coarse gravel of chalk. 8.80 - 9.30 m bgl recovered as white mottled orange putty chalk with occasional fine to medium gravel of chalk. 9.30 m bgl occasional subrounded gravel of very weak low density chalk with brown staining.			
7.50-7.80	ES							(2.97)			LECH	
9.50	SPT	3,2,3 3,2,2 N=10(S)					-5.60	10.00				

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
		5.30	20	5.00	

General Remarks

Hole terminated at 10.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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Telephone: 0117 930 2000
Fax:

BOREHOLE LOG

Hole No. **W4BH306**

Project: City Deal Portsmouth

Sheet: 2 of 2

Job No: 70015362

Client: PCC

Date: 20-04-17
20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 464012.972 N 103379.792	4.400

SAMPLES & TESTS						Water	STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
									Borehole terminated at 10.00 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing

General Remarks

Hole terminated at 10.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP Kings Orchard, 1 Queen St, Bristol, BS2 0HQ Telephone: 0117 930 2000 Fax:	**BOREHOLE LOG**	Hole No. **W4BH307**
	Project City Deal Portsmouth	Sheet 1 of 2
Job No 70015362	Client PCC	Date 21-04-17 20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 464025.870 N 103307.778	4.100

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.10-0.30	ES		1				3.35	(0.75) 0.75	Dark brown slightly clayey very sandy fine to coarse angular to subrounded gravel of brick, flint, concrete, chalk. Frequent cobble sized bricks and decaying rootlets. (MADE GROUND)		MG	Dia. 50 mm
0.80-1.00	ES		2						Greyish brown sandy very gravelly clay. Gravel is fine to coarse angular to subangular of brick flint and concrete. Frequent decaying wood fragments and cobble sized brick and concrete fragments. (MADE GROUND)			
1.50	SPT	25,0,50 N=50/ 0.075(S)					1.80	(1.55) 2.30			MG	
2.40-2.60 2.50-2.80	ES D		85	52	77				Greyish orange slightly sandy slightly gravelly clay. Gravel is fine and medium angular to subangular of brick. With grey mottle. (MADE GROUND)			
3.00	SPT	2,2,3 3,3,2 N=11(S)					0.10	(1.70) 4.00			MG	
4.00	SPT	2,1,2 2,3,2 N=9(S)	2				-0.40	(0.50) 4.50	Light yellowish brown slightly clayey fine and medium SAND. (RAISED MARINE DEPOSITS)		RMD	
4.00-4.45 4.00-4.20 4.60-4.80	B ES D			53	79	1	-0.87	(0.47) 4.97	Firm bluish brown sandy very gravelly CLAY. Gravel is coarse subrounded to rounded of flint. Bluish grey mottle and pockets of light orange sand. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated)) 4.95 m bgl green clay.		TFD	
5.00	SPT	1,2,2 2,1,2 N=7(S)							Possibly grey becoming grey brown slightly sandy SILT. Sand is fine to medium. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated)) 5.00 - 7.00 m bgl No recovery.			
6.00	SPT	1,0,1 0,1,0 N=2(S)						(2.21)			TFD	
7.00	SPT	N=SWP(S)					-3.08	7.18				
7.50-7.80	ES		0						Structureless CHALK composed of white gravelly silt. Clasts are angular very weak, low density chalk. Matrix is white sandy silt. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm) 7.18 - 7.24 m bgl subrounded cobble of flint. 7.31 - 7.33 m bgl pocket of dark grey clay. 7.55 - 7.57 m bgl pocket of dark grey clay. 8.00 - 8.61 m bgl recovered wet putty chalk. 8.20 - 8.25 m bgl mottled orange. 8.65 - 8.71 m bgl relict structure, very close spaced jointingand bedding 5 to 10mm. 8.70 - 9.00 m bgl orange mottling and black speckling. 9.40 - 9.62 m bgl Recovered as wet putty chalk.			
8.00	SPT	2,2,1 2,2,2 N=7(S)						(3.02)			LECH	
9.00	SPT	1,1,2 2,2,2 N=8(S)										
9.50-10.00	ES		0									

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
								5.10	20	4.80	

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole terminated at 12.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **W4BH307**

Project: City Deal Portsmouth

Sheet: 2 of 2

Job No	Client	Date
70015362	PCC	21-04-17 20-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 464025.870 N 103307.778	4.100

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
10.00	SPT	3,4,4 5,4,4 N=17(S)					-6.10	10.20			LECH	
11.00	SPT	4,4,5 4,5,5 N=19(S)						(1.80)	Very weak, low to medium density white CHALK. Recovered as silty sandy gravel. Clasts are angular to subangular white CHALK. Matrix is white. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Possibly Structured Chalk) 10.34 - 10.36 m bgl relict structure, fracture spacing 5 to 15mm. 10.36 m bgl cobble of chalk, 140mm long and 80mm dia. very weak, medium density. 10.54 m bgl Cobble of chalk, 65mm long and 40mm dia. 10.73 - 10.75 m bgl angular flint with white chalk rind. 10.80 - 10.84 m bgl relict structure, fractures are 3 to 10mm spacing. 11.00 - 12.00 m bgl no recovery.		LECH	
							-7.90	12.00	Borehole terminated at 12.00 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing

General Remarks

Hole terminated at 12.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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BOREHOLE LOG

Hole No. **W5BH302**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	12-04-17 12-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 463811.070 N 103414.201	4.380

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.10-0.30	ES		0				4.28	0.10	Grass over soft orangish brown sandy CLAY with frequent rootlets and organic matter. (TOPSOIL)		TS	
0.90-1.00	ES		9					(1.70)	Dark brown slightly sandy very gravelly clay with occasional ash and clinker and decaying rootlets. Gravel is fine to coarse angular to subangular of flint brick and rare concrete fragments. (MADE GROUND)		MG	
1.20	SPT	1,0,1 1,0,1 N=3(S)										
1.20-1.65	D						2.58	1.80				
1.50-1.70	D											
2.00	SPT	2,1,2 2,2,1 N=7(S)	1					(0.70)	Brownish black sandy clay. Rare ash and clinker and frequent organic material. (MADE GROUND)		MG	
2.00-2.45	D			32	47		1.88	2.50				
2.00-2.20	ES								Firm light brownish orange sandy silty CLAY. (RIVER TERRACE DEPOSITS (Undifferentiated))			
3.00	SPT	2,3,2 3,3,3 N=11(S)						(1.00)			RT	
3.00-3.45	D			55	82		0.88	3.50				
3.50-4.00	U100							(0.50)	Soft locally firm greyish brown gravelly CLAY. Gravel is coarse angular to subangular of flint. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
3.80-4.00	ES		0				0.38	4.00				
4.00	SPT	3,3,2 3,3,2 N=10(S)							Soft brown gravelly CLAY. Gravel is fine to medium very weak chalk. (WEATHERED LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated))			
4.00-4.45	D					1		(1.28)			LECH	
5.00	SPT	4,3,3 2,3,3 N=11(S)					-0.90	5.28				
5.00-5.45	D						-1.39	(0.49) 5.77	Structureless CHALK composed of cream to off-white slightly gravelly silt. Clasts are very weak low density chalk. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm)		LECH	
5.80-6.00	ES		0									
6.00	SPT	3,3,3 4,4,3 N=14(S)						(0.73)	5.28 - 5.43 m bgl cream mottled brown		LECH	
6.00-6.45	D						-2.12	6.50	Structureless CHALK composed of cream to off-white gravelly silt. Clasts are low density very weak subangular chalk. Frequent fine black subangular to subrounded flint. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dm)			
6.75	SPT	3,4,4 3,4,4 N=15(S)						(1.50)	Structureless CHALK composed of silty sandy gravel. Clasts are very weak to weak, medium density, cream with orange brown staining. Matrix is cream coloured. (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated), Probably Grade Dc)		LECH	
6.75-7.20	D											
7.50	SPT	4,5,4 4,4,5 N=17(S)	0				-3.62	8.00	6.50 - 8.00 m bgl Rotary cored, 660mm of core recovered. Not Intact.			
7.50-7.95	D								7.50 - 7.71 m bgl matrix is mottled orange, clasts have orange staining.		END	
7.80-8.00	ES								7.71 m bgl becoming white with slight orange speckling. Occasional coarse flint with chalk rind and angular black fine to medium sized flint fragments.			
									Borehole terminated 8.00 m bgl.			

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
12-04-17		5.00			

General Remarks

Hole terminated at 8.0 m bgl. Borehole logged in accordance with BS5930 (2015) and CIRIA C257 (2002).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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BOREHOLE LOG

Hole No. **W5BH303**

Project: City Deal Portsmouth

Sheet: 1 of 2

Job No	Client	Date
70015362	PCC	13-04-17 13-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 463857.133 N 103367.532	4.930

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill Dia. 50 mm
							4.73	0.20	Grass over brown silty sand with frequent organic matter and rootlets. (TOPSOIL)		TS	
									0.00 - 1.20 m bgl Inspection pit			
								(1.00)	Brown silty gravelly sand. Gravel is fine to medium angular to subangular brick and concrete. (MADE GROUND)		MG	
							3.73	1.20				
1.20	SPT	1,0,0 1,1,1 N=3(S)							Friable brown silty sandy gravel. Sand is fine to coarse, gravel is angular to subrounded fine to coarse flint and brick. (MADE GROUND)			
1.20-1.65	D							(1.00)	1.55 - 1.60 m bgl occasional plastic and bitumin covered aggregate.		MG	
1.50	ES								1.80 - 2.00 m bgl red brick fragments.			
2.00	SPT	1,0,1 1,1,1 N=4(S)					2.73	2.20	2.00 - 3.00 m bgl DS 80mm dia. 1000mm recovery.			
							2.53	2.40	Dark brown slightly gravelly clay. Gravel is angular to subangular flint and brick with occasional chalk fragments. (MADE GROUND)		MG	
2.00-2.45	D								Orange brown gravelly clay. Gravel is angular to subangular flint and occasional brick fragments. (MADE GROUND)			
2.10	ES								2.70 - 2.80 m bgl pockets of brown clay with flint and brick fragments.			
2.60-2.70	D								3.00 - 3.10 m bgl Frequent brick fragments.			
2.80	ES							(1.80)	3.10 - 3.40 m bgl becoming very gravelly of flint.		MG	
3.00	SPT	2,3,4 3,4,3 N=14(S)							3.60 m bgl angular gravel of red chert.			
3.00-3.45	D								3.65 m bgl frequent pockets of chalk putty and fine brick fragments.			
3.70	ES											
3.80-3.90	D											
4.00	SPT	4,5,4 5,6,5 N=20(S)					0.73	4.20	4.00 - 5.00 m bgl no recovery			
4.00-4.45	D								Firm orangish brown grey mottled fine sandy CLAY. (BEACH and TIDAL FLAT DEPOSITS (Undifferentiated))			
4.50-5.00	U100							(0.80)			TFD	
							-0.07	5.00				
5.00	SPT	4,4,4 5,4,4 N=17(S)						(0.50)	Soft to firm green mottled orange sandy CLAY. Sand is fine to medium. (BEACH and TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
							-0.57	5.50				
5.00-5.45	D								Grey slightly clayey fine SAND. Occasionally mottled orange. (BEACH and TIDAL FLAT DEPOSITS (Undifferentiated))			
5.10-5.20	D											
5.50-6.50	B							(1.17)			TFD	
5.50	ES											
6.50	ES						-1.74	6.67				
							-2.07	7.00	Grey mottled red clayey GRAVEL. Gravel is angular to subangular flint and reddish flint or chert. (BEACH AND TIDAL FLAT DEPOSITS (Undifferentiated))		TFD	
7.00	SPT	(S) N_{60}=SWP							Probably CHALK (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated))			
8.00	SPT	(S) N_{60}=SWP									LECH	
9.00	SPT	1,0,1 0,1,0 N=2(S)						(5.45)				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole terminated at 12.45 m bgl. Borehole logged in accordance with BS5930 (2015).
Installed with a shallow 19 mm pipe and a deep 50 mm pipe.

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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BOREHOLE LOG

Hole No. **W5BH303**

Project: City Deal Portsmouth

Sheet: 2 of 2

Job No: 70015362

Client: PCC

Date: 13-04-17
13-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS/RM	E 463857.133 N 103367.532	4.930

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
10.00	SPT	1,0,0 1,0,0 N=1(S)							Probably CHALK (LEWES NODULAR CHALK FORMATION, SCF, NCF, CCF AND PCF (Undifferentiated)) *(continued)*		LECH	
12.00	SPT	2,3,3 4,4,3 N=14(S)					-7.52	12.45				
12.00-12.45	D								Borehole terminated at 12.45 m bgl.		END	

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole terminated at 12.45 m bgl. Borehole logged in accordance with BS5930 (2015).
Installed with a shallow 19 mm pipe and a deep 50 mm pipe.

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **W8BH308**

Project: City Deal Portsmouth

Sheet: 1 of 1

Job No: 70015362

Client: PCC

Date: 24-04-17
24-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS	E 463931.924 N 103025.596	2.628

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
							2.58	0.05	Brown slightly sandy coarse subrounded to rounded gravel of flint and quartzite. (MADE GROUND)		MG	
0.10-0.30	ES		5				2.33	0.30			MG	
							1.93	0.70	Dark yellowish brown slightly silty sandy fine to coarse angular to subrounded gravel of flint quartzite brick and quartz. Rare decaying rootlets and rare ceramic pottery fragments. (MADE GROUND)		MG	
0.90-1.00	ES		1				1.43	(0.50) 1.20	Dark brown slightly sandy gravelly clay. Gravel is fine and medium angular to subangular of flint brick and chalk. Rare decaying rootlets. (MADE GROUND)		MG	
1.50	SPT	2,1,0 1,1,2 N=4(S)					0.63	(0.80) 2.00	Greyish brown slightly silty clay. Orange mottle and frequent decaying rootlets and rare brick fragments. (MADE GROUND)		MG	
1.50-1.95	D		0						Light orange slightly silty fine sand. With bluish grey mottle and bands of yellowish brown very sandy clay and rare decaying rootlets. (MADE GROUND)			
2.00-2.30	ES			9	13							
2.50	SPT	1,2,2 1,2,2 N=7(S)		16	24	1			Firm brownish orange slightly silty very sandy CLAY. Greyish blue mottle and pockets of clayey sand. (LAMBETH GROUP)			
2.50-2.95	D											
3.40-3.60	ES		0	30	45							
3.50	SPT	3,3,2 3,3,4 N=12(S)						(3.50)			LMBE	
3.50-3.95	D											
4.00-4.50	U100											
4.50	SPT	4,5,6 6,5,7 N=24(S)		75	85							
4.50-4.95	D											
							-2.87	5.50				
5.50	SPT	4,4,5 5,4,5 N=19(S)	0	25	37				Stiff brown slightly silty slightly sandy CLAY. Occasional grey mottle. (LAMBETH GROUP)			
5.50-5.95	D											
5.60-6.00	ES											
6.50	SPT	4,4,6 7,9,8 N=30(S)		21	31							
6.50-6.95	D											
7.20-7.50	ES		0									
7.30-7.50	D			70	82			(3.95)			LMBE	
7.50-8.00	U100											
8.00	SPT	3,4,4 4,4,4 N=16(S)		54	80							
9.00	SPT	6,7,7 8,10,11 N=36(S)					-6.82	9.45				
									Borehole terminated at 9.45 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
24-04-17		3.10	20	2.90	2.00

General Remarks

Hole terminated at 9.45 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP Kings Orchard, 1 Queen St, Bristol, BS2 0HQ Telephone: 0117 930 2000 Fax:	**BOREHOLE LOG**	Hole No. **W9BH309**
	Project City Deal Portsmouth	Sheet 1 of 2
Job No 70015362	Client PCC	Date 26-04-17 27-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS	E 463659.341 N 103067.904	4.674

SAMPLES & TESTS							STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
0.00-0.00 0.10-0.30	EW ES		1					(0.90)	Light brownish orange slightly gravelly silty fine and medium sand. Gravel is fine and medium angular to subangular of flint. Abundant rootlets. (MADE GROUND)		MG	
0.70-0.90	ES		3				3.77	0.90				
							3.47	1.20	Greyish brown slightly silty slightly sandy gravelly clay. Gravel is fine and medium angular to subangular of brick concrete flint and chalk. Rare decaying rootlets. (MADE GROUND)		MG	
1.50	SPT	3,5,18 32 N=50/ 0.125(S)	1				2.87	(0.60) 1.80	Dark brownish grey slightly clayey gravelly medium and coarse sand. Gravel is fine to coarse angular to subrounded of brick concrete flint and chalk. Frequent asphalt / tarmacadam and clinker material. (MADE GROUND)		MG	
							2.57	2.10			MG	
1.50-1.80 1.60-1.80	D ES						2.17	2.50	Light grey coarse gravel of concrete with light reinforcement. (MADE GROUND)		MG	
2.50	SPT	2,3,2 3,1,3 N=9(S)	0			1 1	1.97	2.70	Light orangish brown silty gravelly fine and medium sand. Gravel is fine and medium of flint and chalk. Ocassional decaying rootlets. (MADE GROUND)		MG	
2.50-2.95	D			68	81				Light grey coarse angular gravel of concrete. (MADE GROUND)			
2.80-3.00	ES			90	134				Firm light orange slightly silty CLAY. With occasional decaying rootlets. (LAMBETH GROUP)			
3.50	SPT	2,3,4 4,5,4 N=17(S)										
3.50-3.95 4.00-4.20	D ES		0	110	163			(2.80)			LMBE	
4.00	EW			100	148							
4.50	SPT	3,4,4 4,5,5 N=18(S)										
4.50-4.95 4.80-5.00	D D			40	59							
				41	61		-0.83	5.50				
5.50	SPT	3,3,4 4,3,5 N=16(S)							Firm locally stiff reddish orange slightly silty sandy CLAY. With frequent grey mottle and decaying rootlets. (LAMBETH GROUP)			
5.50-5.95 6.00-6.30 6.00-6.50	D ES U100		0					(1.50)			LMBE	
6.50	SPT	4,4,5 5,3,4 N=17(S)					-2.33	7.00				
6.50-6.95	D			76	113				Stiff orangish brown CLAY. Occasional decaying rootlets and grey and reddish brown mottle. (LAMBETH GROUP)			
7.50	SPT	4,4,5 6,5,4 N=20(S)						(1.75)			LMBE	
7.50-7.95 8.00-8.20	D ES		0									
8.50	SPT	3,4,5 4,4,3 N=16(S)					-4.08	8.75				
8.50-8.95 9.00-9.50	D D							(1.25)	Stiff reddish orange slightly sandy CLAY. Rare decaying rootlets and grey mottle. (LAMBETH GROUP)		LMBE	
							-5.33	10.00				

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
						26-04-17		3.00	20	3.00	2.00

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole completed at 10.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
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Fax:

BOREHOLE LOG

Hole No. **W9BH309**

Project: City Deal Portsmouth

Sheet: 2 of 2

Job No: 70015362

Client: PCC

Date: 26-04-17
27-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS	E 463659.341 N 103067.904	4.674

SAMPLES & TESTS						Water	STRATA					Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
									Borehole terminated at 10.00 m bgl.		END	

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing

General Remarks

Hole completed at 10.0 m bgl. Borehole logged in accordance with BS5930 (2015).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
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Fax:

BOREHOLE LOG

Hole No. **W9BH310**

Project: City Deal Portsmouth

Sheet: 1 of 2

Job No: 70015362

Client: PCC

Date: 25-04-17
25-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS	E 463790.002 N 103061.597	4.473

SAMPLES & TESTS							STRATA				
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.00-0.00	EW		0				4.37	0.10	Grass over brown fine and medium sand with abundant recently active roots and abundant organic matter. (TOPSOIL)		TS	Dia. 50 mm
0.10-1.00	B							(1.00)	Light yellowish orange slightly clayey gravelly fine and medium sand. Gravel is fine to coarse subangular to rounded of flint and chalk. Occasional rootlets. (MADE GROUND)		MG	
0.10-0.30	ES											
0.80-1.00	ES		1				3.37	1.10				
1.50	SPT	2,4,50 N=50/ 0.075(S)	1				2.47	(0.90)	Light brown black slightly clayey very gravelly fine to coarse sand. Gravel is fine to coarse angular to subangular of flint brick concrete and chalk. Frequent ash and clinker material. (MADE GROUND)		MG	
1.50-1.70	D											
1.50-2.00	ES							(1.00)	Probably MADE GROUND.		MG	
						1 1	1.47	3.00				
3.00	SPT	3,3,3 2,3,3 N=11(S)					1.17	3.30	Light grey angular cobbles of concrete. (MADE GROUND)		MG	
3.00-3.45	D		0				0.77	3.70	Firm light brown sandy very gravelly CLAY. Gravel is medium and coarse angular to subangular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
3.50-3.80	ES							(0.50)	Reddish orange slightly clayey very gravelly medium and coarse SAND. Gravel is medium and coarse subrounded to rounded of flint. (RAISED MARINE DEPOSITS)		RMD	
4.00	SPT	5,3,3 4,4,4 N=15(S)					0.27	4.20				
4.00-4.45	D			72	83				Firm locally stiff brownish grey mottled bluish grey CLAY. (LAMBETH GROUP)			
4.50-5.00	U100							(1.80)	5.00 - 6.00 m bgl; no recovery		LMBE	
5.00	SPT	4,5,5 4,4,4 N=17(S)										
5.00-5.45	D											
5.00	EW						-1.53	6.00				
6.00	SPT	4,5,5 5,4,3 N=17(S)	0	46	68		-1.83	6.30	Firm orangish brown CLAY. (LAMBETH GROUP)		LMBE	
6.00-6.45	D			72	107			(0.70)	Stiff grey mottled orange CLAY. (LAMBETH GROUP)		LMBE	
6.00-6.30	ES			140	208		-2.53	7.00				
7.00	SPT	5,6,5 6,5,7 N=23(S)							Firm locally stiff brownish orange sandy CLAY. With occasional orange fine to medium sand partings. (LAMBETH GROUP)			
7.00-7.45	D			25	37			(1.00)			LMBE	
7.80-8.00	ES		0				-3.53	8.00				
8.00-8.50	U100								Stiff reddish grey CLAY. With grey orange and red mottle. (LAMBETH GROUP)			
8.50	SPT	2,3,4 3,4,4 N=15(S)		140	208			(2.00)			LMBE	
9.30-9.50	D											
9.50	SPT	4,5,6 5,4,4 N=19(S)					-5.53	10.00				

Boring Progress

Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt

Chiselling

From	To	Hours	Tool

Water Added

From	To

Water Strikes

Date	Time	Strike	Minutes	Standing	Casing
25-04-17		3.10	20	3.10	3.00

General Remarks
Hole completed at 10.0m. Borehole logged in accordance with BS5930 (2015).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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BOREHOLE LOG

Hole No. **W9BH310**

Project: City Deal Portsmouth

Sheet: 2 of 2

Job No	Client	Date
70015362	PCC	25-04-17 25-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Comacchio Geo 305	RS	E 463790.002 N 103061.597	4.473

SAMPLES & TESTS						Water	STRATA				Install / Backfill
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Dia. 50 mm
9.50-9.95	D								Borehole terminated at 10.00 m bgl.		END	

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing

Chiselling				Water Added	
From	To	Hours	Tool	From	To

General Remarks
Hole completed at 10.0m. Borehole logged in accordance with BS5930 (2015).

Scale 1:62.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP BH LOG 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
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TRIAL PIT LOG

Hole No. **HP201**

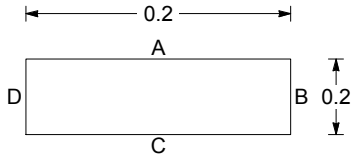
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463653.459 N 103243.530	3.900

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.20	ES						(0.60)	Grass over stiff light brown gravelly clay. Gravel is fine to coarse sub-rounded to angular flint. (MADE GROUND) 0.20 m bgl Occasional wood fragments. Rare bullets (no casing).		MG	
						3.30	0.60				
0.90	ES						(0.40)	Soft dark brown gravelly clay with wood fragments, metal fragment and bullet casing and occasional brick fragments. Gravel is fine to coarse sub-rounded to angular of flint. (MADE GROUND)		MG	
						2.90	1.00				
								Hand pit terminated at 1.00 m bgl.		END	



Length	Shoring/Support:
0.20m	None
Width	
0.20m	
Orientation	**Stability:**
degrees from north	Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP202**

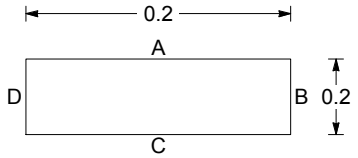
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463637.181 N 103195.093	3.739

SAMPLES & TESTS					Water	STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
								Grass over firm light brown silty gravelly clay. Gravel is fine to coarse sub-angular to sub-rounded of flint, concrete, slate and brick. (MADE GROUND)			
0.30	ES	0					(0.70)	0.30 m bgl rare clay pipe		MG	
0.50		0.5						0.50 m bgl increasing brick fragment content			
						3.04	0.70				
0.70	ES	0					(0.30)	Stiff reddish brown CLAY. [LAMBETH GROUP]		LMBE	
						2.74	1.00				
								Hand pit terminated at 1.00 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP203**

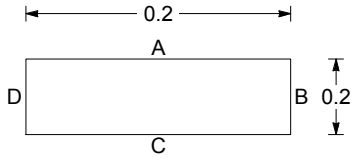
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463747.477 N 103241.004	4.005

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								Grass over firm brown gravelly clay with occasional wood fragments. Gravel is fine to coarse rounded to angular flint. (MADE GROUND)			
0.15	ES	0									
								0.30 m bgl becoming pale orangish grey.			
							(0.80)			MG	
								0.55 m bgl rare glass fragments.			
0.70	ES	0									
						3.21	0.80				
								Hand pit terminated at 0.80 m bgl.		END	



Length	Shoring/Support:
0.20m	None
Width	
0.20m	**Stability:**
Orientation	Stable to base
degrees from north	

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.8 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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Fax:

TRIAL PIT LOG

Hole No. **HP204**

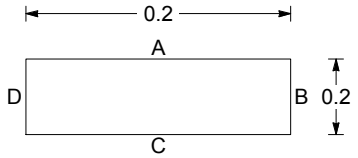
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	GD	E 463736.941 N 103186.710	3.844

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						3.54	(0.30) 0.30	Grass over soft light reddish brown clay. (TOPSOIL)		TS	
0.30	ES	0				2.84	(0.70) 1.00	Light brownish orange gravelly clay. Gravel is fine and medium subangular of brick, concrete and limestone aggregate. (MADE GROUND)		MG	
1.00	ES	0						Hand pit terminated at 1.00 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

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TRIAL PIT LOG

Hole No. **HP205**

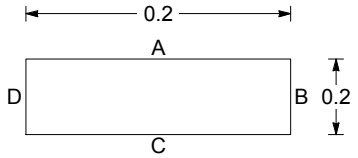
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	17-08-16 17-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463835.395 N 103195.340	3.975

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								Grass over stiff light brown gravelly clay. Gravel is fine to coarse angular to sub-angular flint. (MADE GROUND)			
								0.20 m bgl Rare clinker and rare brick gravels			
								0.30 m bgl more frequent flint gravel.			
0.40	ES	0					(0.80)			MG	
								0.50 m bgl rare coal gravel.			
								0.60 m bgl concrete rubble			
0.70	ES	0									
						3.18	0.80				
								Hand pit terminated at 0.80 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.8 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
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Fax:

TRIAL PIT LOG

Hole No. **HP206**

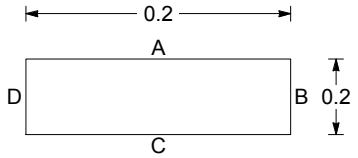
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	16-08-16 16-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463816.506 N 103133.229	4.089

SAMPLES & TESTS					Water	STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.30	ES	0					(0.70)	Grass over stiff light brown gravelly clay. Gravel is fine to coarse rounded to angular of flint, chalk, brick and concrete. Rare sub-rounded to rounded slate fragments. (MADE GROUND) 0.45 m bgl black woven textile membrane. 0.60 m bgl rare subrounded to subangular cobble of chalk.		MG	
						3.39	0.70				
						3.29	(0.10) 0.80	Stiff brown to dark brown gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
0.80	ES	0						Hand pit terminated at 0.80 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.8 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

Hole No. **HP207**

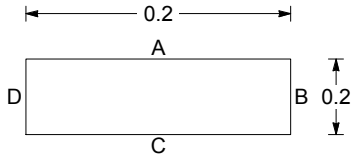
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	19-08-16 19-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	GD	E 463920.126 N 103176.484	4.615

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						4.32	(0.30) 0.30	Soft light brownish yellow gravelly clay. Gravel is medium and coarse subangular of brick, plastic and concrete. (MADE GROUND)		MG	
0.30	ES	0						Firm light brownish yellow clay. (MADE GROUND)			
0.60	ES	0					(0.70)			MG	
						3.62	1.00				
								Hand pit terminated at 1.00 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.0 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

Hole No. **HP208**

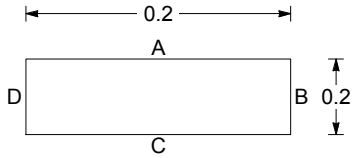
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463905.727 N 103131.787	4.173

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.15	ES	0					(0.70)	Grass over firm sandy gravelly clay. Sand is fine and medium. Gravel is fine to coarse rounded to angular of flint and brick. (MADE GROUND) 0.55 m bgl bullet 0.60 m bgl occasional chalk gravel		MG	
						3.47	0.70				
						3.37	(0.10) 0.80	Firm light brown and black slightly gravelly clay. Gravel is fine to coarse sub-rounded to sub-angular of flint and ash. (MADE GROUND)		MG	
0.80	ES	0						Hand pit terminated at 0.80 m bgl.		END	



Length	Shoring/Support:
0.20m	None
Width	
0.20m	
Orientation	**Stability:**
degrees from north	Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.8 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

Hole No. **HP209**

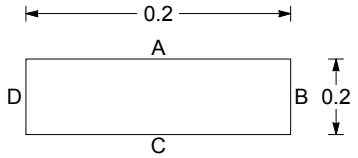
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463482.780 N 103373.411	3.723

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
						3.57	(0.15) 0.15	Grass over stiff light brown clay with numerous rootlets. (TOPSOIL)		TS	
0.30	ES	0						Light brown gravelly fine sand. Gravel is fine to coarse rounded to sub-rounded of flint. (MADE GROUND) 0.30 m bgl breeze block.			
0.65	ES	0				3.02	(0.55) 0.70	0.40 m bgl Occasional timber, plastic, and asphalt gravel. Numerous bricks.		MG	
								Hand pit terminated at 0.70 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Hole terminated at 0.7 m bgl. Hand pit positioned over approximate position of historic mustard gas trials. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

Hole No. **HP210**

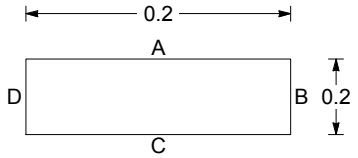
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	18-08-16 18-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	MW	E 463484.752 N 103412.790	3.111

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.25	ES	0					(0.65)	Grass over clayey gravel with numerous sub-angular to angular cobbles of flint, brick, plastic, barbed wire. Gravel is fine to coarse rounded to angular of flint, glass, plastic and brick. (MADE GROUND)		MG	
						2.46	0.65				
0.75	ES	0				2.31	(0.15) 0.80	Firm grey mottled brown gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (LAMBETH GROUP)		LMBE	
								Hand pit terminated at 0.80 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Hole terminated at 0.8 m bgl. Hand pit positioned over approximate position of historic mustard gas trials. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

Hole No. **HP211**

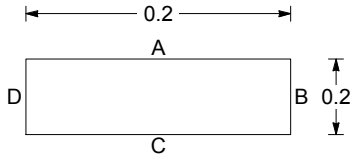
Project: City Deal Portsmouth

Sheet: 1 of 1

Job No	Client	Date
70015362	PCC	19-08-16 19-08-16

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	SS	E 463715.228 N 103309.949	3.613

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
						3.41	(0.20) 0.20	Dark grey slightly clayey gravelly fine sand with frequent metal screws. Gravel is fine to coarse rounded to angular of flint. (MADE GROUND)		MG	
0.20	ES							Hand pit terminated at 0.20 m bgl.		END	



Length: 0.20m

Width: 0.20m

Orientation: degrees from north

Shoring/Support: None

Stability: Stable to base

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Hole terminated at 0.2 m bgl. Hand pit dug within an area of black ground surrounded by grassland indicating potential vegetation stress. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

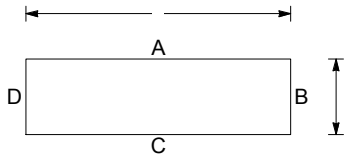
Hole No. **W5HP306**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	19-04-17 19-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 464019.612 N 103282.194	3.119

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.10-0.20 0.10-0.20	ES ES	0				2.82	(0.30) 0.30	Grass over dark brown slightly gravelly clay with rare wire, glass and pottery and numerous rootlets. Gravel is fine and medium angular to subrounded of flint, brick and chalk. (MADE GROUND)		MG	
						2.72	(0.10) 0.40	Orangish brown and brown slightly gravelly clay. Gravel is fine to coarse angular of flint, brick and chalk. (MADE GROUND)		MG	
						2.52	(0.20) 0.60	White sandy silty gravel of fine to coarse angular chalk with rare chalk cobbles. (MADE GROUND)		MG	
0.80-1.00 0.80-1.00	ES ES	1				1.92	(0.60) 1.20	0.60 m bgl Brick cobble Firm orangish brown mottled light grey occasionally black slightly gravelly silty CLAY. Gravel is fine to coarse angular of flint. (RIVER TERRACE DEPOSITS (Undifferentiated))		RT	
								Hand pit terminated at 1.20 m bgl.		END	



Length	Shoring/Support:
m	
Width	
m	Stability:
Orientation	
degrees from north	

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 1.2 m bgl. Hand pit logged in accordance with BS5930 (2015).

Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

WSP
Kings Orchard, 1 Queen St,
Bristol, BS2 0HQ
Telephone: 0117 930 2000
Fax:

TRIAL PIT LOG

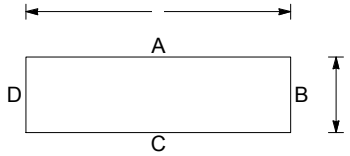
Hole No. **W9HP301**

Project	Sheet
City Deal Portsmouth	1 of 1

Job No	Client	Date
70015362	PCC	26-04-17 26-04-17

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
Van Elle	Hand Dug Pit	CN	E 463624.449 N 103114.407	5.073

SAMPLES & TESTS					Water	STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
0.00-0.30	ES	0					(0.40)	Orangish brown slightly gravelly fine to coarse sand with numerous rootlets. Gravel is medium and coarse subrounded of flint. (MADE GROUND)		MG	
						4.67	0.40				
0.50-0.60	ES	0					(0.20)	Brown very gravelly sandy clay with rare angular cobble of concrete. Gravel is fine to coarse angular to subrounded of flint, brick, concrete and asphalt / tarmacadam. (MADE GROUND)		MG	
						4.47	0.60				
								Hand pit terminated at 0.60 m bgl.		END	



Length
m

Width
m

Orientation
degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks
Hole terminated at 0.6 m bgl. Hand pit logged in accordance with BS5930 (2015).

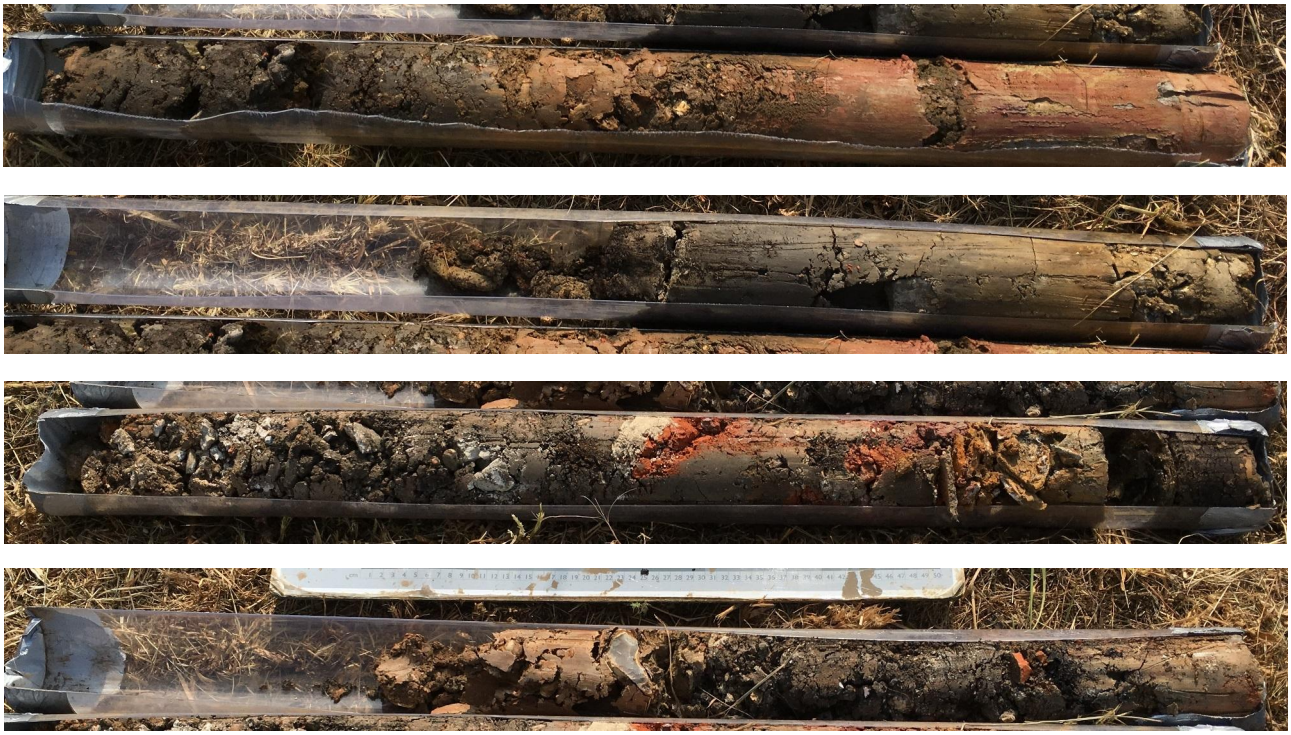
Scale 1:12.5

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

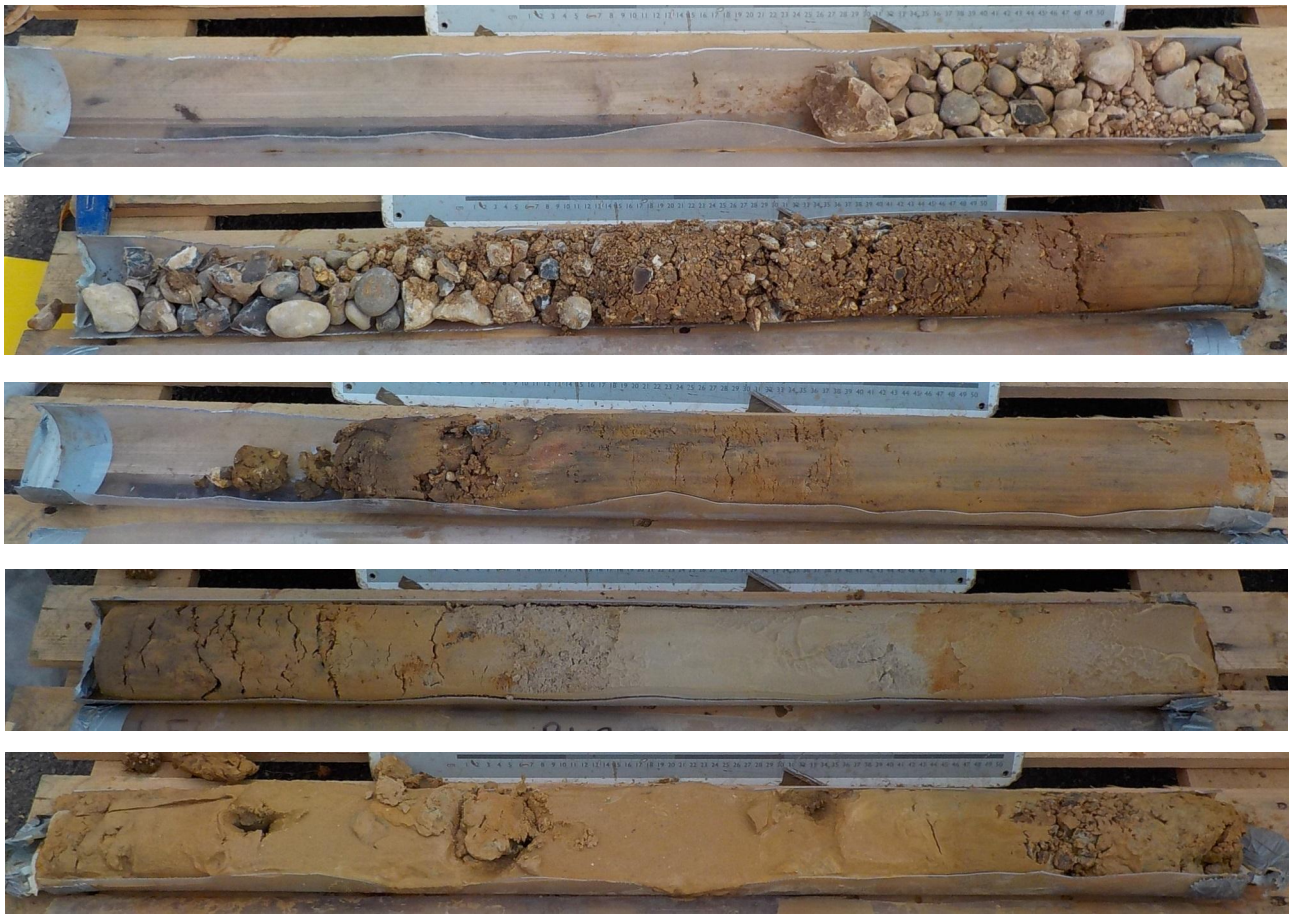
08 WSP TP LOG STANDARD 70015362_TIPNER_V9_MASTER.GPJ WSPETEMPLATE1.03.GDT 21/11/17

Appendix D.3

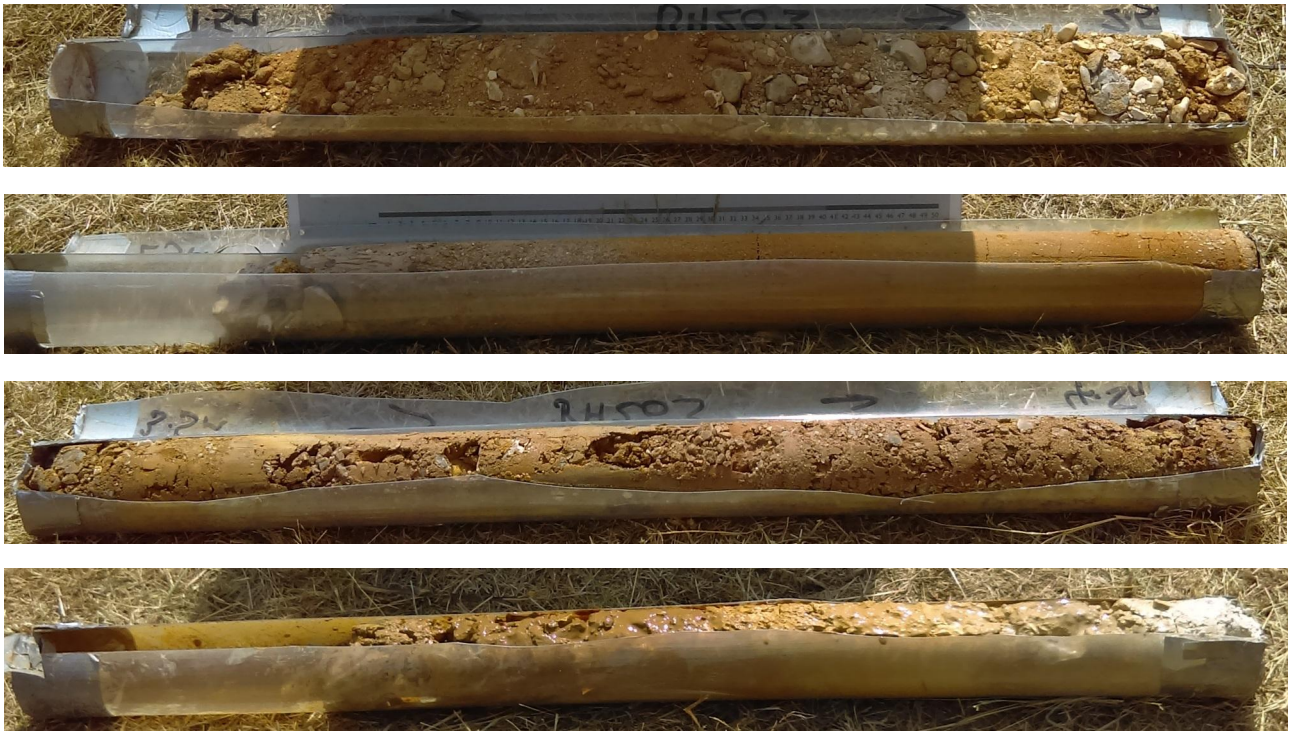
PHOTOGRAPHIC RECORDS



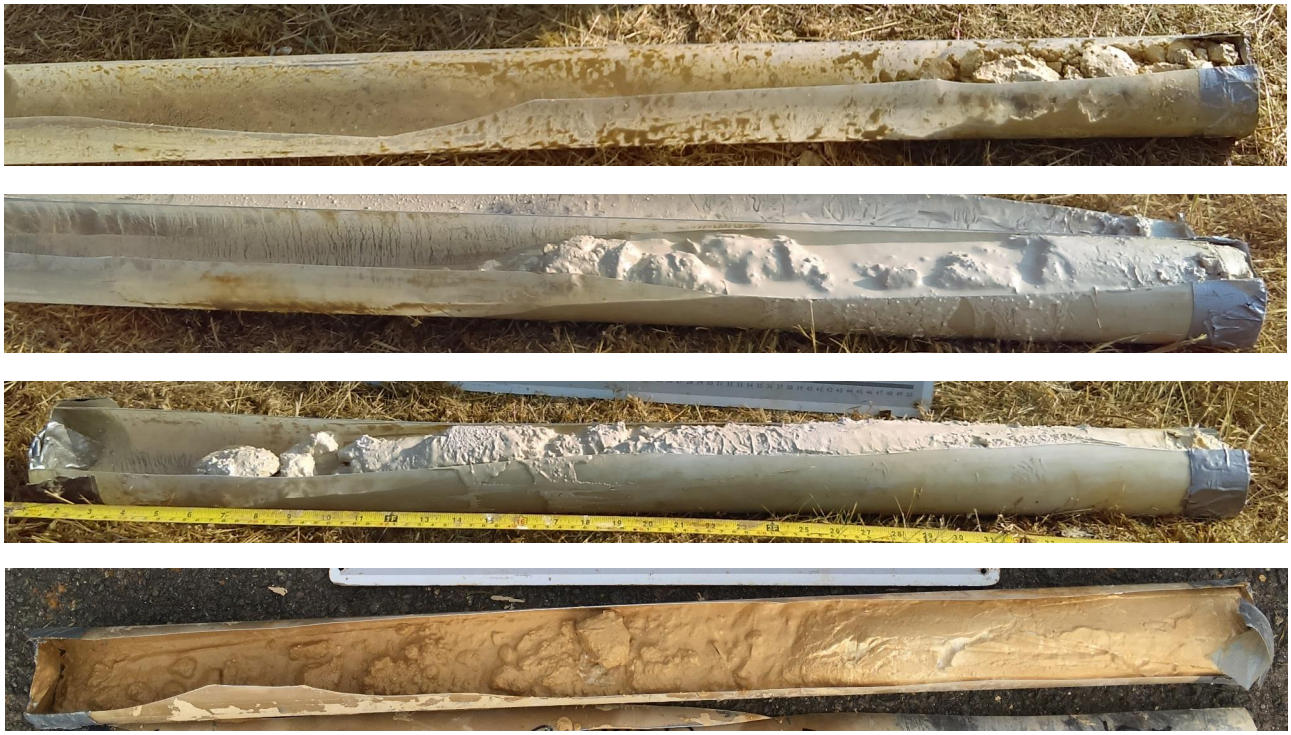
Photograph 1 - View of BH201 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

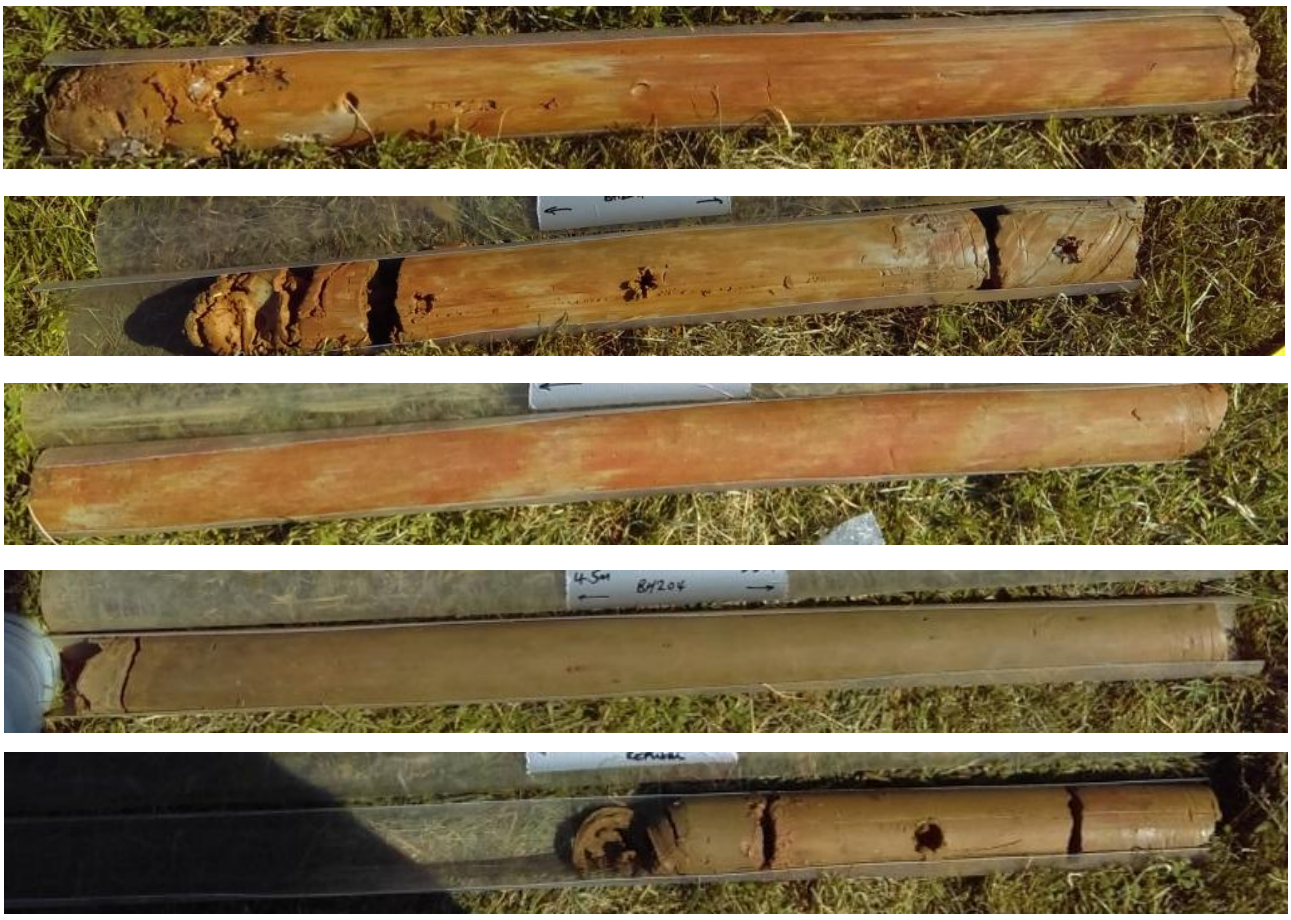
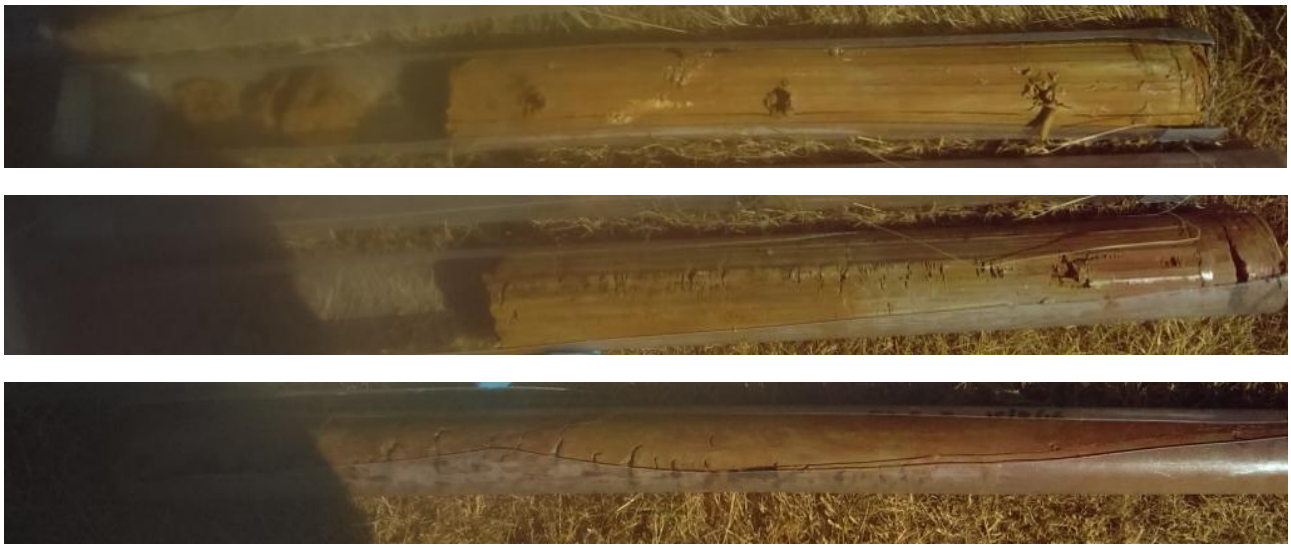


Photograph 2 - View of BH202 from 1.5m to 2.5m (top), 2.5m to 3.5m, 3.5m to 4.5m, 4.5m to 5.5m, and 5.5m to 6.5m (bottom).



Photograph 3 - View of BH203 from 1.5m to 2.5m (top), 2.5m to 3.5m, 3.5m to 4.5m, and 4.5m to 5.5m (bottom).

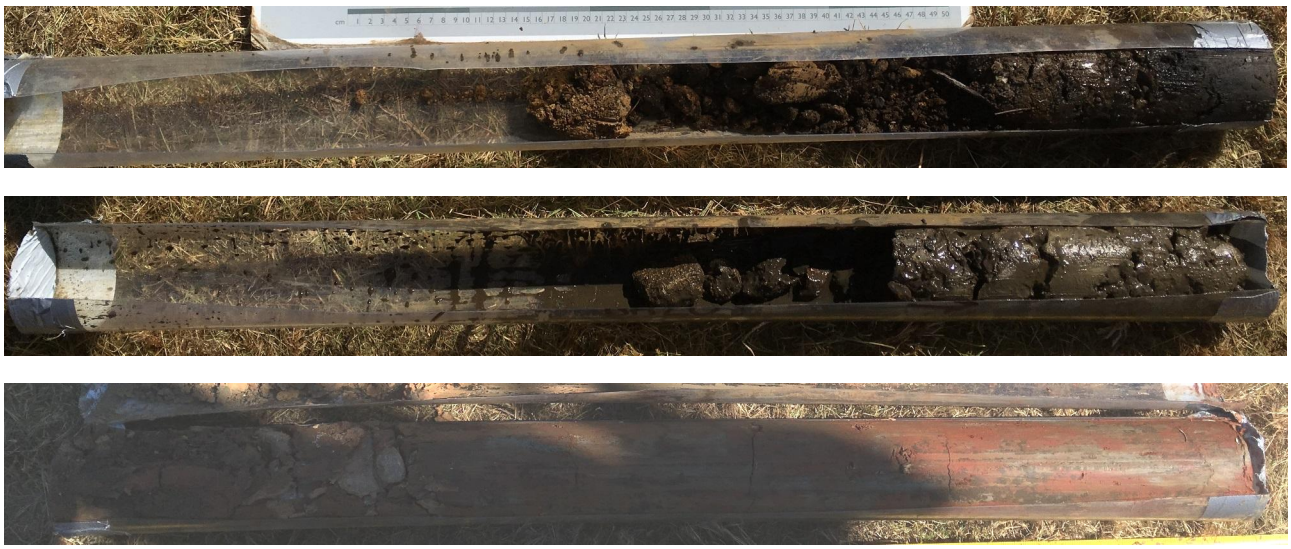


Photograph 4 - View of BH203 from 5.5m to 6.5m (top), 6.5m to 7.5m, 7.5m to 8.5m, and 9.5m to 10m (bottom).

Photograph 5 - View of BH204 from 1.5m to 2.5m (top), 2.5m to 3.5m, 3.5m to 4.5m, 4.5m to 5.5m, and 5.5m to 6.1m (bottom).

Photograph 6 - View of BH205 from 1.2m to 2.0m (top), 2.0m to 3.0m, and 3.0m to 4.0m (bottom).

Photograph 7 - View of BH205 from 4.0m to 5.0m (top), 5.0m to 6.0m, and 6.0m to 6.5m (bottom).

Photograph 8 - View of BH206 from 1.5m to 2.5m (top), 2.5m to 3.5m, 3.5m to 4.5m, and 4.5m to 5.0m (bottom).

Photograph 9 - View of BH207 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, 5.0m to 5.5m, and 5.5m to 6.0m (bottom).



Photograph 10 - View of BH208 from 1.1m to 2.0m (top), 2.0m to 3.0m, and 3.0m to 4.0m (bottom).

Photograph 11 - View of BH209 from 1.0m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, 5.0m to 6.0m (bottom).

Photograph 12 - View of TP201 from GL to 1.2m.

Photograph 13 - View of TP201 from GL to 1.2m.

Photograph 14 - View of TP203 from GL to 2.6m.

Photograph 15 - View of TP203 from GL to 2.6m.

Photograph 16 - View of TP207 from GL to 2.1m.

Photograph 17 - View of TP207 from GL to 2.1m.

Photograph 18 - View of TP208 from GL to 2.3m.

Photograph 19 - View of TP208 from GL to 2.3m.

Photograph 20 - View of TP209 from GL to 2.0m.

Photograph 21 - View of TP209 from GL to 2.0m.

Photograph 22 - View of TP210 from GL to 2.1m.

Photograph 23 - View of TP210 from GL to 2.1m.

Photograph 24 - View of TP211 from GL to 2.3m.

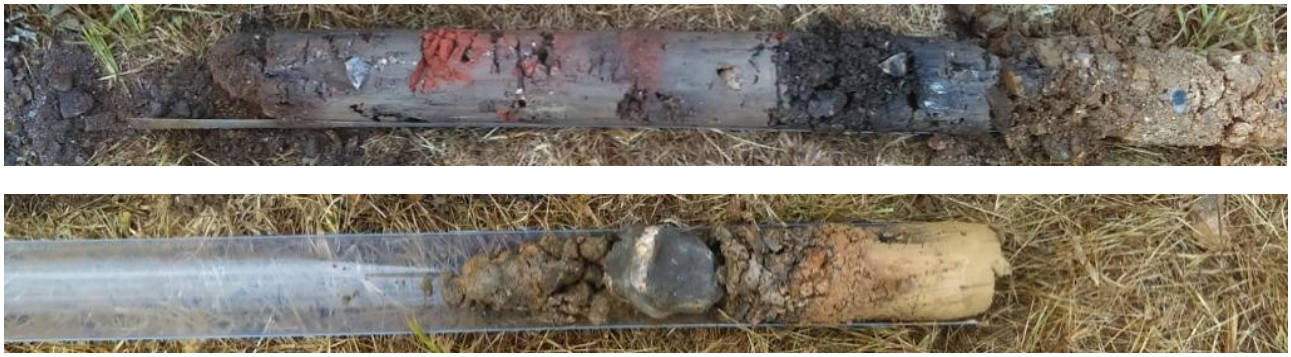
Photograph 25 - View of TP211 from GL to 2.3m.

Photograph 26 - View of TP213 from GL to 2.0m.

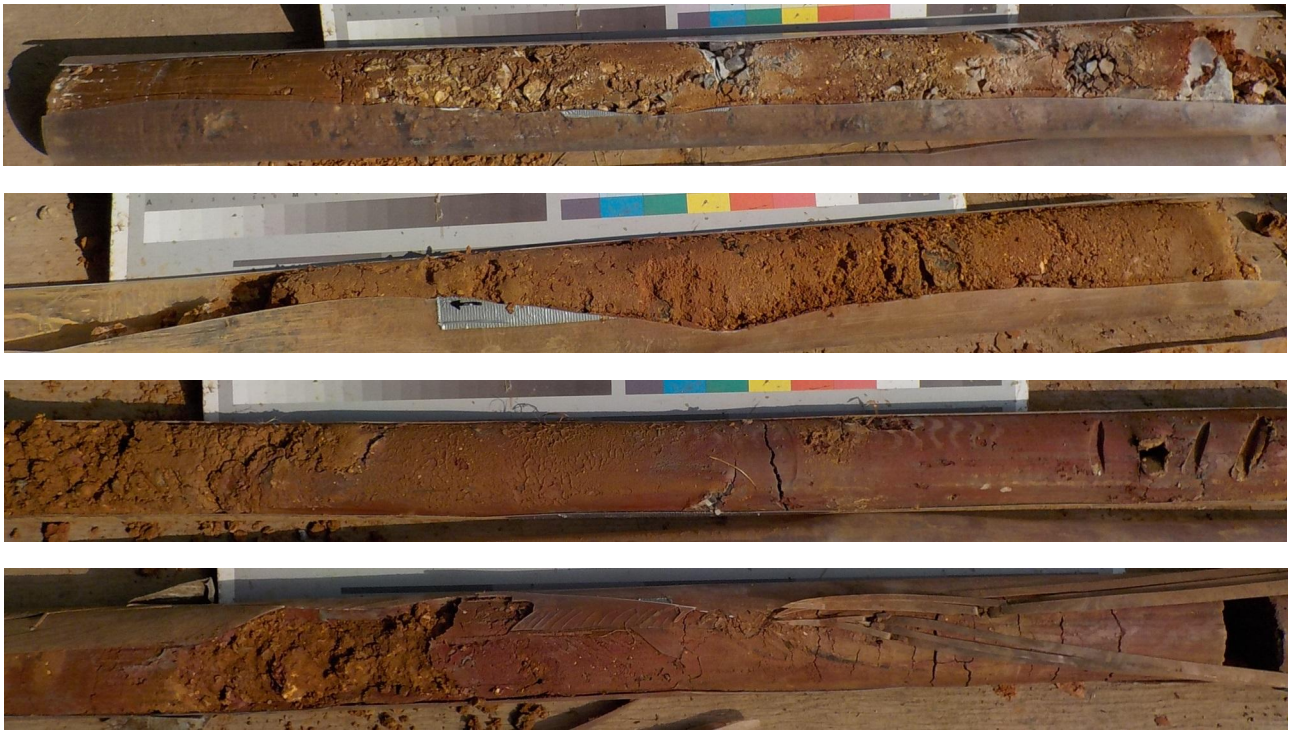
Photograph 27 - View of TP213 from GL to 2.0m.

Photograph 28 - View of WS202 from 1.2m to 2.0m (top), and 2.0m to 3.0m (bottom).

Photograph 29 - View of WS203 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

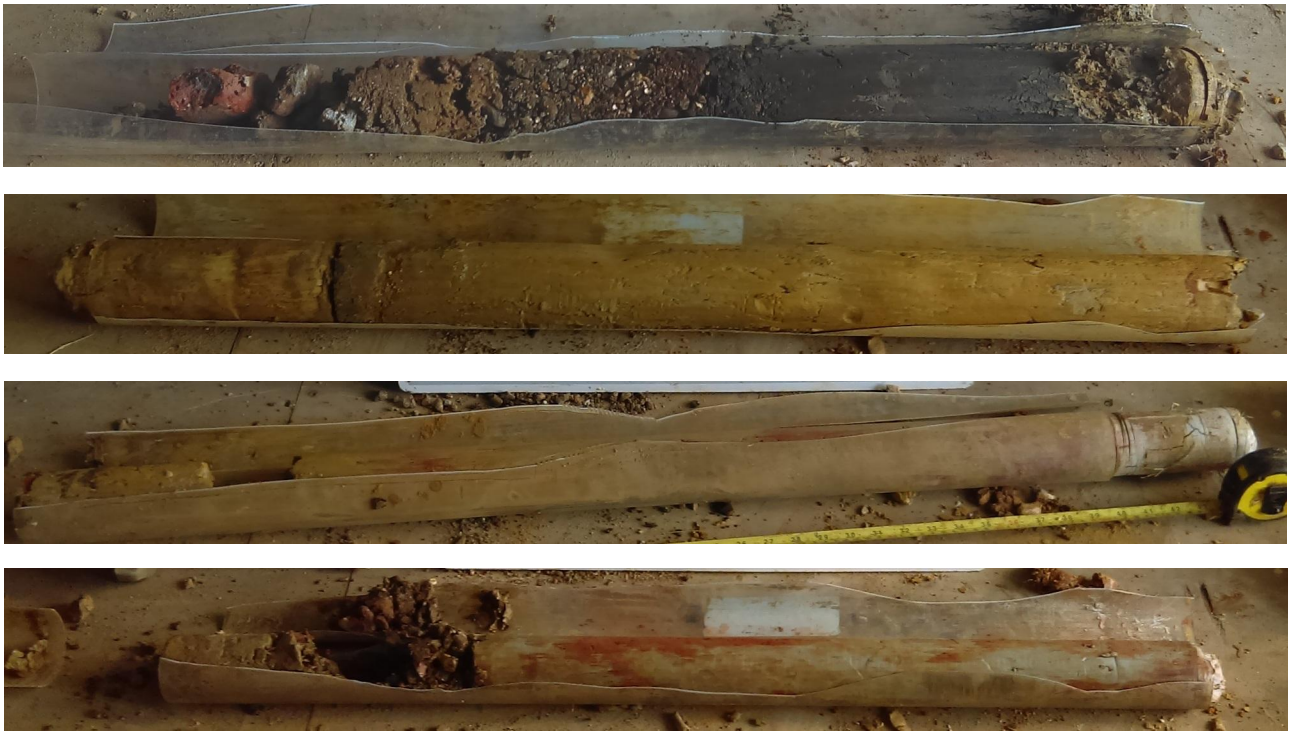


Photograph 30 - View of WS204 from 1.2m to 2.0m (top), and 2.0m to 3.0m (bottom).



Photograph 31 - View of WS205 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

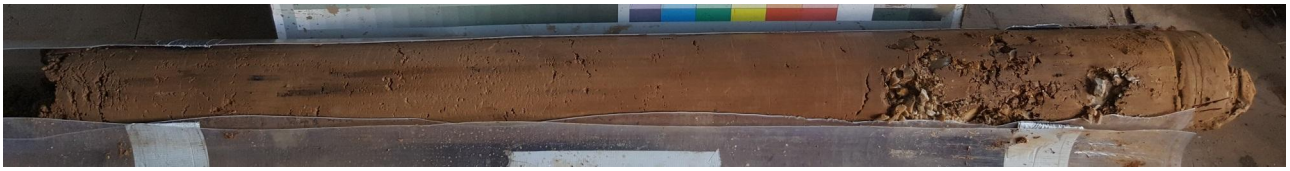
Photograph 32 - View of WS206 from 1.2m to 2.0m (top), and 2.0m to 3.0m (bottom).



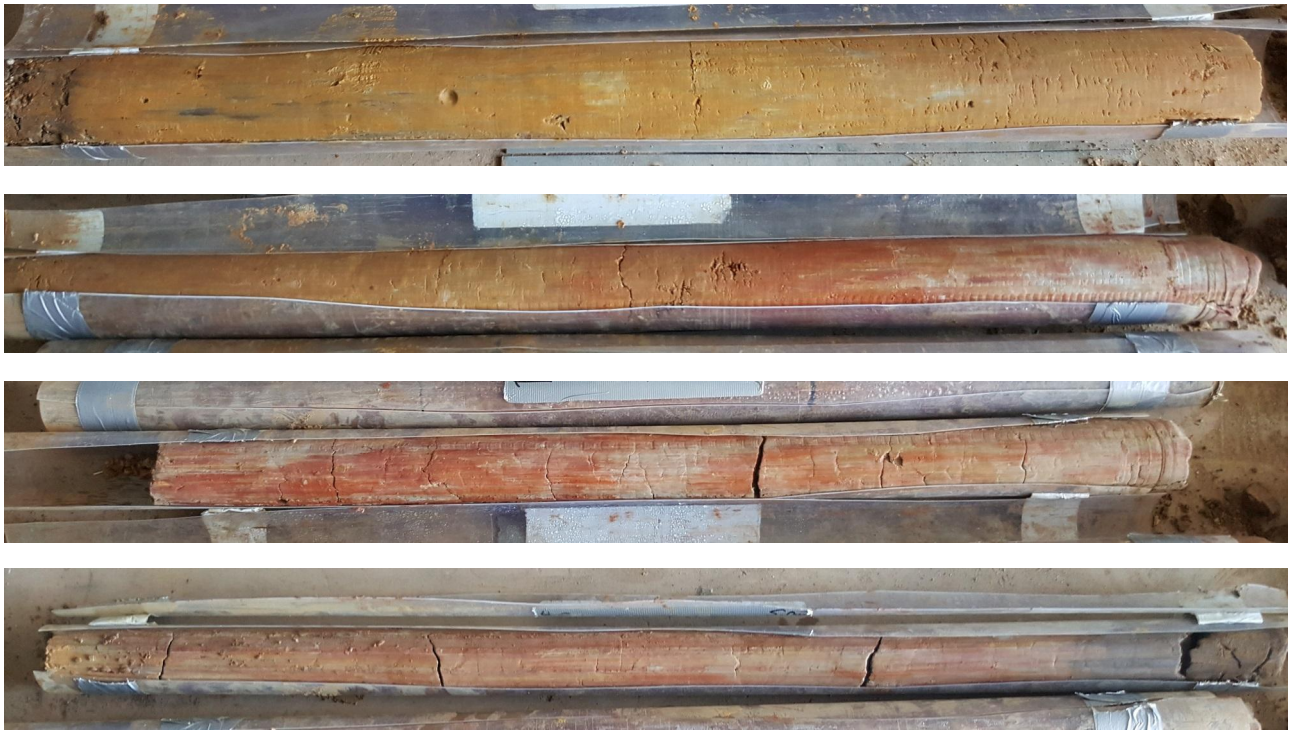
Photograph 33 - View of WS207 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

Photograph 34 - View of WS208 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

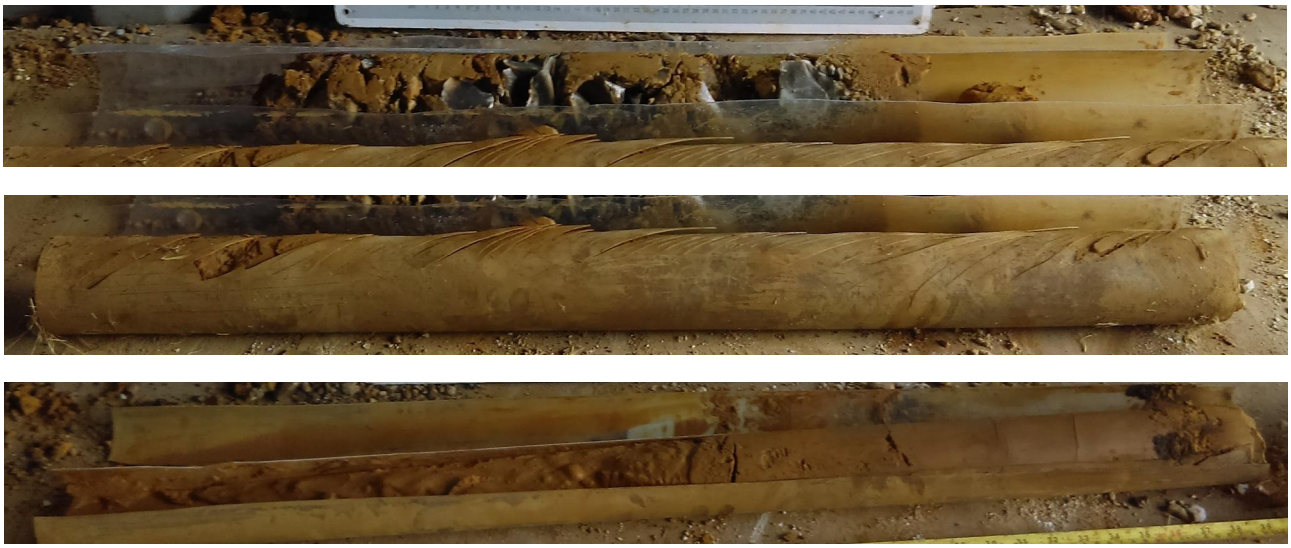
Photograph 35 - View of WS209 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).



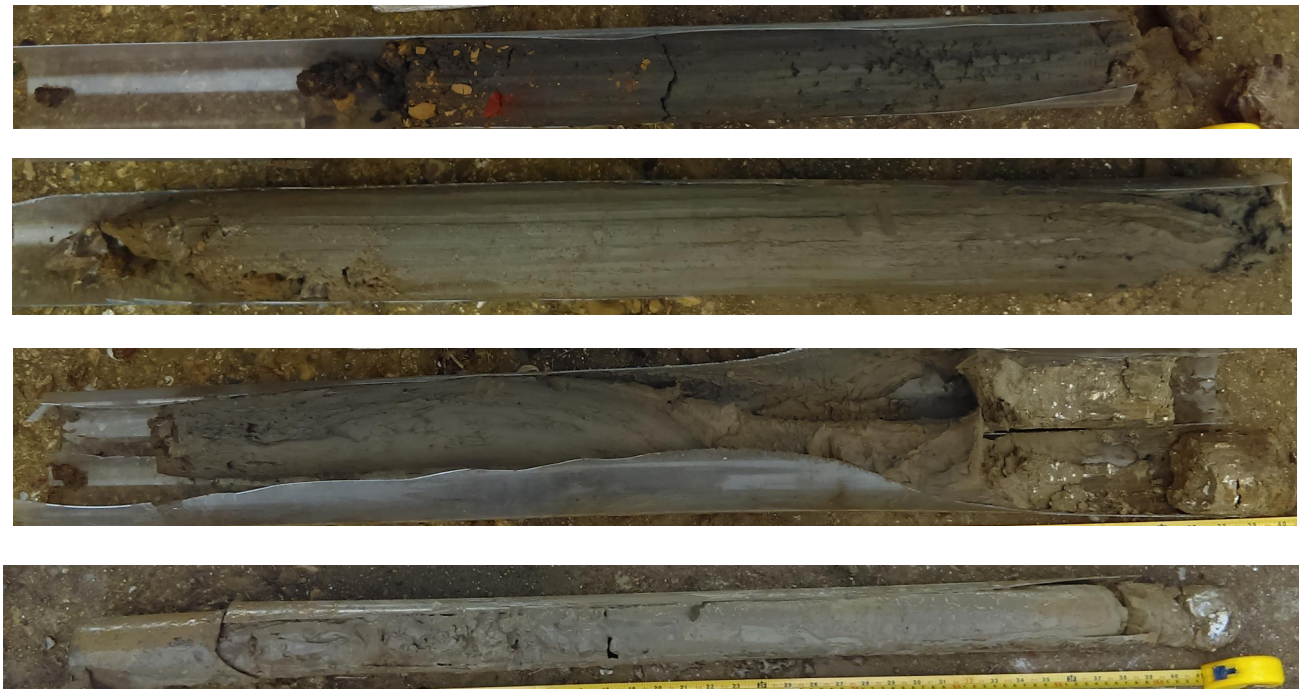
Photograph 36 - View of WS210 from 1.2m to 2.0m. Photos of cores 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m became corrupted.



Photograph 37 - View of WS211 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).



Photograph 38 - View of WS212 from 1.2m to 2.0m (top), 2.0m to 3.0m, and 3.0m to 4.0m (bottom).



Photograph 1 - View of W3WS301 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

Photograph 2 - View of W3WS304 from 0.0m to 0.15m (top), 1.2m to 2.0m, 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

Photograph 3 - View of W3BH301 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.5 to 4.5m, 4.5m to 5.5m, 5,.5m to 6.5m, 6.5m to 7.5m, and 7.5m to 8.5m (bottom).

Photograph 4 - View of W4WS312 from 1.6m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

Photograph 5 - View of W4WS313 from 1.2m to 2.2m (top), and 2.2m to 3.0m (bottom).

Photograph 6 - View of W4WS314 from 1.0m to 2.0m.

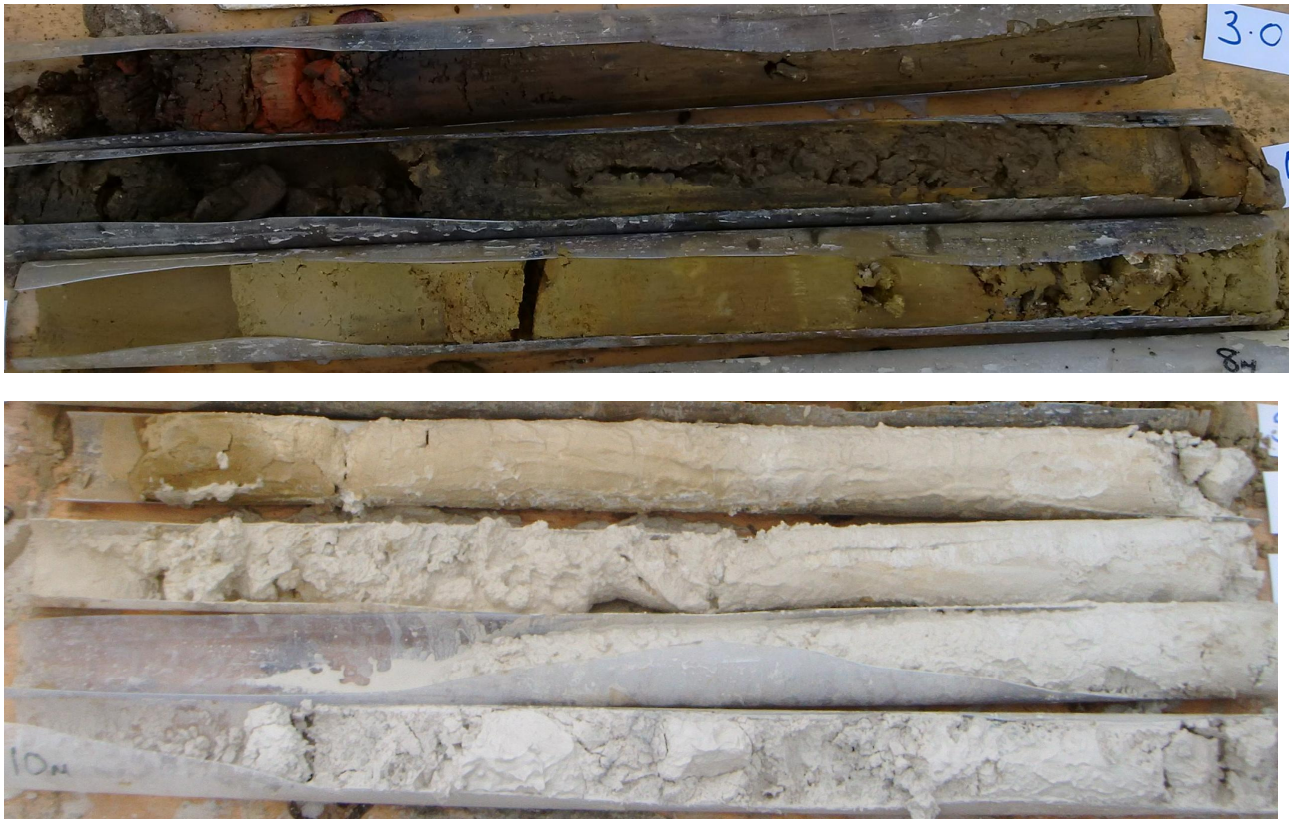
Photograph 7 - View of W4WS315 from 2.0m to 3.0m (top), 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

Photograph 8 - View of W4WS316 from 1.75m to 2.0m (top), and 2.0m to 2.50m (bottom).

Photograph 9 - View of W4BH304 from 3.5m to 4.5m.

Photograph 10 - View of W4BH305 from 1.5m to 2.5m (top), 2.5m to 3.5m, 4.5m to 5.5m, 5.5m to 6.5m (bottom).

Photograph 11 - View of W4BH306 from 1.5m to 2.5m (top), 2.5m to 3.5m, 4.5m to 5.5m, and 5.5m to 6.5m, 6.5m to 7.5m, 7.5m to 8.5m, 8.5m to 9.5m



Photograph 12 - View of W4BH307 from 2.0m to 3.0m (top), 3.0 to 4.0m, 4.0m to 5.0m, 7.0m to 8.0m, 8.0m to 9.0m, 9.0m to 10.0m, and 10.0m to 11.0m (bottom).

Photograph 13 - View of W4TP307 from GL to 3.1m.

Photograph 14 - View of arisings from W4TP307 from GL to 3.1m.

Photograph 15 - View of arisings from W4TP307 from GL to 3.1m.

Photograph 16 - View of arisings from W4TP307 from GL to 3.1m.

Photograph 17 - View of W4TP309 from GL to 3.2m.

Photograph 18 - View of arisings from W4TP309 from GL to 3.2m.

Photograph 19 - View of W4TP310 from GL to 2.9m.

Photograph 20 - View of arisings from W4TP310 from GL to 2.9m.

Photograph 21 - View of W4TP311 from GL to 3.0m.

Photograph 22 - View of arisings from W4TP311 from GL to 3.0m.

Photograph 23 - View of W4TP312 from GL.

Photograph 24 - View of arisings from W4TP312 from GL to 2.6m.

Photograph 23 - View of W4TP313 from GL to 2.8m

Photograph 24 - View of arisings from W4TP313

Photograph 25 - View of W4TP314 from GL to 3.2m.

Photograph 26 - View of arisings from W4TP314 from GL to 3.2m.

Photograph 27 - View of W4TP315 from GL to 2.2m

Photograph 28 - View of arisings from W4TP315 from GL to 2.2m.

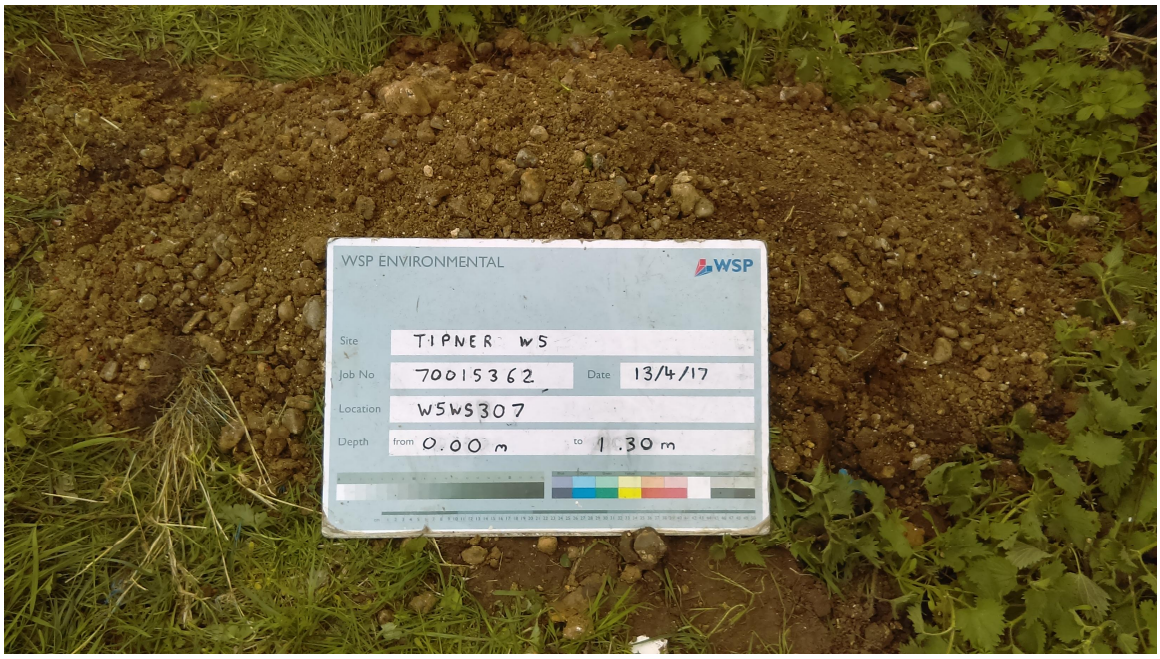
Photograph 29 - View of W4TP316 from GL to 2.4m

Photograph 30 - View of arisings from W4TP316 from GL to 2.4m.

Photograph 31 - View of handpit of W5WS306 from GL to 0.35m.

Photograph 32 - View of W5WS206 from 0.35m to 1.2m.

Photograph 33 - View of handpit of W5WS306 from 1.2m to 1.5m.



Photograph 34 - View of handpit for W5WS307c from GL to 1.3m.

Photograph 35 - View of W5WS307c from 1.3m to 2.3m (top), and 2.3m to 3.0m (bottom).

Photograph 36 - View of W5BH302 from 1.2m to 2.0m, 2.0m to 3.0m, 3.0m to 4.0m (top), 5.0 to 6.0m (middle), and 6.5m to 8.0m (bottom).

Photograph 37 - View of W5BH303 from 1.2m to 2.2m (top), 2.2m to 3.2m, 3.2m to 4.2m, 5.0 to 6.0m, and 6.0m to 7.0m (bottom).

Photograph 38 - View of arisings from W5HP306 from GL to 1.2m.

Photograph 39 - View of W5TP301 from GL to 3.0m.

Photograph 39 - View of arisings from W5TP301 from GL to 3.0m.

Photograph 40 - View of arisings from W5TP302 from GL to 2.8m.

Photograph 41 - View of W5TP303 from GL to 2.2m.

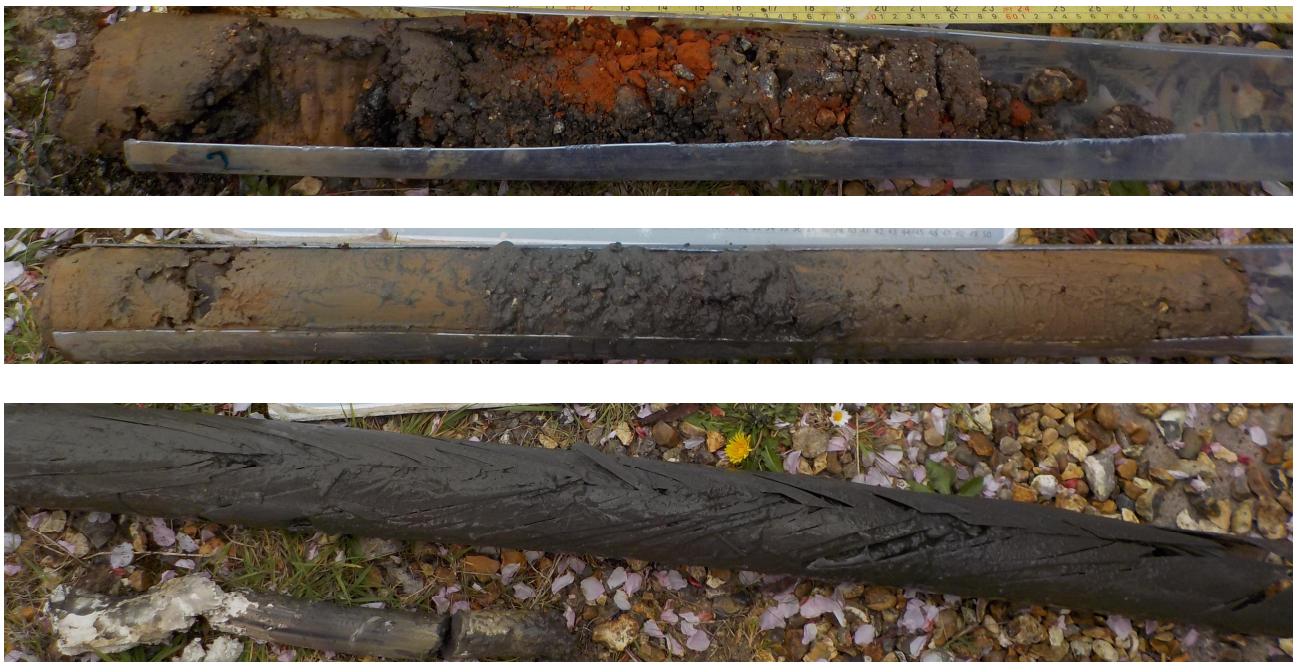
Photograph 42 - View of arisings from W5TP303 from GL to 2.2m.

Photograph 43 - View of W5TP304 from GL to 0.5m.

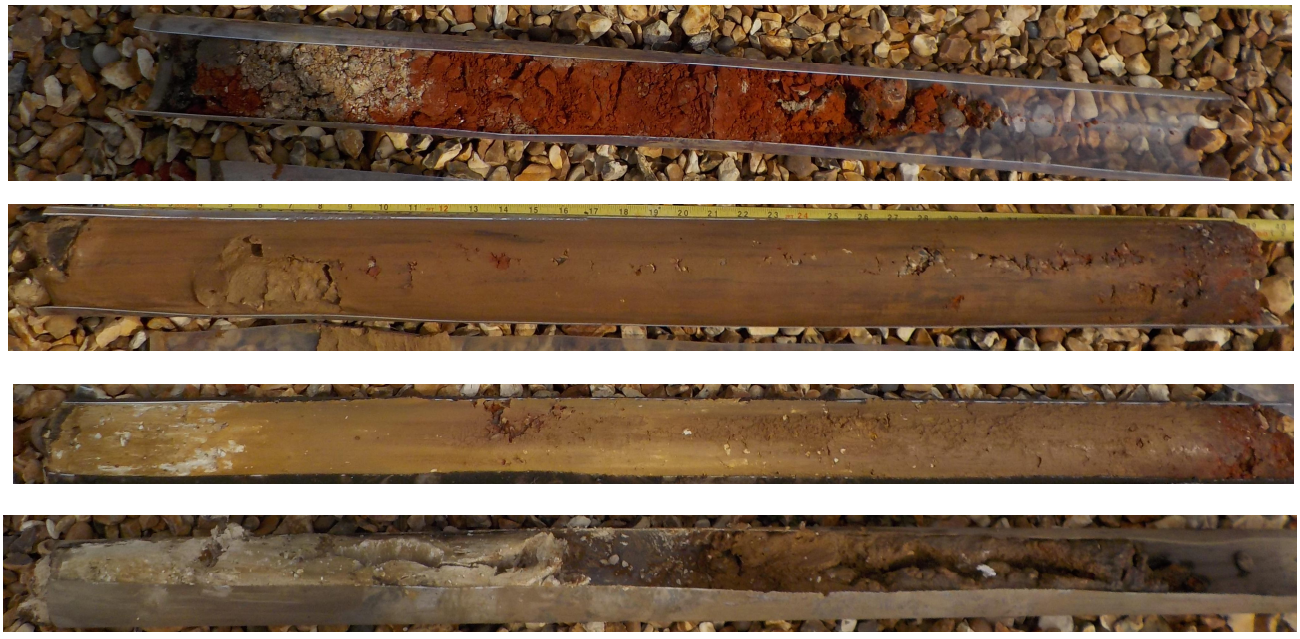
Photograph 44 - View of arisings from W5TP304 from GL to 0.5m.

Photograph 45 - View of W5TP305 from GL to 1.0m.

Photograph 46 - View of arisings from W5TP305 from GL to 1.0m.

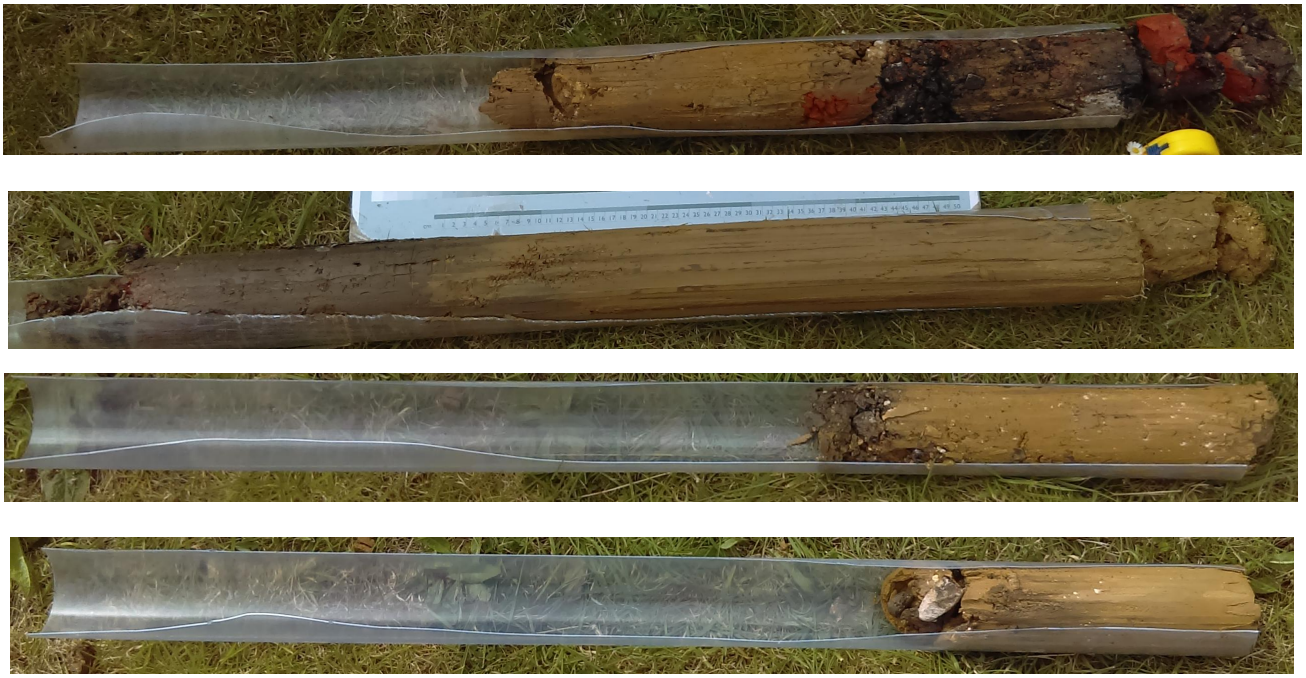


Photograph 47 - View of W7WS308 from 1.2m to 2.0m (top), 2.0m to 3.0m and 3.0m to 4.0m (bottom).



Photograph 48 - View of W7WS309 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0 to 4.0m and 4.0m to 5.0m (bottom).

Photograph 49 - View of W7WS310 from GL to 1.2m.



Photograph 50 - View of W7WS310 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0 to 4.0m and 4.0m to 5.0m (bottom).

Photograph 51 - View of W7WS311 from GL to 1.4m.

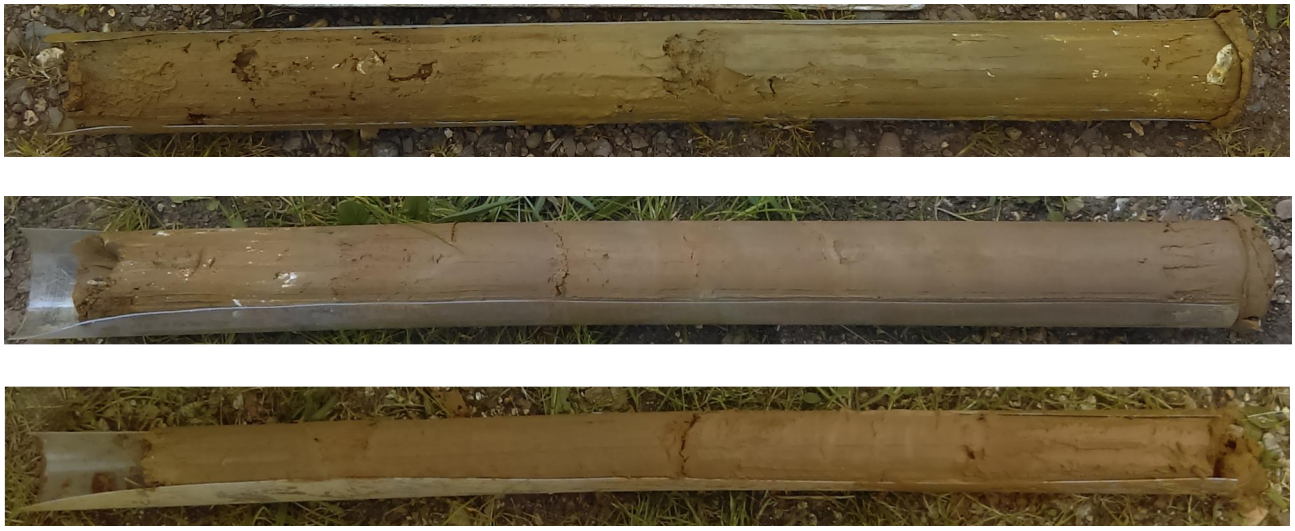
Photograph 52 - View of W7WS311 from 1.4m to 2.0m (top), 2.0m to 3.0m, and 3.0m to 4.0m (bottom).

Photograph 53 - View of W8WS317c from GL to 1.0m.

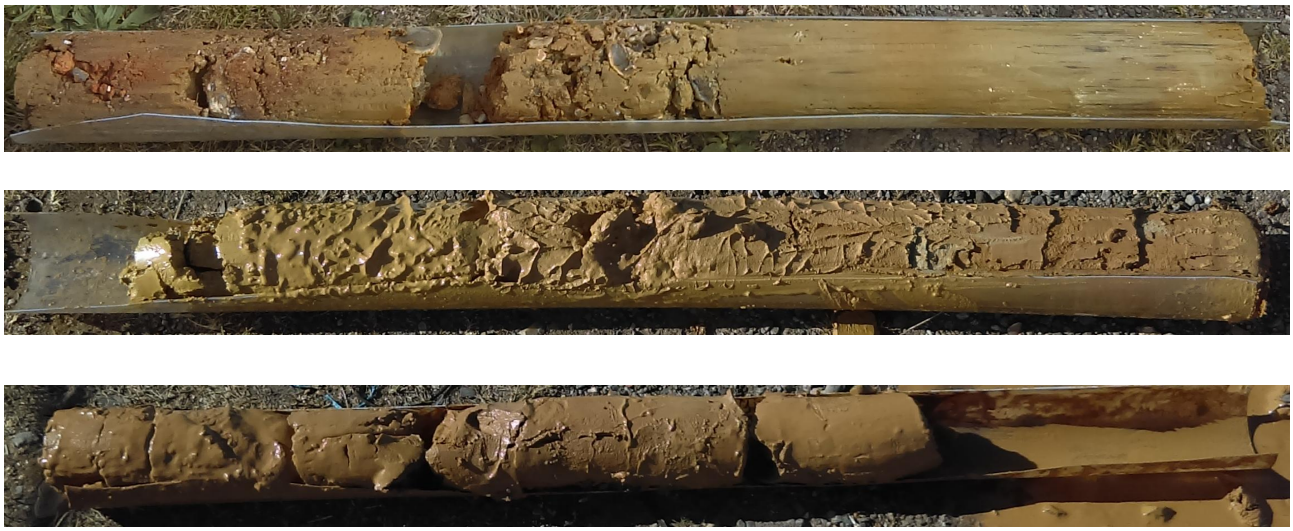
Photograph 54 - View of W8WS317c from 1.0m to 2.0m (top), 2.0m to 3.0m, and 3.0m to 4.0m (bottom).

Photograph 55 - View of W8WS318 from GL to 1.0m.

Photograph 56 - View of W8WS318 from 1.0m to 2.0m (top), and 2.0m to 3.0m (bottom).

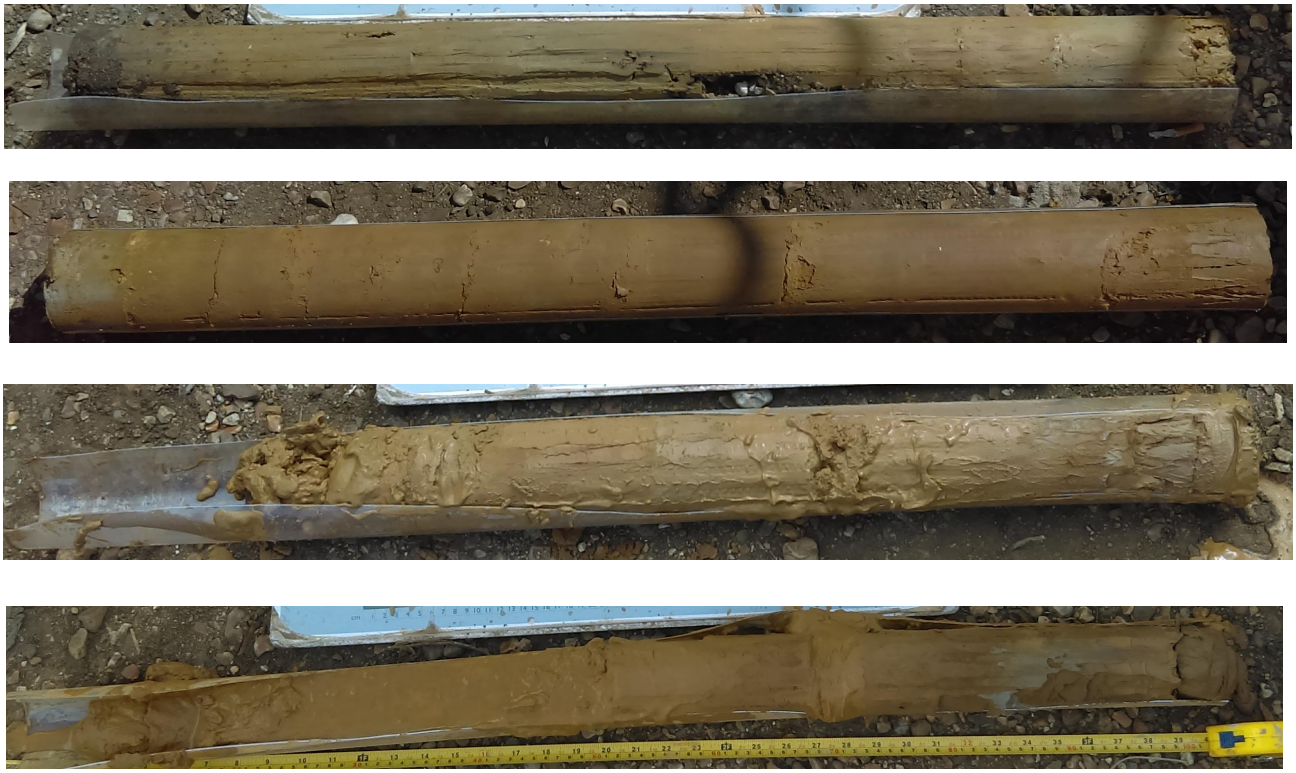
Photograph 57 - View of W8WS319 from GL to 1.0m.

Photograph 58 - View of W8WS319 from 1.0m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

Photograph 59 - View of W8WS320 from GL to 1.0m.

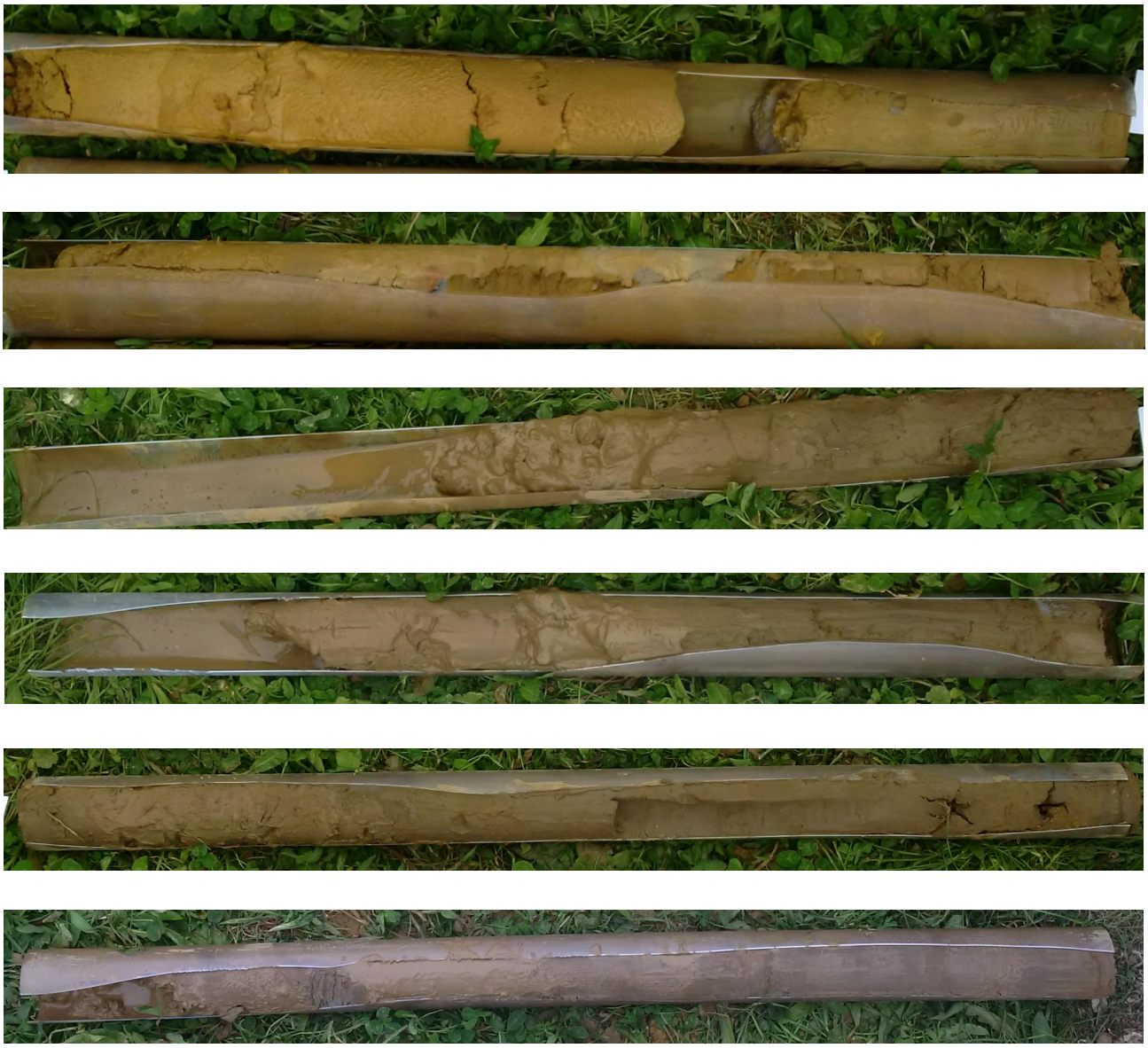


Photograph 60 - View of W8WS320 from 1.0m to 2.0m (top), 2.0m to 3.0m, and 3.0m to 4.0m (bottom).

Photograph 61 - View of W8WS321 from GL to 1.0m.



Photograph 62 - View of W8WS321 from 1.0m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m and 4.0m to 5.0m (bottom).



Photograph 63 - View of W8BH308 from 1.5m to 2.5m (top), 2.5m to 3.5m, 3.5m to 4.5m, 4.5m to 5.5m, 5.5m to 6.5m, 6.5m to 7.5m, and 8.0m to 9.0m (bottom).

Photograph 64 - View of W9WS323 from GL to 1.2m.

Photograph 65 - View of W9WS323 from 1.2m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

Photograph 66 - View of W9WS324 from GL to 1.0m.

Photograph 67 - View of W9WS324 from 1.0m to 2.0m (top), 2.0m to 3.0m, 3.0m to 4.0m, and 4.0m to 5.0m (bottom).

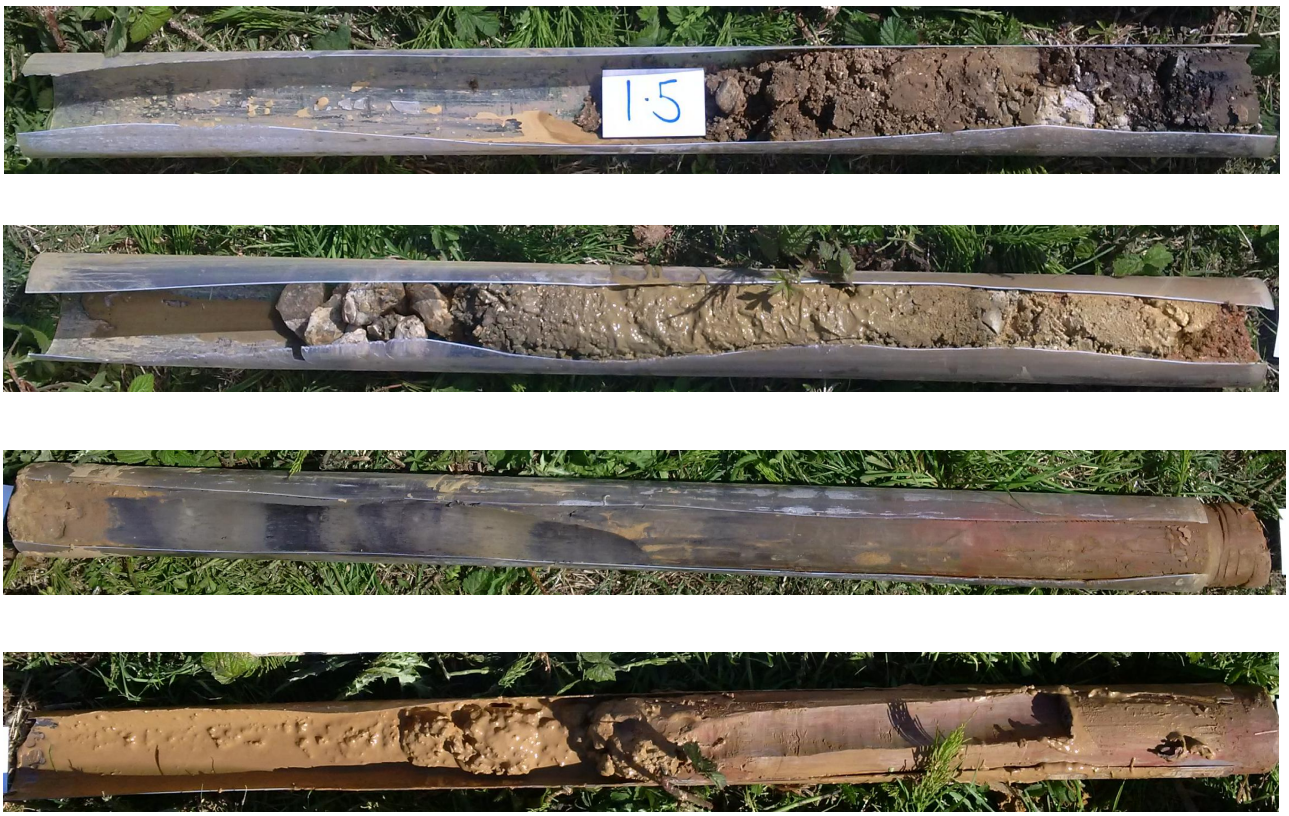
Photograph 68 - View of W9WS325c from GL to 1.0m.

Photograph 69 - View of W9WS325c from 1.0m to 2.0m (top), 2.0m to 3.0m, and 3.0m to 4.0m (bottom).

Photograph 70 - View of W9WS326 from GL to 1.2m.

Photograph 71 - View of W9WS326 from 1.2m to 2.0m (top), 2.0m to 3.0m, and 3.0m to 4.0m (bottom).

Photograph 72 - View of W9BH309 from 1.5m to 2.5m (top), 2.5m to 3.5m, 3.5m to 4.5m, 4.5m to 5.5m, 6.5m to 7.5m, and 7.5m to 8.5m (bottom).



Photograph 73 - View of W9BH310 from 1.5m to 2.0m (top), 3.0m to 4.0m, 6.0m to 7.0m, and 8.5m to 9.5m (bottom).

Appendix D.4

MONITORING RECORDS

Table D.4.1 – Summary of Water strikes WSP Ground Investigation 2016 and 2017

Exploratory Hole	Depth Groundwater Encountered (Strike) (m bgl)	Elevation Groundwater Encountered (Strike) (m AOD)	Depth to Groundwater after 20 mins (m bgl)	Elevation of Groundwater after 20 mins (m AOD)	Remarks
BH202	4.5	0.03			
BH203	4.3	0.11			
BH204	8.2	-4.74	5.3	-1.84	
BH205	7.5	-4.22			
BH207	2	1.13			
BH208	1.55	1.85			
BH209	2	1.27			
TP208	1.3	1.96			
TP211	2.1	1.04			
TP212	1.3	1.69			
W3BH301	5.1	-2.4	4.9	-2.2	
W3WS301	4.2	-1.5			
W3WS304	4.9	-1.94			
W4BH305	6.9	-2.38	5.4	-0.88	
W4BH306	5.3	-0.9	5	-0.6	
W4BH307	5.1	-1	4.8	-0.7	
W4TP313	2.5	1.42			Seepage.
W4WS312	1.6	1.39			
W4WS313	0.4	4.11			
W4WS314	1.6	2.87			
W5BH302	5	-0.62			
W5WS307c	2.8	2.13			
W8BH308	3.1	-0.47	2.9	-0.27	
W8WS317c	2	1.49			

Exploratory Hole	Depth Groundwater Encountered (Strike) (m bgl)	Elevation Groundwater Encountered (Strike) (m AOD)	Depth to Groundwater after 20 mins (m bgl)	Elevation of Groundwater after 20 mins (m AOD)	Remarks
W8WS318	2.6	0.71			
W8WS320	3.2	-0.31			
W8WS321	3.2	-0.59			
W9BH309	3	1.67	3	1.67	
W9BH310	3.1	1.37	3.1	1.37	
W9WS324	3	1.49			
W9WS325c	2	1.4	1.5	1.9	
W9WS326	3	1.14			
WS202	1.4	2.66			
WS203	2	1.49			
WS205	3.1	0.43			
WS210	3.7	-0.77			
WS212	2	0.92			

Table D.4.2: Summary of Stabilised Groundwater Quality Readings

Site Area	Location	Strata	Temp (°C)	Dissolved Oxygen (mg/l)	Conductivity (μScm^{-1})	Redox Potential (mV)	pH (units)
Area 1 Tipner Firing Range	BH203	Chalk	11.1	3.2	15927	-11.6	6.97
	BH205	Lambeth Group	14.1	0.84	1185	-298.2	6.77
	BH207*	Superficial Deposits	14.1	1.35		-352.2	6.66
	BH208	Made Ground	16.5	0.51	3000	-76	7.6
	BH209	Lambeth Group	15.5	2.2	608	94	7
	W9BH309	Lambeth Group	13.5	1.01	9971	91	6.39
	W9BH310	Lambeth Group	14.1	0.78	5444	-57	6.83
	W9WS325c	Superficial Deposits	15.7	0.7	1596	46	6.85
	WS204	Made Ground	13	2.78	1231	-253.1	6.27

	WS209*	Superficial Deposits	17.2				7
	WS210	Superficial Deposits	16.1	0.35	355	21	7.89
Area 2 Former MOD Landfill	W3BH301	Chalk	15.5	0.65	10109	-320.6	6.78
	W3WS301	Superficial Deposits	16.8	2.02	722	-203.9	6.99
	W3WS304	Made Ground	17.9	0.3	2603	-324.7	6.68
	W4BH305*	Chalk	13.7	0.20	2601	-50.0	
	W4WS312*	Made Ground	15.3	8.46	2629.	-100.2	
	W4WS313*	Made Ground	18.8	0.11	2670	-113	
Area 3 Former Military Barracks	W7WS309	Chalk	14.2	3.11	1265	-15	6.76
	W7WS311	Superficial Deposits	14	3.23	2430	-135	6.67

* faulty instrument

Table D.4.3. Summary of Groundwater Levels during Gas Monitoring

Area	Sub Area	Monitoring Point	Top of Response Zone (m bgl)	Bottom of Response Zone (m bgl)	Standing Water Depth		Frequency of Flooding	Comments on quality of data due to flooding of installations
					Min	Max		
1	W8	W8BH308	4	7	0.8	1.01	5 of 5	1
		W8WS317c	2	4	1.51	1.71	6 of 6	1
		W8WS318	1	2	1.08	1.49	1 of 6	1
		W8WS319	2	5	0.62	1.12	6 of 6	1
		W8WS320	1.5	3.5	0.82	1.01	3 of 3	1
		W8WS321	0.3	0.8	0.43	0.43	0 of 1	2
	W9	BH201	1	2	2.07	2.07	0 of 2	2
		BH202	1.5	2.5	2.44	2.44	0 of 3	2
		BH203	7	10	3.23	4.02	2 of 2	1
		BH204	7	10	2.65	3.48	7 of 7	1
		BH205	8.5	9.9	2.2	2.72	6 of 6	1
		BH206	3	6	0.51	0.92	5 of 5	1
		BH207	1.5	3.5	1.51	1.65	0 of 3	2
		BH208	1	3	1.34	1.55	0 of 6	2
		BH209	1.6	3.8	1.38	2.01	2 of 6	1
		W9BH309	4	7	2.74	3.09	6 of 6	1
		W9BH310	5	8	2.39	2.95	6 of 6	1
		W9WS323	1	3	2.78	2.89	0 of 6	2

Area	Sub Area	Monitoring Point	Top of Response Zone (m bgl)	Bottom of Response Zone (m bgl)	Standing Water Depth		Frequency of Flooding	Comments on quality of data due to flooding of installations
					Min	Max		
		W9WS324	1	2.5	2.64	2.64	0 of 6	2
		W9WS325c	2	3	1.5	1.81	6 of 6	1
		W9WS326	1	2.5	1.71	1.71	0 of 6	2
		WS202	1.5	3	2.03	2.17	0 of 3	2
		WS203	1	1.5	1.6	1.62	0 of 6	2
		WS204	1	1.5			0 of 3	2
		WS206	1	3	1.01	1.36	1 of 5	1
		WS207	4	5	1.5	1.67	3 of 3	1
		WS208	1	2	0.84	0.84	1 of 1	1
		WS209	3	5	1.51	1.6	2 of 2	1
		WS210	3	5	1.35	1.53	2 of 2	1
		WS211	1	2	0.82	1.45	3 of 4	1
		WS212	1	2	1	1.57	1 of 7	1
2	W3	W3BH301	6	8	1.13	2.57	6 of 6	1
		W3WS301	1.5	2.5	1.21	1.84	1 of 7	2
		W3WS304	1	2	1.47	1.71	0 of 7	2
		W3WS305	0.5	1.2			0 of 6	2
	W4	W4BH304	6	8	2.58	2.98	5 of 5	1
		W4BH305	8	10	3.48	4.48	4 of 4	1
		W4BH306	4	6	4.4	5.28	0 of 6	2
		W4BH307	9	12			2 of 6	2
		W4BH307	9	12	2.96	4.55	6 of 6	1
		W4BH307	9	12	3.36	3.36	2 of 6	2
		W4WS312	1	2	1.49	1.66	0 of 3	2
		W4WS313	1	3	0.16	0.56	7 of 7	1
		W4WS314	1	2			0 of 6	2
		W4WS315	2	4	2.11	2.59	0 of 6	1
		W4WS316	1	2.5	2.51	2.87	0 of 6	2
3	W5	W5BH302	6	8	3.05	4.01	6 of 6	1
		W5BH303	10	12	3.69	4.51	6 of 7	1
		W5WS306	1	1.5			0 of 4	2
		W5WS307c	1	2	1.88	2.11	0 of 6	2
	W7	W7WS308	1	2	2.04	2.09	0 of 6	2
		W7WS309	4	5	1.91	2.02	6 of 6	1

Area	Sub Area	Monitoring Point	Top of Response Zone (m bgl)	Bottom of Response Zone (m bgl)	Standing Water Depth		Frequency of Flooding	Comments on quality of data due to flooding of installations
					Min	Max		
		W7WS310	1	2	1.98	2.03	0 of 6	2
		W7WS311	3	4	2.45	3.54	5 of 7	1

1 - Well flooded or partially flooded, gas readings are indicative of dissolved gases in groundwater rather than formation. Flow readings may reflect groundwater equilibration with atmospheric conditions.

2- Gas readings represent conditions in screened strata.

Summary of Gas Monitoring Results and Gas Screening Values

CIRIA Characteristic Situation Classification Key:

CS1 Very Low Risk (GSV <0.07)	Monitoring well flooded - data not considered representative of formation
CS2 Low Risk (GSV <0.7)	
GSV - Gas Screening Value	Where null value recorded LOD of 0.1 used for GSV calculation.

Site Area	Sub Area	Location	Screened Deposits	Maximum Initial gas flow rate l/hr	Maximum Steady gas flow rate l/hr	Maximum Initial Oxygen %v/v	Maximum Steady Oxygen %v/v	Maximum Initial Carbon Dioxide %v/v	Maximum Steady Carbon Dioxide %v/v	Maximum Initial Methane %v/v	Maximum Steady Methane %v/v	GSV Carbon Dioxide	GSV Methane	Laboratory Reported Gas Concentration	
														Carbon Dioxide %v/v	Methane %v/v
	W8	W8BH308	Lambeth Group	0	0	20.8	20.7	0.5	0.5	0.1	0.1	0.0005	0.0001		
	W8	W8WS317c	Superficial Deposits	0	0	20.8	20	6.2	6.6	0.2	0.1	0.0066	0.0002		
	W8	W8WS318	Superficial Deposits	4.8	3.8	20.4	20.3	20.2	20.2	9.4	5.5	0.9696	0.4512	0.31	<0.05
	W8	W8WS319	Superficial Deposits	5.6	1.4	21.1	20.6	0.9	0.6	0.1	0.1	0.0504	0.0056		
	W8	W8WS320	Superficial Deposits	0	0	20.3	20.8	0.3	0.1	0.9	0	0.0003	0.0009		
	W8	W8WS321	Superficial Deposits	0	0	20.6	20.5	3	2.8	0	0	0.003	0.0001		
	W9	BH204	Lambeth Group	1.6	0.2	20.7	21.4	1.1	0.3	0.1	0.1	0.0176	0.0016		
	W9	BH205	Lambeth Group	0.4	0	20.3	19.6	3.1	3.1	0.1	0.2	0.0124	0.0008		
	W9	BH206	Lambeth Group	0	0	20.8	20.8	1.4	0.8	0	0	0.0014	0.0001		
	W9	BH209	Lambeth Group	19.5	0.2	20.5	17.6	6.9	3.6	0	0	1.3455	0.0195		
	W9	W9BH309	Lambeth Group	3.5	0	28.4	20.3	2.6	3.3	0	0	0.1155	0.0035		
	W9	W9BH310	Lambeth Group	0	0	21.2	21.4	10	0.1	0.1	0.1	0.01	0.0001		
1	W9	WS206	Lambeth Group	9	1.5	20.3	15	8.6	9.1	0.2	0.1	0.819	0.018		
	W9	WS211	Lambeth Group	3.1	11.6	20.5	14.7	7.1	8	0	0	0.928	0.0116		
	W9	WS212	Superficial Deposits	2.1	3	20.2	19.3	3.2	3.2	0.1	0.1	0.096	0.003		
	W9	BH208	Made Ground	0	0	20.6	19.3	10.9	2.5	0	0	0.0109	0.0001		
	W9	W9WS323	Made Ground	0	0	20.4	12.7	9.8	10.9	0	0	0.0109	0.0001	8.66	<0.05
	W9	W9WS324	Made Ground	0	0	21.3	20.6	1.6	5	0.1	0.1	0.005	0.0001		
	W9	W9WS326	Made Ground	0	0	20.6	21	2.9	3.2	0	0	0.0032	0.0001		
	W9	WS202	Made Ground	0	0	20.4	14.3	7.4	10.3	0.1	0.1	0.0103	0.0001		
	W9	WS203	Made Ground	0	0	20.7	20.4	2.3	2.3	0.1	0.1	0.0023	0.0001		
	W9	WS204	Made Ground	0.1	0	20.4	16.1	10.5	8.5	0.1	0.1	0.0105	0.0001		
	W9	WS207	Made Ground	0	0.1	20.8	19.6	1.5	1.5	0.1	0.1	0.0015	0.0001		
	W9	BH207	Superficial Deposits	0	0	20.1	18.4	5.9	5.9	0	0	0.0059	0.0001		
	W9	W9WS325c	Superficial Deposits	106	1.2	21.4	20.7	1.8	1.8	0.2	0.1	1.908	0.212		
	W3	W3BH301	Chalk	0	0	19.5	21.1	0.8	0	0	0	0.0008	0.0001		
	W3	W3WS304	Made Ground	0.1	0	20.1	0.8	15.3	17.5	0.1	2	0.0175	0.002	11.1	1.66
	W3	W3WS305	Made Ground	0.1	0.1	20.6	1.8	15.5	17.5	0.2	0.2	0.0175	0.0002		
	W3	W3WS301	Superficial Deposits	0	0	19.8	20.1	12.6	4	0.8	0.1	0.0126	0.0008		
	W4	W4BH304	Chalk	0	0	20.4	18.7	4.3	6.24	3.1	0.1	0.00624	0.0031		
	W4	W4BH305	Chalk	14.6	0	18.4	20	4.2	0.8	1.5	1.1	0.6132	0.219		
2	W4	W4BH307	Chalk	0	0	20.6	20.9	12.9	0.2	12.2	0.3	0.0129	0.0122		
	W4	W4WS312	Made Ground	0	0	17	16.9	6	4.6	0.2	0	0.006	0.0002		
	W4	W4WS313	Made Ground	9.8	5.9	20	18.1	5.2	5.9	5	10.3	0.5782	1.0094		
	W4	W4WS314	Made Ground	0	0	20.1	0.3	4.5	4.5	33.6	33.7	0.0045	0.0337	2.73	31.1
	W4	W4WS315	Made Ground	6.1	3.6	20	20	4.5	5.8	3.9	3.8	0.3538	0.2379		
	W4	W4WS316	Made Ground	0	0	20.4	0.9	18.7	18.7	31.1	20.2	0.0187	0.0311		
	W4	W4BH306	Superficial Deposits	0	0	20.5	20.1	8.8	8.6	0.1	0.1	0.0088	0.0001		
	W5	W5BH302	Chalk	46	0.1	18	15.6	11.7	12	0.5	0.1	5.52	0.23		
	W5	W5BH303	Chalk	90	2.5	20.6	20.5	2.7	2.3	0.1	0.1	2.43	0.09		
	W5	W5WS306	Chalk	0	0	20.6	20.7	1	3.5	0.4	0.1	0.0035	0.0004		
3	W5	W5WS307c	Made Ground	0	0	20.5	18.3	4.6	4.6	0.1	0.1	0.0046	0.0001		
	W7	W7WS308	Made Ground	0	0	21.3	21	1.8	1.3	0.1	0.1	0.0018	0.0001		
	W7	W7WS310	Made Ground	0	0	21.2	20.9	2.3	2.4	0.1	0.1	0.0024	0.0001		
	W7	W7WS309	Chalk	0	0	19.3	20.2	1.3	1.3	0	0	0.0013	0.0001		
	W7	W7WS311	Superficial Deposits	0	0	21.2	20.5	3.1	2.2	0.1	0.1	0.0031	0.0001		

Tipner West
Ground Gas Monitoring Records

Monitoring Event	Site Area	Sub Area	Location	Screened Strata	Date Time	Borehole Pressure mb	Initial gas flow rate l/hr	Steady gas flow rate l/hr	Initial Carbon Dioxide % v/v	Steady Carbon Dioxide % v/v	Initial Methane % v/v	Steady Methane % v/v	Initial Oxygen % v/v	Steady Oxygen % v/v	Carbon Monoxide % v/v	Hydrogen Sulphide PPM	PID	Dip to LNAPL	Dip to Groundwater m bgl	Dip to Base m bgl	Portsmouth Harbour Tide Times		
																					High Tide	Low Tide	Date
	1	W8	W8WS317c	Superficial Deposits	02/06/2017 09:00	1017	0	0	0	0	0	0	20	20	0	0	0.3		1.589	2.16			
	1	W8	W8WS318	Superficial Deposits	02/06/2017 09:09	1016	0	0	20.2	20.2	0	0	20.3	20.3	0	0	1.4		1.406	2.07			
	1	W8	W8WS319	Superficial Deposits	02/06/2017 09:34	1016	0	0	0	0	0	0	20.6	20.6	0	0	1.7		1.046	4.62			
	1	W8	W8WS320	Superficial Deposits	02/06/2017 09:19	1018	0	0	0	0	0	0	20.3	20.3	0	0	1.4		1.01	3.03			
	1	W8	W8WS321	Superficial Deposits	02/06/2017 09:50	1014	0	0	0	0	0	0	20.5	20.5	0	0	25.4		0.429	0.97			
	1	W9	BH204	Lambeth Group	02/06/2017 14:28		0	0	0.6	0.3	0	0	20.6	20.8	0	0			3.26	7.24			
	1	W9	BH205	Lambeth Group	02/06/2017 14:39		0	0	3.1	3.1	0	0	18.1	18	0	0			2.71	8.53			
	1	W9	BH206	Lambeth Group	02/06/2017 14:54		0	0	1.1	0.3	0	0	17.8	20.3	0	0			0.65	5.85			
	1	W9	BH209	Lambeth Group	02/06/2017 16:22		0.1	0.2	0.4	3.1	0	0	19.5	13.3					1.38	3.52			
	1	W9	W9BH309	Lambeth Group	02/06/2017 11:51		0	0	0.9	0.8	0	0	19.7	19.7	4	0			2.74	6.44			
	1	W9	W9BH310	Lambeth Group	02/06/2017 11:30		0	0	0.1	0.1	0	0	20.4	20.4	0	0			2.39	7.65			
	1	W9	W9WS323	Made Ground	02/06/2017 11:58		0	0	9.8	10.1	0	0	8	7.3	3	0				2.92			
	1	W9	W9WS324	Made Ground	02/06/2017 11:22		0	0	1.6	2.6	0	0	18.8	17.8	1	0				2.68			
	1	W9	W9WS325c	Superficial Deposits	02/06/2017 11:38		0	0	0.1	0.1	0	0	20.7	20.7	3	1			1.5	2.85			
	1	W9	W9WS326	Made Ground	02/06/2017 11:46		0	0	0.4	1.2	0	0	20	18.7	0	0				1.62			
	1	W9	WS203	Made Ground	02/06/2017 14:19		0	0	2.3	2.3	0.1	0	19	19	0	0				1.71			
	1	W9	WS206	Lambeth Group	02/06/2017 14:30	1013	0.1	0	0.9	4.8	0	0	18	15	0	0			1.1	2.52			
	1	W9	WS211	Lambeth Group	02/06/2017 16:27		3.1	11.6											0.82	2.25			
	1	W9	WS212	Superficial Deposits	02/06/2017 14:45	1015	2.1	3	2	1.6	0	0	17.6	18.7	0	0			1	1.45			
Visit 1	2	W3	W3BH301	Chalk	02/06/2017 12:30	1014	0	0	0	0	0	0	19.5	20	0	0			2.57	6.98	07:21	11:48	02/06/2017
	2	W3	W3WS301	Superficial Deposits	02/06/2017 12:25	1014	0	0	1	1.6	0	0	19.2	17.8	0	0			1.84	2.56			
	2	W3	W3WS304	Made Ground	02/06/2017 12:20	1014	0	0	12.5	13.2	0	0	1	0.8	0	0			1.7	2.05			
	2	W3	W3WS305	Made Ground	02/06/2017 12:15	1015	0	0	9.9	10.6	0	0	1.4	0.6	0	0				1.12			
	2	W4	W4BH304	Chalk	02/06/2017 10:19		0	0	2.9	4.2	0	0	15.9	13.5	0	0			2.58	7.9			
	2	W4	W4BH305	Chalk	02/06/2017 10:25		0	0	1.1	0.8	1.5	1.1	18.4	19	2	0			3.86	10.3			
	2	W4	W4BH306	Superficial Deposits	02/06/2017 10:04		0	0	0.7	0.2	0	0	19.1	20.1	2	1			5.28	6.04			
	2	W4	W4BH307	Chalk	02/06/2017 10:41		0	0	0.1	0.1	0.3	0.2	20.6	20.8	0	0			2.96	5.81			
	2	W4	W4WS312	Made Ground	02/06/2017 10:50		0	0	4.2	4.2	0	0	17	16.9	2	0			1.49	1.96			
	2	W4	W4WS313	Made Ground	02/06/2017 10:13		3.7	1.6	2.1	2.2	5	5.2	17.4	17.4	0	1			0.36	2.86			
	2	W4	W4WS314	Made Ground	02/06/2017 10:32		0	0	3.4	3.4	33.6	33.7	0.7	0.3	1	0				2			
	2	W4	W4WS315	Made Ground	02/06/2017 09:56		0	0	2.4	2.3	3.9	3.8	17.2	17.2	1	0			2.16	4.14			
	2	W4	W4WS316	Made Ground	02/06/2017 10:36		0	0	12.5	15	10.2	12.3	3.8	0.4	0	0				2.6			
	3	W5	W5BH302	Chalk	02/06/2017 09:40		-4.2	-3.5	2.8	3.7	0	0	17	15.6	3	1			3.46	7.67			
	3	W5	W5BH303	Chalk	02/06/2017 09:28		3.8	2.5	1.7	1.3	0	0	18.9	19.3	0	0			4.04	10.91			
	3	W5	W5WS307c	Made Ground	02/06/2017 09:15		0	0	4.6	4.6	0		15.9	15.5	1	0				1.89			
	3	W7	W7WS308	Made Ground	02/06/2017 10:15		0	0	0.3	0.3	0	0	19.9	19.7					2.04	2.06			
	3	W7	W7WS309	Chalk	02/06/2017 10:20		0	0	1.3	1.3	0	0	18.7	18.1					2.02	4.7			
	3	W7	W7WS310	Made Ground	02/06/2017 10:26		0	0	0.3	0.8	0	0	19.3	18.5					2.01	2.02			
	3	W7	W7WS311	Superficial Deposits	02/06/2017 10:30		0	0	2.1	2.2	0	0	18.3	17.6					2.56	3.71			

Tipner West
Ground Gas Monitoring Records

Monitoring Event	Site Area	Sub Area	Location	Screened Strata	Date Time	Borehole Pressure mb	Initial gas flow rate l/hr	Steady gas flow rate l/hr	Initial Carbon Dioxide % v/v	Steady Carbon Dioxide % v/v	Initial Methane % v/v	Steady Methane % v/v	Initial Oxygen % v/v	Steady Oxygen % v/v	Carbon Monoxide % v/v	Hydrogen Sulphide PPM	PID	Dip to LNAPL	Dip to Groundwater m bgl	Dip to Base m bgl	Portsmouth Harbour Tide Times		
																					High Tide	Low Tide	Date
	1	W8	W8BH308	Lambeth Group	29/06/2017 16:41	1000	0	0	0.1	0.5	0	0	20.1	18.2		0	0		0.9	6.92			
	1	W8	W8WS317c	Superficial Deposits	29/06/2017 16:01	998	0	0	4.4	4.6	0	0	20.4	17		0	0.1		1.58	2.16			
	1	W8	W8WS318	Superficial Deposits	29/06/2017 16:09	999	0	0	0.1	1.7	0.1	5.5	20	1.4		0	2.7		1.08	2.07			
	1	W8	W8WS319	Superficial Deposits	29/06/2017 16:59	1000	0	0	0.2	0.2	0	0	21.1	20.4		0	0.1		1.05	4.67			
	1	W8	W8WS320	Superficial Deposits	29/06/2017 16:26	1000	0	0	0.3	0.1	0.9	0	16.1	20.8		0	0.2		0.94	2.94			
	1	W8	W8WS321	Superficial Deposits	29/06/2017 16:49	1000	0	-0.1	3	2.8	0	0	20.6	18.7		0	0.1		0.429	0.97	16:05	09:14	29/06/2017
	3	W5	W5BH302	Chalk	29/06/2017 17:44	995	46	0.1	3.2	9.4	0	0	13.3	13.7	0	0	0		3.05	7.92			
	3	W5	W5BH303	Chalk	29/06/2017 17:34	995	90	0	2.5	2	0	0	18.2	18.6	0	0	0		3.69	11.2			
	3	W5	W5WS306	Chalk	29/06/2017 17:19	997	0	0	1	0.9	0.4	0	20.6	20.2	0	0	0.3			1.5			
	3	W5	W5WS307c	Made Ground	29/06/2017 17:27	995	0	0	1	3.4	0	0	20.3	17.3	0	0	1.6		1.88	1.97			
	1	W9	BH204	Lambeth Group	30/06/2017 13:44	1003	0	0	1.1	0.1	0	0	19.8	21.4	0	0	0		3.48	7.88			
	1	W9	BH205	Lambeth Group	30/06/2017 13:05	1002	0	0	2.2	2	0	0	19.4	19.6	0	0	0		2.72	8.55			
	1	W9	BH206	Lambeth Group	30/06/2017 14:35	1005	0	0	0.7	0.8	0	0	20.6	20.2	0	0	0		0.88	5.99			
	1	W9	BH208	Made Ground	30/06/2017 11:45	1003	0	0	0.9	1.7	0	0	20.6	19.3	0	0	0		1.38	2.8			
	1	W9	BH209	Lambeth Group	30/06/2017 12:03	1003	-13	0	6.9	1.4	0	0	15.2	17.6	0	0	0		1.52	3.14			
	1	W9	W9BH309	Lambeth Group	30/06/2017 10:42	1002	0	0	0.1	0.9	0	0	20.9	20.3	0	0	0.5		3.09	6.54			
	1	W9	W9BH310	Lambeth Group	30/06/2017 11:01	1003	0	0	10	0.1	0	0	15.2	20.9	0	0	0.2		2.58	7.6			
	1	W9	W9WS323	Made Ground	30/06/2017 10:53	1001	0	0	0.9	10.9	0	0	20.4	12.7	0	0	0.2		2.78	2.98			
	1	W9	W9WS324	Made Ground	30/06/2017 10:10	1001	0	0	1.4	1	0	0	20.5	19.7	0	0	0		2.64	2.66			
	1	W9	W9WS325c	Superficial Deposits	30/06/2017 09:55	1002	106	0	0.9	1.5	0	0	20.6	20.3	0	0	0.2		1.67	2.64			
Visit 2	1	W9	W9WS326	Made Ground	30/06/2017 10:33	1003	0	0	1.3	0	0	0	19.9	21	0	0	0.2			1.84			
	1	W9	WS203	Made Ground	30/06/2017 11:22	1005	0	0	0.6	0.8	0	0	20.1	20.4	0	0	0		1.62	1.77			
	1	W9	WS211	Lambeth Group	30/06/2017 11:53	1005	-5	0	7.1	7.1	0	0	12.1	10.9	0	0	0.1		0.92	2.16			
	1	W9	WS212	Superficial Deposits	30/06/2017 12:45	1003	0	0	2.6	2.7	0	0	19.2	19	0	0	0		1.4	1.66			
	2	W3	W3BH301	Chalk	30/06/2017 15:21	1005	0	0	0.8	0	0	0	17.6	21.1	0	0	0		2.18	7.03			
	2	W3	W3WS301	Superficial Deposits	30/06/2017 15:13	1005	0	0	12.6	0.5	0.8	0	3.9	20.1	0	0	0		1.57	2.59	05:56	10:08	30/06/2017
	2	W3	W3WS304	Made Ground	30/06/2017 15:06	1003	0	0	13.2	15.2	0	0.8	2.9	0.1	0	0	0		1.67	3.1			
	2	W3	W3WS305	Made Ground	30/06/2017 14:59	1004	0	0	0.7	14	0	0	20.6	0.6	0	0	0			1.13			
	2	W4	W4BH304	Chalk	30/06/2017 15:50	1003	0	0	2.8	6.24	3.1	0.1	18.5	10.7	0	0	0.2		2.59	8.01			
	2	W4	W4BH305	Chalk	30/06/2017 16:06	1004	14.6	0	4.2	0.6	0	1	17.2	20	0	0	0		3.64	10.39			
	2	W4	W4BH306	Superficial Deposits	30/06/2017 15:36	1005	0	0	1.1	1.4	0	0	20	18.2	0	0	1		5	6.15			
	2	W4	W4BH307	Chalk	30/06/2017 16:23	1006	0	0	12.9	0.1	12.2	0	2.3	20.9	0	0	41.6		3	8.56			
	2	W4	W4WS312	Made Ground	30/06/2017 15:58	1003	0	0	6	4.6	0.2	0	13.8	15.7	0	0	1.5		1.66	1.91			
	2	W4	W4WS313	Made Ground	30/06/2017 15:42	1003	0	0	1.3	2.9	0	3.1	18.8	18.1	0	0	0		0.32	2.68			
	2	W4	W4WS314	Made Ground	30/06/2017 16:13	1003	0	0	1.3	4	1.3	32.3	18.3	0.2	0	0	0.3			2.02			
	2	W4	W4WS315	Made Ground	30/06/2017 15:31	1005	0	0	0.2	1.2	0	0	19.9	20	0	0	1		2.3	4.2			
	2	W4	W4WS316	Made Ground	30/06/2017 16:18	1003	0	0	6.6	14.9	31.1	12	2	0.9	0	0	9.7		2.6	2.63			
	3	W7	W7WS308	Made Ground	30/06/2017 08:49	1002	0	0	1.8	1.3	0	0	17.2	19.4	0	0	0		2.09	2.11			
	3	W7	W7WS309	Chalk	30/06/2017 08:56	1002	0	0	1.2	0.2	0	0	19.3	20.2	0	0	0.1		1.95	4.82			
	3	W7	W7WS310	Made Ground	30/06/2017 09:04	1002	-0.3	0	0.3	2	0	0	20	18.4	0	0	0.7		2.03	2.07			
	3	W7	W7WS311	Superficial Deposits	30/06/2017 09:13	1003	0	0	1.9	2	0	0	19	19	0	0	0.2		2.57	2.74			

Tipner West
Ground Gas Monitoring Records

Monitoring Event	Site Area	Sub Area	Location	Screened Strata	Date Time	Borehole Pressure mb	Initial gas flow rate l/hr	Steady gas flow rate l/hr	Initial Carbon Dioxide % v/v	Steady Carbon Dioxide % v/v	Initial Methane % v/v	Steady Methane % v/v	Initial Oxygen % v/v	Steady Oxygen % v/v	Carbon Monoxide % v/v	Hydrogen Sulphide PPM	PID	Dip to LNAPL	Dip to Groundwater m bgl	Dip to Base m bgl	Portsmouth Harbour Tide Times		
																					High Tide	Low Tide	Date
	1	W8	W8BH308	Lambeth Group	20/07/2017 14:18	1008	0	0	0	0	0	0	20	20.2	0	0	0		1.005	4.01			
	1	W8	W8WS317c	Superficial Deposits	20/07/2017 14:03	1008	0	0	0.4	4.7	0	0	19.8	16.7	0	0	0		1.714	2.12			
	1	W8	W8WS318	Superficial Deposits	20/07/2017 14:09	1008	0	0	0	1.6	0	0	20.3	17.5	0	0	0		1.492	2.08			
	1	W8	W8WS319	Superficial Deposits	20/07/2017 14:30	1008	0	0	0	0.1	0	0.1	19.9	20.4	0	0	0		1.118	4.66			
	2	W3	W3WS301	Superficial Deposits	20/07/2017 16:10	1009	0	0	0.4	1	0	0	19.8	18	0	0	0		1.81	2.59			
	2	W3	W3WS304	Made Ground	20/07/2017 15:55	1008	0	0	0.1	17.5	0	0	20.1	0	0	0	0		1.712	2.07			
	2	W3	W3WS305	Made Ground	20/07/2017 15:45	1008	0	0	0.2	17.5	0	0	20	0	0	0	0			1.15			
	2	W4	W4BH304	Chalk	20/07/2017 16:32	1009	0	0	0	3.7	0	0	20.4	15.7	0	0	0		2.981	7.91			
	2	W4	W4BH306	Superficial Deposits	20/07/2017 16:27	1008	0	0	0	4.8	0	0	20.5	10	0	0	0.6		4.842	6.08			
	2	W4	W4BH307	Chalk	20/07/2017 16:58	1008	0	0	0.4	0.1	0	0	20.3	20.4	0	0	3.9	3.13	4.52	9.97	10:02	14:41	20/07/2017
	2	W4	W4WS313	Made Ground	20/07/2017 16:38	1008	-7.2	0	0	4.6	0	2.5	19.9	9.1	0	0	0.3		0.365	2.77			
	2	W4	W4WS314	Made Ground	20/07/2017 16:46	1008	0	0	0	4.5	0	32.4	20.1	0	0	0	3			2.08			
	2	W4	W4WS315	Made Ground	20/07/2017 16:22	1008	0	0	0.2	2.1	0	0	20	18.6	0	0	0.6		2.452	4.25			
	2	W4	W4WS316	Made Ground	20/07/2017 16:52	1008	0	0	0	18.1	0	17.3	20.4	0	0	0	11.8		2.592	2.62			
	3	W5	W5BH303	Chalk	20/07/2017 14:44	1008	-48	0	0	0.2	0	0	20.5	20.5	0	0	0		4.442	11.17			
	3	W5	W5WS306	Chalk	20/07/2017 15:12	1008	0	0	0	0	0	0	20.4	20.7	0	0	0			1.49			
	3	W5	W5WS307c	Made Ground	20/07/2017 15:20	1008	0	0	0	3.7	0	0	20.5	17.5	0	0	0		1.889	1.99			
Visit 3	3	W7	W7WS308	Made Ground	20/07/2017 14:56	1009	0	0	0	0.3	0	0	20.4	20.3	0	0	0		2.068	2.09			
	3	W7	W7WS310	Made Ground	20/07/2017 15:04	1009	0	0	0	1.2	0	0	20.5	19.9	0	0	0		2.013	2.06			
	3	W7	W7WS311	Superficial Deposits	20/07/2017 14:48	1008	0	0	0	0.5	0	0	20.3	20.2	0	0	0		2.58	3.73			
	1	W9	BH204	Lambeth Group	21/07/2017 11:46	1007	0	0	0	0	0	0	20.4	20.5	0	0	0		2.65	7.66			
	1	W9	BH205	Lambeth Group	21/07/2017 12:02	1007	0.4	0	0	2.3	0	0	20.3	18.7	0	0	0		2.2	8.6			
	1	W9	BH206	Lambeth Group	21/07/2017 11:40	1007	0	0	0	0.1	0	0	20.4	20.4	0	0	0		0.92	5.98			
	1	W9	BH208	Made Ground	21/07/2017 11:31	1007	0	0	0.1	1.4	0	0	20.1	19.1	0	0	0		1.55	2.94			
	1	W9	BH209	Lambeth Group	21/07/2017 11:12	1008	-14	0	0	1.6	0	0	20.5	15.4	0	0	0		1.83	3.24			
	1	W9	W9BH309	Lambeth Group	21/07/2017 10:33	1008	0	0	1.3	1.8	0	0	19.6	18.7	0	0	1.2		2.865	6.14			
	1	W9	W9BH310	Lambeth Group	21/07/2017 10:17	1009	-5.6	0	0	0	0	0	19.9	20.3	0	0	0.1		2.7	7.62			
	1	W9	W9WS323	Made Ground	21/07/2017 10:27	1009	0	0	0	10.9	0	0	20.2	12.4	0	0	0		2.82	2.86	09:47	15:40	21/07/2017
	1	W9	W9WS324	Made Ground	21/07/2017 10:49	1008	0	0	0	1	0	0	20.3	19	0	0	0.5			2.65			
	1	W9	W9WS325c	Superficial Deposits	21/07/2017 10:09	1009	0	0	0	1.5	0	0	20.2	19.5	10	0	1		1.72	2.58			
	1	W9	W9WS326	Made Ground	21/07/2017 10:44	1008	0	0	0	1.8	0	0	20.4	19.4	0	0	0			1.61			
	1	W9	WS203	Made Ground	21/07/2017 11:54	1008	0	0	0	1.6	0	0	20.3	19.1	0	0	0			1.75			
	1	W9	WS206	Lambeth Group	21/07/2017 12:11	1007	0	0	0	7.7	0	0	20.3	13.4	0	0	0.5		1.36	2.54			
	1	W9	WS211	Lambeth Group	21/07/2017 11:21	1008	-23.4	0	0	5.9	0	0	19.9	13.2	0	0	0		0.92	2.16			
	1	W9	WS212	Superficial Deposits	21/07/2017 11:03	1008	0	0	0	2.2	0	0	20	18.6	0	0	0		1.57	1.82			

Tipner West
Ground Gas Monitoring Records

Monitoring Event	Site Area	Sub Area	Location	Screened Strata	Date Time	Borehole Pressure mb	Initial gas flow rate l/hr	Steady gas flow rate l/hr	Initial Carbon Dioxide % v/v	Steady Carbon Dioxide % v/v	Initial Methane % v/v	Steady Methane % v/v	Initial Oxygen % v/v	Steady Oxygen % v/v	Carbon Monoxide % v/v	Hydrogen Sulphide PPM	PID	Dip to LNAPL	Dip to Groundwater m bgl	Dip to Base m bgl	Portsmouth Harbour Tide Times		
																					High Tide	Low Tide	Date
	1	W8	W8WS317c	Superficial Deposits	02/08/2017 12:05		0	0	3	6.6	0	0	18.3	14.3	0	0	0		1.55	2.1			
	1	W8	W8WS318	Superficial Deposits	02/08/2017 11:55		0	0	4	1	0	0	10.3	17.8	0	0	0		1.32	2.05			
	1	W8	W8WS319	Superficial Deposits	02/08/2017 11:40		0	0	0.2	0.2	0	0	20.3	20.4	0	0	0		0.9	4.61			
	2	W3	W3WS301	Superficial Deposits	02/08/2017 10:59	1016	0	0	6.3	4	0.3	0.1	19	11.7		0	0		1.74	2.57			
	2	W3	W3WS304	Made Ground	02/08/2017 10:51	1016	0	0	15.3	15.1	0.1	2	18.7	0.2		0	0.9		1.67	2.06			
	2	W3	W3WS305	Made Ground	02/08/2017 10:32	1015	0	0	15.3	16.4	0.1	0.1	15	1.8		0	0			1.12			
	2	W4	W4BH304	Chalk	02/08/2017 09:07		0	0	4.3	2	0	0	15.1	18.7	0	0			2.83	8.19			
	2	W4	W4BH306	Superficial Deposits	02/08/2017 08:46		0	0	8.8	8.6	0	0	5.6	5.7	2	0			4.81	6.43			
	2	W4	W4BH307	Chalk	02/08/2017 09:38		0	0	0.4	0.2	0.3	0.2	20.3	20.8					3.37	11.61			
	2	W4	W4WS313	Made Ground	02/08/2017 09:15		1.5	1.5	5.2	5	1.4	1.4	12.8	12.8					0.51	2.89	07:08	13:32	02/08/2017
	2	W4	W4WS314	Made Ground	02/08/2017 09:22		0	0	4.5	4.5	33.1	32.9	0.3	0.3	1					2.18			
	2	W4	W4WS315	Made Ground	02/08/2017 08:40		0.3	0.3	3.3	3.3	0.1	0.1	17.7	17.7	1	1			2.59	4.51			
	2	W4	W4WS316	Made Ground	02/08/2017 09:29		0	0	18.7	18.7	20.2	20.2	0.1	0.1					2.87	2.9			
	3	W5	W5BH303	Chalk	02/08/2017 10:42		1.5	1.5	2.7	1.6	0	0	18	18.9	2				4.36	11.33			
	3	W5	W5WS307c	Made Ground	02/08/2017 10:30		0	0	3.3	3.2	0	0	18.3	18.3	1				2.11	2.19			
	3	W7	W7WS308	Made Ground	02/08/2017 09:31	1017	0	0	0.1	0.3	0.1	0.1	21.3	21		0	0.1			2.1			
Visit 4	3	W7	W7WS310	Made Ground	02/08/2017 09:24	1015	0	0	0.1	0.4	0.1	0.1	21.2	20.9		0	0		2.03	2.05			
	3	W7	W7WS311	Superficial Deposits	02/08/2017 09:16		0	0	0.1	0.9	0.1	0.1	21.2	20.5		0	0		3.54	3.75			
	1	W9	BH204	Lambeth Group	04/08/2017 12:12	1014	1.6	0.2	0.7	0	0.1	0.1	20.2	20.7	0	0			2.72	7.74			
	1	W9	BH205	Lambeth Group	04/08/2017 10:30		0.1	0	0.9	1.1	0.1	0.2	19.3	19.5	0	0	0		2.22	8.45			
	1	W9	BH208	Made Ground	04/08/2017 12:13	1012	0	0	10.9	2.2	0	0	14.3	17.7	0	0	0		1.39	2.79			
	1	W9	BH209	Lambeth Group	04/08/2017 12:52	1012	19.5	0	2.1	2	0	0	18.2	15.9	0	0	0		1.68	3.12			
	1	W9	W9BH309	Lambeth Group	04/08/2017 15:13	1012	3.5	0	0.8	2.2	0	0	28.4	18.7	0	0	0		2.87	6.21			
	1	W9	W9BH310	Lambeth Group	04/08/2017 15:53	1012	0	0											2.73	7.69			
	1	W9	W9WS323	Made Ground	04/08/2017 11:57	1011	0		1.2		0		19.8	8.3	0	0	0			2.93			
	1	W9	W9WS324	Made Ground	04/08/2017 10:38	1011	0	0	0.9	0.1	0	0	20.5	20.6	0	0	0			2.77	09:46	15:25	04/08/2017
	1	W9	W9WS325c	Superficial Deposits	04/08/2017 10:06	1011	23	0	0.6	1.6	0	0	20	19.9					1.67	2.57			
	1	W9	W9WS326	Made Ground	04/08/2017 11:09	1011	0	0	0.3	1.4			20.3	19.5	0	0	0			1.66			
	1	W9	WS202	Made Ground	04/08/2017 09:00		0	0	7.3	7.5	0.1	0.1	14.6	14.3	0	0	0			2.52			
	1	W9	WS203	Made Ground	04/08/2017 11:45		0	0	0	0	0.1	0.1	20.1	20.3	0	0	0		1.6	1.72			
	1	W9	WS204	Made Ground	04/08/2017 11:10		0.1	0	0.2	5.8	0.1	0.1	20	16.1	0	0	0			1.63			
	1	W9	WS207	Made Ground	04/08/2017 09:15		0	0											1.5	4.92			
	1	W9	WS212	Superficial Deposits	04/08/2017 09:45		0	0.1	1.3	2.3	0.1	0.1	20.2	19.3	0	0	0		1.3	1.57			

Tipner West
Ground Gas Monitoring Records

Monitoring Event	Site Area	Sub Area	Location	Screened Strata	Date Time	Borehole Pressure mb	Initial gas flow rate l/hr	Steady gas flow rate l/hr	Initial Carbon Dioxide % v/v	Steady Carbon Dioxide % v/v	Initial Methane % v/v	Steady Methane % v/v	Initial Oxygen % v/v	Steady Oxygen % v/v	Carbon Monoxide % v/v	Hydrogen Sulphide PPM	PID	Dip to LNAPL	Dip to Groundwater m bgl	Dip to Base m bgl	Portsmouth Harbour Tide Times		
																					High Tide	Low Tide	Date
	1	W8	W8BH308	Lambeth Group	31/08/2017 13:55	1021	-0.4	-0.1	0.5	0.1	0	0	19.5	20.2		1			0.92	6.72			
	1	W8	W8WS317c	Superficial Deposits	31/08/2017 13:23		0		6.2	6.4	0.2	0.1	17.4	15.5		0			1.59	1.98			
	1	W8	W8WS318	Superficial Deposits	31/08/2017 13:40	1021	0	0	9.2	1.3	9.4	1	18.5	17.3		1			1.4	1.94			
	1	W8	W8WS319	Superficial Deposits	31/08/2017 14:06	1021	0	0	0.2	0.3	0.1	0.1	20.5	20.4		1			1.12	4.5			
	1	W8	W8WS321	Superficial Deposits	31/08/2017 14:16		0	0											0.429	0.97			
	2	W3	W3WS301	Superficial Deposits	31/08/2017 11:40	1020	0	0	5.3	0.5	0.1	0.1	12.7	19.5		0			1.71	2.44			
	2	W3	W3WS304	Made Ground	31/08/2017 11:27	1020	0	-0.1	1.4	16.6	0.1	0.1	19.6	0.5		0			1.5	2.91			
	2	W3	W3WS305	Made Ground	31/08/2017 11:17	1019	0	0	15.5	16.5	0.2	0.2	10.5	0.2		0				1			
	2	W4	W4BH304	Chalk	31/08/2017 11:00		0	0	4	4	0	0	19.4	16.5	0	0	0		2.71	7.95			
	2	W4	W4BH306	Superficial Deposits	31/08/2017 10:50		0	0	8	5.7	0	0	18.3	11.6	2	1	0		4.82	6.28			
	2	W4	W4BH307	Chalk	31/08/2017 11:40		0	0	0.4	0.1	0.5	0.2	20.4	20.7	0	0	0.5		4.55	0	08:27	13:01	31/08/2017
	2	W4	W4WS313	Made Ground	31/08/2017 11:10		-2.8	-1.3	2.5	4.4	1.1	1.4	20	13.5	1	0	0		0.41	2.8			
	2	W4	W4WS314	Made Ground	31/08/2017 11:20		0	0	3.7	3.7	31.8	32.2	16.2	0.2	0	0	0			1.96			
	2	W4	W4WS315	Made Ground	31/08/2017 10:45		6.1	3.6	4.5	4.6	0	0	17.5	18.6	2	0	0		2.35	4.29			
	2	W4	W4WS316	Made Ground	31/08/2017 11:30		0	0	16.7	18	16.3	17.1	16.9	0.2	0	1	0			2.51			
	3	W5	W5BH302	Chalk	31/08/2017 14:10		0	0	10.5	11	0	0	18	1.9	1	1	0		3.93	7.68			
	3	W5	W5BH303	Chalk	31/08/2017 14:00		-7.4	-5	0.4	2.3	0	0	20.6	17.9	2	1	0		4.5	11.31			
	3	W5	W5WS307c	Made Ground	31/08/2017 13:50		0	0	3.5	3.6	0	0	17.7	16.9	0	0	0			1.96			
	3	W7	W7WS308	Made Ground	31/08/2017 13:40		0	0	0.7	0.4	0	0	20.2	20.2	0	0	0			2.1			
	3	W7	W7WS310	Made Ground	31/08/2017 13:15		0	0	2.3	2.4	0	0	20	17.1	0	0	0			2.05			
Visit 5	3	W7	W7WS311	Superficial Deposits	31/08/2017 13:30		0	0	0.7	0.4	0	0	20.2	20.2	0	0	0		2.57	3.74			
	1	W9	BH204	Lambeth Group	01/09/2017 12:15	1025	0	0	0.3	0.1	0.1	0.1	19.7	19.9		1			2.65	7.45			
	1	W9	BH205	Lambeth Group	01/09/2017 12:51	1025	0	-0.1	2.6	0.9	0.1	0	18.3	18.6		0			2.49	8.33			
	1	W9	BH206	Lambeth Group	01/09/2017 12:00		0	0	1.4	0.4	0	0	19.9	20	0	0	0		0.74	5.85			
	1	W9	BH207	Superficial Deposits	01/09/2017 12:30		0	0	5.9	5.9	0	0	20.1	12.8	0	0	0		1.65	7.06			
	1	W9	BH208	Made Ground	01/09/2017 11:15		0	0	2.4	2.5	0	0	19.9	17.4	0	0	0		1.39	2.78			
	1	W9	BH209	Lambeth Group	01/09/2017 11:45		0	0	1.6	1.6	0	0	19.5	17.5	0	0	0		1.82	3.13			
	1	W9	W9BH309	Lambeth Group	01/09/2017 15:29		-2.9	-0.6	1.7	2.2	0	0	19.1	18.4	4	1	0		3.09	6.34			
	1	W9	W9BH310	Lambeth Group	01/09/2017 14:24	1024	0	0	0.1	0.1	0.1	0.1	20.5	20.3		0	0		2.95	7.69			
	1	W9	W9WS323	Made Ground	01/09/2017 15:00		0	0	9.5	10.1	0	0	17.2	12.2	1	1	0		2.89	2.96			
	1	W9	W9WS324	Made Ground	01/09/2017 14:37	1025	0	0	0.5	5	0.1	0.1	20.3	15.2		1	0			2.79			
	1	W9	W9WS325c	Superficial Deposits	01/09/2017 14:16		-0.2	-0.9	1.6	1.7	0.2	0.1	20.2	19.8		0	0		1.81	2.62	09:49	14:07	01/09/2017
	1	W9	W9WS326	Made Ground	01/09/2017 14:15		0	0	0.1	0.1	0	0	20.6	20.6	1	0	0		1.71	1.72			
	1	W9	WS202	Made Ground	01/09/2017 11:43	1024	0	0	5.7	9.6	0.1	0.1	17.8	9.4		1			2.03	2.5			
	1	W9	WS203	Made Ground	01/09/2017 12:26	1025	0	-0.1	0.5	2.3	0	0	19.9	18.2		1				1.63			
	1	W9	WS204	Made Ground	01/09/2017 12:41		0	0	10.1	7.9	0.1	0.1	19.5	10.4		1				1.5			
	1	W9	WS206	Lambeth Group	01/09/2017 11:19	1023	0	-0.1	7.4	7.7	0.2	0.1	19.3	12.8		0			1.23	1.5			
	1	W9	WS207	Made Ground	01/09/2017 11:57	1025	0	0	1.4	0.5	0.1	0.1	17.5	19.6		1			1.54	4.74			
	1	W9	WS211	Lambeth Group	01/09/2017 11:30		-11.3	-2.7	1.1	8	0	0	20.1	14.4	0	0	0		0.98	2.16			
	1	W9	WS212	Superficial Deposits	01/09/2017 12:15		0	0	3.2	3.2	0	0	19.5	18.8	0	0	0		1.45	1.58			
	3	W5	W5WS306	Chalk	01/09/2017 15:21		0	0	0.1	0.2	0.1	0.1	20.6	20.7		0	0			1.48			

Tipner West
Ground Gas Monitoring Records

Monitoring Event	Site Area	Sub Area	Location	Screened Strata	Date Time	Borehole Pressure mb	Initial gas flow rate l/hr	Steady gas flow rate l/hr	Initial Carbon Dioxide % v/v	Steady Carbon Dioxide % v/v	Initial Methane % v/v	Steady Methane % v/v	Initial Oxygen % v/v	Steady Oxygen % v/v	Carbon Monoxide % v/v	Hydrogen Sulphide PPM	PID	Dip to LNAPL	Dip to Groundwater m bgl	Dip to Base m bgl	Portsmouth Harbour Tide Times		
																					High Tide	Low Tide	Date
	1	W8	W8BH308	Lambeth Group	28/09/2017 15:54		-0.2	0	0.1	0.1	0.1	0.1	20.8	20.7		0			0.8	3.74			
	1	W8	W8WS317c	Superficial Deposits	28/09/2017 15:11		0	0	5.7	5.9	0.1	0.1	20.8	15		0			1.51	3.74			
	1	W8	W8WS318	Superficial Deposits	28/09/2017 15:28		4.8	3.8	0.6	1.2	0.1	0.1	20.4	15.5		0			1.1	3.74			
	1	W8	W8WS319	Superficial Deposits	28/09/2017 16:06		5.6	1.4	0.9	0.6	0.1	0.1	20.8	20.6		0			0.62	3.74			
	2	W3	W3WS301	Superficial Deposits	28/09/2017 12:12		-0.1	0	5.3	1	0.1	0.1	18.1	19.1		0			1.6	3.74			
	2	W3	W3WS304	Made Ground	28/09/2017 11:52		0.1	0	12	13.1	0.1	1.2	12.4	0.2		0			1.71	3.74			
	2	W3	W3WS305	Made Ground	28/09/2017 11:44		0.1	0.1	13.4	14.2	0.2	0.2	5.4	0.3		0				3.74			
	2	W4	W4BH306	Superficial Deposits	28/09/2017 10:25		0	0	6.1	3.3	0.1	0.1	16.1	16.8		1			4.4	3.74			
	2	W4	W4BH307	Chalk	28/09/2017 10:44		0	0	0.4	0.2	0.5	0.3	19.8	20.2		0	0	3.6	4.39	3.74			
	2	W4	W4WS313	Made Ground	28/09/2017 10:00		9.8	5.9	0.2	5.9	0.8	10.3	19.4	6.1		0			0.16	3.74	16:55	10:19	28/09/2017
	2	W4	W4WS314	Made Ground	28/09/2017 09:31	1021	0	0	3.6	3.5	0.2	30.8	13.3	0.1		0				3.74			
	2	W4	W4WS315	Made Ground	28/09/2017 10:32		0	0	0.3	5.8	0.2	0.5	19.3	15.6		0			2.11	3.74			
	2	W4	W4WS316	Made Ground	28/09/2017 10:39		0	-0.1	12.1	12.7	16.9	17.7	7.6	0.3		0			2.51	3.74			
	3	W5	W5BH302	Chalk	28/09/2017 13:05		-0.1	-0.2	11.7	12	0.1	0.1	2.7	1.5		0			4	3.74			
	3	W5	W5BH303	Chalk	28/09/2017 12:57		-0.12	-0.1	2.6	0.4	0.1	0.1	19.8	20.4		0			4.51	3.74			
	3	W5	W5WS307c	Made Ground	28/09/2017 13:16		-0.1	-0.1	3.4	3.5	0.1	0.1	18.3	16.8		0			1.88	3.74			
	3	W7	W7WS308	Made Ground	28/09/2017 13:37		-0.1	-0.1	0.1	0.6	0.1	0.1	20.5	20.1		0				3.74			
	3	W7	W7WS310	Made Ground	28/09/2017 13:32		-0.1	-0.1	2	2	0.1	0.1	17.2	17		0			1.98	3.74			
	3	W7	W7WS311	Superficial Deposits	28/09/2017 13:44		-0.1	-0.1	3.1	1.5	0.1	0.1	18.3	19.3		0			2.45	3.74			
Visit 6	1	W9	BH204	Lambeth Group	29/09/2017 10:46	-1.38	-0.6	-0.6	0.4	0.1	0	0	20.7	20.9	0	0			2.9	3.74			
	1	W9	BH205	Lambeth Group	29/09/2017 10:01		0	-0.2	2.9	2.9	0.1	0.1	18.4	18.6		0			2.72	3.74			
	1	W9	BH206	Lambeth Group	29/09/2017 11:00	0.05	0	0	0.9	0.2	0	0	20.8	20.8	0	0			0.51	3.74			
	1	W9	BH207	Superficial Deposits	29/09/2017 09:52	0.19	0	0	5.3	1.9	0	0	20.1	18.4	0	0			1.57	3.74			
	1	W9	BH208	Made Ground	29/09/2017 10:37	0.14	0	0	2.2	2.4	0	0	20.2	17	0	0			1.49	3.74			
	1	W9	BH209	Lambeth Group	29/09/2017 10:16	0.21	0	0	3.6	3.6	0	0	20.2	17.3	0	0			2.01	3.74			
	1	W9	W9BH309	Lambeth Group	29/09/2017 11:51	-5.3	-2.9	-0.5	2.6	3.3	0	0	18.8	17.8	2	0			2.97	3.74			
	1	W9	W9BH310	Lambeth Group	29/09/2017 11:50		0	-0.1	0.2	0.1	0.1	0.1	21.2	21.4		0			2.91	3.74			
	1	W9	W9WS323	Made Ground	29/09/2017 12:03		0	0	7.5	9.8	0	0	19.5	12.2		0				3.74			
	1	W9	W9WS324	Made Ground	29/09/2017 11:40		0	0	1.6	1.5	0.1	0.1	21.3	20.2		0				3.74	07:46	12:29	29/09/2017
	1	W9	W9WS325c	Superficial Deposits	29/09/2017 11:28		2.5	1.2	1.8	1.8	0.1	0.1	21.4	20.6		0			1.71	3.74			
	1	W9	W9WS326	Made Ground	29/09/2017 11:44	0.28	0	0	2.9	3.2	0	0	20.4	17.6	0	0				3.74			
	1	W9	WS202	Made Ground	29/09/2017 10:51		0	0	7.4	10.3	0.1	0.1	20.4	11.7		0			2.17	3.74			
	1	W9	WS203	Made Ground	29/09/2017 10:29		0	0	1.9	2.2	0.1	0.1	20.7	19.4		0			1.61	3.74			
	1	W9	WS204	Made Ground	29/09/2017 10:14		0	0	10.5	8.5	0.1	0.1	20.4	11.1		0				3.74			
	1	W9	WS206	Lambeth Group	29/09/2017 09:40		9	1.5	8.6	9.1	0.1	0.1	16.4	7		1			1.03	3.74			
	1	W9	WS207	Made Ground	29/09/2017 10:40		0	0.1	1.5	1.5	0.1	0.1	20.8	19.4		0			1.67	3.74			
	1	W9	WS211	Lambeth Group	29/09/2017 10:28	-2.35	0	0	6.5	6.8	0	0	20.5	14.7	0	0			1.45	3.74			
	1	W9	WS212	Superficial Deposits	29/09/2017 09:57	-0.5	0	0	2.9	2.9	0	0	20.1	18.1	0	0			1.54	3.74			
	3	W5	W5WS306	Chalk	29/09/2017 11:13	0.14	0	0	0.6	3.5	0	0	20.6	17.5	0	0				3.74			

Appendix D.5

UXO RECORDS

RPS Energy

Daily Work Journal

RPS Energy, Explosives Engineering Services

Tel: +44 (0)1291 621821
vi.storey@rpsgroup.com

Site Manager:	C. SHORE	Date:	11-8-16	Serial:		Page:	1
Project:	TILNER RANGES	Client:	WSP.			Project No:	466 0699
Task: (survey, Site Support, etc)	GROUND SURVEY BEFORE TRIAL P.I.T + BORE HOLES - UXO DETECTION					No. of RPS Engineers on Site:	ONE

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH VALLON	1	✓	C. SHORE	SM
CHEMPRO	1	✓	C. SHORE	SM

Time Arrived on Site:	0830	Time of Leaving Site:	1715.

Time	Task	Notes
0830	On Site.	
0900	Site Induction	
1010		Ground Survey and BH 206 - clear to dig 1.5M
1015		Ground Survey and BH 209 - clear to dig to 1.5M
1020		Ground Survey and BH 208 - clear to dig to
1030		Ground Survey and WS 208 - clear to dig.
1120		Start digging by hand to 1.5M BH 209
1140		Start digging by hand to 1.5M BH 206
1200		BH 209 - Hit hard flint at 1.0M. Clear to dig to 6M
1210		BH 206 Hit hard flint at 1.0M clear to dig to 6M.
		* Soil Sample taken at 0.5M.
1540	All clear to dig.	Test Pits - 208, 212, 210, 211
		Hand Pits - 202, 201, 203, 204, 205, 206, 208
		Window Sampled - 211, 210, 209, 212
		Bore Hole - 207
	*	Hand Pit N° 207. Large area of contamination
1715.		Secure from Site.

RPS Site Manager:	C. SHORE	Client Representative	S. SMEDLEY
Signature:		Signature:	

RPS Energy

Daily Work Journal

RPS Energy, Explosives Engineering Services

Tel: +44 (0)1281 621821
Email: uxoservices@rpsgroup.com (Marine)/M.storey@rpsgroup.com (International & UK)

Site Manager:	G SHORE	Date:	12-8-16	Serial:		Page:	1
Project:	TIDER LANE	Client:	WSP			Project No:	EE10699
Task: (survey, Site Support, etc)	Ground survey before trial pits + bore holes - CWA detection					No. of RPS Engineers on Site:	ONE.

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
D H VALLON	1	✓	G SHORE	SH
CHEMPRO	1	✓	G SHORE	SH.

Time Arrived on Site:	0720	Time of Leaving Site:	1415

Time	Task	Notes
0720	On Site.	
0750		Ground survey over BH 208. Contaminated area - Overwater
0815.	Ground Survey	Over TP's 213 & 209. Clear to dig.
0815	BH 204	Start digging by hand on BH 204 to 1.5M.
0835	BH 208	Start digging by hand on BH 208 to 1.5M.
0840	BH 204	Unable to dig past 0.3M due to hard ground.
		~~Bad~~ Soil Sample taken @ 0.3M.
		Drill down to natural soil.
0855	BH 204	BH down to 1.5M. - Hard clay. Mag survey taken - clear to dig.
0930	BH 208	Bore hole down to 1.1M. Full of clinker & metal engine parts. Soil sampled taken at 0.5m & 1.0m. Cleart to dig to natural ground.
1110	BH 208.	Met natural soil at 1.3M. Unable to take Mag reading due to casing. Re-drill down to 1.5M.
1215.	CLEAR TO DIG	TEST PITS:- 202, 204, 205 & 404
		WINDOW SAMPLE:- 207, 202, 206, 204, 205
		BORE HOLE:- 202, 203, 207
1415.		Secure from Site.

RPS Site Manager:	G SHORE	Client Representative	S. SMEDLEY
Signature:		Signature:	

Daily Work Journal

RPS Group Plc
Conrad House, Beaufort Sq
Chepstow, NP16 5EP

Tel: 01291 621821
Email: eelco-ord@rpsgroup.com

Site Manager:	G Shore	Date:	15·8·16	Serial:		Page:	1 of
Project:	Tilse Ranges.	Client:	WSP			Project No:	EES 0657
Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring					No. of RPS Engineers on Site:	ONE

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1	✓	G Shore	Site Manager
Chemipro	1	✓	G Short	SM.

Time Arrived on Site:	0725	Time of Leaving Site:	1700

Time	Task	Notes
0725	On Site.	
0800	UXO Induction	To all new personnel.
0830	BH 208	Bore hole mag check at 4·0M Clear to dig to 5M.
0855	BH 201	Mag check and BH 201. Clear to dig to 1·5M by hand.
		If BH in CWA area. Chemipro check whilst digging
0915	BH 201	Start digging to 1·5M by hand.
1035	BH 208	Complete.
1045	BH 206	Complete.
1115	WS 208	Start digging by hand to 1·5M.
1118	WS 208	Due to hard ground, unable to dig any further by hand - 0·4M.
1155	WS 208	BH mag check at 2·5M. All clear to dig to 5M.
1280	WS 208	Complete.
1300	BH 201	BH at 1·5M - BH Mag check. CTD to 3M.
1300	WS 211	Start digging by hand to 1·5M.
1400	WS 211	At 1·5M. CTD to 5M.
1420	BH 205	BH at 2M. Mag check. CTD to 5M.
1420	WS 210	Start digging by hand to 1·5M.
1435	BH 201	Suspect ASBESTOS at this location. All digging stopped OFN
1525	WS 210	At 1·5M CTD to 5M.
1525	WS 211	Complete.
1530	BH 201	ASBESTOS confirmed. No more digging allowed. Found at 3·8M.
1610	BH 205	BH Mag check at 5M. All CTD to 10M. (Hard dig)
1620	WS 210	Complete.
1655	WS 212	At 1·5M. CTD to 5M.
1700		Secure from Site

RPS Site Manager:	G Shore	Client Representative	
Signature:		Signature:	

Daily Work Journal

RPS Group Plc
Conrad House, Beaufort Sq
Chepstow, NP16 5EP

Tel: 01291 621821
Email: cetco-ord@rpsgroup.com

Site Manager:	G Shore	Date:	16.8.16	Serial:		Page:	1 of
Project:	TIPNER LANE RANGES	Client:	NSP			Project No:	EES0699
Task: (survey, Site Support, etc)	UXO Site Support / CWA MONITORING					No. of RPS Engineers on Site:	ONE

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH VALMONT	1	✓	G Shore	Site Manager
CHEMRO	1	✓	G Shore	SM

Time Arrived on Site:	0815.	Time of Leaving Site:	1700

Time	Task	Notes
0815	On Site.	
0820	WS 212.	~~Start~~ ~~drilling~~ ~~to 5m~~. Complete
0850	WS 209	Start digging by hand to 1.5M.
1005	TP 208	Start ~~dig~~ excavating. Mag check at 0.5, 1.0, ETB 5M
1013	BH203	BH Mag check at 1.5M. Clear to 2.5M.
1143	TP 208	Complete.
1215	WB 209	Complete.
1225	TP 212	Start excavating. UXO on watch.
1515	WS 207	Start digging to 1.5M by hand. Soil Sample taken @1.0M
1530	TP 212	Complete.
1445	WB 205	Complete.
1445	TP 213	Start excavating. UXO on watch. ~~Start Sample taken~~
1910	BH 205	Complete.
1630	WS 207	Complete. Chemical mon. toring clear.
1550	BH 207.	Start digging by hand to 1.5M.
1700		Secure from Site.

RPS Site Manager:	G Shore	Client Representative	
Signature:		Signature:	

Daily Work Journal

RPS Group Plc
Conrad House, Beaufort Sq
Chepstow, NP16 5EP

Tel: 01291 621621
Email: eetco-ord@rpsgroup.com

Site Manager:	G Shore	Date:	17.8.16	Serial:		Page:	1 of
Project:	TIPNER LANE RANGE	Client:	MOD			Project No:	EES 0699
Task: (survey, Site Support, etc)	UXO Site Support / CWA MONITORING					No. of RPS Engineers on Site:	02.

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
GH VALLON	1	✓	G Shore	Site Manager
CHEMPRO	1	✓	C. SHORE	SM

Time Arrived on Site:	0730	Time of Leaving Site:	1710

Time	Task	Notes
0730	On Site	
0745	BH 207	BH Mag check. CTD to 3m.
0805	WS 208	Start digging by road to 1.5m.
0820	TP 213	Resume excavating. down to 2mtr.
0915	TP 213	Complete.
0930	TP 209	Start excavating. ~~Some samples taken to 0.5m.~~
0940	BH 202	Start digging by road to 1.5m
1050	WS 202	Stopped drilling at 3m. Due to Stoppage. Mag check conducted @3m. Negative reading observed. Still in Made up ground. Stopped drilling at 3m. Completed.
1130	TP 209	Completed.
1200	TP 201	Start excavating large hole metal pipe found at
1450	TP 201	Complete.
1510	TP 203	Start excavating.
1600	TP 203	Stop digging due to suspect ASBESTOS.
1430	WS 204	Start digging by road
1630	WS 204	Mag check at 2.5m. CTD to 3.5m
1650	BH 207	Complete
1710		Secure from Site

RPS Site Manager:	G Shore	Client Representative	
Signature:		Signature:	

Daily Work Journal

RPS Group Plc
Conrad House, Beaufort Sq
Chepstow, NP16 5EP

Tel: 01291 621821
Email: eolco-ord@rpsgroup.com

Site Manager:	G Shore	Date:	18-8-16	Serial:		Page:	1 of
Project:	TIPNER LANE RANGE	Client:	WSP			Project No:	EES 0699
Task: (survey, Site Support, etc)	UXO Site Support / CWA MONITORING					No. of RPS Engineers on Site:	ONE

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH VALLON	1	✓	G Shore	Site Manager
CHEMPRO	1	✓	G SHORE	SM.

Time Arrived on Site:	0730	Time of Leaving Site:	

Time	Task	Notes
0730	On Site	
0745	BH 209	BH mag check at 2m. CTD dig drill to 7.5m
0810	NS 204	Refusal at 3.5m. Chalk + flint. Small mag reading
0830	BH202	BH mag check at 7.5m. CTD to 6m.
0840	TP210	Start excavating
0910	NS 206	Start digging by hand to 1.5m
1010	NS 207A	Dig by hand to 1m for soil samples. Soil samples taken at 0.3m & 0.7m.
1130	HP 208.	Start digging by hand. 2x chemical soil samples taken at 0.3m & 0.65m
1300	HP 210	Start digging by hand 2x chemical soil samples taken. 0.3 & 0.75m
1505	HP 210	Complete.
1550		Soil Samples collected from Site. A. ZAHETER YF31KPA ASAP EXPRESS.

RPS Site Manager:	G Shore	Client Representative	
Signature:		Signature:	

RPS Energy

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Riverside Court, Beaufort Park,
Chepstow, Monmouthshire
NP16 5UH

Tel: +44 (0) 1291 621821
Email: vl.storey@rpsgroup.com

RPS SITE ATTENDANCE REGISTER

Client	NSP	Site	TIPNER LANE	EES	0699

Week Beginning:		Week No:	

Day/Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				11-8-16	12-8-16	
Write in the name of all RPS Energy Ltd Explosive Engineers on site daily				C. SHELL	C. SHELL	
Total on site:					1	

Remarks:

Signed by Site Manager:	**Signed by** On behalf of Client:

Copy 1 for RPS Copy 2 for Client

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Riverside Court, Beaufort Park,
Chepstow, Monmouthshire.
NP16 5UH

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Email: ukoeservices@rpsgroup.com (Marine)vi.storey@rpsgroup.com (International & UK)

RPS SITE ATTENDANCE REGISTER

Client	WSP	Site	TIPNER LANE	EES	0699

Week Beginning:		Week No:	

Day/Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Write in the name of all RPS Energy Ltd Explosive Engineers on site daily	C. SHORE	C. SHORE	C. SHORE.	C. SHORE.		
Total on site:	ONE	ONE	ONE	ONE.		

Remarks:

Signed by Site Manager:	**Signed by** On behalf of Client:

Copy 1 for RPS Copy 2 for Client

RPS Energy Ltd
Riverside Court, Beaufort Park,
Chepstow, Monmouthshire
NP16 5UH

Tel: +44 (0) 1291 621821
Email: vl.storey@rpsgroup.com

RPS SITE ATTENDANCE REGISTER

Client	WJ	Site	TYNE RANGE PORTSMOUTH	EES	0699

Week Beginning:		Week No:	

Day/Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	17.04.17	18.04.17	19.04.17	20.04.17	21.04.17	
Write in the name of all RPS Energy Ltd Explosive Engineers on site daily		C.SHOLE	C.SHOLE	C.SHOLE	C.SHOLE	
Total on site:	~~ONE~~	ONE	ONE	ONE	ONE	

Remarks: BANK HOLIDAY MONDAY.

Signed by Site Manager:	**Signed by** On behalf of Client:

Copy 1 for RPS Copy 2 for Client

RPS Energy

RPS Energy Ltd
Riverside Court, Beaufort Park,
Chepstow, Monmouthshire
NP16 5UH

Tel: +44 (0) 1291 621821
Email: vl.storey@rpsgroup.com

RPS SITE ATTENDANCE REGISTER

Client	WSP	Site	TIPNER LANE	EES	0699

Week Beginning:	10.04.17	Week No:	

Day/Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	10.4.17	11.4.17	12.4.17	13.4.17		
Write in the name of all RPS Energy Ltd Explosive Engineers on site daily	C. SHORE	C. SHORE	C. SHORE	C. SHORE		
Total on site:	ONE	ONE	ONE	ONE		

Remarks:

Signed by Site Manager:	**Signed by** On behalf of Client:

Copy 1 for RPS Copy 2 for Client

RPS

Daily Work Journal

RPS Group Plc
Conrad House, Beaufort Sq
Chepstow, NP16 5EP

Tel: +44 (0)1291 621821
Email: vi.elorey@rpsgroup.com

Site Manager:	G Shore	Date:	10.04.17	Serial:	01	Page:	1 of 1
Project:	Tipner Lane Portsmouth	Client:	WSP			Project No:	EES 0699

Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring	No. of RPS Engineers on Site:	One

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1		G Shore	Site Manager
Cable & drum	1			
CHECK Rig	1			

Time Arrived on Site:	0750	Time of leaving site:	1750

Time	Task	Notes
1000	Site Induction	
1020		Set up site.
1110		Start concrete coring on "AREA W2" Unable to use magnetometer survey due to large amounts of metal within the area (EAST WEST)
1450		Mag survey over "AREA W4" Due to this site being a landfill site there is heavy magnetic contamination. Watch & Direct during any excavation work.
1620		W3BH501 Mag test at 5M. Clay to dig to 5M
1730	Secure for site	

RPS Site Manager:	G Shore	Client Representative	M. WEIL
Signature:		Signature:	

Daily Work Journal

RPS Group Plc
Conrad House, Beaufort Sq
Chepstow, NP16 5EP

Tel: +44 (0)1291 621821
Email: vi.storey@rpsgroup.com

Site Manager:	G Shore	Date:	11.04.17	Serial:	0 2	Page:	1 of 1
Project:	Tipner Lane Portsmouth	Client:	WSP			Project No:	EES 0699

Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring	No. of RPS Engineers on Site:	One

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1		G Shore	Site Manager
Cable & drum	1			
CHARGER	1			

Time Arrived on Site:	0750	Time of leaving site:	1710

Time	Task	Notes
0750	On Site.	
0800	UXO Induction	4x Personnel. (VANELLA)
0920		BH301 - Informed by drillers that the EH will collapse if they take out the steel pipe. Unable to take a magnetometer reading. Office informed. Watch & brief. Hard chalk found at 4M. Clear to dig to 8M
0930		Ground magnetometer survey over NS area. High magnetic readings on all 10 dig sites. Site manager informed.
1150		NBNS303 Mag Survey taken at 3M - clear to dig to 5M.
1435		WSBH302. Mag test at 1.5M deep. Clear to 3M.
1530		NEBH302 - Mag test at 3M deep. Clear to 5M.
1710		Secure from site.

RPS Site Manager:	G Shore	Client Representative	M. NEIL
Signature:		Signature:	

Daily Work Journal

RPS Group Plc
Conrad House, Beaufort Sq
Chepstow, NP16 5EP

Tel: +44 (0)1291 621821
Email: vl.storey@rpsgroup.com

Site Manager:	G Shore	Date:	12.04.17	Serial:	03	Page:	1 of 1
Project:	Tipner Lane Portsmouth	Client:	WSP			Project No:	EES 0699
Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring					No. of RPS Engineers on Site:	One

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1		G Shore	Site Manager
Cable & drum	1			
Chempro	1			

Time Arrived on Site:	0750	Time of leaving site:	1820

Time	Task	Notes
0750	On site	
0815		Ground magnetometer survey over WP AREA, & location clear to dig to 1.5M.
0930	UXO Brief	To 2x Personnel, (JCB Driver & Engineer)
1005		WSWS301 Mag test at 5M clear to dig to 5M
1040		Ground magnetometer survey over WP AREA. Due to close proximity to boat yard unable to get accurate readings.
1040		NSBH302. Mag test at 6M. clear to dig to 8M.
1330		WSBH303. Mag test at 1.2M. Unable to get accurate reading due to shallow depth of BH.
1440		WSBH308 Mag test at 2M. High mag reading
1515		Still in made up ground
		WSBH308. Mag test at 4M. High mag reading. Still in made up ground. Clear to dig until reaching natural ground
1620		WSBH305. Mag test at 6M. Still in made up ground.
1725		WSBH302 Mag test at 8M. Natural ground, but very wet. clear to dig to 10M.
1820	Secure from Site.	

RPS Site Manager:	G Shore	Client Representative	M. WEIL
Signature:		Signature:	

RPS

Daily Work Journal

RPS Group Plc
Conrad House, Beaufort Sq
Chepstow, NP16 5EP

Tel: +44 (0)1291 621821
Email: vi.storey@rpsgroup.com

Site Manager:	G Shore	Date:	13 .04.17	Serial:	0 4	Page:	1 of 1
Project:	Tipner Lane Portsmouth	Client:	WSP			Project No:	EES 0699

Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring	No. of RPS Engineers on Site:	One

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1		G Shore	Site Manager
Cable & drum	1			
Chemical	1			

Time Arrived on Site:	0750	Time of leaving site:	

Time	Task	Notes
0750	On site.	
0815		WSBH308 complete.
0830		WSWS306. Hand dug to 1.5M. Still in made up ground with red brick. Clear to dig until they reach natural earth.
0840		WSWS306. Refusal at 1.5M. WS complete.
0845		Start hand digging on WSWS307. ~~- chalky pos~~
~~0850~~ 0940		WSWS307. Hand dug to 1.5M. Still in made up ground. Clear to dig until reaching natural earth.
1150		WSWS307. May test at 5M. Ops to dig to 5M.
1220		WSWS307 complete

RPS Site Manager:	G Shore	Client Representative	M. WEIL
Signature:		Signature:	

RPS

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Tel: +44 (0)1291 621821
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Site Manager:	G Shore	Date:	18.04.17	Serial:	05	Page:	1 of 1
Project:	Tipner Lane Portsmouth	Client:	WSP			Project No:	EES 0699

Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring	No. of RPS Engineers on Site:	One

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1		G Shore	Site Manager
Cable & drum	1			
Chem Pro	1			

Time Arrived on Site:	0750	Time of leaving site:	1740

Time	Task	Notes
0950	ON SITE.	
0800		Waiting on Asbestos training.
0930		Asbestos training
1010		WSBH304 & WSWS313. Start digging by hand to 1.1M
1055		WSBH304 Start drilling. Depth 8M.
1140		WSWS313 Start drilling Depth 5M.
1450		WSBH304. Mag test at 4M. Decision to dig to 6M.
1615		WSWS313. Refusal at 4M. - Backfill.
1630		WSWS312. Start digging by hand to 1.5M. 2K
1713		refusals due to concrete block.
1740	Secure from Site	

RPS Site Manager:	G Shore	Client Representative	Ross Smith
Signature:		Signature:	

RPS

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Tel: +44 (0)1291 621821
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Site Manager:	G Shore	Date:	19.04.17	Serial:	06	Page:	1 of 1
Project:	Tipner Lane Portsmouth	Client:	WSP			Project No:	EES 0699

Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring	No. of RPS Engineers on Site:	One

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1		G Shore	Site Manager
Cable & drum	1			
Chem Pro	1			

Time Arrived on Site:	0750	Time of leaving site:	1715

Time	Task	Notes
0750	ONSITE.	
0830		W4BH313 Start digging by hand to 1.4M. Depth 10M
0840		W4WSS14 · Start digging by hand to 1.5M Depth 5M
1015		W4RH313. Made up ground to 3.5M. Mag test at 4.5M clear to dig to 8.5M.
1050		W4WS314. Start drilling. Refusal at 2.0M Move to next S.I.
		~~W4WS314. Start drilling~~
1110		W4WSS16 Start digging by hand to 1.6M. Depth 5M
1140		W4BH314. Mag test at 6.5M clear to dig to 8M.
1140		W4WSS16 Refused at 0.3 Move to next site.
1215		W4WSS19. Start digging by hand to 1.3M Depth 5M.
		Refusal 2.4M. (concrete slab)
1450		W5HPS06. Start digging by hand to 1.5M - Depth 1.5M
1600		W5HPS06 · Comm plate
~~1615~~	~~Secure for the day~~	
1610		W4BH306 · Start digging by hand to 1.5M Depth 10M
1715		Secure for the day.

RPS Site Manager:	G Shore	Client Representative	Ross Smith
Signature:		Signature:	

RPS

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Tel: +44 (0)1291 621821
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Site Manager:	G Shore	Date:	20.04.17	Serial:	07	Page:	1 of
Project:	Tipner Lane Portsmouth	Client:	WSP			Project No:	EES 0699

Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring	No. of RPS Engineers on Site:	One

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1		G Shore	Site Manager
Cable & drum	1			
Chem Pro	1			

Time Arrived on Site:	0745.	Time of leaving site:	1730

Time	Task	Notes
0945	ONSITE.	
0810		W4BH306 - Made up ground to 4M. Mag check at 5M. clear to dig to 7M.
0900		W4BH306. Mag check at 7.5M. - chalk. clear to dig to 10M.
0900		W7WS311 Hand dig to 1.5M. Depth 5M.
0940		UXO trial to 2x personnel. (Drillers)
1000		W7WS309. Start hand digging to 1.5m. Depth 5M.
1043		UXO brief to 2x personnel. (1x digger driver & engineer)
1100		W4BH306 complete.
1105		W4BH307. Start digging by hand to 1.5M Depth 12M.
1110		W4TP314. Start digging to 3M.
1140		W4TP314 complete. 3M Deep x 2M x 1M.
1143		W4TP313. Start digging to 3M.
1210		W4TP313 complete 3x2x1M.
1215		W4TP310. ~~Start~~ Start digging to 3M.
1235		W4TP310 complete - 3x2x1M.
1315		W4BH307. Mag test at 6M clear to dig to 8M
1550		Window samples #309, 308, 310 & 311 in Area 7 complete. Made up ground to values 4M - No Mag tests conducted due to high concentration of red brick and other Metallic objects
1605		W4WS316. Start drilling to 5M. 1.5M dug by 360° Machine
1610		W4BH307 Mag test at 8M & 10M clear to 12M.
1710		W4BH307 completed
1725		W4WS316 complete
1730		Final 2 pts 309, 308 & 311 on Area 4. complete 3M x 2M x 1M.
1730		Secure from Site.

RPS Site Manager:	G Shore	Client Representative	Ross Smith
Signature:		Signature:	

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Site Manager:	G Shore	Date:	21.04.17	Serial:	08	Page:	1 of 1
Project:	Tipner Lane Portsmouth	Client:	WSP			Project No:	EES 0699

Task: (survey, Site Support, etc)	UXO Site Support / CWA Monitoring	No. of RPS Engineers on Site:	One

Equipment Check List			Personnel	
Type	Quantity	Checked	Name	Position
DH Vallon	1		G Shore	Site Manager
Cable & drum	1			
Chem Pro	1			

Time Arrived on Site:	0750	Time of leaving site:	

Time	Task	Notes
0750	On Site.	
0800		WHNS314 - Start drilling until reaching natural ground.
0830		WSTP304 Start digging. TP in the side of a kerb.
0900		WSTP304 Complete 2m x 2m x 1.
0900		WHNS312 Start drilling to 5m. No hand dig as 360° loading dug down to 2m due to concrete slab on surface.
0915		WHTP315. Start digging. Depth 3m
0950		WHTP315 Complete. 3m x 2m x 1m.
1015		Trial pits 316, 312 & 315 Complete 3m x 2m x 1m.
1025		WHNS314 - Complete.
1030		WSTP301 Start digging. Depth 3m.
1100		WSTP301 Complete 3m x 2m x 1m.
1100		WHNS312. Complete.

RPS Site Manager:	G Shore	Client Representative	Ross Smith
Signature:		Signature:	

Daily Work Journal

RPS Energy, Explosives Engineering Services

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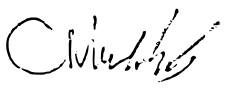
Site Manager:	R Smith	**Date:**	24Apr17	**Serial:**	AEC-01	**Page:**	1
Project:	Tipner Lane		**Client:**	WSP (Parsons Brinckerhoff)		**Project No:**	0699

Task: (survey, Site Support, etc)	Site Support & Chemical Monitoring	**No. of RPS Engineers on Site:**	1

Equipment Check List			***Personnel***	
Type	**Quantity**	**Checked**	**Name**	**Position**
Vallon VX1 Serial No. 97749	01	Yes	A Candler	UXO Engineer
ChemPro 100i Serial No 10592	01	Yes		

Time Arrived on Site:	0800	**Time of Leaving Site:**	1741

Time	Task	Notes
0800	Briefing	Site safety briefing
0810	Briefing	1 x UXO safety briefing
0820	Set up	Set up test and calibrate Vallon for borehole survey. First area W8
0900	Checks	Visual on W8-BH308
0905	Checks	Visual on W8-WS317
0950	Survey	W8-BH308 checked at 1m. No indications
1030	Survey	W8-WS317 checked at 1m. No indications
1105	Survey	W8-WS317 checked at 3m. No indications
1110	Survey	W8-BH308 at 3m. Using casing due to close proximity to sea as borehole
		keeps collapsing. Unable to get clear reading
1115	Checks	Visual on W8-WS318
1130	Survey	W8-WS318 checked at 1m. No indications
1300		W8-WS317 at 5m sampling complete
1310	Survey	W8-BH308 checked at 6m
1315	Lunch	
1400		Recommenced sampling on W8-BH308
1430	Survey	W8-BH308 checked at 7.5m
1445	Survey	W8-WS318 checked at 2.5m
1450	Checks	Visual on W8-WS320
1515	Survey	W8-WS320 at 1m. No indications
1520		W8-WS318 at 3m sampling complete
1655	Check	Visual on W8-WS319
1705	Survey	W8-WS320 at 2m. No indications
1715		W8-BH308 at 9.6m sampling complete
1730	Survey	W8-WS319 at 1m. No indications
1735	De rig	Clean and pack Vallon away
1741	Sign out	
1741	Depart site	

RPS Site Manager:	AE Candler	**Client Representative**	C Nichols
Signature:		**Signature:**	

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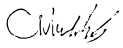
Site Manager:	R Smith	**Date:**	25Apr17	**Serial:**	AEC-02	**Page:**	01
Project:	Tipner Lane	**Client:**	Parsons Brinckerhoff			**Project No:**	0699

Task: (survey, Site Support, etc)	Site Support & Chemical Monitoring	**No. of RPS Engineers on Site:**	01

Equipment Check List			***Personnel***	
Type	**Quantity**	**Checked**	**Name**	**Position**
Vallon VX1 Serial No. 97749	01	Yes	AE Candler	UXO Engineer
ChemPro 100i Serial No. 10592	01	Yes		

Time Arrived on Site:	0750	**Time of Leaving Site:**	1710

Time	Task	Notes
0800	Set Up	Set up Test & Calibrate Vallon for Borehole Survey's
0900	Brief	Firing Range Tool Box Talk
0910	Checks	Visual & Vallon check on BH310. No indications
0930	Checks	Visual on W8-WS321
0930	Survey	W8-WS320 at 3m. No indications
0940	Survey	W8-WS321 at 1m. No indications
0945		W8-WS320 at 4m. Completed sampling
1000	Survey	Visual & Vallon check on W9-WS325. No indications
1010	Survey	W9-BH310 at 1.5m. No indications
1100	Survey	W8-WS319 at 2m. No indications
1130	Survey	W9-BH310 at 4m. No indications
1145		W8-WS319 at 4m. Completed sampling
1245	Survey	W9-BH310 at 7m. No indications
1300	Lunch	Request by site manager for samples from area W9 to be analysed by RPS.
		This info was past to the office
1430	Survey	W8-WS321 at 2m. No indications
1500	Survey	W8-WS321 at 3m. No indications
1600		W8-WS321 at 5m. Completed sampling
		All borehole and window sampling complete in area W8
1630		W9-BH310 at 10m. Sampling complete
1700	Sign out	
1710	Depart	

RPS Site Manager:	AE Candler	**Client Representative**	C Nichols
Signature:		**Signature:**	

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RPS Energy, Explosives Engineering Services

Tel: +44 (0)1291 621821
Email: uxoservices@rpsgroup.com (Marine)/vi.storey@rpsgroup.com (International & UK)

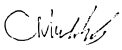
Site Manager:	R Smith	**Date:**	26Apr17	**Serial:**	AEC-03	**Page:**	01
Project:	Tipner Lane	**Client:**	WSP (Parsons Brinckerhoff)			**Project No:**	0699

Task: (survey, Site Support, etc)	Site Support & Chemical Monitoring	**No. of RPS Engineers on Site:**	01

Equipment Check List			***Personnel***	
Type	**Quantity**	**Checked**	**Name**	**Position**
Vallon VX1 Serial No. 97749	01	Yes	AE Candler	UXO Engineer
ChemPro 100i Serial No 10592	01	Yes		

Time Arrived on Site:	0800	**Time of Leaving Site:**	1710

Time	Task	Notes
0800	Start/Set up	Set up test & calibrate Vallon for Borehole surveys
0830	Survey	Visual & Vallon check on W9-BH309. No indications
0835	Survey	Visual & Vallon check on W9-WS323. No indications
0840	Survey	Visual & Vallon check on W9-WS322. No indications
0900	Sampling	2 x samples collected from W9-WS323 at 0.5m
	Survey	W9-WS323 at 1.2m. No indications
0925	Survey	Visual & Vallon check on W9-WS326. No indications
0940	Survey	W9-BH309 at 2.5m. No indications
	Sampling	2 x samples collected from W9-BH309 at 1.5 - 2m
0955	Survey	W9-WS323 at 2m. No indications
1035	Survey	W9-326 at 1.2m. No indications
1115	Survey	W9-WS323 at 4m. No indications
1125	Survey	W9-BH309 at 5m. No indications
1130		W9-WS323 at 5m completed sampling
1155	Stop/Lunch	Temporary stop in sampling due to shooting on the firing range
1210	Start	Firing completed
1330	Sampling	2 x samples collected from W9-WS322 at 1 - 1.2m. No further sampling from
		this location
1400	Survey	Visual & Vallon check on W9-HP301. No indications
1425		Sampling complete at W9-HP301
1435	Sampling	2 x samples collected from W9-WS326 at 1.5 - 2m
1450	Survey	W9-WS326 at 3m. No indications
1520	Survey	W9-BH309 at 8m. No indications
1615		W9-WS326 at 5m completed sampling
1655	De rig	Clean de rig and pack Vallon away.place samples in chacon
1700	Sign out	
1710	Depart	

RPS Site Manager:	AE Candler	**Client Representative**	C Nichols
Signature:		**Signature:**	

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Email: uxoservices@rpsgroup.com (Marine)/vi.storey@rpsgroup.com (International & UK)

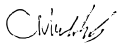
Site Manager:	R Smith	**Date:**	27Apr17	**Serial:**	AEC-04	**Page:**	01
Project:	Tipner Lane	**Client:**	WSP (Parsons Brinckerhoff)			**Project No:**	0699

Task: (survey, Site Support, etc)	Site Support & Chemical Monitoring	**No. of RPS Engineers on Site:**	01

Equipment Check List			***Personnel***	
Type	**Quantity**	**Checked**	**Name**	**Position**
Vallon VX1 Serial No. 97749	01	Yes	AE Candler	UXO Engineer
ChemPro 100i Serial No 10592	01	Yes		

Time Arrived on Site:	0800	**Time of Leaving Site:**	1630

Time	Task	Notes
0800	Start/Set up	Set up test & calibrate Vallon for borehole surveys
0830	Survey	Visual & Vallon check W9-WS325. No indicationd
0845	Survey	Visual & Vallon check W9-WS324. No indications
0900	Survey	W9-WS325 at 1.3m. No indications
1015	Survey	W9-WS325 at 3m. No indications
1050	Survey	W9-WS324 at 1.3m. No indications
1100		W9-WS325 at 5m completed sampling
1300	Lunch	
1400	Survey	W9-WS324 at 2m. No indications
1405	Sampling	2 x samples collected from W9-WS324 1.8 - 2m
1430		All samples boxed up ready for collection.
1450	Survey	W9-WS324 at 4m. No indications
1510		W9-WS324 at 5m sampling complete
		All intrusive work in W9 area complete
1530	De rig	Clean & pack up Vallon
		Requested to wait until courier arrive to collect samples for RPS Lab's
1630	Sign out	
	Depart	

RPS Site Manager:	AE Candler	**Client Representative**	C Nichols
Signature:		**Signature:**	

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Email: uxoservices@rpsgroup.com (Marine)/vi.storey@rpsgroup.com (International & UK)

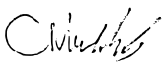
Site Manager:	R Smith	**Date:**	28Apr17	**Serial:**	AEC-05	**Page:**	01
Project:	Tipner Lane	**Client:**	Parsons Brinckerhoff			**Project No:**	0699

Task: (survey, Site Support, etc)	Site Support & Chemical Monitoring	**No. of RPS Engineers on Site:**	01

Equipment Check List			***Personnel***	
Type	**Quantity**	**Checked**	**Name**	**Position**
Vallon VX1 Serial No. 97749	01	Yes	AE Candler	UXO Engineer
ChemPro 100i Serial No. 10592	01	Yes		

Time Arrived on Site:	0755	**Time of Leaving Site:**	0830

Time	Task	Notes
0800		No intrusive works planned today site compound being relocated to
		Horsea Island. Intrusive work to recommence Tuesday 2nd May 2017
0815	Admin	R Smith site manager departed last night. Temp manager C Nichols
	Equipment	To avoid lost/confusion Chempro will stay with me to be handed over
		to next UXO Engineer
0830	Sign out	
	Depart	

RPS Site Manager:	AE Candler	**Client Representative**	C Nichols
Signature:		**Signature:**	

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Email: vi.storey@rpsgroup.com

RPS SITE ATTENDANCE REGISTER

Client	WPS (Parsons Brinckerhoff)	**Site**	Tipner/Horsea Island	**EES**	0699

Week Beginning:	08May17	**Week No:**	05 (AEC-02)

Day/Date	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
	08May17	09May17				
Write in the name of all RPS Energy Ltd Explosive Engineers on site daily	AE Candler	AE Candler				
Total on site:	01	01				

Remarks:

Signed by Site Manager:	**Signed by** On behalf of Client:

Copy 1 for RPS Copy 2 for Client

Appendix D.6

RADIOLOGICAL ASSESSMENT

Site Investigation and Sampling Operations of MOD Firing Range (Area W9) Tipner, Portsmouth

Ref: 03/146/03.20

Prepared by:		Name:	Jon Goodwin	Date:	26/09/2016
Checked by:		Name:	Mark Musgrave	Date:	26/09/2016
Approved by:		Name:	Matt Tuck	Date:	26/09/2016

Review / Amendment Log

Page No:	Section No:	Details:	Prepared by:	Authorised by:	Date:

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1. Scope

1.1 Objectives

2. Introduction

3. Objectives

4. Method

4.1 Instrumentation

5. Survey Results

5. Conclusion and Discussion

6. References

7. Appendices

1. Scope

Matom was employed by WSP Parsons Brinckerhoff (WSP | PB) to provide radiological assurance monitoring, and radiological sample acquisition and analysis, to site investigations at the MOD firing range, (Area W9) Tipner, Portsmouth from the 15th to 19th August 2016. The programme of works is defined in WSP | PB Construction Phase Plan (Ref:70015362-CPP) and the radiological sample regime in Matom_Tipner (W9)_Sampling_Method Statement (Ref: 03/146/03.14)

1.1 Objectives

The objectives were to provide radiological reassurance to staff and contractors and acquire soil samples from a series of trial pits, hand dug pits and boreholes for despatch to a designated laboratory for radiological analysis.

2. Introduction

The Horsea Island East and Tipner West redevelopment zones have a mixed military and industrial history which has left a legacy of ground contamination across the proposed development areas. These areas have been subject to a large number of land contamination assessments by various parties during the period of 1993 to 2015. Whilst most of these assessments have been made available to WSP Parsons Brinckerhoff, additional site investigations are required to address data gaps in support of progressing the sites through the planning process.

One significant data gap across the sites is the lack of radiological survey information. Given the mixed military and industrial history of the sites, and knowledge of similar sites around the UK, there is deemed to be a potential risk of radiological contamination within areas of the redevelopment zones.

Matom were commissioned by WSP | PB to undertake a desk based assessment of the potential for radiological contamination within the Horsea Island and Tipner West Redevelopment Zones (Ref: 03/146/03.02r1). From this assessment several areas were identified as having an elevated potential for radiological contamination based on previous land use. The most expansive of these areas being the MOD firing range (Area W9) in Tipner, Portsmouth. Subsequently Matom recommended that assurance monitoring for the protection of the operators and environment should be provided, and a selection of soil samples taken to provide qualitative data prior to any land development.

3. Method

The Matom Health Physics Surveyor (HP Surveyor) initially provided a tool box talk to the contractors before work commenced and subsequently monitored activities during the operations phase of the ground investigation.

In accordance with:

WSP I PB Construction Phase Plan, Report Number 70015362-CPP;
03/146/03.11 - Matom_Tipner (W9)_Method Statement;
03/146/03.12 - Matom_Tipner (W9) - RISK ASSESSMENT;
03/146/03.14 - Matom_Tipner (W9)_Sampling_Method Statement.

Matom undertook:

1. Provision of a Suitably Qualified Experienced Person (SQEP) Health Physics Surveyor;
2. Provision of selected instruments for field monitoring that were suitable for identifying the type and energy of radionuclides that may have originated from previous MOD activities;
3. The Health Physics Surveyor had access to hand-held instrumentation able to identify radionuclides present (SuperIDent RT-30);
4. In-situ radiological reassurance monitoring across the site area to gather supplementary information and for radiation protection purposes;
5. Acquisition of soil samples during operations;
6. Recording of samples and labelling of sample containers;
7. Provision and completion of chain of custody forms for samples;
8. Provision of gamma spectroscopy analysis of resultant soil samples;
9. Recording of the sampling process as part of the final report.

In addition, the HP Surveyor was required to take soil samples (in the sample pots provided) when:

- Any area where 2 x background radiation level was found.
- Areas of ash/burning were evident.
- Sections of core samples where soils showed a raised radiological contamination by probe.
- Areas of open pits which showed significant colour changes in the strata.
- As requested by WSP | PB.

To provide more qualitative radiological data for the site the following samples were to be taken:

- 1 sample (within 1m of ground level) from Trial Pit numbers:
  - TP201; TP205*; TP207; TP209
- 1 sample (within 1m of ground level) from Hand Dug Pit numbers:
  - HP201; HP204; HP205; HP208
- 1 sample (from made ground) from Boreholes numbers:
  - BH202; BH204; BH206; BH207.

* Trial Pit (TP205) was cancelled by WSP | PB and, as such, no sample was taken.

4. Sample collection

Soil samples were collected in the sample pots provided.

Method:

- Sample pots were filled to the brim to reduce any degradation by air.
- Samples pots lids were taped shut.
- Samples were checked externally for contamination and clearance certificate provided.
- Samples were labelled using the following convention:
  - Matom Ltd
  - Date of sample collection
  - Site location
  - Trial Pit/Borehole/Hand dug pit number

- Depth
- Activity (cps)

- Samples were placed in the provided cool-box's for shipment to laboratory.
- Samples were held in a secure location on site until despatch to the laboratory, at the end of the site works.

4.1 Instrumentation

EQUIPMENT NAME	DESCRIPTION	SERIAL NUMBER	CALIBRATION DUE DATE
SUPER-IDENT RT 30	Gamma Spectoral identifier	2479	18/11/2016
Rotem DA3 & PM11	Gamma rate and dose rate meter	8303-021	07/07/2017
Elektra & BP19AD	Beta probe and rate meter	5867	15/07/2017

Instruments were response checked at that each day before commencing monitoring duties. Check sources were stored in accordance with Matom procedure RSOI.021 Radioactive Check Sources.

5. Survey Results

Local background radiation levels were taken for each of the field instruments to be used, the measured levels across a number of locations was:

Effective dose rate 0.1µSv/h (γ)
Radiation levels of 80-120cps γ and 6-7cps βγ

Summary of soil sampling surveys:

Sample	Radiation	Contamination	
	Y	βγ	Probe Y
TP201	0.1µSv/h (γ)	6-7cps	80-120cps
TP207	0.1µSv/h (γ)	6-7cps	80-120cps
TP209	0.1µSv/h (γ)	6-7cps	80-120cps
HP201	0.1µSv/h (γ)	6-7cps	80-120cps
HP204	0.1µSv/h (γ)	6-7cps	80-120cps
HP205	0.1µSv/h (γ)	6-7cps	80-120cps
HP208	0.1µSv/h (γ)	6-7cps	80-120cps
BH202	0.1µSv/h (γ)	6-7cps	80-120cps
BH204	0.1µSv/h (γ)	6-7cps	80-120cps
BH206	0.1µSv/h (γ)	6-7cps	80-120cps
BH207	0.1µSv/h (γ)	6-7cps	80-120cps

The results of the radiochemical analysis of the samples listed above are provided within Appendix 2.

5. Conclusion and Discussion

The radiological monitoring programme for the site investigation and associated trial pit, hand dug pit and borehole sampling was appropriate to the likelihood of contamination being present or in significant quantities to that may have posed a risk to personnel working onsite, handling samples, or the receiving laboratory personnel.

The results of the Matom surveys (Appendix 1) provide confidence that there is a low probability of radiological contamination across this site given none of the areas sampled had levels of radiation above measured background levels for any of the trial pits, hand dug pits or borehole samples tested. Therefore, there was no risk from elevated radiation levels to operators, the public and the environment.

Results of the radiochemical analysis of the samples are provided in Appendix 2. These results, combined with the infield surveys, indicate that there is no significant radiological contamination in the sampled areas in accordance with Environmental Permitting Regulations 2010 (EPR) and the National Planning Policy Framework (NPPF).

6. References

1. WSP I PB Construction Phase Plan, Report Number 70015362
2. 03/146/03.11 - Matom_Tipner (W9)_Method Statement
3. 03/146/03.12 - Matom_Tipner (W9) – Risk Assessment;
4. 03/146/03.14 - Matom_Tipner (W9)_Sampling_Method Statement
5. 03/146/03.02r1 - Horsea Island & Tipner Site Radiological Contamination Assessment
6. Environmental Permitting Regulations 2010
7. National Planning Policy Framework (NPPF)

Appendix 1: Scanned copies of original surveys

Appendix 2: Results of the Radiochemical Analysis of Soil Samples

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RADIAT.)N AND CONTAMINATION SURVEY REPORT FORM

Date: 19 8 16	Survey Ref: 09	Area Designation:		Survey Type:		Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location: Tipner Lane		Controlled		Routine		RSM DP3	8303-021	✓	0.1 nSv/h -1σ	✓
Area Surveyed / Site Plan Reference:		Supervised		Request		RM11	0702-044	✓	85-110 cps 1σ	✓
See Below		Non-des	✓	Incident		Electra/BP19	5862/248	✓	6-7 cps 1σ	✓
Start Time:	End Time:	Other:		Other:	✓					

No:	Survey Details:	Radiation: µSv/h β/γ	Radiation: Or γ	Radiation: mSv/h n	Contamination: Bq/cm² α	Contamination: Or β	Contamination: cps P/α	FM or R**	US S or K***	Comments / Notes:
HP208	Plot 0-10		Bg			Bg	Bg			
HP207	Plot 0-10		Bg			Bg	Bg			

Completed by:					
Name:	MAsbridge	Signature:		Date:	19 8 16

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

Date: 18 8 16	Survey Ref: 08	Area Designation:	Survey Type:	Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location: Tipner Lane		Controlled	Routine	RAM DA3	8303-021	✓	0-1 µSv/h β	✓
Area Surveyed / Site Plan Reference:		Supervised	Request	PM II	0702-044	✓	25-120 cps β	✓
See Below		Non-des ✓	Incident	Electra / DP6	58627248	✓	6-7 cps β	✓
Start Time:	End Time:	Other:	Other: ✓					

No:	Survey Details:	Radiation: µSv/h β/γ	Radiation: Or γ	Radiation: mSv/h n	Contamination: Bq/cm² α	Contamination: Or β	Contamination: cps β	FM or R**	US S or K***	Comments / Notes:
HP205	Plot. 0-1.0		Bg			Bg	Bg			
TP210	Plot 0-0.3, 0.3-1.0, 1.0-2.0		Bg			Bg	Bg			
WS206	Plot 0-1.2 (hand dig) 1.2-2.0, 2.0-3.0, 3.0-4.0, 4.0-5.0		Bg			Bg	Bg			
HP210A	Plot. 0-1.0		Bg			Bg	Bg			
TP211	Plot 0-0.3, 0.3-1.0, 1.0-2.0		Bg			Bg	Bg			
HP209	Plot. 0-1.0		Bg			Bg	Bg			
TP207	Plot 0-0.3, 0.3-1.0, 1.0-2.0		Bg			Bg	Bg			
HP210	Plot 0-1.0		Bg			Bg	Bg			

Completed by: MAsbridge					
Name:		Signature:	MAs	Date:	18 8 16

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

Date:	17 8 16	Survey Ref:	07	Area Designation:		Survey Type:		Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location:	Tipton Lane			Controlled		Routine		RAM DP3	8303-021	✓	0.1μSv/h-1	✓
Area Surveyed / Site Plan Reference:				Supervised		Request		RAM 4	0202 044	✓	80-120cps	✓
See below				Non-des	✓	Incident		Electra/DP6	5862/248	✓	6-7cps/BG	✓
Start Time:		End Time:		Other:		Other:	✓					

No:	Survey Details:	Radiation: μSv/h β/γ	Or γ	mSv/h n	Contamination: Bq/cm² α	Or β	cps β	FM or R**	US S or K***	Comments / Notes:
WS203	Plot 0-1.2 (hand drg) 1.2-2.0, 2.0-3.0, 3.0-4.0, 4.0-5.0		Bg			Bg	Bg			
HD206	Plot 0-4.0		Bg			Bg	Bg			
TP203	Plot 0-0.3, 0.3-1.0, 1.0-2.0 2.0-2.2		Bg			Bg	Bg			
WS204	Plot 0-1.2 (hand drg) 1.2-2.0 2.0-3.0, 3.0-3.6		Bg			Bg	Bg			
BH202	Plot 0-1.5 (hand drg) 1.5-2.5 2.5-3.5, 3.5-4.5, 4.5-5.5, 5.5-6.0		Bg			Bg	Bg			

Completed by: Name:	MAsbridge	Signature:	MA	Date:	18 8 16

Document No:	Owner:	Approved By:	Dated:	Revision No:	Page No:
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RADIATION AND CONTAMINATION SURVEY REPORT FORM

Date:	17 8 16	Survey Ref:	06	Area Designation:		Survey Type:		Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location:	Tipner Lane			Controlled		Routine		RAM DP3	8303-021	✓	0.1μSv/h ✓	✓
Area Surveyed / Site Plan Reference:				Supervised		Request		PM II	0702-044	✓	80-120cps ✓	✓
See below				Non-des	✓	Incident		Electra/BP19	58LL2418	✓	6-7cps ✓	✓
Start Time:		End Time:		Other:		Other:	✓					

No:	Survey Details:	Radiation: μSv/h β/γ	Or γ	mSv/h n	Contamination: Bq/cm² α	Or β	cps β/γ	FM or R**	US S or K***	Comments / Notes:
BH207	Plot 0-1.2 (hand dig) 1.2-2, 2.0-3.0, 3.0-4.0 4.0-5.0 5.0-5.5, 5.5-6.0		Bg			Bg	Bg			
WS202	Plot 0-1.2 (hand dig) 1.2-2.0 2.0-3.0.		Bg			Bg	Bg			
BH203	(Cont'd) 6.5-7.5, 7.5-8.5, 8.5-9.5		Bg			Bg	Bg			
TP208	Plot 0-0.3, 0.3-1.0, 1.0-2.0		Bg			Bg	Bg			
TP201	Plot 0-0.3, 0.3-1.0, 1.0-2.0		Bg			Bg	Bg			
WS203	Plot 0-1.2 (hand dig)									

Completed by:
Name: MAsbridge Signature: MW Date: 17 8 16

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

Date: 16 8 16	Survey Ref: 05	Area Designation:	Survey Type:	Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location: Tyner Lane		Controlled	Routine	RAM DA3	8303-001	✓	0.1 µSv/h 18	✓
Area Surveyed / Site Plan Reference:		Supervised	Request	RPM1	8202 044	✓	80-120 cps 18	✓
See below		Non-des ✓	Incident	Electra/GP14	SRB/243	✓	6-7 cps βγ	✓
Start Time:	End Time:	Other:	Other: ✓					

No:	Survey Details:	Radiation: µSv/h β/γ	Radiation: Or γ	Radiation: mSv/h n	Contamination: Bq/cm² α	Contamination: Or β/γ	Contamination: cps β/γ & α	FM or R**	US S or K***	Comments / Notes:
WS209 Plot	0-1.2 (hand dig) 1.2-2.0, 2.0-3.0, 3.0-4.0, 4.0-5.0		Bg			Bg	Bg			
WS203 Plot	0-1.2 (hand dig) 1.2-2.0, 2.0-3.0, 3.0-4.0, 4.0-5.0.		Bg			Bg	Bg			
TP212 plot	0-0.3, 0.3-1.0, 1.0-2.0.		Bg			Bg	Bg			
HP204 Plot, 0-1.0			Bg			Bg	Bg			
WS207 Plot	0-1.2 (hand dig) 1.2-2.0, 2.0-3.0, 3.0-4.0, 4.0-5.0.		Bg			Bg	Bg			
TP213 Plot	0-0.3 0.3-1.0, 1.0-2.0.		Bg			Bg	Bg			

Completed by:				
Name:	Mosbridge	Signature:		Date: 16 8 16

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04 HSFRS.008a	Ell Louise Brown	Matt Tuck	23/07/2015	06	Page 1 of 1

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

Date: 16 8 16	Survey Ref: 04	Area Designation:	Survey Type:	Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location: Tipner Lane		Controlled	Routine	RAM DA3	8303-021	✓	0 nGy/h	✓
Area Surveyed / Site Plan Reference:		Supervised	Request	PM11	0702-044	✓	20-120cps β	✓
See below		Non-des ✓	Incident	Electra/EBP19	5867/248	✓	6-7cps β	✓
Start Time:	End Time:	Other:	Other: ✓					

No:	Survey Details:	Radiation: µSv/h β/γ	Or γ	mSv/h n	Contamination: Bq/cm² α	Or β	cps Pβ	FM or R**	US S or K***	Comments / Notes:
WS212	Plot 0-1.2 (hand dig) 1.2-2.0, 2.0-3.0, 3.0-4.0, 4.0-5.0		Bg			Bg	Bg			
BH205	(cont'd) 5.0-6.0 6.0-6.5		Bg			Bg	Bg			
BH203	Plot 0-1.5 (hand dig) 1.5-2.5, 2.5-3.5, 3.5-4.5, 4.5-5.5, 5.5-6.5		Bg			Bg	Bg			
HP202	Plot 0-1.0.		Bg			Bg	Bg			
HP201	Plot 0-1.0.		Bg			Bg	Bg			
HP203	Plot 0-1.0		Bg			Bg	Bg			
TP208	Plot 0-0.15, 0.15-0.9, 0.9-1.3, 1.3-2.3.		Bg			Bg	Bg			

Completed by: Name: MAshbridge	Signature: MA	Date: 16 8 16

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

Date: 15 8 16	Survey Ref: 03	Area Designation:		Survey Type:		Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location: Tipper Lane			Controlled		Routine	RAM DA3	8803-021	✓	0.1/5vD-B	✓
Area Surveyed / Site Plan Reference:			Supervised		Request	DMI	0702-0424	✓	80-120cps B	✓
See below			Non-des	✓	Incident	Electra/BP19	5867/248	✓	67cps/B	✓
Start Time:	End Time:		Other:		Other: ✓					

No:	Survey Details:	Radiation: µSv/h β/γ	Or Y	mSv/h n	Contamination: Bq/cm² α	Or B	cps P/	FM or R**	US S or K***	Comments / Notes:
	H3210 Plot									
	0-1.2 (banding) 1.2-2.0		Bg			Bg	Bg			
	2.0-3.0, 3.0-4.0, 4.0-5.0									

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

Date: 15-8-16	Survey Ref: 02	Area Designation:	Survey Type:	Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location: Tipner Lane		Controlled	Routine	RWM IDA3	8303-021	✓	0.1 µSv/h β/γ	✓
Area Surveyed / Site Plan Reference:		Supervised	Request	BP 9/1	0202-044	✓	80-120 cps β	✓
See below		Non-des ✓	Incident	Electra BP/9	5267/248	✓	6-7 cps β	✓
Start Time:	End Time:	Other:	Other: ✓					

No:	Survey Details:	Radiation: µSv/h β/γ	Radiation: Or γ	Radiation: mSv/h n	Contamination: Bq/cm² α	Contamination: Or β	Contamination: cps β	FM or R**	US S or K***	Comments / Notes:
BH208 (continued) Plot	4.0–5.0, 5.0–6.0 (No more grass)		Bg			Bg	Bg			
BH205 Plot	0.1.5 (hand dig) 1.5–2.0, 2.0–3.0, 3.0–4.0 4.0–5.0									
WS208 Plot	0–1.3 (hand dig) 1.3–2.0, 2.0–3.0, 3.0–4.0, 4.0–5.0		Bg			Bg	Bg			
BH207 Plot	0–1.2 (hand dig) 1.2–2.0, 2.0–3.0 3.0–4.0 (ASBESTOS) 4.0–5.0		Bg			Bg	Bg			
WS211 Plot	0–1.2 (hand) 1.2–2.0, 2.0–3.0 3.0–4.0 4.0–5.0		Bg			Bg	Bg			

Completed by: MAbbridge

Name: | Signature: | Date: 15 8 16

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

Date:	11/12-8-16	Survey Ref:	01	Area Designation:		Survey Type:		Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location:		TIMMERLANE			Controlled		Routine	RAM DA3	8353-021	✓	0.1 µSv/h-18	✓
Area Surveyed / Site Plan Reference:					Supervised		Request	PM11	0702-044	✓	80-120 cps/38	✓
SEE BELOW					Non-des	✓	Incident	Electra/BP19	5267/248	✓	6-7 cps/38	✓
Start Time:		End Time:			Other:		Other: ✓					

No:	Survey Details:	Radiation: µSv/h β/γ	Radiation: Or γ	Radiation: mSv/h n	Contamination: Bq/cm² α	Contamination: Or β ✓	Contamination: cps Pr ✓	FM or R**	US S or K***	Comments / Notes:
BH209	Plot 0-1-0 (hand dig), 1-0-2-0, 2-0-3-0, 3-0-4-0, 5-0-6-0, (4-0-5-0 - no core)		Bg			Bg	Bg			
BH206	Plot 0-1.5m (hand dig) 1.5-2.5, 2.5-3.5, 3.5-4.5, 4.5-5.0		Bg			Bg	Bg			
BH204	Plot 0-1-5 (hand dig) 1-5-2-5, 2-5-3-5, 3-5-4-5, 4-5-5-5, 5-5-6-5. No fmatter arising		Bg			Bg	Bg			
BH208	Plot 0-1-1 (hand dig) 1-1-3-0 (2 cores), 3-0-4-0		Bg			Bg	Bg			

Completed by:					
Name:	MD Bridge	Signature:	MA	Date:	15-8-16

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ESG
Environmental Scientifics Group

Final Test Report: **RT4972**

Radiochemical Analysis of Soil Samples

Prepared for Mark Musgrave

Matom Ltd

September 2016

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ESG

Radiochemical Analysis of Soil Samples

Client:	Matom Ltd 26 Castle Street Conwy LL32 8AY
Testing Facility:	ESG Unit 12 Moorbrook Southmead Industrial Park Didcot Oxon OX11 7HP
Quote Number:	ENR-ANU-8711
Customer Reference:	Tipner Lane
Laboratory Reference:	RT4972
Samples Received:	24 August 2016
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	08 September 2016
Report Author:	CHunston
Author's Name:	Charlene Hunston
Job Title:	Analyst
Approved by:	
Date:	08/09/16
Approver's name:	Carla Thompson
Job Title:	Senior Analyst
Report Date:	08 September 2016

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Introduction

Eleven soil samples were received from Matom Ltd on 24th August 2016. The samples were in a satisfactory/ambient condition on receipt. Accompanying instructions detailed the analysis required.

Experimental

Gamma Spectrometry

The samples were dried, homogenised with a ball mill and analysed using method "ANU/SOP/2029 Issue 4" – "Samples were placed in containers to match the appropriate calibration geometry and then measured by high-resolution gamma ray spectrometry.

The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 60-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series."

Results

Results are presented in the following tables. Result uncertainties for each analysis are stated in the results tables or beneath the tables where applicable.

An asterisk "*" indicates that the analysis is not covered under the UKAS accreditation of the laboratory with UKAS 1015. Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested. This test report must not be reproduced except in full, without written approval of the laboratory.

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Results Summary - Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Pb-212	Bi-212
TP201	RT4972	<10	<30	<2	<2	<2	<2	<20	3.9 ± 1.4	<20
TP207	RT4973	<20	220 ± 40	<2	<2	<2	5.9 ± 1.6	<30	17 ± 2.3	<30
TP209	RT4974	<20	310 ± 55	<3	<3	14 ± 2.4	7.9 ± 2.1	<30	28 ± 3.9	<30
HP201	RT4975	<20	300 ± 51	<2	<2	<2	8.7 ± 1.8	<30	28 ± 3.2	<30
HP204	RT4976	<20	440 ± 67	<3	<3	<2	11 ± 2.1	<30	31 ± 3.6	<30
HP205	RT4977	<20	370 ± 53	<2	<2	<2	10 ± 1.6	<30	32 ± 3.5	<30
HP208	RT4978	<10	140 ± 26	<2	<2	<2	5.4 ± 1.2	<30	13 ± 2.0	<20
BH202	RT4979	<20	390 ± 56	<2	<2	<2	10 ± 1.7	<30	30 ± 3.2	<20
BH204	RT4980	<20	92 ± 21	<2	<2	4.5 ± 1.3	4.6 ± 1.2	<30	9.6 ± 1.8	<20
BH206	RT4981	<20	360 ± 53	<2	<2	<2	11 ± 1.9	<30	32 ± 3.5	42 ± 16
BH207	RT4982	<20	270 ± 42	<2	<2	<2	7.9 ± 1.6	<30	24 ± 3.3	<20
Method Blank		<20	<30	<3	<2	<2	<3	<30	<4	<30

Notes:

1. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples.
2. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
3. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.
4. Results below and above the LoD are reported to one and two significant figures, respectively.

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Results Summary - Gamma Spectrometry

Customer Reference	Laboratory Reference	Pb-214	Bi-214	Ra-224	Ra-226*	Ac-228	Th-234	Pa-234m	U-235	Am-241
TP201	RT4972	7.8 ± 1.6	6.7 ± 2.2	<20	<20	<7	<30	<200	<2	<2
TP207	RT4973	15 ± 2.2	12 ± 2.9	<20	<20	20 ± 4.1	<30	<200	<2	<3
TP209	RT4974	23 ± 3.5	23 ± 4.4	<50	59 ± 24	30 ± 5.6	<30	<300	<20	<3
HP201	RT4975	23 ± 3.0	20 ± 3.6	<30	<30	33 ± 5.2	<30	<200	<2	<3
HP204	RT4976	26 ± 3.3	25 ± 4.5	<40	<30	31 ± 5.7	<30	<300	<2	<3
HP205	RT4977	27 ± 3.0	22 ± 3.5	<50	<30	29 ± 4.4	<40	<200	<2	<3
HP208	RT4978	10 ± 1.7	8.3 ± 2.2	<20	<30	13 ± 3.4	<30	<200	<2	<3
BH202	RT4979	22 ± 2.6	18 ± 3.1	<30	<30	30 ± 4.6	<40	<200	<2	<3
BH204	RT4980	9.6 ± 1.9	7.0 ± 2.3	<30	<30	<7	<30	<200	<2	<3
BH206	RT4981	28 ± 3.2	25 ± 3.7	<30	53 ± 19	31 ± 4.9	<30	<200	<20	<3
BH207	RT4982	24 ± 3.0	22 ± 3.2	<40	<30	25 ± 4.2	<30	<200	<2	<3
Method Blank		<5	<5	<50	<40	<20	<30	<300	<3	<3

Notes:

1. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples.
2. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
3. An asterisk "*" indicates that the analysis is not covered by UKAS accreditation.
4. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.
5. Results below and above the LoD are reported to one and two significant figures, respectively.

UKAS TESTING
1015

Site Investigation and Sampling Operations of MoD Landfill (Area W4), Tipner Boating Club (Area W8) and Tipner Firing Range (Area W9) Tipner, Portsmouth

Ref: 03/146/03.29

Prepared by:		Name:	Mark Musgrave	Date:	05/06/2017
Checked by:		Name:	Matt Tuck (CRadP)	Date:	09/06/2017
Approved by:		Name:	Matt Tuck (CRadP)	Date:	09/06/2017

Review / Amendment Log

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1. Scope

Matom was employed by WSP Parsons Brinckerhoff (WSP | PB) to provide radiological assurance monitoring, and radiological sample acquisition and analysis, to site investigations on areas W4, W8 and W9 at Tipner, Portsmouth from the 17th to 21st April 2017. The programme of works is defined in WSP | PB Construction Phase Plan (Ref:70015362-CPP) and the radiological sample regime in Matom_Tipner Sampling_Method Statement (Ref: 03 146 03.27)

1.1 Objectives

The objectives were to provide radiological reassurance to staff and contractors and acquire soil samples from a series of trial pits, hand dug pits and boreholes for despatch to a designated laboratory for radiological analysis.

2. Introduction

The Horsea Island East and Tipner West redevelopment zones have a mixed military and industrial history which has left a legacy of ground contamination across the proposed development areas. These areas have been subject to a large number of land contamination assessments by various parties during the period of 1993 to 2015. Whilst most of these assessments have been made available to WSP Parsons Brinckerhoff, additional site investigations are required to address data gaps in support of progressing the sites through the planning process.

One significant data gap across the sites is the lack of radiological survey information. Given the mixed military and industrial history of the sites, and knowledge of similar sites around the UK, there is deemed to be a potential risk of radiological contamination within areas of the redevelopment zones.

Matom were commissioned by WSP | PB to undertake a desk based assessment of the potential for radiological contamination within the Horsea Island and Tipner West Redevelopment Zones (Ref: 03/146/03.02r1). From this assessment several areas were identified as having an elevated potential for radiological contamination based on previous land use. The most expansive of these areas being the MOD firing range (Area W9) and secondly areas W4 and W8 at Tipner, Portsmouth. Subsequently Matom recommended that assurance monitoring for the protection of the operators and environment should be provided, and a selection of soil samples taken to provide qualitative data prior to any land development.

3. Method

The Matom Health Physics Surveyor (HP Surveyor) initially provided a tool box talk to the contractors before work commenced and subsequently monitored activities during the operations phase of the ground investigation.

In accordance with:

WSP I PB Construction Phase Plan, Report Number 70015362-CPP;
03/146/03.25 - Matom_Tipner (W4,W8,W9)_Method Statement;
03/146/03.26 - Matom_Tipner (W4,W8,W9)_ Risk Assessment;
03 146 03.27 - Matom_Tipner (W4,W8,W9)_Sampling_Method Statement.

Matom undertook:

1. Provision of sample analysis regime for all areas;
2. Provision of advice on Risk Assessments and Method Statements;
3. Provision of advice on appropriate PPE;
4. Provision of radiation awareness briefing (tool box talks) to ensure staff safety during site investigation;
5. Provision of SQEP Health Physics Surveyor (HPS) to perform reassurance monitoring of borehole sampling;
6. Provision of assurance monitoring of an area approximately 10 x 10m around operations;
7. Gamma spec analysis of soil samples;
8. Provision of suitable monitoring equipment;

In addition, the HP Surveyor was required to take soil samples (in the sample pots provided) when:

- Any area where 2 x background radiation level was found.
- Areas of ash/burning were evident.
- Sections of core samples where soils showed a raised radiological contamination by probe.
- Areas of open pits which showed significant colour changes in the strata.
- As requested by WSP | PB.

4. Sample collection

Soil samples were collected in the sample pots provided.

Method:

- Sample pots were filled to the brim to reduce any degradation by air.
- Samples pots lids were taped shut.
- Samples were checked externally for contamination and clearance certificate provided.
- Samples were labelled using the following convention:
  - Matom Ltd
  - Date of sample collection
  - Site location
  - Trial Pit/Borehole/Hand dug pit number
  - Depth
  - Activity (cps)
- Samples were placed in the provided cool-box's for shipment to laboratory.
- Samples were held in a secure location on site until despatch to the laboratory, at the end of the site works.

4.1 Instrumentation

EQUIPMENT NAME	DESCRIPTION	SERIAL NUMBER	CALIBRATION DUE DATE
Exploranium GR135	2993	11/08/2017	Exploranium GR135
Rotem DA3 & PM11	8308-003 0708-001	11/08/2017	Rotem DA3 & PM11
Mini 900 / EP15	3296	22/06/2017	Mini 900 / EP15

Instruments were response checked each day before commencing monitoring duties. Check sources were stored in accordance with Matom procedure RSOI.021 Radioactive Check Sources.

5. Survey Results

Local background radiation levels were taken for each of the field instruments to be used, the measured levels across a number of locations was:

Effective dose rate 0.1µSv/h (γ)
Radiation levels of 30-50cps γ and <1cps βγ

Summary of soil sampling surveys:

Sample	Radiation	Contamination	
	Y	βγ	Probe Y
W4 BH 305 0.25m	0.1µSv/h (γ)	<1cps	40-45cps
W4 WS 314 0.25m	0.1µSv/h (γ)	<1cps	40-45cps
W4 TP 314 0.75m	0.1µSv/h (γ)		40-45cps
W4 TP 314 2.0m	0.1µSv/h (γ)	<1cps	40-50cps
W4 WS 315 0.3m	0.1µSv/h (γ)	<1cps	40-45cps
W4 TP 316 1.0m	0.1µSv/h (γ)	<1cps	40-50cps
W8 WS 321 0.2m	0.1µSv/h (γ)	<1cps	30cps
W8 WS 319 2.0m	0.1µSv/h (γ)	<1cps	
W9 BH 309 1.5m	0.1µSv/h (γ)	<1cps	50cps
W9 WS 322 0.2m	0.1µSv/h (γ)	<1cps	50cps
W9 WS 323 0.5m	0.1µSv/h (γ)	<1cps	50cps
W9 WS 326 1.2m	0.1µSv/h (γ)	<1cps	45cps

The results of the radiochemical analysis of the samples listed above are provided within Appendix 2.

6. Conclusion and Discussion

The radiological monitoring programme for the site investigation and associated trial pit, hand dug pit and borehole sampling was appropriate to the likelihood of contamination being present or in significant quantities to that may have posed a risk to personnel working onsite, handling samples, or the receiving laboratory personnel.

The results of the Matom surveys (Appendix 1) provide confidence that there is a low probability of radiological contamination across this site given none of the areas sampled had levels of radiation above measured background levels for any of the trial pits, hand dug pits or borehole samples tested. Therefore, there was no risk from elevated radiation levels to operators, the public and the environment.

Results of the radiochemical analysis of the samples are provided in Appendix 2. These results, combined with the infield surveys, indicate that there is no significant radiological contamination in the sampled areas in accordance with Environmental Permitting Regulations 2010 (EPR) and the National Planning Policy Framework (NPPF).

7. References

1. WSP I PB Construction Phase Plan, Report Number 70015362
2. 03/146/03.25 - Matom_Tipner (W4,W8,W9)_Method Statement;
3. 03/146/03.26 - Matom_Tipner (W4,W8,W9)_ Risk Assessment;
4. 03 146 03.27 - Matom_Tipner (W4,W8,W9)_Sampling_Method Statement.
5. 03/146/03.02r1 - Horsea Island & Tipner Site Radiological Contamination Assessment
6. Environmental Permitting Regulations 2010
7. National Planning Policy Framework (NPPF)

Appendix 1: Scanned copies of original surveys

Appendix 2: Results of the Radiochemical Analysis of Soil Samples

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

0.1 µSv/h

Date:	18/4/17	Survey Ref:		Area Designation:		Survey Type:		Instrument:	Serial No:	Pre Test:	Bgd:	Post Test:
Building / Location:	WSP/MOD TIPNER SITE			Controlled		Routine		RADTEMDAB/PM11	8308/003	OK	40-45 CPS	OK
Area Surveyed / Site Plan Reference:				Supervised	✓	Request		Mini 900/EP15	3296	OK	1CPS/µSv	OK
MOD TIPNER SITE LOCATIONS W4, W8, W9.				Non-des	✓	Incident						
Start Time:	1000 HRS 18/4/17	End Time:	1515 HRS 27/4/17	Other:		Other:						

No:	Survey Details:	Radiation: µSv/h β/γ	Radiation: Or γ	Radiation: mSv/h n	Contamination: Bq/cm² α	Contamination: Or β	Contamination: cps P/s*	FM or R**	US S or K***	Comments / Notes:
	GENERAL WALK OVER OF SITE W4 WASTE DUMP		0.1			40-50	P			BACKGROUND READINGS TAKEN OUTSIDE OF SITE ENTRANCE. ALL READINGS ARE GROSS.
	DEPTH (M) LOC DESCRIPTION									
	W4BH304 START 1000 18/4/17 END 1645 —11—									
0.0	GLASS/SOIL		0.1			40-45	P			
0.5	SOIL		"			"	P			
1	"		"			"	P			
2	"		"			"	P			
3	"		"			"	P			
4.5	CLAY		"			"	P			
5.5	CLAY/CHALK		"			"	P			
8	—11—		"			"	P			
	W4BH313 START 1010 18/4/17 END 1630 —11—									
0.0	STONE/SOIL		0.1			40-50	P			

Completed by:					
Name:	T. ROBSON	Signature:		Date:	27/4/17

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

			Radiation:			Contamination:					
No:	Survey Details:		µSv/h β/γ	Or Y	mSv/h n	Bq/cm² α	Or β	cps P/s*	FM or R**	US S or K***	Comments / Notes:
DEPTH	LOC	DESCRIPTION		0·1			40-50	P			
0·25	W4WS313	STONE / SOIL		"			"	P			
1·25		—"		"			"	P			
2·2		STONE / CLAY		"			"	P			
3		—"		"			"	P			
4		—"		"			"	P			
	W4WS312	START 1635 18/4/17									
		STOPPED 1720 —"									
		RESTART 1440 20/4/17									
		END 1015 21/4/17									
0·0		STONE / SOIL		0·1			40-45	P			
0·25		—"		"			"	P			
0·5		SOIL		"			"	P			
1		—"		"			"	P			
2		—"		"			"	P			
3		CLAY		"			"	P			
4		—"		"			"	P			
5		—"		"			"	P			
	W4BH305	START 0830 19/4/17									
		END 1400 —"									
0·0		STONE / SOIL		0·1			40-45	P			
0·25		—"		"			"	P	SAMPLE TAKEN lcps βS		
1·5		SOIL		"			"	P			
2·5		SOIL / CLAY		"			"	P			
5		CLAY		"			"	P			
6·5		—"		"			"	P			

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

(3)

No:	Survey Details:	Radiation: uSv/h β/γ	Or γ	mSv/h n	Contamination: Bq/cm² α	Or β	cps P/s	FM or R**	US S or K***	Comments / Notes:
DEPTH	LOC DESCRIPTION									
	W4WS316 START 1105 19/4/17									
	STOPPED 1205 —11—									
	RESTART 1410 20/4/17									
	END 1510 —11—									
0·0	SOIL/STONE		0·1			45-50	P			
0·2	—11—		"			"	P			
1	—11—		"			"	P			
1·5	—11—		"			"	P			
2	—11—		"			"	P			
2·5	CLAY/STONE/OIL		"			"	P			
	W4WS315 START 1205 19/4/17									
	STOPPED 1430 —11—									
	RESTART 1350 20/4/17									
	END 1510 —11—									
0·0	SOIL/STONE		0·1			45-50	P			
0·3	—11—		"			"	P	SAMPLE TAKEN <1 GBq BS		
0·5	SOIL/TARMAC		"			"	P			
2·5	CLAY		"			"	P			
3·5	—11—		"			"	P			
5	—11—		"			"	P			
	W4BH306 START 1500 A/4/17									
	END 0955 20/4/17									
0·0	SOIL/STONE		0·1			45-50	P			
0·5	—11—		"			"	P			
1·5	CLAY		"			"	P			
2·5	—11—		"			"	P			
3·5	—11—		"			"	P			

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

		Radiation:			Contamination:					
No:	Survey Details:	µSv/h β/γ	Or γ	mSv/h n	Bq/cm² α	Or β	cps P/S	FM or R**	US S or K***	Comments / Notes:
DEPTH	LOC DESCRIPTION									
4.5	WHBH306 CLAY		0.1			45-50	P			
5.5	"		"			"	P			
6.5	"		"			"	P			
7.5	"		"			"	P			
8.5	"		"			"	P			
10	"		"			"	P			
	WHBH307 START 1055 20/4/17									
	END 1700 -11-									
0.0	SOIL/STONE		0.1			40-45	P			
1	"		"			"	P			
2	"		"			"	P			
3	"		"			"	P			
4	SOIL/CLAY		"			"	P			
5	CLAY		"			"	P			
11	CLAY		"			"	P			
	WHTP314 START 1100 20/4/17									
	END 1140 -11-									
0.0	SOIL/STONE		0.1			40-45	P			
0.25	-11-		"			40-50	P			
2	STONE/CLAY/SOIL		"			40-50	P	SAMPLE TAKEN	1 CPS	BS
3	-11-		"			96	A	-11-	1 CPS	BS
	WHTP313 START 1145 20/4/17									
	END 1200 -11-					40-45	P			
0.0	SOIL/STONE		0.1			45-50	P			
1	-11-		"			"	P			
2	-11-/CLAY		"			"	P			

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

(5)

		Radiation:			Contamination:					
No:	Survey Details:	µSv/h β/γ	Or γ	mSv/h n	Bq/cm² α	Or β	cps P/s*	FM or R**	US S or K***	Comments / Notes:
DEPTH	LOC DESCRIPTION									
3.5	WHTP313 CLAY/OIL		0.1			40-50	P			
	WHTP310 START 1210 20/4/17									
	END 1225 —"—									
0.0	SOIL/STONE		0.1			45-50	P			
1	SOIL		"			"	P			
2	CLAY/OIL		"			"	P			
2.7	—"—		"			"	P			
2.9	CLAY		"			"	P			
	WHTP309 START 1230 20/4/17									
	END 1245 —"—									
0.0	SOIL/STONE		0.1			40-45	P			
1	CLAY		"			"	P			
2	CLAY/OIL		"			"	P			
3	—"—		"			"	P			
	WHTP308 START 1325 20/4/17									
	END 1340 —"—									
0.0	SOIL		0.1			45-50	P			
1	SOIL/BRICK		"			"	P			
2	—"—		"			"	P			
3	CLAY/BRICK		"			"	P			
	WHTP307 START 1345 20/4/17									
	END 1510 —"—									
0.0	SOIL/STONE		0.1			45-50	P			
1	—"—		"			"	P			
2	—"—		"			"	P			
3	—"—		"			"	P			

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

(6)

		Radiation:			Contamination:					
No:	Survey Details:	µSv/h β/γ	Or Y	mSv/h n	Bq/cm² α	Or β/γ	cps P/s*	FM or R**	US S or K***	Comments / Notes:
DEPTH	LOC DESCRIPTION									
	WHTP312 START 1515 20/4/17									
	END 1540 -11-		0·1			40-45	P			
0·0	SOIL/STONE		11			11	P			
1	-11-		11			11	P			ASBESTOS FOUND
2	SOIL/BRICK		11			11	P			WORK STOPPED
3	-11-		11			11	P			
	WHTP316 START 0900 21/4/17									
	END 0915 -11-									
0·0	SOIL/STONE		0·1			45-50	P			
1	-11-		11			11	P	SAMPLE TAKEN 1CP3B5		
2	CLAY/BRICK		11			11	P			ASBESTOS FOUND
										WORK STOPPED
	WHTP315 START 0930 21/4/17									
	END 0950 -11-									
0·0	SOIL/STONE		0·1			40-45	P			
1	-11-		11			45-50	P			
2	CLAY/BRICK		11			45-50	P			
3	-11-		11			50-60	P			
3·5	-11-		11			50-60	P			
	WHTP311 START 0955 21/4/17									
	END 1015 -11-									
0·0	SOIL/STONE		0·1			40-45	P			
1	-11-		11			11	P			
2	CLAY/BRICK		11			11	P			
3	-11-		11			11	P			
3·5	CLAY/STONE		11			50-60	P			

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

		Radiation:			Contamination:					
No:	Survey Details:	µSv/h β/γ	Or Y	mSv/h n	Bq/cm² α	Or β	cps P/s*	FM or R**	US S or K***	Comments / Notes:
DEPTH	LOC DESCRIPTION									
	W4WS314 START 0820 A/4/17									
	END 1150 -11-									
0·0	STONE/SOIL		0·1			40-45	P			
0·25	-11-		"			"	P	SAMPLE TAKEN 1 CPS BG		
0·5	-11-		"			"	P			
2	CLAY/SOIL		"			"	P			
	GENERAL WALKOVER									
	SITE W8 BOATYARD		0·1			40-45	P			
	W8BH308 START 0845 24/4/17									
	END 1715 -11-									
0·0	IMPORTED CLEAN STONE		0·1			30	P			
0·3	-11-		"			30	P			
1	CLAY		"			40	P			
1·5	SAND		"			"	P			
2·5	-11-		"			"	P			
3·5	-11-		"			"	P			
4·5	-11-		"			"	P			
7·5	CLAY		"			"	P			
9·5	-11-		"			"	P			
	W8WS317 START 0855 24/4/17									OUTSIDE BOATYARD.
	END 1330 -11-									
0·0	SOIL		0·1			45-50	P			
0·2	-11-		"			45	P			
1	-11-		"			45	P			
2	CLAY/SAND		"			40-45	P			
3	SAND		"			"	P			
4	SAND		"			"	P			

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

(8)

		Radiation:			Contamination:					
No:	Survey Details:	µSv/h βγ	Or Y	mSv/h n	Bq/cm² α	Or β	cps P/S	FM or R**	US S or K***	Comments / Notes:
DEPTH	LOC DESCRIPTION									
	WBWS318 START 1000 24/4/17									
	END 1610 —11—									
0.0	STONE		0.1			40-45	P			
1	SOIL/CLAY		"			"	P			OUTSIDE BOATYARD
2	—11—		"			"	P			
3	CLAY/SAND		"			"	P			
	WBWS320 START 1330 24/4/17									
	END 0930 25/4/17									
0.0	STONE		0.1			45-50	P			
0.2	STONE/BRICK		"			40-45	P			
1	BRICK/CLAY		"			"	P			
2	CLAY		"			"	P			
3	—11—		"			"	P			
4	—11—		"			"	P			
	WBWS319 START 0755 15/4/17									
	END 1245 —11—									
0.0	STONE/SOIL									
0.2	—11—									
1	—11—									
2	CLAY							SAMPLE TAKEN 1CPBS5		
3	—11—									
4	—11—									
	WBWS321 START 0805 25/4/17									
	END 1555 —11—									
0.0	STONE/SAND		0.1			30	P			
0.2	—11—		"			30	P	SAMPLE TAKEN 1CPBS5		

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

		Radiation:			Contamination:					
No:	Survey Details:	µSv/h β/γ	Or γ	mSv/h n	Bq/cm² α	Or β	cps P/s*	FM or R**	US S or K***	Comments / Notes:
ROMA	LOC DESCRIPTION									
1	W8WS321 CLAY/SAND		0·1			30	P			
2	CLAY		"			"	P			
3	CLAY		"			"	P			
4	CLAY/FLINT		"			"	P			
5	CLAY		"			"	P			
	GENERAL WALK OVER		0·1			35-45	P			
	SITE W9 SSSI									
	W9BH310 START 0915 25/4/17									
	END 1630 "									
0·0	SOIL/GRASS		0·1			30-35	P			
0·2	SOIL		"			"	P			
1	SOIL		"			"	P			
2	SOIL/STONE		"			"	P			
3	"		"			"	P			
4	CLAY		"			"	P			
5	"		"			"	P			
6	NO RECOVERY		"			"	P			
7	CLAY		"			"	P			
8	"		"			"	P			
9·5	"		"			"	P			
	W9BH309 START 0820 26/4/17									
	END 1715 "									
0·0	GRASS/SOIL		0·1			50-55	P			
0·2	SOIL		"			"				
1·5	SOIL		"			50		SAMPLE TAKEN 1QBAG		
2·5	SOIL/STONE		"			45				

(10)

RADIATION AND CONTAMINATION SURVEY REPORT FORM

		Radiation:			Contamination:					
No:	Survey Details:	µSv/h β/γ	Or γ	mSv/h n	Bq/cm² α	On	cps P/s*	FM or R**	US S or K***	Comments / Notes:
DEPTH	LOC DESCRIPTION									
3.5	W9BH309 SOIL/CLAY/STONE		0.1			45	P			
4.5	CLAY		"			50-55	P			
5.5	—"—		"			"	P			
6.5	—"—		"			50	P			
7.5	—"—		"			50	P			
8.5	—"—		"			50	P			
9.5	—"—		"			50	P			
	W9WS323 START 0830 26/4/17									
	END 1230 —"—									
0.0	GRASS/SOIL		0.1			50	P			
0.2	SOIL		"			45	P			
1.2	SOIL		"			45	P	SAMPLE TAKEN lcps BGS		
2	SOIL/CLAY		"			45-50	P			
3	SOIL/WASTE		"			"	P			
4	CLAY		"			"	P			
5	CLAY		"			"	P			
	W9WS326 START 1020 26/4/17									
	END 1600 27/4/17									
0.0	GRASS/SOIL		0.1			45	P			
0.2	SOIL		"			"	P			
1.2	SOIL		"			"	P	SAMPLE TAKEN lcps BGS		
2	SOIL/CLAY		"			"	P			
3	RUBBLE/FLINT		"			"	P			
4	—"—/CLAY		"			"	P			
	W9WS322 START 1315 26/4/17									
	END 1345 —"—									

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RADIATION AND CONTAMINATION SURVEY REPORT FORM

(11)

		Radiation:			Contamination:					
No:	Survey Details:	µSv/h β/γ	Or γ	mSv/h n	Bq/cm² α	Or β	cps P/s*	FM or R**	US S or K***	Comments / Notes:
REPT	LOC DESCRIPTION									
0·0	WSWS322 GRASS/SOIL		0·1			50	P			
0·2	SOIL		0·1			50	P	SAMPLE TAKEN LAB ANS		ASBESTOS FOUND WORK STOPPED
0·7	SOIL		0·1			50	P			
	WSWS325 START 0815 27/4/17									
	END 1115 "									
0·0	GRASS/SOIL		0·1			55	P			
0·2	SOIL/STONE		"			50	P			
1·2	"		"			"	P			
2	CLAY		"			"	P			
3	"		"			"	P			
4	"		"			"	P			
5	CLAY/SLOPER		"			"	P			
	WSWS324 START 1005 27/4/17									
	END 1515 "									
0·0	GRASS/SOIL		0·1			50	P			
0·2	SOIL/BRICK		"			45	P			
1·2	" /CLAY		"			45	P			
2	CLAY/BRICK		"			45-50	P			
3	"		"			"	P			
4	CLAY		"			"	P			
5	CLAY		"			"	P			

(12)

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INTEGRATED MANAGEMENT SYSTEM

RADIOLOGICAL CLEARANCE CERTIFICATE

Project Ref:	WSP / TIPNER	Survey Ref No:	N/A	Sheet	1 of 1

DESCRIPTION AND REFERENCE	DOSE RATE ($\mu Sv.h^{-1}$)	CONTAMINATION - PROBE		CONTAMINATION – WIPE	
		CPS	$Bq.cm^{-2}$	CPS	$Bq.cm^{-2}$
SAMPLE POTS					
WH BH 305 WH WS 314 WH TP 314	0.1	<1.0	/	NIL	/
WH TP 314 WH WS 315 WH TP 316	"	"	/	NIL	/
W8 WS 321 W8 WS 319 W9 BH 309	"	"	/	NIL	/
W9 WS 322 W9 WS 323 W9 WS 326	"	"	/	NIL	

INSTRUMENTS USED:	RADEM RAD-2000 MINI 900/EP15
SERIAL NUMBERS:	8308-003 3296
BACKGROUND:	0.1 µSv/h <1.0 CPS
DATE / TIME:	0900 27/4/17
INSTRUMENT RESPONSES:	OK
MONITORED BY:	T. Robson

COMMENTS / ACTIONS

* OUTSIDE CONTAINER POTS

* THIS IS TO CERTIFY THAT THE ITEMS LISTED ABOVE ARE FREE FROM RADIOACTIVE CONTAMINATION (EXCEPTING NATURAL OCCURRING ACTIVITY) I.E. ACTIVITY CONCENTRATIONS ARE LESS THAN 0.4 BQ/CM^{-2}

Name: T. Robson	Grade: RPS
Signature:	Date: 27/4/17

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INTEGRATED MANAGEMENT SYSTEM

(13)

INSTRUMENT RESPONSE CHECK

DATE	INSTRUMENT	SERIAL NUMBER	CALIBRATION DUE DATE	CORRECT RESPONSE TO SOURCE	DAILY RESPONSE TO SOURCE	SATISFACTORY Y/N	UNSATISFACTORY Y/N	COMMENTS	HPM INITIALS
18/4/17	Rotem DA3/PM11	8308/003	11/8/17	600-650cps	OK	Y	Y		
	MIN900/EPIS	3296	22/6/17	250 cps	OK				
19/4/17	—11—	—11—	—11—	—11—	OK	Y	Y		
					OK				
20/4/17	—11—	—11—	—11—	—11—	OK	Y	Y		
					OK				
21/4/17	—11—	—11—	—11—	—11—	OK	Y	Y		
					OK				
24/4/17	—11—	—11—	—11—	—11—	OK	Y	Y		
					OK				
25/4/17	—11—	—11—	—11—	—11—	OK	Y	Y		
					OK				

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INTEGRATED MANAGEMENT SYSTEM

INSTRUMENT RESPONSE CHECK

DATE	INSTRUMENT	SERIAL NUMBER	CALIBRATION DUE DATE	CORRECT RESPONSE TO SOURCE	DAILY RESPONSE TO SOURCE	SATISFACTORY Y/N	UNSATISFACTORY Y/N	COMMENTS	HPM INITIALS
26/4/17	ROTEM RAM/AM11 MINI 900/EP15	8308/003 3296	11/8/17 22/6/17	600-650 cps 250 cps	OK OK	Y	Y		
27/4/17	—11—	—11—	—11—	—11—	OK OK	Y	Y		

ESG
Environmental Scientifics Group

Test Report: **RV3191**

Radiochemical Analysis of Soil Samples

Prepared for Mark Musgrave

Matom Ltd

May 2017

ESG

A company of SOCOTEC

Radiochemical Analysis of Soil Samples

Client:	Matom Ltd 26 Castle Street Conwy LL32 8AY
Testing Facility:	ESG Unit 12 Moorbrook Southmead Industrial Park Didcot Oxon OX11 7HP
Quote Number:	ENR-ANU-8711
Customer Reference:	WSP/TIPNER
Laboratory Reference:	RV3191
Samples Received:	28 April 2017
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	25 May 2017
Report Author:	CHunston
Author's Name:	Charlene Hunston
Job Title:	Senior Analyst
Checked by:	J.Neilson
Date:	25 May 17
Checker's name:	Joseph Neilson
Job Title:	Analyst
Report Date:	25 May 2017

UKAS TESTING
1015

Introduction

Twelve soil samples were received from Matom Ltd on 28th April 2017. The samples were in a satisfactory/ambient condition on receipt. Accompanying instructions detailed the analysis required.

Experimental

Gamma Spectrometry

The samples were dried, homogenised with a crusher and analysed using method "ANU/SOP/2029 Issue 4" – "Samples were placed in containers to match the appropriate calibration geometry and then measured by high-resolution gamma ray spectrometry.

The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 60-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series."

Results

Results are presented in the following tables. Result uncertainties for each analysis are stated in the results tables or beneath the tables where applicable.

An asterisk "*" indicates that the analysis is not covered under the UKAS accreditation of the laboratory with UKAS 1015. Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested. This test report must not be reproduced except in full, without written approval of the laboratory.

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Results Summary - Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Pb-212	Bi-212
W4 BH 305 0.25m	RV3191	<20	170 ± 31	<2	<2	<2	4.5 ± 1.3	<30	14 ± 2.1	<20
W4 WS 314 0.25m	RV3192	<20	160 ± 27	<2	<2	<2	3.9 ± 1.1	<30	9.8 ± 1.8	<20
W4 TP 314 0.75m	RV3193	<20	150 ± 26	<2	<2	<2	4.2 ± 1.1	<30	11 ± 1.9	<20
W4 TP 314 2.0m	RV3194	<20	200 ± 34	<2	<2	3.5 ± 1.2	5.6 ± 1.5	<40	14 ± 2.4	<20
W4 WS 315 0.3m	RV3195	<20	200 ± 38	<2	<2	<2	6.1 ± 1.5	<30	19 ± 2.4	<30
W4 TP 316 1.0m	RV3196	<20	150 ± 32	<2	<2	<2	4.1 ± 1.3	<30	14 ± 2.0	<20
W8 WS 321 0.2m	RV3197*	<20	120 ± 28	<2	<2	<2	3.5 ± 1.2	<20	10 ± 1.8	<20
W8 WS 319 2.0m	RV3198	<20	350 ± 55	<3	<2	<2	11 ± 1.9	<30	30 ± 3.7	<30
W9 BH 309 1.5m	RV3199	<20	360 ± 51	<2	<2	<2	7.5 ± 1.5	<30	20 ± 2.6	<30
W9 WS 322 0.2m	RV3200	<20	410 ± 56	<3	<2	<2	7.8 ± 1.5	<30	18 ± 2.5	<30
W9 WS 323 0.5m	RV3201	<20	280 ± 42	<2	<2	<2	7.1 ± 1.4	<30	17 ± 2.5	<20
W9 WS 326 1.2m	RV3202	<20	330 ± 49	<2	<2	<2	7.8 ± 1.6	<40	21 ± 2.5	<30
Method Blank		<30	<70	<4	<3	<3	<3	<30	<4	<40

Notes:

1. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and decay corrected to the provided sample dates.
2. Uncertainties are quoted at 2 s.d. and are based on a total uncertainty budget.
3. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
4. An asterisk "*" indicates that the matrix is not covered by UKAS accreditation.
5. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{238}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{238}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.
6. Results below and above the LoD are reported to one and two significant figures, respectively.

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Results Summary - Gamma Spectrometry

Customer Reference	Laboratory Reference	Pb-214	Bi-214	Ra-224	Ra-226*	Ac-228	Th-234	Pa-234m	U-235	Am-241
W4 BH 305 0.25m	RV3191	14 ± 2.2	14 ± 3.0	<20	<30	15 ± 3.3	<30	<200	<2	<3
W4 WS 314 0.25m	RV3192	14 ± 1.9	11 ± 2.7	<20	<20	<6	<30	<200	<2	<3
W4 TP 314 0.75m	RV3193	15 ± 2.1	13 ± 2.6	<30	<20	14 ± 2.9	<30	<200	<2	<3
W4 TP 314 2.0m	RV3194	15 ± 2.5	16 ± 3.1	<40	<30	<9	<40	<200	<2	<4
W4 WS 315 0.3m	RV3195	18 ± 2.7	17 ± 3.3	<20	<20	18 ± 4.0	<30	<200	<2	<3
W4 TP 316 1.0m	RV3196	15 ± 2.1	15 ± 3.0	<20	<20	13 ± 3.8	<30	<200	<2	<3
W8 WS 321 0.2m	RV3197*	12 ± 1.9	11 ± 2.6	<30	<20	12 ± 3.5	<30	<200	<2	<2
W8 WS 319 2.0m	RV3198	22 ± 2.8	22 ± 3.7	<30	<30	34 ± 4.9	<30	<200	<2	<3
W9 BH 309 1.5m	RV3199	17 ± 2.6	19 ± 3.0	<40	<30	24 ± 4.2	<30	<200	<2	<3
W9 WS 322 0.2m	RV3200	19 ± 2.7	23 ± 3.4	<40	<30	24 ± 4.9	<30	<200	<2	<3
W9 WS 323 0.5m	RV3201	18 ± 2.3	15 ± 2.8	<30	<30	22 ± 4.3	<40	<200	<2	<3
W9 WS 326 1.2m	RV3202	21 ± 2.5	20 ± 3.0	<30	<30	23 ± 4.1	<40	<200	<2	<3
Method Blank		8.7 ± 3.5	<7	<40	<40	<20	<30	<400	<3	<3

Notes:

1. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and decay corrected to the provided sample dates.
2. Uncertainties are quoted at 2 s.d. and are based on a total uncertainty budget.
3. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
4. An asterisk "*" indicates that the matrix/analysis is not covered by UKAS accreditation.
5. ^{228}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported the ^{228}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.
6. Results below and above the LoD are reported to one and two significant figures, respectively.

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Appendix D.7

ECOLOGICAL RECORDS

WSP|Parsons Brinckerhoff Site Attendance Record

Site:	Tipner West, Portsmouth City Deal	Attendees	Company
Project Number:	70015362	Rebecca Blamey (RB), Senior Ecologist	WSP | Parsons Brinkerhoff
Date:	11/08/2016, 12/08/2016, 15/08/2016	Katie Morris (KM), Assistant Ecologist	WSP | Parsons Brinkerhoff
Time:	9am-4pm (Day 1), 7.30am-4pm (Days 2-3)		
Weather Conditions: (temperature, cloud cover, wind speed, rain)	11/08/2016: **Start:** (circa 10am, at start of veg clearance), 19°c, 6/8 cloud (high in sky), Beaufort Scale: 3, dry. Sunny spells all day. **End:** (4pm), 23°c, 2/8 cloud Beaufort Scale: 3, dry.	12/08/2016: **Start:** hot and sunny all day. 23°C, 0/8 cloud. Beaufort Scale 1, dry. End: (3pm) 26°C, 0/8 cloud, Beaufort Scale: 0, dry.	15/08/2016: **Start:** hot and sunny all day. 24°C, 0/8 cloud. Beaufort Scale 1, dry. **End:** (4pm) 28°C, 0/8 cloud, Beaufort Scale: 0, dry.

Rain: *0=none, 1=drizzle, 2=light, 3=moderate, 4=heavy.* ***Cloud:*** *0-8 oktas.* ***Beaufort Scale:*** *0=calm, 1=light air (smoke drifts in wind), 2=light breeze (leaves rustle, wind felt on face), 3=gentle breeze (light flags extended, small twigs in constant motion); 4=moderate wind (dust, leaves and loose paper raised, small branches move), 5=fresh wind (small trees sway), 6=strong wind (large branches move, whistling in phone lines, difficult to use umbrellas), 7-12=inappropriate conditions.*

Notes/Limitations:	Access to all the trial pits and bore holes in the north west corner of the Site was considered impossible due to the height and desnsity of the scrub. It was decided that the trial pits and bore holes would be moved towards the centre of the site where access was more possible. On the 15th Asbestos was found in the north west corner of the Site. All works in that area of the site were cancelled.

Record of site visit

RB provided Ecological Clerk of Works (ECoW) support at Tipner Firing Range on 11th August 2016. Following the induction and H+S briefing process, RB briefed the two vegetation clearance operatives on potential ecological constraints to the vegetation clearance and the staged clearance method to be adopted. Martin Weil confirmed that the firing range ground investigation (GI) locations were the priority given access constraints, and vegetation clearance was prioritised in these areas. Access paths were agreed as: 2m wide (window samples), 3m wide (boreholes), 4m wide (trial pits), with a 2m radius of clearance surrounding the staked GI location. Once each location had been marked out, RB confirmed the absence of Japanese knotweed *Fallopia japonica* , and completed a visual inspection for reptiles or ground nesting birds. As required, RB instructed the vegetation clearance operatives to strim vegetation to approximately 200mm above ground level. Following a secondary check by RB, the vegetation clearance operatives were instructed to clear to ground level. The arisings were raked out of the way to prevent re-establishment of the cleared path by reptiles. Locations confirmed to have no further ecological constraints by RB:

Shorty mown grass- RB confirmed absence of Japanese knotweed: TP208, HP201, HP202, HP203, HP204, BH201, BH203/TP210 and WS216.

Long grass / ruderal habitat- RB supervised two stage vegetation clearance, to include removal of arisings: TP211, WS214, BH210, HP207, HP208, BH209, TP209, Un-numbered WS, Un-numbered BH.

On the 12th and 15th KM provided ECoW support for the remaining TP and BH. Where clearance was carried out in long grass and scrub the areas were carried out in two stages with KM carrying out a check for reptiles in between. Reptiles were found at BH206, TP203 and TP201, two common lizard had to be translocated out of the area, these individuals were moved approximatley 10m away from the clearance area into the main scrub area which where no works were going to occur. TP205 was moved central by a metre to ensure it avoided potential JK rhizome extent. The remaining areas WS218, WS217, TP213, BH205, TP202, WS206, TP205, WS207, BH202 and two unnumbered TP.

Photographs demonstrating examples of vegetation clearance:

Photograph 1-2: TP209 (before and after)

Photograph 3: HP205 (no vegetation cleanrace required)

WSP|Parsons Brinckerhoff Site Attendance Record

Site:	Tipner West	**Attendees**	**Company**
Project Number:	70015362-EC3	Xenia Snowman, Ecologist	Arbology, on behalf of WSP | Parsons Brinkerhoff
Date:	11/04/2017		
Time:	08:30-16:30 (exclusive of travel)		
Weather Conditions: (temperature, cloud cover, wind speed, rain)	11/04/2017 **Start:** partly cloudy 3/8 oktas,wind 15mph W, approximately 7°C,		

Rain: *0=none, 1=drizzle, 2=light, 3=moderate, 4=heavy.* ***Cloud:*** *0-8 oktas.* ***Beaufort Scale:*** *0=calm, 1=light air (smoke drifts in wind), 2=light breeze (leaves rustle, wind felt on face), 3=gentle breeze (light flags extended, small twigs in constant motion); 4=moderate wind (dust, leaves and loose paper raised, small branches move), 5=fresh wind (small trees sway), 6=strong wind (large branches move, whistling in phone lines, difficult to use umbrellas), 7-12=inappropriate conditions.*

Notes/Limitations:	N/a

Record of site visit

XS was present on site 11/04/2017 0830 to 1630.

XS provided Ecological Clerk of Works (ECoW) support at the Tipner Range. XS briefed the contractors on potential ecological constraints; reptile suitable habitat and nesting birds and the presence of Japanese knotweed on the site. Following a hand search for reptiles and a search for birds nests, where applicable , vegetation clearance was undertaken under supervision to reduce the vegetation height to unsuitable levels for reptiles. A further search was made prior to the raking up of remaining materials. This was undertaken at the ten GI locations. Sections due to be utilised to track the required vehicles in to these ten locations were also searched and cleared to levels unsuitable for reptiles, to ensure that no reptiles were killed or injured during the machinery set-up, or birds nests damaged, destroyed or disturbed. Following the vegetation clearance the area due for GI works and the sections of vehicle access track were assessed as being unsuitable for use by reptiles. Therefore, the works at these ten locations could proceed without any further ecological supervision in the subsequent days required for these drilling works.

The walkover also considered Japanese knotweed. A stand of what may have been very young Japanese knotweed or a hybrid was identified. However, identification could not be confirmed due to the early stage of growth of the plant and the fact that the tops have been recently strimmed. As a precaution, this area was cordoned off to a radius of 8m to ensure that no works on site affect this area.

WSP|Parsons Brinckerhoff Site Attendance Record

Site:	Tipner West	**Attendees**	**Company**
Project Number:	70015362-EC3	Bryony Paul, Ecologist	WSP | Parsons Brinkerhoff
Date:	25-27/04/2017		
Time:	08:00-16:30/9:30-16:30 / 8:00-13:00 (exclusive of travel)		
Weather Conditions: (temperature, cloud cover, wind speed, rain)	25/04/2017 **Start:** sunny 3/8 oktas,wind 14mph NW, approximately 8°C,	26/04/2017 **Start:** overcast 7/8 oktas,wind 10mph N approximately 4°C at start, occasional drizzle	27/04/17 **Start**: Sunny 3/8 oktas, wind 5mph NW, approximately 5°C

Rain: *0=none, 1=drizzle, 2=light, 3=moderate, 4=heavy.* ***Cloud:*** *0-8 oktas.* ***Beaufort Scale:*** *0=calm, 1=light air (smoke drifts in wind), 2=light breeze (leaves rustle, wind felt on face), 3=gentle breeze (light flags extended, small twigs in constant motion); 4=moderate wind (dust, leaves and loose paper raised, small branches move), 5=fresh wind (small trees sway), 6=strong wind (large branches move, whistling in phone lines, difficult to use umbrellas), 7-12=inappropriate conditions.*

Notes/Limitations:	N/a

Record of site visit

BP was present on site 25/04/2017 0800 to 1630, 26/04/2017 0800 to 1600 and 27/04/2017 0800 to 1130.

BP provided Ecological Clerk of Works (ECoW) support at Tipner Firing Range, following relevant induction from Ross Smith (WSP|Parsons Brinckerhoff Site engineer). BP briefed the hand digging and borehole operatives on potential ecological constraints; reptile suitable habitat, nesting birds, the site being within Portsmouth Harbour SSSI/SPA and the presence of Japanese knotweed on the site. The locations for GI works had already been marked out, BP conducted a site walkover of access routes between each GI location and inspected the locations to highlight any ecological constraints, no birds nests or reptiles were present. Vehicle access paths were agreed as 2-4 m wide and were limited to only necessary vehicles i.e drilling rig operative vehicles, with a suitable working area around the location of the GI investigation point. Two stands of japanese knotweed were present (approximate locations are as shown on the appended map) but they were avoided with vehicle movements and borehole locations and therefore did not impact the works. BP supervised the hand digging to 1.2m of all the boreholes, window panes and trial pits within the site throughout the three days; no reptiles were found within topsoil.

Drilling vehicle track

Approximate locations of Japanese knotweed

W5 Scrub Land

W9 MOD Firing Range

Portsea Island

Tipner Range

Seamanship Training Centre

El Sub Sta

Shingle

Mean High Water

Beacon

Butts

Track

FS

Jetty

Slipway

Mud

TIPNER LANE

HP210 TP203 HP209 BH201 WS202 WS203 BH202 BH203 WS204 W5TP301 W7WS311 W5BH302 W7WS308 W7WS309 W7WS312 W5WS305 W5TP302 W5BH303 W3WS303 W3WS304 W4TP308 W3WS305 W4BH304 W4TP309 W4TP310 W4BH30 W4TP313 W4WS315 W5WS306 W4TP314 W5TP303 W5TP304 W5TP305 WS205 BH204 WS208 BH205 WS207 TP208 TP210 BH206 TP209 WS209 BH207 TP211 WS206 WS210 BH208 TP212 TP213 WS211 BH209 WS212 W8WS317 W8WS318 W8WS319 W8WS320 W8WS321 W8BH308 W9TP301 W9WS322 W9BH309 W9WS323 W9BH310 W9WS325 W9WS324 W9WS326

jap knotweed

jap knotweed

Legend

- Site Boundary
- Previous Investigation
- BH, Deep
- BH, Shallow
- TP
- WS
- Low Voltage Electricity
- High Voltage Electricity
- Gas Low Pressure
- Virgin Media
- BT Openreach
- Southern Water
- Water Abanoned
- Water
- HV SSE
- Gas Other
- Range Exlusion Zone

WSP | PARSONS BRINCKERHOFF

TITLE:

CITY DEAL, PORTSMOUTH
TIPNER
PROPOSED EXPLORATORY
HOLE PLAN

FIGURE No:

70015362 - W9 Firing Range

0 20 40 80 120 160 Meters

Contains Ordnance Survey data © Crown copyright and database right 2017.

File:Q:\WSP UK\WSP E\gint\#Projects\Agresso\70015362 - Tipner West\04-Drawings\70015362 Tipner Ex Hole Plan W9 Enlarged.mxd
Drawn By:SE
Date Modified:04/04/2017

Appendix E

GENERIC QUANTITATIVE RISK ASSESSMENT

Appendix E.1

SOIL SCREENING ASSESSMENT

Table E.1.1 Area 1 - W8 & W9 Soil Screening

						FIRING RANGE																														BOMB CRATER - FIRING RANGE			
					Sample ID:	HP211	TP201	TP201	TP209	TP209	TP210	TP210	TP211	BH204	BH204	BH204	BH205	BH205	BH205	BH207	BH207	BH207	BH209	BH209	BH209	WS203	WS203	WS205	WS205	WS208	WS208	WS209	WS209	WS210	WS211	WS211	WS212	WS212	TP213	TP213	BH206	BH206
					Sample Depth (m):	0.2	0.3	1.0	0.4	1.0	0.2	0.8	0.7	0.3	0.8	5.0	0.3	0.7	4.5	0.3	0.7	1.5	0.3	1.0	2.1	0.3	1.5	0.3	1.0	0.3	1.0	0.5	1.0	1.0	0.2	0.65	0.2	0.65	0.4	1.0	0.3-0.4	0.6-0.7
					Date Sampled:	19/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	18/08/2016	18/08/2016	18/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016	16/08/2016	16/08/2016	17/08/2016	17/08/2016	17/08/2016	11/08/2016	11/08/2016	11/08/2016	19/08/2016	18/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	16/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	16/08/2016	16/08/2016	15/08/2016	15/08/2016
					Geology:	MG	MG	MG	RT	RT	TS	RT	MG	MG	MG	LMBE	MG	RT	LMBE	MG	MG	RT	TS	RT	RT	MG	MG	MG	MG	RT	RT	TS	TS	MG	MG	MG	MG	MG	MG	RT	TS	LMBE
Analyte	**Units**	**LOD**	**Human Health GAC/SGV Resi W HG Veg**	**Resi WO HG Veg**	**Commercial**																																			
Asbestos																																								
Asbestos Identification	-		n.v.	n.v.	n.v.	No Asbestos Detected	No Asbestos Detected	Chrysotile as loose fibres in soil.	No Asbestos Detected	-	-	-	No Asbestos Detected	No Asbestos Detected	Soil containing material typical of ACM debris as chrysotile.	-	No Asbestos Detected	No Asbestos Detected	-	No Asbestos Detected	No Asbestos Detected	-	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Crocidolite as loose fibres in soil.	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	-	-	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos Quantification - Gravimetric - %	%	<0.001	n.v.	n.v.	n.v.	-	-	<0.001	-	-	-	-	-	-	0.0069	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Quantification - PCOM Evaluation - %	%	<0.001	n.v.	n.v.	n.v.	-	-	<0.001	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Quantification - Total - %	%	<0.001	n.v.	n.v.	n.v.	-	-	<0.001	-	-	-	-	-	-	0.0069	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Properties																																								
pH	pH Units	<1	n.a.	n.a.	n.a.	6.69	8.44	8.47	7.57	8	6.68	7.74	8.15	6.87	8.41	7.6	6.53	8.14	7.93	8.14	8.11	8.68	7.09	7.22	8.25	7.96	7.73	8.04	8	7.12	8.4	6.55	7.69	7.9	8.15	7.36	6.15	7.77	6.33	7.23	6.62	7.69
Soil Organic Matter (SOM)	%	<0.35	n.a.	n.a.	n.a.	3.81	-	-	-	<0.35	-	0.4	-	-	1.71	<0.35	-	-	-	3.95	-	<0.35	2.07	-	<0.35	-	-	2.93	-	2.43	<0.35	-	-	-	-	-	-	-	-	<0.35	3.22	-
Inorganics																																								
Ammonia (Exchangeable) as NH_4	mg/kg	<15	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Free	mg/kg	<1	15	15	78	-	<1	<1	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Complex	mg/kg	<0.5-1	15	15	78	-	<1	<1	-	-	-	<1	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	0.604	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-
Cyanide, Total	mg/kg	<1	15	15	78	-	<1	<1	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																								
Arsenic	mg/kg	<0.6	32	35	635	14.8	11.8	8.22	7.64	14.1	14.0	12.1	13.5	14.3	19.8	5.79	12.5	8.85	6.42	11.6	14.0	1.58	9.43	17.7	1.54	12.1	2.59	16.1	10.8	10.5	16.8	9.58	11.4	9.72	5.03	23.5	11.9	13.3	14.1	<0.6	8.77	12.5
Barium	mg/kg	<0.6	1,210	1,350	22,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	<0.01	1.7	1.7	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron, water soluble	mg/kg	<1	300	10,500	207,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	<0.02	12	87	223	0.561	0.138	0.325	0.195	0.194	0.429	0.207	<0.02	<0.02	0.172	<0.02	0.579	0.178	<0.02	0.831	0.4	0.0232	<0.02	<0.02	<0.02	0.403	0.029	0.663	0.378	0.207	0.18	<0.02	<0.02	0.145	0.0974	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chromium, Hexavalent	mg/kg	<0.6	4.5	4.5	24	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chromium, Total	mg/kg	<0.9	1,590	1,590	9,550	15.8	21.5	12.9	20.8	12.9	20.2	35.3	17.5	8.56	18.3	27.6	17.2	29.9	34.1	18.5	19.2	3.55	18.3	11.9	7.46	15.2	2.10	25.4	19.5	17.5	20.7	15.8	25.4	24.0	7.82	11.7	16.8	28.7	19.8	7.3	17.0	32.0
Copper	mg/kg	<1.4	2,490	7,520	69,800	195	106	63.4	27.2	6.65	46.2	11.4	175	18.0	46.6	11.6	85.4	16.8	20.5	65.9	59.3	2.46	44.7	4.3	7.45	105	3.96	224	26.7	21.1	5.00	26.9	13.8	58.6	146	252	92.8	11.9	102	1.98	129	12.4
Lead	mg/kg	<1.2	148	188	1,390	2,750	1,370	482	80.9	9.02	200	14.8	361	287	146	16.5	509	18.1	22.2	106	235	2.71	113	15.0	12.4	551	6.35	402	94.3	116	10.1	121	18.3	217	659	392	329	28.2	249	<0.7	1,190	31.1
Mercury	mg/kg	<0.14	39	56	1,110	0.277	0.236	<0.14	<0.14	<0.14	<0.14	<0.14	0.549	0.211	0.157	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.27	<0.14	<0.14	0.649	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.163	0.845	<0.14	0.903	<0.14	0.333	<0.14
Nickel	mg/kg	<0.2	126	181	1,710	12.9	20.1	21.7	11.7	15.0	16.6	18.7	15.5	8.59	22.0	25.7	20.7	19.4	42.1	21.2	19.6	3.24	14.9	5.07	9.89	38.6	2.34	45.8	16.0	9.69	10.9	16.0	21.1	27.7	10.8	16.8	18.4	16.0	21.9	0.266	13.2	16.0
Selenium	mg/kg	<1	258	430	12,300	<1	<1	<1	<1	<1	1.55	2.01	<1	<1	<1	<1	1.04	1.65	<1	1.28	1.27	<1	<1	<1	<1	<1	<1	1.2	1.6	<1	<1	<1	<1	1.4	<1	<1	<1	<1	<1	<1	<1	<1
Tin	mg/kg	<0.24	7,360	16,000	429,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	<0.2	413	1,170	9,220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	<1.9	3,860	40,400	NRP	4,600	357	73.3	44.6	24.4	107	47.2	227	72.8	85.1	46.7	428	46.1	56.3	97.7	92.0	6.99	61.7	14.2	32.3	545	9.37	240	72.9	52.1	20.4	59.9	47.4	56.9	35.4	204	96.6	42.9	88.0	<1.9	104	38.5
Organo Tins																																								
Monobutyl Tin	mg/kg	<0.1	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monophenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diphenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tributyl Tin	mg/kg	<0.02	0.26	2	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triphenyl Tin	mg/kg	<0.05	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrabutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons																																								
Aliphatics >C5-C6	mg/kg	<0.01	42	42	3,190	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	mg/kg	<0.01	103	104	7,780	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	mg/kg	<0.01	27	27	2,000	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	mg/kg	<0.01	132	132	9,690	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	mg/kg	<0.1	1,030	1,030	58,800	0.371	<0.1	0.601	<0.1	<0.1	0.239	<0.1	4.41	<0.1	2.08	1.73	1.61	<0.1	<0.1	<0.1	1.33	<0.1	1.19	<0.1	0.999	3.17	<0.1	0.469	0.267	<0.1	<0.1	0.439	<0.1	<0.1	0.842	<0.1	<0.1	0.891	<0.1
Aliphatics >C16-C21	mg/kg	<0.1	NRP	NRP	NRP	0.788	<0.1	3.85	<0.1	<0.1	0.777	<0.1	7.57	<0.1	5.01	2.25	3.06	<0.1	<0.1	0.901	1.95	<0.1	0.467	<0.1	<0.1	3.96	<0.1	1.41	0.885	0.44	<0.1	1.02	<0.1	<0.1	0.204	0.345	1.22	<0.1	1.07	<0.1	<0.1
Aliphatics >C21-C35	mg/kg	<0.1	88,400	89,100	NRP	12.6	1.23	14.3	2.14	<0.1	7.09	<0.1	23.8	19.6	23.2	44.5	59.7	<0.1	<0.1	0.887	7.03	8.14	<0.1	8.88	6.25	3.69	26.5	<0.1	18.9	4.21	7.68	<0.1	8.43	0.425	0.968	10.4	6.26	7.02	0.708	3.56	<0.1	8.03	3.64
Aliphatics >C35-C44	mg/kg	<0.1	88,400	89,100	NRP	1.51	<0.1	1.9	<0.1	<0.1	0.21	<0.1	5.37	1.77	1.32	4.12	20.7	<0.1	<0.1	0.222	<0.1	<0.1	0.222	<0.1	<0.1	7	<0.1	3.16	<0.1	0.903	<0.1	0.67	<0.1	<0.1	0.256	0.263	0.358	<0.1	<0.1	<0.1	<0.1
Total Aliphatics >C12-C44	mg/kg	<0.1	n.v.	n.v.	n.v.	15.3	1.23	20.7	2.14	<0.1	8.31	<0.1	41.1	21.3	31.6	52.6	85	<0.1	<0.1	0.887	8.15	11.4	<0.1	10.5	6.25	4.69	40.7	<0.1	23.9	5.36	9.03	<0.1	10.6	0.425	0.968	10.8	6.86	9.44	0.708	3.56	<0.1	8.92	3.64
Aromatics >EC5-EC7	mg/kg	<0.01	72	372	26,200	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	mg/kg	<0.01	130	853	56,100	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	mg/kg	<0.01	34	47	3,460	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	mg/kg	<0.01	74	248	16,200	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	mg/kg	<0.1	141	1,430	36,200	0.315	<0.1	1.75	<0.1	<0.1	0.315	<0.1	3.01	1.48	22.5	<0.1	1.32	<0.1	<0.1	1.43	3.36	<0.1	1.22	2.5	<0.1	3.53	<0.1	4.42	1.21	0.105	<0.1	<0.1	<0.1	<0.1	2.34	1.32	0.386	<0.1	0.584	<0.1	0.579	<0.1
Aromatics >EC16-EC21	mg/kg	<0.1	249	1,340	28,600	3.38	1.02	6.97	1.22	<0.1	4.46	0.412	11.1	7.7	175	0.539	3.99	<0.1	<0.1	6.5	20.4	<0.1	1.86	2.27	<0.1	9.15	<0.1	35.3	5.97	2.66	<0.1	1.68	<0.1	0.589	11.5	5.16	4.03	0.433	2.22	<0.1	2.83	<0.1
Aromatics >EC21-EC35	mg/kg	<0.1	873	1,340	28,600	30.8	6.22	41.9	7.17	<0.1	27.7	0.766	55.7	39.2	309	10.2	35	<0.1	1.05	29.9	63.8	<0.1	14.2	6.71	0.628	35.1	<0.1	107	23.4	20.0	<0.1	17.1	0.314	3.44	56.6	28.5	26.4	1.75	14.8	<0.1	21.1	1.53
Aromatics >EC35-EC44	mg/kg	<0.1	873	1,340	28,600	13.1	0.437	20.2	0.649	<0.1	9.78	<0.1	26.1	16.1	94.4	0.919	16.9	<0.1	<0.1	11.9	17.8	<0.1	4.8	3.31	0.123	13	<0.1	36.6	7.78	7.41	<0.1	3	<0.1	0.723	16.4	7.67	9.79	0.13	3.95	<0.1	8.51	1.31
Total Aromatics >EC12-EC44	mg/kg	<0.1	n.v.	n.v.	n.v.	47.7	7.68	70.9	9.04	<0.1	42.3	1.18	95.9	64.4	601	11.7	57.2	<0.1	1.05	49.7	105	<0.1	22.1	14.8	0.751	60.8	<0.1	183	38.4	30.1	<0.1	21.8	0.314	4.75	86.8	42.7	40.6	2.31	21.5	<0.1	33.0	2.83
Total Aliphatics & Aromatics >C5-C44	mg/kg	<0.1	n.v.	n.v.	n.v.	63.0	8.91	91.6	11.2	<0.1	50.6	1.18	137	85.7	632	64.3	142	<0.1	1.94	57.9	117	<0.1	32.6	21	5.46	101	<0.1	207	43.7	39.2	<0.1	32.4	0.741	5.72	97.7	49.6	50.0	3.02	25.1	<0.1	42.0	6.47
Polyaromatic Hydrocarbons																																								
Benzo(a)pyrene	mg/kg	<0.015	1.6	1.7	38	0.173	0.117	0.63	0.0585	<0.015	0.139	<0.015	0.554	0.778	5.31	<0.015	0.217	<0.015	<0.015	0.952	1.34	<0.015	0.0465	<0.015	<0.015	0.392	<0.015	3.57	0.175	0.297	<0.015	0.0546	<0.015	0.0502	0.0318	0.421	0.137	<0.015	0.0693	<0.015	0.144	<0.015
Naphthalene	mg/kg	<0.009	2.3	2.3	193	0.0167	<0.009	0.0387	<0.009	<0.009	<0.009	<0.009	0.0421	0.0303	0.111	<0.009	0.0675	<0.009	<0.009	0.26	0.0513	<0.009	<0.009	<0.009	<0.009	0.0764	<0.009	0.433	0.0234	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	0.023	0.0317	<0.009	<0.009	<0.009	0.0202	<0.009
Acenaphthylene	mg/kg	<0.012	n.v.	n.v.	n.v.	<0.012	<0.012	0.0416	<0.012	<0.012	<0.012	<0.012	0.0543	0.0501	0.446	<0.012	0.0293	<0.012	<0.012	0.109	0.171	<0.012	<0.012	<0.012	<0.012	0.026	<0.012	0.0834	0.0147	0.0141	<0.012	<0.012	<0.012	<0.012	<0.012	0.0183	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Acenaphthene	mg/kg	<0.008	n.v.	n.v.	n.v.	<0.008	0.00974	0.0219	<0.008	<0.008	<0.008	<0.008	0.00893	0.0219	0.394	<0.008	<0.008	<0.008	<0.008	0.0395	0.0215	<0.008	<0.008	<0.008	<0.008	0.0126	<0.008	0.777	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	0.0189	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Fluorene	mg/kg	<0.01	n.v.	n.v.	n.v.	<0.01	<0.01	0.0225	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.05	<0.01	<0.01	<0.01	<0.01	0.0349	0.0528	<0.01	<0.01	<0.01	<0.01	0.0131	<0.01	0.46	<0.01	<0.01	<0.01	0.0263	<0.01	<0.01	<0.01	0.031	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenanthrene	mg/kg	<0.015	n.v.	n.v.	n.v.	0.12	0.0688	0.372	0.0377	<0.015	0.0799	<0.015	0.269	0.374	10.6	<0.015	0.288	<0.015	<0.015	0.669	0.859	<0.015	0.0355	<0.015	<0.015	0.236	<0.015	7.42	0.132	0.0908	<0.015	0.0682	<0.015	0.0276	<0.015	0.407	0.143	<0.015	0.0688	<0.015	0.102	<0.015
Anthracene	mg/kg	<0.016	n.v.	n.v.	n.v.	0.0203	0.0191	0.0765	<0.016	<0.016	0.0234	<0.016	0.0618	0.117	2.76	<0.016	0.0549	<0.016	<0.016	0.195	0.259	<0.016	<0.015	<0.016	<0.016	0.0494	<0.016	1.44	0.0239	0.023	<0.016	<0.016	<0.016	<0.016	<0.016	0.114	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Fluoranthene	mg/kg	<0.017	n.v.	n.v.	n.v.	0.194	0.122	0.871	0.0977	<0.017	0.207	<0.017	0.696	1.07	13.6	<0.017	0.451	<0.017	<0.017	1.35	1.91	<0.017	0.0703	<0.017	<0.017	0.453	<0.017	10.7	0.274	0.365	<0.017	0.112	<0.017	0.0662	0.0325	0.681	0.189	<0.017	0.306	<0.017	0.164	<0.017
Pyrene	mg/kg	<0.015	n.v.	n.v.	n.v.	0.167	0.11	0.816	0.0747	<0.015	0.176	<0.015	0.602	0.933	10.7	<0.015	0.38	<0.015	<0.015	1.25	1.68	<0.015	0.0617	<0.015	<0.015	0.423	<0.015	9.1	0.235	0.293	<0.015	0.0961	<0.015	0.0572	0.0294	0.595	0.161	<0.015	0.0891	<0.015	0.143	<0.015
Benz(a)anthracene	mg/kg	<0.014	n.v.	n.v.	n.v.	0.143	0.0901	0.461	<0.014	<0.014	0.0703	<0.014	0.46	0.685	6.67	<0.014	0.096	<0.014	<0.014	0.81	1.26	<0.014	0.0336	<0.014	<0.014	0.354	<0.014	3.06	0.167	0.167	<0.014	0.0347	<0.014	0.0334	0.0159	0.412	0.135	<0.014	0.0729	<0.014	0.0293	<0.014
Chrysene	mg/kg	<0.01	n.v.	n.v.	n.v.	0.139	0.0738	0.434	0.0402	<0.01	0.114	<0.01	0.478	0.54	4.79	<0.01	0.129	<0.01	<0.01	0.657	0.961	<0.01	0.0373	<0.01	<0.01	0.363	<0.01	3.49	0.174	0.251	<0.01	0.0363	<0.01	0.0143	0.021	0.348	0.125	<0.01	0.0596	<0.01	0.0734	<0.01
Benzo(b)fluoranthene	mg/kg	<0.015	n.v.	n.v.	n.v.	0.282	0.159	0.867	0.0787	<0.015	0.197	<0.015	0.771	1	6.17	<0.015	0.386	<0.015	<0.015	1.15	1.66	<0.015	0.0629	<0.015	<0.015	0.566	<0.015	4.84	0.252	0.4	<0.015	0.0857	<0.015	0.0956	0.0401	0.569	0.242	<0.015	0.109	<0.015	0.192	<0.015
Benzo(k)fluoranthene	mg/kg	<0.014	n.v.	n.v.	n.v.	0.078	0.0616	0.293	0.0252	<0.014	0.0788	<0.014	0.242	0.374	2.27	<0.014	0.132	<0.014	<0.014	0.375	0.553	<0.014	0.0278	<0.014	<0.014	0.166	<0.014	1.91	0.0711	0.16	<0.014	0.0332	<0.014	0.0317	0.0174	0.204	0.0729	<0.014	0.035	<0.014	0.0511	<0.014
Indeno(1,2,3-cd)pyrene	mg/kg	<0.018	n.v.	n.v.	n.v.	0.107	0.0783	0.419	0.0315	<0.018	0.0778	<0.018	0.324	0.439	2.45	<0.018	0.178	<0.018	<0.018	0.531	0.676	<0.018	0.0296	<0.018	<0.018	0.209	<0.018	2.21	0.0981	0.163	<0.018	0.0411	<0.018	0.0344	0.021	0.231	0.0816	<0.018	0.0428	<0.018	0.0848	<0.018
Dibenz(a,h)anthracene	mg/kg	<0.023	n.v.	n.v.	n.v.	0.0344	<0.023	0.112	<0.023	<0.023	0.0274	<0.023	0.0956	0.128	0.884	<0.023	0.0611	<0.023	<0.023	0.149	0.201	<0.023	<0.023	<0.023	<0.023	0.0677	<0.023	0.67	0.0283	0.0558	<0.023	<0.023	<0.023	<0.023	<0.023	0.0698	0.0291	<0.023	<0.023	<0.023	0.0287	<0.023
Benzo(g,h,i)perylene	mg/kg	<0.024	n.v.	n.v.	n.v.	0.136	0.101	0.497	0.0358	<0.024	0.0938	<0.024	0.359	0.485	2.41	<0.024	0.222	<0.024	<0.024	0.642

Table E.1.1 Area 1 - W8 & W9 Soil Screening

						FIRING POINTS														INFILL - NORTH-WESTERN CORNER												INFILL - NORTHERN BOUNDARY									
Sample ID:					BH206	HP201	HP201	HP202	HP202	HP203	HP203	HP204	HP204	HP205	HP205	HP206	HP206	HP207	HP207	HP208	HP208	HP209	HP209	HP210	HP210	TP203	BH201	BH201	BH201	BH201	WS202	WS202	BH202	BH202	BH203	BH203	BH203	TP207	TP207	TP214	WS204
Sample Depth (m):					1.9-2.0	0.2	0.9	0.3	0.7	0.15	0.7	0.3	1.0	0.4	0.7	0.3	0.8	0.3	0.6	0.15	0.8	0.3	0.65	0.25	1.0	0.4	0.3	1.0	1.8	3.0	0.3	1.0	0.3	1.0	0.3	1.0	2.0	0.5	0.85	0.3	0.2
Date Sampled:					15/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	16/08/2016	16/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	18/08/2016	18/08/2016	18/08/2016	17/08/2016	19/08/2016	19/08/2016	19/08/2016	17/08/2016	17/08/2016	18/08/2016	18/08/2016	19/08/2016	19/08/2016	16/08/2016	16/08/2016	16/08/2016	18/08/2016	18/08/2016	19/08/2016	19/08/2016
Geology:					LMBE	MG	MG	MG	LMBE	MG	MG	MG	TS	MG	MG	MG	RT	MG	MG	MG	MG	MG	MG	MG	LMBE	MG	MG	MG	MG	MG	MG	MG	TS	TS	MG	MG	RT	MG	MG	RT	TS
Analyte	**Units**	**LOD**	**Human Health GAC/SGV: Resi W HG Veg**	**Resi WO HG Veg**	**Commercial**																																					
Asbestos																																										
Asbestos Identification	-		n.v.	n.v.	n.v.	-	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile as loose fibres in soil.	Chrysotile and amosite as loose fibres in soil.	No Asbestos Detected	Chrysotile and amosite as loose fibres in soil.	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	-	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos Quantification - Gravimetric - %	%	<0.001	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	-	0.354	-	-	-	-	-	-	-	-	-
Asbestos Quantification - PCOM Evaluation - %	%	<0.001	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	-	0.0045	-	-	-	-	-	-	-	-	-
Asbestos Quantification - Total - %	%	<0.001	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	-	0.359	-	-	-	-	-	-	-	-	-
Soil Properties																																										
pH	pH Units	<1	n.a.	n.a.	n.a.	7.7	7.94	7.8	7.87	8.2	7.86	8.29	8.03	8.14	8.07	8.13	8.21	11.4	7.7	8.24	7.61	8.01	11.6	10.5	8.07	8.71	8.52	8.4	8.36	-	8.15	7.74	8.24	8.44	8.34	8.29	8.26	8.5	8.58	8.31	7.97	8.26
Soil Organic Matter (SOM)	%	<0.35	n.a.	n.a.	n.a.	<0.35	-	-	-	0.552	-	-	-	-	3.09	-	-	4.02	-	-	-	-	-	0.609	-	2.22	3.74	-	-	-	0.978	0.922	3.53	1.54	-	1.53	-	<0.35	0.565	1.35	-	5.17
Inorganics																																										
Ammonia (Exchangeable) as NH_4	mg/kg	<15	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Free	mg/kg	<1	15	15	78	-	<1	-	-	-	-	<1	-	-	<1	-	-	-	<1	-	-	-	-	<1	-	<1	-	<1	<1	<1	-	<1	<1	<1	<1	<1	-	-	<1	<1	-	<1
Cyanide, Complex	mg/kg	<0.5-1	15	15	78	<0.5	<1	-	-	-	-	<1	-	-	<1	-	-	-	<1	-	-	-	-	<1	-	<1	-	<1	<1	<1	-	<1	<1	<1	<1	<1	-	-	<1	<1	-	<1
Cyanide, Total	mg/kg	<1	15	15	78	-	<1	-	-	-	-	<1	-	-	<1	-	-	-	<1	-	-	-	-	<1	-	<1	-	<1	<1	<1	-	<1	<1	<1	<1	<1	-	-	<1	<1	-	<1
Metals																																										
Arsenic	mg/kg	<0.6	32	35	635	10.9	14.7	9.69	12.0	6.65	14.4	5.11	12.8	17.5	10.7	12.0	12.7	9.56	11.4	10.7	6.53	5.76	9.00	7.26	22.9	25.3	11.1	11.1	10.2	-	11.7	7.19	11.1	9.78	18.7	10.5	16.0	7.54	14.1	15.5	29.1	9.48
Barium	mg/kg	<0.6	1,210	1,350	22,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	<0.01	1.7	1.7	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron, water soluble	mg/kg	<1	300	10,500	207,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	<0.02	12	87	223	<0.02	0.421	0.217	0.42	0.253	0.388	0.343	0.948	0.397	0.655	0.46	0.387	0.328	0.335	0.39	<0.02	0.351	0.228	0.185	0.595	0.0651	0.17	0.312	0.448	-	0.171	0.287	0.241	0.414	1.28	0.269	0.401	0.038	0.159	0.586	0.29	0.0384
Chromium, Hexavalent	mg/kg	<0.6	4.5	4.5	24	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chromium, Total	mg/kg	<0.9	1,590	1,590	9,550	34.0	17.4	11.4	19.9	28.1	17.7	11.4	21.7	12.2	25.3	21.1	18.3	19.9	27.5	27.9	6.85	8.06	15	8.32	14.9	22	16.3	22.2	18.5	-	12.9	14.9	15.7	28.8	30.0	18.7	17.8	8.31	15.2	19.8	15.2	20.9
Copper	mg/kg	<1.4	2,490	7,520	69,800	13.2	978	315	76	49.1	25.6	12.9	25.4	180	38.6	10.0	20.7	162	16.4	16.2	10.1	10.5	7.27	6.28	16.7	22.2	54.0	44.6	34.7	-	10.0	9.01	458	28.0	182	27.1	206	5.24	24.1	67.3	12.2	25.7
Lead	mg/kg	<0.7	148	188	1,390	23.4	12,100	3,350	91.9	31.8	435	51.0	109	1,130	203	15.0	44.0	184	53.1	36.8	60.9	45.7	12.8	22.5	114	132	559	155	200	-	21.0	28.7	2,290	81.2	537	80.4	641	16.0	316	251	23.3	83.9
Mercury	mg/kg	<0.14	39	56	1,110	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<1.4	<0.14	0.447	<0.14	<0.14	-	<0.14	<0.14	<1.4	<0.14	<0.14	<0.14	<0.14	<0.14	1.05	0.674	<0.14	<0.14
Nickel	mg/kg	<0.2	126	181	1,710	24.3	325	93.3	14.0	52.4	14.4	13.1	17.3	85.3	24.9	21.6	14.5	20.4	20.6	22.2	8.15	8.10	11.8	7.42	16.9	13.0	14.5	13.8	13.4	-	7.53	12.8	21.7	17.7	17.3	16.0	13.9	5.61	13.2	21.6	8.82	18.9
Selenium	mg/kg	<1	258	430	12,300	<1	1.05	<1	1.3	1.68	1.16	<1	1.37	<1	1.58	1.43	<1	1.1	1.19	1.26	<1	<1	1.19	<1	<20	1.12	<1	<1	1.12	-	<1	1.16	<20	1.49	1.56	<1	<1	<1	<1	<1	1.75	<1
Tin	mg/kg	<0.24	7,360	16,000	429,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	<0.2	413	1,170	9,220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	<1.9	3,860	40,400	NRP	33.3	66.9	119	110	130	63.5	46.5	124	192	76.0	49.6	79.1	364	56.5	57.3	32.8	42.5	28.0	37.9	200	81.5	230	119	128	-	21.3	43.7	159	115	570	81.6	432	18.1	120	1,010	35.2	128
Organo Tins																																										
Monobutyl Tin	mg/kg	<0.1	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monophenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diphenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tributyl Tin	mg/kg	<0.02	0.26	2	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triphenyl Tin	mg/kg	<0.05	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrabutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons																																										
Aliphatics >C5-C6	mg/kg	<0.01	42	42	3,190	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	mg/kg	<0.01	103	104	7,780	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	mg/kg	<0.01	27	27	2,000	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	mg/kg	<0.01	132	132	9,690	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	mg/kg	<0.1	1,030	1,030	58,800	<0.1	<0.1	0.413	<0.1	0.405	0.204	<0.1	1	<0.1	<0.1	0.18	<0.1	<0.1	<0.1	<0.1	0.279	<0.1	<0.1	<0.1	2.93	0.534	<0.1	0.628	-	<0.1	<0.1	1.34	<0.1	0.415	2.05	1.43	<0.1	<0.1	0.569	<0.1	<0.1	<0.1
Aliphatics >C16-C21	mg/kg	<0.1	88,400	89,100	NRP	<0.1	<0.1	0.526	0.392	0.478	0.123	<0.1	3.19	<0.1	<0.1	0.522	0.899	0.664	0.382	<0.1	0.607	<0.1	2.1	2.07	0.26	11.4	3.22	0.202	3.97	-	<0.1	<0.1	13.3	1.48	2.33	0.521	0.506	<0.1	0.417	6.19	<0.1	0.264
Aliphatics >C21-C35	mg/kg	<0.1	88,400	89,100	NRP	4.35	4.8	8.38	5.32	0.805	8.2	3.01	30	3.76	12.6	2.81	33.8	8.18	4.12	2.65	6.06	3.87	30.5	24.7	15	52.4	16.3	8.08	77.6	-	0.703	2.67	65.2	11.6	16.2	14.3	8.34	2.14	17.6	78.6	<0.1	11.4
Aliphatics >C35-C44	mg/kg	<0.1	88,400	89,100	NRP	<0.1	0.172	0.765	<0.1	<0.1	<0.1	<0.1	6.03	<0.1	7.29	<0.1	5.08	<0.1	<0.1	<0.1	0.344	<0.1	2.27	1.29	6.14	15.1	2.4	1.43	24	-	<0.1	0.573	10.6	2.41	11.1	2.13	<0.1	<0.1	8.15	18.4	<0.1	0.455
Total Aliphatics >C12-C44	mg/kg	<0.1	n.v.	n.v.	n.v.	4.35	4.97	10.1	5.72	1.69	8.53	3.01	40.2	3.76	19.9	3.51	39.8	8.85	4.51	2.65	7.29	3.87	34.9	28	21.4	81.8	22.4	9.71	106	-	0.703	3.24	90.4	15.4	30	19	10.3	2.14	26.1	104	<0.1	12.1
Aromatics >EC5-EC7	mg/kg	<0.01	72	372	26,200	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	mg/kg	<0.01	130	853	56,100	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	mg/kg	<0.01	34	47	3,460	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	mg/kg	<0.01	74	248	16,200	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	mg/kg	<0.1	141	1,430	36,200	<0.1	<0.1	<0.1	0.591	<0.1	0.556	<0.1	0.675	0.329	0.296	<0.1	0.773	0.422	<0.1	<0.1	0.534	<0.1	<0.1	<0.1	2.09	11.5	<0.1	0.249	0.604	-	<0.1	<0.1	3.27	0.901	1.50	1.71	1.24	<0.1	2.02	4.18	<0.1	0.394
Aromatics >EC16-EC21	mg/kg	<0.1	249	1,340	28,600	<0.1	1.74	0.62	1.75	2.12	4.5	0.487	6.53	1.63	3.05	0.896	5.11	2.09	0.749	0.506	2.63	1.74	0.19	<0.1	10.4	92.3	13.8	5.67	4.44	-	<0.1	0.222	47.4	5.42	7.47	11.9	2.45	0.558	8.39	35.2	<0.1	7.86
Aromatics >EC21-EC35	mg/kg	<0.1	873	1,340	28,600	1.17	13.5	14.7	14.6	11.8	26.5	6.97	37.7	10.9	30.8	9.69	32.0	17.7	5.71	4.27	17.2	11.2	5.03	6.51	55.8	269	45.4	39.6	46.1	-	2.3	4.76	276	24.1	44.6	50.7	10.3	3.5	43.8	269	<0.1	46.8
Aromatics >EC35-EC44	mg/kg	<0.1	873	1,340	28,600	0.676	4.14	6	4.42	3.89	9.45	1.87	17.0	3.49	15.6	2.34	14.0	3.9	1.55	1.24	6.27	3.45	0.95	2.13	19.6	82.9	15	15.2	32.1	-	<0.1	1.93	83.9	11.7	26.1	27.6	4.65	1.67	33.2	112	<0.1	17.9
Total Aromatics >EC12-EC44	mg/kg	<0.1	n.v.	n.v.	n.v.	1.85	19.4	21.4	21.4	17.8	41.0	9.33	61.9	16.4	49.8	12.9	51.9	24.1	8.01	6.02	26.6	16.4	6.17	8.64	87.8	456	74.1	60.7	83.2	-	2.30	6.91	411	42.2	79.7	91.9	18.7	5.73	87.4	420	<0.1	72.9
Total Aliphatics & Aromatics >C5-C44	mg/kg	<0.1	n.v.	n.v.	n.v.	6.20	24.4	31.5	27.1	19.5	49.5	12.3	102	20.1	69.7	16.4	91.7	33.0	12.5	8.67	33.9	20.3	41.1	36.7	109	538	96.6	70.4	189	-	3.00	10.2	501	57.6	110	111	28.9	7.88	114	524	<0.1	85.0
Polyaromatic Hydrocarbons																																										
Benzo(a)pyrene	mg/kg	<0.015	1.6	1.7	38	<0.015	0.139	0.0444	0.254	0.0342	0.924	0.063	0.837	0.402	0.641	0.0633	0.537	0.179	0.0622	0.0357	0.191	0.114	<0.015	0.091	1.31	2.48	4.9	0.346	1.23	-	<0.015	0.161	9.24	1.33	0.325	1.40	0.121	<0.015	0.185	9.88	0.0207	1.56
Naphthalene	mg/kg	<0.009	2.3	2.3	193	<0.009	<0.009	<0.009	0.0137	<0.009	0.0482	<0.009	0.0145	0.0314	0.0152	<0.009	0.0164	0.0182	<0.009	<0.009	0.0192	0.0135	<0.009	<0.009	0.0719	0.235	0.227	0.0109	0.0318	-	<0.009	0.0115	0.151	0.0458	0.0453	0.0437	0.0173	<0.009	0.021	0.18	<0.009	0.0241
Acenaphthylene	mg/kg	<0.012	n.v.	n.v.	n.v.	<0.012	0.0198	<0.012	0.0249	<0.012	0.0295	<0.012	0.0764	0.0369	0.0339	<0.012	0.0293	0.0186	<0.012	<0.012	0.0141	<0.012	<0.012	<0.012	0.0343	0.0582	0.739	0.025	0.0664	-	<0.012	<0.012	0.413	0.0544	0.0223	0.0929	<0.012	<0.012	0.0158	0.257	<0.012	0.0414
Acenaphthene	mg/kg	<0.008	n.v.	n.v.	n.v.	<0.008	<0.008	<0.008	<0.008	<0.008	0.0906	0.0255	0.013	0.0111	0.0184	<0.008	0.027	<0.01	<0.01	<0.01	0.0222	<0.01	<0.01	<0.01	0.0775	0.181	0.312	<0.01	0.0212	-	<0.01	0.221	0.0485	0.0143	0.0474	<0.01	<0.01	<0.01	0.0182	0.23	<0.01	0.159
Fluorene	mg/kg	<0.01	n.v.	n.v.	n.v.	<0.01	0.0354	0.0226	0.0722	0.0202	2.06	0.0327	0.646	0.263	0.125	0.0748	0.356	0.198	0.0243	0.0206	0.243	0.0753	<0.015	0.017	0.719	1.61	4.89	0.0664	0.303	-	<0.015	0.095	3.18	0.667	0.277	0.655	0.121	0.017	0.259	4.91	0.0237	1.97
Phenanthrene	mg/kg	<0.015	n.v.	n.v.	n.v.	<0.015	0.0354	0.0226	0.0722	0.0202	2.06	0.0327	0.646	0.263	0.125	0.0748	0.356	0.198	0.0243	0.0206	0.243	0.0753	<0.015	0.017	0.719	1.61	4.89	0.0664	0.303	-	<0.015	0.095	3.18	0.667	0.277	0.655	0.121	0.017	0.259	4.91	0.0237	1.97
Anthracene	mg/kg	<0.016	n.v.	n.v.	n.v.	<0.016	0.0194	<0.016	0.0261	<0.016	0.35	<0.016	0.244	0.0655	0.0593	0.0199	0.112	0.0288	<0.016	<0.016	0.0427	<0.016	<0.016	<0.016	0.203	0.421	3.06	0.0331	0.133	-	<0.016	0.027	1.42	0.158	0.0639	0.192	0.023	<0.016	0.0291	1.84	<0.016	0.468
Fluoranthene	mg/kg	<0.017	n.v.	n.v.	n.v.	<0.017	0.135	0.0498	0.283	0.0426	2.36	0.0782	1.57	0.588	0.407	0.123	0.728	0.299	0.0702	0.0348	0.338	0.146	<0.017	0.0666	1.48	2.94	10.2	0.283	1.3	-	<0.017	0.185	12	1.79	0.504	1.89	0.205	0.0207	0.368	12.7	<0.017	3.44
Pyrene	mg/kg	<0.015	n.v.	n.v.	n.v.	<0.015	0.132	0.0465	0.258	0.0368	1.87	0.0689	1.34	0.53	0.477	0.0876	0.671	0.253	0.0635	0.0325	0.298	0.123	<0.015	0.069	1.27	2.5	8.62	0.278	1.32	-	<0.015	0.174	12.5	1.55	0.419	1.7	0.165	0.0167	0.316	10.6	0.0287	2.76
Benz(a)anthracene	mg/kg	<0.014	n.v.	n.v.	n.v.	<0.014	0.0589	0.027	0.208	0.0219	0.861	0.0689	0.507	0.0759	0.156	0.06	0.0905	0.0562	0.0501	0.0246	0.194	0.105	<0.014	0.0825	1.14	2.1	2	0.215	0.456	-	<0.014	0.161	3.92	0.488	0.13	1.13	0.0658	<0.014	0.0768	4.01	<0.014	1.56
Chrysene	mg/kg	<0.01	n.v.	n.v.	n.v.	<0.01	0.0922	0.0285	0.187	0.022	0.805	0.0479	0.569	0.306	0.258	0.0585	0.379	0.0932	0.0452	0.0243	0.175	0.0978	<0.01	0.0629	1	2.01	4.61	0.191	0.585	-	<0.01	0.138	6.05	0.981	0.203	1.01	0.0663	0.0105	0.0949	5.2	0.0116	1.27
Benzo(b)fluoranthene	mg/kg	<0.015	n.v.	n.v.	n.v.	<0.015	0.22	0.0699	0.326	0.0412	1.14	0.0857	1.03	0.536	0.789	0.0955	0.63	0.235	0.0838	0.0468	0.246	0.153	<0.015	0.113	1.64	3.03	5.94	0.491	1.42	-	<0.015	0.205	11.1	1.81	0.447	1.66	0.172	0.0173	0.27	11.2	0.0226	1.79
Benzo(k)fluoranthene	mg/kg	<0.014	n.v.	n.v.	n.v.	<0.014	0.0814	0.0266	0.12	<0.014	0.436	0.025	0.341	0.211	0.253	0.0354	0.207	0.0923	0.0305	0.0193	0.0757	0.048	<0.014	0.0388	0.512	1.07	1.98	0.152	0.549	-	<0.014	0.064	4.65	0.692	0.168	0.618	0.0659	<0.014	0.09	3.87	<0.014	0.787
Indeno(1,2,3-cd)pyrene	mg/kg	<0.018	n.v.	n.v.	n.v.	<0.018	0.0983	0.0372	0.14	<0.018	0.483	0.0396	0.463	0.233	0.419	0.0379	0.296	0.11	0.0392	0.0238	0.101	0.0664	<0.018	0.052	0.667	1.31	2.47	0.229	0.753	-	<0.018	0.092	6.5	0.746	0.248	0.79	0.0903	<0.018	0.116	6.26	<0.018	0.764
Dibenz(a,h)anthracene	mg/kg	<0.023	n.v.	n.v.	n.v.	<0.023	0.033	<0.023	0.0816	<0.023	0.128	<0.023	0.132	0.0688	0.115	<0.023	0.0828	0.0325	<0.023	<0.023	0.0259	<0.023	<0.023	<0.023	0.219	0.429	0.77	0.0181	0.197	-	<0.

Table E.1.1 Area 1 - W8 & W9 Soil Screening

| | | | | | | INFILLING - WESTERN FIRING RANGE | | | | | | | | EASTERN CORNER | | WESTERN BOUNDARY | | STAMSHAW POWDER WORKS | | | TIPNER BOATING & ANGLING CLUB | | | | | | | |

Table E.1.2. Area 2 - W3 & W4 Soil Screening

| | | | Human Health (UK/GSV) | | |

Table E.1.2. Area 2 - W3 & W4 Soil Screening

			Human Health (UKSGV)			Sample ID	WATP213	WATP314	WATP314	WATP315	WATP315	WATP316	WATP316	WATP316	WAWS312	WAWS312	WAWS313	WAWS313	WAWS314	WAWS314	WAWS315A	WAWS315	WAWS316	WAWS316
						Sample Depth	2.2	0.9	2.65	0.1	0.9	0.4	1.3	2.2	0.0-0.1	1.7-2.0	0.1-0.25	2.0-2.2	0.7-0.9	1.35-1.5	0.1-0.3	2.3-2.4	0.1-0.2	2.3-2.4
						Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	18/04/2017	18/04/2017	19/04/2017	19/04/2017	19/04/2017	21/04/2017	19/04/2017	20/04/2017
						Geology	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
Analyte	Units	LOD	Resi W HG Veg	Resi WO HG Veg	Commercial																			
Asbestos																								
Asbestos Identification	-		n.v.	n.v.	n.v.		Soil containing loose fibres and ACM debris - amosite.	Amosite as loose fibres in soil.	Soil containing loose fibres and debris typical of asbestos lagging material - chrysotile and amosite.	*No Asbestos Detected*	Amosite as loose fibres in soil.	*No Asbestos Detected*	Soil containing loose fibres and debris typical of asbestos bituminous product - amosite.	Amosite as loose fibres in soil.	Amosite and crocidolite as loose fibres in soil.	Chrysotile and amosite as loose fibres in soil.	*No Asbestos Detected*	Amosite as loose fibres in soil.	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	Amosite as loose fibres in soil.	*No Asbestos Detected*	-
Asbestos Quantification - Gravimetric - %	%	<0.001	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	<0.001	0.0085	-	-	-	-	-	0.159	-	-
Asbestos Quantification - PCOM Evaluation - %	%	<0.001	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	<0.001	0.0049	-	-	-	-	-	0.003	-	-
Asbestos Quantification - Total - %	%	<0.001	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	<0.001	0.0134	-	-	-	-	-	0.162	-	-
Soil Properties																								
pH	pH Units	<1	n.a.	n.a.	n.a.		8.02	10.1	8.1	8.08	7.85	8.3	8.21	7.22	8.33	9.66	8.59	8.46	10.7	10.6	8.74	8.62	8.75	8.33
Soil Organic Matter (SOM)	%	<0.35	n.a.	n.a.	n.a.		-	-	-	-	-	-	-	-	5.83	2.00	4.48	15.1	-	-	2.31	-	-	-
Inorganics																								
Ammonia (Exchangeable) as NH_4	mg/kg	<15	n.v.	n.v.	n.v.		-	<15	35.6	-	-	-	-	-	-	28.3	-	85.5	-	16.9	-	-	-	-
Cyanide, Free	mg/kg	<1	15	15	78		<1	<1	<1	<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cyanide, Complex	mg/kg	<0.5-1	15	15	78		2.45	<1	1.53	<1	<1	<1	<1	<1	-	<1	<1	1.52	<1	<1	<1	<1	<1	<1
Cyanide, Total	mg/kg	<1	15	15	78		2.56	<1	1.59	<1	<1	<1	<1	<1	-	<1	<1	1.52	<1	<1	<1	<1	<1	<1
Metals																								
Arsenic	mg/kg	<0.6	32	35	635		12.2	7.83	26.8	9.12	12.1	11.6	24.4	14.2	12.0	14.0	10.8	21.7	9.87	7.87	8.97	9.74	9.73	6.98
Cadmium	mg/kg	<0.02	12	87	223		0.915	0.0797	0.683	0.873	1.27	2.58	1.56	2.16	10.3	0.778	3.27	2.87	9.54	2.29	0.425	0.106	0.301	0.701
Chromium, Hexavalent	mg/kg	<0.6	4.5	4.5	24		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	10.4	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chromium, Total	mg/kg	<0.9	1,500	1,500	9,550		16.1	10.4	18.1	21.9	20.4	13.4	31.3	9.55	59.4	12.2	53.0	174	76.6	21.2	14.0	16.6	11.9	14.5
Copper	mg/kg	<1.4	2,490	7,520	69,800		260	24.7	499	73.6	256	65.5	401	626	240	106	534	737	1,370	275	54.6	40.6	31.6	62.6
Lead	mg/kg	<0.7	148	188	1,390		928	81.5	1,710	234	584	293	714	623	2,870	240	429	1,870	460	178	97.5	77.2	635	63.0
Mercury	mg/kg	<0.54	39	56	1,110		1.93	0.494	2.55	0.553	1.4	0.743	1.46	1.11	0.759	0.411	0.31	1.89	0.994	0.471	0.406	0.539	0.425	0.417
Nickel	mg/kg	<0.2	126	181	1,710		25.7	10.1	40.3	16.5	26.9	18.6	42.3	54.8	31.4	19.1	36.0	97.6	109	24.5	18.6	29.1	13.2	20.3
Selenium	mg/kg	<3	258	430	12,300		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Tin	mg/kg	<0.24	7,360	16,000	429,000		-	4.4	13.2	-	-	-	-	33.5	-	-	-	82.2	-	-	-	-	-	-
Zinc	mg/kg	<1.9	3,860	40,400	NRP		883	88.1	615	252	572	268	670	642	913	218	1,640	1,210	3,690	1,140	181	128	119	201
Organo Tins																								
Monobutyl Tin	mg/kg	<0.1	n.v.	n.v.	n.v.		-	<0.1	<0.1	-	-	-	-	<0.1	-	-	-	<0.1	-	-	-	-	-	-
Monophenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.		-	<0.02	<0.02	-	-	-	-	<0.02	-	-	-	<0.02	-	-	-	-	-	-
Dibutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.		-	<0.02	<0.02	-	-	-	-	<0.02	-	-	-	<0.02	-	-	-	-	-	-
Diphenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.		-	<0.02	<0.02	-	-	-	-	<0.02	-	-	-	<0.02	-	-	-	-	-	-
Tributyl Tin	mg/kg	<0.02	0.26	2	123		-	<0.02	<0.02	-	-	-	-	<0.02	-	-	-	<0.02	-	-	-	-	-	-
Triphenyl Tin	mg/kg	<0.05	n.v.	n.v.	n.v.		-	<0.05	<0.05	-	-	-	-	<0.05	-	-	-	<0.05	-	-	-	-	-	-
Tetrabutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.		-	<0.02	<0.02	-	-	-	-	<0.02	-	-	-	<0.02	-	-	-	-	-	-
Petroleum Hydrocarbons																								
Aliphatics >C5-C6	mg/kg	<0.01	42	42	3,190		0.0155	<0.01	0.0249	0.0201	0.0138	<0.01	<0.01	<0.01	<0.01	0.0155	<0.01	0.0174	0.0107	0.016	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	mg/kg	<0.01	103	104	7,780		0.14	<0.01	0.117	0.0343	0.0363	0.0104	<0.01	0.0124	0.107	0.783	<0.01	0.117	0.0155	0.0436	<0.01	<0.01	<0.01	0.0199
Aliphatics >C8-C10	mg/kg	<0.01	27	27	2,000		2.07	0.0127	0.368	0.0169	0.0525	0.0196	<0.01	0.0158	0.0172	22.1	<0.01	2.95	0.0131	0.262	<0.01	<0.01	<0.01	0.252
Aliphatics >C10-C12	mg/kg	<0.01	132	132	9,660		1.95	<0.01	0.231	<0.01	0.0575	0.023	<0.01	0.0124	0.0118	27.4	<0.01	4.86	0.0119	0.217	<0.01	<0.01	<0.01	0.507
Aliphatics >C12-C16	mg/kg	<0.1	1,030	1,030	58,800		29.1	0.898	2.59	<0.1	3.4	<0.1	2.88	16.9	1.83	<0.1	0.859	385	<0.1	0.32	2.86	0.331	1.59	<0.1
Aliphatics >C16-C21	mg/kg	<0.1	88,400	89,100	NRP		163	7.05	15.2	<0.1	10.7	2.13	24.4	58.6	9.34	5.95	<0.1	597	2.18	<0.1	8.73	4.38	7.14	1.54
Aliphatics >C21-C35	mg/kg	<0.1	88,400	89,100	NRP		499	51.4	93.1	55.8	77.3	24.7	187	321	94	70.4	6.56	1660	22.7	<0.1	50.4	21.7	145	7.61
Aliphatics >C35-C44	mg/kg	<0.1	88,400	89,100	NRP		89.7	20.2	35.5	54.5	47.5	11.4	74.7	146	27.1	8.16	19.7	355	10.9	4.29	38	6.18	168	0.711
Total Aliphatics >C12-C44	mg/kg	<0.1	n.v.	n.v.	n.v.		781	79.6	146	105	139	38.1	269	543	122	84.5	27.1	3000	35.8	4.61	100	32.6	322	9.86
Aromatics >EC5-EC7	mg/kg	<0.01	72	372	26,200		0.0428	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	mg/kg	<0.01	130	853	56,100		<0.01	<0.01	<0.01	<0.01	0.0288	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0226	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	mg/kg	<0.01	34	47	3,460		1.8	0.0184	0.261	0.0116	0.0425	0.0138	<0.01	0.0147	0.0215	14.7	<0.01	1.97	0.0119	0.174	<0.01	<0.01	<0.01	0.168
Aromatics >EC10-EC12	mg/kg	<0.01	74	248	16,200		1.3	<0.01	0.153	<0.01	0.0388	0.015	<0.01	<0.01	<0.01	18.3	<0.01	3.24	<0.01	0.145	<0.01	<0.01	<0.01	0.338
Aromatics >EC12-EC16	mg/kg	<0.1	141	1,430	36,200		6.98	0.822	0.883	1.91	2.51	0.706	1.50	5.40	2.06	0.942	<0.1	230	<0.1	9.8	8.21	0.617	1.25	0.958
Aromatics >EC16-EC21	mg/kg	<0.1	249	1,340	28,600		52.7	13.6	13.4	22.0	20.6	7.72	17.9	30.1	20.3	6.18	5.55	539	2.18	73.7	56.3	3.9	9.96	3.32
Aromatics >EC21-EC35	mg/kg	<0.1	873	1,340	28,600		230	113	95.1	145	137	86.5	178	196	114	38.7	76.8	1,150	19.8	457	177	25.9	174	7.57
Aromatics >EC35-EC44	mg/kg	<0.1	873	1,340	28,600		68.9	43.1	53.4	142	91.6	39.5	129	163	46	11.7	71.3	449	14.0	446	109	12.2	226	3.19
Total Aromatics >EC12-EC44	mg/kg	<0.1	n.v.	n.v.	n.v.		359	171	163	311	252	134	327	395	182	57.6	154	2,370	36.0	987	351	42.6	412	15.0
Total Aliphatics & Aromatics >C5-C44	mg/kg	<0.1	n.v.	n.v.	n.v.		1,150	250	310	416	391	173	596	938	304	225	181	5,380	71.9	992	451	75.2	734	26.2
Polyaromatic Hydrocarbons																								
Benzo(a)pyrene	mg/kg	<0.015	1.6	1.7	38		2.60	1.43	1.59	1.86	4.42	0.529	2.2	1.31	3.36	0.234	0.452	5.24	0.496	10.9	3.54	0.162	1.68	0.0852
Naphthalene	mg/kg	<0.009	2.3	2.3	193		0.718	0.0429	0.0519	0.0307	0.227	0.050	<0.045	0.0466	0.0914	0.0274	0.026	0.515	0.0425	0.254	0.045	<0.009	0.0362	0.0144
Acenaphthylene	mg/kg	<0.012	n.v.	n.v.	n.v.		0.119	0.0992	0.0343	0.101	0.275	0.0438	0.0772	0.0562	0.199	0.0299	0.0255	0.253	0.0264	0.514	0.163	0.0431	0.104	<0.012
Acenaphthene	mg/kg	<0.008	n.v.	n.v.	n.v.		0.409	0.0407	0.189	0.0263	0.21	0.0181	0.0684	0.0786	0.118	0.049	0.0452	1.28	0.0947	1.05	0.0672	0.0338	0.0379	0.198
Fluorene	mg/kg	<0.01	n.v.	n.v.	n.v.		0.337	0.0336	0.147	0.0241	0.18	0.0252	<0.05	0.106	0.116	<0.01	0.0387	1.26	0.0569	0.854	0.066	<0.01	0.0356	0.111
Phenanthrene	mg/kg	<0.015	n.v.	n.v.	n.v.		1.74	0.647	1.03	0.411	2.34	0.19	0.881	0.319	1.55	0.181	0.145	4.79	0.521	7.65	0.8	0.075	0.378	0.379
Anthracene	mg/kg	<0.016	n.v.	n.v.	n.v.		0.585	0.212	0.254	0.174	0.767	0.077	0.306	0.141	0.499	0.0555	0.0871	1.42	0.117	2.63	0.343	0.0376	0.189	0.114
Fluoranthene	mg/kg	<0.017	n.v.	n.v.	n.v.		3.21	1.73	3.83	1.83	6.27	0.547	3.07	1.26	4.09	0.36	0.627	9.51	0.762	13.8	2.54	0.199	1.03	0.282
Pyrene	mg/kg	<0.015	n.v.	n.v.	n.v.		3.04	1.71	2.67	1.69	5.35	0.481	2.62	1.17	3.75	0.294	0.524	7.68	0.58	11.8	2.49	0.164	1.04	0.218
Benz[a]anthracene	mg/kg	<0.014	n.v.	n.v.	n.v.		2.07	1.09	2.41	1.48	3.78	0.403	1.69	0.908	2.9	0.218	0.378	4.71	0.398	7.18	2.35	0.14	0.895	0.114
Chrysene	mg/kg	<0.01	n.v.	n.v.	n.v.		1.59	0.874	2.39	1.26	2.91	0.379	1.32	0.784	2.39	0.174	0.323	3.77	0.351	5.79	1.89	0.109	0.797	0.0805
Benzo(b)fluoranthene	mg/kg	<0.015	n.v.	n.v.	n.v.		3.09	1.73	3.77	2.4	5.52	0.737	2.54	1.94	4.07	0.322	0.509	5.45	0.52	10.6	2.45	0.231	1.6	0.107
Benzo(k)fluoranthene	mg/kg	<0.014	n.v.	n.v.	n.v.		1.1	0.635	1.32	0.798	1.92	0.273	0.902	0.578	1.52	0.127	0.208	2.35	0.219	4.29	1.46	0.0965	0.711	0.0447
Indeno(1,2,3-cd)pyrene	mg/kg	<0.018	n.v.	n.v.	n.v.		1.93	0.803	1.29	1.12	2.58	0.36	1.19	0.794	1.92	0.139	0.32	2.8	0.322	5.78	1.94	0.104	1.07	0.0399
Dibenz(a,h)anthracene	mg/kg	<0.023	n.v.	n.v.	n.v.		0.47	0.221	0.469	0.279	0.729	0.0922	0.391	0.202	0.466	0.0424	0.0963	0.835	0.0864	1.6	0.571	0.0301	0.312	<0.023
Benzo(g,h,i)perylene	mg/kg	<0.024	n.v.	n.v.	n.v.		1.94	0.962	1.42	1.35	3.14	0.44	1.5	0.934	2.06	0.176	0.445	3.22	0.385	6.98	2.3	0.125	1.3	0.0463
PAH, Total Detected USEPA 16	mg/kg	<0.118	n.v.	n.v.	n.v.		24.7	12.3	23.3	14.8	40.5	4.65	18.8	10.6	29.0	2.43	4.45	55.1	4.95	91.7	23.0	1.53	11.2	1.83
Polychlorinated Biphenyls, Dioxins & Furans																								
PCB congener 81	µg/kg	<3	n.v.	n.v.	n.v.		-	<3	<3	-	-	-	-	<3	-	<3	-	<3	-	-	-	-	-	-
PCB congener 77	µg/kg	<3	n.v.	n.v.	n.v.		-	<3	<3	-	-	-	-	<3	-	<3	-	<3	-	-	-	-	-	-
PCB congener 123	µg/kg	<3	n.v.	n.v.	n.v.		-	<3	<3	-	-	-	-	<3	-	<3	-	<3	-	-	-	-	-	-
PCB congener 114	µg/kg	<3	n.v.	n.v.	n.v.		-	<3	<3	-	-	-	-	<3	-	<3	-	<3	-	-	-	-	-	-
PCB congener 105	µg/kg	<3	n.v.	n.v.	n.v.		-	22.1	53.1	-	-	-	-	55.8	-	5.11	-	52	-	-	-	-	-	-
PCB congener 118	µg/kg	<3	n.v.	n.v.	n.v.		-	58.1	160	-	-	-	-	213	-	15.5	-	184	-	-	-	-	-	-
PCB congener 126	µg/kg	<3	n.v.	n.v.	n.v.		-	<3	<3	-	-	-	-	<3	-	<3	-	<3	-	-	-	-	-	-
PCB congener 167	µg/kg	<3	n.v.	n.v.	n.v.		-	<0.003	7.02	-	-	-	-	15.6	-	<3	-	5.43	-	-	-	-	-	-
PCB congener 156	µg/kg	<3	n.v.	n.v.	n.v.		-	7.25	21.6	-	-	-	-	36.5	-	<3	-	22	-	-	-	-	-	-
PCB congener 157	µg/kg	<3	n.v.	n.v.	n.v.		-	<3	5.81	-	-	-	-	9.15	-	<3	-	<3	-	-	-	-	-	-
PCB congener 169	µg/kg	<3	n.v.	n.v.	n.v.		-	<3	<3	-	-	-	-	<3	-	<3	-	<3	-	-	-	-	-	-
PCB congener 189	µg/kg	<3	n.v.	n.v.	n.v.		-	<3	<3	-	-	-	-	<3	-	<3	-	<3	-	-	-	-	-	-
1,2,3,4,6,7,8 HpCDD	µg/kg	<0.000002	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,4,6,7,8 HpCDF	µg/kg	<0.0000019	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,4,7,8 HxCDD	µg/kg	<0.0000016	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,4,7,8 HxCDF	µg/kg	<0.0000025	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,4,7,8,9 HpCDF	µg/kg	<0.0000019	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,6,7,8 HxCDD	µg/kg	<0.0000016	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,6,7,8 HxCDF	µg/kg	<0.0000025	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,7,8 PeCDD	µg/kg	<0.0000014	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,7,8 PeCDF	µg/kg	<0.000001	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,7,8,9 HxCDD	µg/kg	<0.0000018	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,7,8,9 HxCDF	µg/kg	<0.0000013	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,3,4,6,7,8 HxCDF	µg/kg	<0.0000013	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,3,4,7,8 PeCDF	µg/kg	<0.000003	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,3,7,8 TCDD	µg/kg	<0.0000092	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,3,7,8 TCDF	µg/kg	<0.0000014	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCDD	µg/kg	<0.000042	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCDF	µg/kg	<0.0000033	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sum of detected dioxins, furans and/or dioxin-like PCBs	µg/kg		8	8	240		-	87.45	247.53	-	-	-	-	330.05	-	20.61	-	263.43	-	-	-	-	-	-
Detected Semi-Volatile Organic Compounds																								
bis(2-Ethylhexyl) phthalate	mg/kg	<0.1	284	2,720	85,200		<0.1	1.59	<0.1	-	<0.1	10.6	0.471	<0.1	-	<0.1	-	0.223	-	-	-	<0.1	-	-
n-Dibutyl phthalate	mg/kg	<0.1	13	445	15,400		<0.1	<0.1	0.602	-	<0.1	0.356	0.134	<0.1	-	<0.1	-	0.267	-	-	-	<0.1	-	-
n-Dioctyl phthalate	mg/kg	<0.1	2,240	3,400	89,100		<0.1	<0.1	<0.1	-	<0.1	1.18	<0.1	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	-
Dibenzofuran	mg/kg	<0.1	n.v.	n.v.	n.v.		0.232	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	0.846	-	-	-	<0.1	-	-
Carbazole	mg/kg	<0.1	n.v.	n.v.	n.v.		0.145	<0.1	<0.1	-	0.144	<0.1	<0.1	<0.1	-	<0.1	-	0.408	-	-	-	<0.1	-	-
4-Methylphenol	mg/kg	<0.1	84	4,450	160,000		<0.1	<0.1	<0.1	-	0.169	<0.1	0.151	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	-
4-Chloroaniline	mg/kg	<0.1	n.v.	n.v.	n.v.		0.22	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	-
2,4-Dimethylphenol	mg/kg	<0.1	20	281	15,700		<0.1	<0.1	<0.1	-	0.246	<0.1	0.247	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	-
2-Methylnaphthalene	mg/kg	<0.1	n.v.	n.v.	n.v.		0.284	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	0.859	-	-	-	<0.1	-	-
Benzo(a)anthracene	mg/kg	<0.1	n.v.	n.v.	n.v.		1.37	0.874	0.352	-	1.95	0.326	1.97	0.242	-	0.184	-	3.72	-	-	-	1.08	-	-
Chrysene	mg/kg	<0.1	n.v.	n.v.	n.v.		1.46	0.905	0.376	-	2.14	0.38	2.12	0.364	-	0.176	-	3.84	-	-	-	1.02	-	-
Naphthalene	mg/kg	<0.1	2.3	2.3	193		0.558	<0.1	<0.1	-	0.194	<0.1	0.116	<0.1	-	<0.1	-	0.736	-	-	-	<0.1	-	-
Detected Volatile Organic Compounds																								
Benzene	mg/kg	<0.009	0.189	0.38	27		0.422	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
Toluene	mg/kg	<0.007	131	868	56,300		<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Ethylbenzene	mg/kg	<0.004	47	83	5,710		0.0536	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
p/m-Xylene	mg/kg	<0.01	-	-	-		0.285	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o-Xylene	mg/kg	<0.01	57	79	5,920		0.131	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isopropylbenzene	mg/kg	<0.005	15	17	1,300		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	-	<0.05
Propylbenzene	mg/kg	<0.01	46	57	3,860		<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1
1,3,5-Trimethylbenzene	mg/kg	<0.008	n.v.	n.v.	n.v.		<0.08	<0.08	<0.08	-	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	<0.08	-	-	-	<0.08	-	<0.08
1,2,4-Trimethylbenzene	mg/kg	<0.009	5	6.1	611		0.232	<0.09	<0.09	-	<0.09	<0.09	<0.09	<0.09	-	<0.09	-	1.07	-	-	-	<0.09	-	<0.09
sec-Butylbenzene	mg/kg	<0.01	n.v.	n.v.	n.v.		<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1
4-Isopropyltoluene	mg/kg	<0.01	n.v.	n.v.	n.v.		<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1
Naphthalene	mg/kg	<0.013	2.3	2.3	193		<0.13	<0.13	<0.13	-	<0.13	<0.13	<0.13	<0.13	-	<0.13	-	0.982	-	-	-	<0.13	-	<0.13
Dichloromethane	mg/kg	<0.01	0.62	3	257		<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-	<0.1
Poly-Fluoroalkyl Substances																								
PFBA (Perfluoro-n-butanoic acid) 357-22-44	mg/kg	<0.003	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	<0.003	-	-	-	-	-	-	-	-
PFPA (Perfluoro-n-pentanoic acid) 2706-90-3	mg/kg	<0.003	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	<0.003	-	-	-	-	-	-	-	-
PFHxA (Perfluoro-n-hexanoic acid) 307-24-4	mg/kg	<0.002	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	<0.002	-	-	-	-	-	-	-	-
PFBS (Perfluoro-1-butanesulfonate) 375-73-5	mg/kg	<0.001	n.v.	n.v.	n.v.		-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-
PFHpA (Perfluoro-n-heptanoic acid) 375-85-9	mg/kg	<0.001	n.v.	n.v.	n.v.		-	-	-

Table E.1.3. Area 3 - W5 & W7 Soil Screening

Analyte	Units	LOD	Human Health GAC/SGV: Resi W HG Veg	Resi WO HG Veg	Commercial	Sample ID:	W5BH302	W5BH302	W5BH302	W5BH303	W5BH303	W5HP306	W5HP306	W5TP301	W5TP301	W5TP302	W5TP302	W5TP302	W5TP303	W5TP303	W5TP304	W5TP304	W5TP305	W5TP305	W5WS306	W5WS306	W5WS307c	W5WS307c	W5WS307c	W7WS308	W7WS308	W7WS309	W7WS309	W7WS310	W7WS310	W7WS310
						Sample Depth (m):	0.1-0.3	0.9-1.0	5.8-6.0	3.7	6.5	0.1-0.2	0.8-1.0	0.15	0.5	0.3	1.0	2.8	0.7	1.5	0.2	0.5	0.3	0.8	0.0-0.3	0.9-1.1	0.0-0.2	0.8-0.9	2.0-2.1	0.3	2.4	0.9	1.7	0.0-0.2	1.0-1.1	2.8-2.9
						Date Sampled:	12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017	19/04/2017	19/04/2017	21/04/2017	21/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	21/04/2017	21/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017	13/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
						Geology:	MG	MG	LECH	MG	TFD	MG	RT	MG	MG	MG	MG	RT	MG	MG	MG	MG	MG	MG	TS	MG	MG	MG	MG	MG	MG	MG	MG	TS	MG	RT
Asbestos																																		
Asbestos Identification	-		n.v.	n.v.	n.v.	Soil containing debris typical of asbestos cement - chrysotile.	*No Asbestos Detected*	-	*No Asbestos Detected*	-	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	-	*No Asbestos Detected*	Chrysotile as loose fibres in soil.	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	-	*No Asbestos Detected*	-	*No Asbestos Detected*	*No Asbestos Detected*	*No Asbestos Detected*	Amosite as loose fibres in soil.	*No Asbestos Detected*
Asbestos Quantification - Gravimetric - %	%	<0.001	n.v.	n.v.	n.v.	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Quantification - PCOM Evaluation - %	%	<0.001	n.v.	n.v.	n.v.	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Quantification - Total - %	%	<0.001	n.v.	n.v.	n.v.	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil Properties																																		
pH	pH Units	<1	n.a.	n.a.	n.a.	8.3	8.14	9.59	8.16	8.5	8.5	8.17	8.19	8.43	8.11	7.98	8.14	8.46	8.67	8.55	8.59	8.69	8.64	8.23	8.59	8.6	8.63	8.33	8.67	9.21	8.71	9.21	8.47	8.36	8.33
Soil Organic Matter (SOM)	%	<0.35	n.a.	n.a.	n.a.	1.78	-	*<0.35*	*<0.35*	*<0.35*	-	2.62	-	-	-	-	1.1	19.7	-	-	-	-	-	2.88	2.38	-	-	3.14	-	2.55	-	-	-	-
Inorganics																																		
Ammonia (Exchangeable) as NH_4	mg/kg	<15	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<15*	-	-	-	-	-	-
Cyanide, Free	mg/kg	<1	15	15	78	-	-	-	-	-	*<1*	*<1*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*
Cyanide, Complex	mg/kg	<0.5-1	15	15	78	-	-	-	-	-	*<1*	*<1*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*
Cyanide, Total	mg/kg	<1	15	15	78	-	-	-	-	-	*<1*	*<1*	-	-	-	-	-	-	-	-	*<1*	*<1*	-	-	-	-	-	-	*<1*	*<1*	*<1*	*<1*	-	*<1*	*<1*
Metals																																		
Arsenic	mg/kg	<0.6	32	35	635	8.84	11.7	1.11	7.88	21.9	21.0	13.8	9.71	10.4	6.7	9.0	10.9	13.8	10.0	10.7	8.97	9.86	7.96	2.33	7.56	7.98	7.93	19.5	21.7	8.1	18.2	7.61	11.6	11.6	11.5
Barium	mg/kg	<0.6	1,210	1,350	22,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	<0.01	1.7	1.7	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron, water soluble	mg/kg	<1	300	10,500	207,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	<0.02	12	87	223	0.0331	0.242	0.751	*<0.02*	*<0.02*	0.196	*<0.02*	0.284	0.934	0.0994	0.0392	*<0.02*	1.52	0.091	0.223	0.186	0.159	0.22	0.0616	0.727	0.34	0.219	0.243	0.196	0.3	0.121	0.102	*<0.02*	*<0.02*	0.581
Chromium, Hexavalent	mg/kg	<0.6	4.5	4.5	24	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*		*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*	*<0.6*
Chromium, Total	mg/kg	<0.9	1,590	1,590	9,550	21.3	21.8	1.89	30.3	24.6	13	14.3	12.9	15.1	11.8	10.7	61.6	43.7	19.3	11.7	11.5	16.0	13.7	5.13	19.3	10.3	13.3	19.2	6.57	16.4	9.12	3.11	15.2	29.1	34.5
Copper	mg/kg	<1.4	2,490	7,520	69,800	30.1	16.9	1.88	19.4	5.56	80.8	29.5	29.6	63.4	28.9	49.2	51.0	553	46.1	89.4	19.0	20.9	25.2	7.2	147	21.3	9.01	57.9	31.8	10.6	43.5	7.59	20.3	26.9	28.9
Lead	mg/kg	<0.7	148	188	1,390	28.9	62.7	1.41	19.0	15.7	246	58.4	133	403	74.7	166	36.7	344	80.5	374	68.8	94.0	96.3	25.1	125	78.4	34.1	341	128	16.8	180	30.3	84.9	65.1	23.8
Mercury	mg/kg	<0.14	39	56	1,110	*<0.14*	*<0.14*	0.314	*<0.14*	*<0.14*	1.01	0.681	0.523	0.475	0.156	0.788	*<0.14*	*<0.14*	*<0.14*	5.85	0.643	0.245	0.339	*<0.14*	0.289	0.236	0.163	0.469	0.566	0.393	0.629	0.268	0.67	0.88	0.696
Nickel	mg/kg	<0.2	126	181	1,710	17.3	17.0	1.81	58.7	61.1	16.6	18.3	12.8	13.0	8.72	10.6	85.8	45.6	14.5	14.0	15.0	13.2	12.2	2.57	14.5	8.87	11.9	23.0	13.9	16.9	15.5	5.2	13.0	16.6	52.5
Selenium	mg/kg	<1	258	430	12,300	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	2.13	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*
Tin	mg/kg	<0.24	7,360	16,000	429,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.74	-	11.7	-	-	18.2	-
Zinc	mg/kg	<1.9	3,860	40,400	NRP	65.2	105	19.2	63.3	32.4	182	56.3	128	285	64.8	66.6	606	1,300	124	180	76.3	85.6	107	26.0	425	95.4	70.3	182	135	33.2	135	95.8	102	83.8	97.5
Organo Tins																																		
Monobutyl Tin	mg/kg	<0.1	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.1*	-	*<0.1*	-	-	*<0.1*	-
Monophenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.02*	-	*<0.02*	-	-	*<0.02*	-
Dibutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.02*	-	*<0.02*	-	-	*<0.02*	-
Diphenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.02*	-	*<0.02*	-	-	*<0.02*	-
Tributyl Tin	mg/kg	<0.02	0.26	2	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.02*	-	*<0.02*	-	-	*<0.02*	-
Triphenyl Tin	mg/kg	<0.05	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.05*	-	*<0.05*	-	-	*<0.05*	-
Tetrabutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.02*	-	*<0.02*	-	-	*<0.02*	-
Petroleum Hydrocarbons																																		
Aliphatics >C5-C6	mg/kg	<0.01	42	42	3,190	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Aliphatics >C6-C8	mg/kg	<0.01	103	104	7,780	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	0.0456	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Aliphatics >C8-C10	mg/kg	<0.01	27	27	2,000	*<0.01*	0.0189	*<0.01*	0.0202	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	1.41	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Aliphatics >C10-C12	mg/kg	<0.01	132	132	9,690	*<0.01*	0.117	0.0248	0.168	0.0464	*<0.01*	*<0.01*	*<0.01*	0.0528	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	1.85	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Aliphatics >C12-C16	mg/kg	<0.1	1,030	1,030	58,800	0.89	12.2	*<0.1*	*<0.1*	*<0.1*	*<0.1*	*<0.1*	1.05	0.432	0.605	0.317	*<0.1*	0.276	*<0.1*	1.15	*<0.1*	1.66	0.886	*<0.1*	0.748	0.306	*<0.1*	0.602	*<0.1*	*<0.1*	0.523	0.111	*<0.1*	*<0.1*	*<0.1*
Aliphatics >C16-C21	mg/kg	<0.1			NRP	4.33	15.1	1.05	*<0.1*	*<0.1*	*<0.1*	*<0.1*	7.36	4.84	2.64	1.47	*<0.1*	0.97	0.789	5.47	*<0.1*	2.62	3.07	*<0.1*	3.38	1.96	*<0.1*	0.908	1.58	*<0.1*	1.81	0.197	*<0.1*	*<0.1*	*<0.1*
Aliphatics >C21-C35	mg/kg	<0.1	88,400	89,100	NRP	15.2	30	2.98	2.06	0.558	6.43	2.14	53.5	38	19.7	7.51	1.25	11.2	9.19	61.9	3.62	13	17.6	8.99	42.8	61.8	3.68	11.5	27.8	3.29	13.5	0.698	3.0	2.6	1.82	*<0.1*
Aliphatics >C35-C44	mg/kg	<0.1	88,400	89,100	NRP	3.74	2.08	*<0.1*	*<0.1*	*<0.1*	0.532	*<0.1*	19.8	10.9	7.47	1.09	*<0.1*	3.56	1.51	17.7	*<0.1*	4.45	7.42	*<0.1*	21.7	48.6	*<0.1*	0.684	19.1	1.15	6.66	*<0.1*	*<0.1*	1.75	*<0.1*
Total Aliphatics >C12-C44	mg/kg	<0.1	n.v.	n.v.	n.v.	24.1	59.4	4.02	2.06	0.558	6.96	2.14	81.6	54.2	30.4	10.4	1.25	16	11.5	86.2	3.62	21.7	29	8.99	68.6	113	3.68	13.7	48.4	4.44	22.5	1.01	2.6	3.57	*<0.1*
Aromatics >EC5-EC7	mg/kg	<0.01	72	372	26,200	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Aromatics >EC7-EC8	mg/kg	<0.01	130	853	56,100	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Aromatics >EC8-EC10	mg/kg	<0.01	34	47	3,460	*<0.01*	0.013	*<0.01*	0.0143	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	0.943	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Aromatics >EC10-EC12	mg/kg	<0.01	74	248	16,200	*<0.01*	0.0779	0.0165	0.112	0.0309	*<0.01*	*<0.01*	*<0.01*	0.0352	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	1.24	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Aromatics >EC12-EC16	mg/kg	<0.1	141	1,430	36,200	1.51	17.6	*<0.1*	*<0.1*	*<0.1*	0.509	*<0.1*	0.233	0.923	1.19	0.733	*<0.1*	0.322	0.372	2.13	0.531	10.2	1.11	*<0.1*	1.7	0.925	*<0.1*	0.898	0.885	0.49	*<0.1*	*<0.1*	0.508	*<0.1*	*<0.1*
Aromatics >EC16-EC21	mg/kg	<0.1	249	1,340	28,600	9.8	112	*<0.1*	*<0.1*	*<0.1*	3.55	*<0.1*	4.52	9.29	9.47	3.12	*<0.1*	2.61	3.19	25.7	6.66	55.2	5.33	1.38	77	7.1	0.654	5.19	7.62	3.46	5.28	0.622	1.53	*<0.1*	*<0.1*
Aromatics >EC21-EC35	mg/kg	<0.1	873	1,340	28,600	36.4	258	0.813	1.67	*<0.1*	22.9	6.86	45.3	40.8	61.6	20.7	1.93	20.2	11.9	96.3	21.6	112	34.4	20.1	78.6	124	3.42	34.9	61.1	10.9	52.8	3.32	9.44	2.52	*<0.1*
Aromatics >EC35-EC44	mg/kg	<0.1	873	1,340	28,600	18.1	73.3	*<0.1*	*<0.1*	*<0.1*	9.14	1.98	37.5	21.4	33.7	11.5	*<0.1*	10.1	4.89	48.2	9.25	39.8	22	10.1	70.5	159	1.05	18	54.3	6.23	30	2.66	5.08	5.59	*<0.1*
Total Aromatics >EC12-EC44	mg/kg	<0.1	n.v.	n.v.	n.v.	65.8	460	0.813	1.67	*<0.1*	36.1	8.84	87.5	72.4	106	36.1	1.93	33.2	20.4	172	38.0	218	62.8	31.6	228	291	5.13	58.9	124	21.1	88.1	6.60	16.6	8.11	*<0.1*
Total Aliphatics & Aromatics >C5-C44	mg/kg	<0.1	n.v.	n.v.	n.v.	89.9	520	4.89	4.05	0.616	43.0	11.0	169	127	136	46.5	3.18	49.2	31.9	258	41.7	239	91.7	40.6	296	404	8.81	78.2	172	25.5	111	7.62	19.2	11.7	*<0.1*
Polyaromatic Hydrocarbons																																		
Benzo(a)pyrene	mg/kg	<0.015	1.6	1.7	38	1.91	2.15	*<0.015*	*<0.015*	*<0.015*	0.456	0.0378	0.0713	0.212	1.09	0.601	*<0.015*	0.507	0.204	3.65	0.935	2.38	3.93	0.0594	0.792	0.338	0.123	0.252	1.78	0.817	0.78	0.0502	1.09	3.45	*<0.015*
Naphthalene	mg/kg	<0.009	2.3	2.3	193	0.0458	0.124	*<0.009*	*<0.009*	*<0.009*	0.0353	*<0.009*	0.0101	0.0259	0.047	0.0242	*<0.009*	0.030	0.0107	0.0945	0.0381	0.150	0.206	*<0.009*	0.0546	0.0124	*<0.009*	0.0257	0.0665	0.283	0.0513	*<0.009*	0.0229	0.0461	*<0.009*
Acenaphthylene	mg/kg	<0.012	n.v.	n.v.	n.v.	0.0535	0.0581	*<0.012*	*<0.012*	*<0.012*	0.0318	*<0.012*	0.0134	0.0744	0.155	0.0355	*<0.012*	0.0647	*<0.012*	0.318	0.0576	0.245	0.218	*<0.012*	0.0531	0.0262	0.0351	0.018	0.124	0.0265	0.0572	*<0.012*	0.0625	0.135	*<0.012*
Acenaphthene	mg/kg	<0.008	n.v.	n.v.	n.v.	0.182	0.194	*<0.008*	*<0.008*	*<0.008*	0.0148	*<0.008*	*<0.008*	*<0.008*	0.0247	0.0168	*<0.008*	*<0.008*	*<0.008*	*<0.008*	0.0165	0.0601	0.115	*<0.008*	0.0236	0.0156	*<0.008*	0.0173	0.0491	0.316	0.0211	*<0.008*	0.0661	0.0586	*<0.008*
Fluorene	mg/kg	<0.01	n.v.	n.v.	n.v.	0.153	0.14	*<0.01*	*<0.01*	*<0.01*	0.0128	*<0.01*	*<0.01*	*<0.01*	0.0279	0.0151	*<0.01*	0.0119	*<0.01*	0.216	0.0142	0.119	0.111	*<0.01*	0.0303	0.0173	*<0.01*	*<0.01*	0.0436	0.323	*<0.01*	*<0.01*	0.0509	0.0555	*<0.01*
Phenanthrene	mg/kg	<0.015	n.v.	n.v.	n.v.	2.26	1.59	*<0.015*	*<0.015*	*<0.015*	0.219	*<0.015*	0.0364	0.104	0.327	0.301	*<0.015*	0.211	0.0839	3.93	0.348	1.61	1.72	0.051	0.403	0.222	0.164	0.228	0.742	1.84	0.387	*<0.015*	1.1	1.74	*<0.015*
Anthracene	mg/kg	<0.016	n.v.	n.v.	n.v.	0.66	0.562	*<0.016*	*<0.016*	*<0.016*	0.0558	*<0.016*	*<0.016*	0.0361	0.137	0.089	*<0.016*	0.0649	0.0219	1.37	0.1	0.46	0.537	*<0.016*	0.105	0.0709	0.0226	0.0512	0.205	0.482	0.0882	*<0.016*	0.328	0.777	*<0.016*
Fluoranthene	mg/kg	<0.017	n.v.	n.v.	n.v.	4.45	4.7	*<0.017*	*<0.017*	*<0.017*	0.492	0.0342	0.0888	0.235	0.929	0.939	*<0.017*	0.658	0.234	8.42	1.21	3.2	4.02	0.0872	0.896	0.529	0.3	0.497	1.95	2.11	0.822	0.048	2.06	6.98	*<0.017*
Pyrene	mg/kg	<0.015	n.v.	n.v.	n.v.	3.68	3.9	*<0.015*	*<0.015*	*<0.015*	0.436	0.0277	0.0829	0.235	0.928	0.812	*<0.015*	0.596	0.209	6.66	1.02	2.73	3.38	0.0712	0.81	0.472	0.235	0.417	1.72	1.56	0.712	0.0422	1.7	5.81	*<0.015*
Benz(a)anthracene	mg/kg	<0.014	n.v.	n.v.	n.v.	1.95	2.14	*<0.014*	*<0.014*	*<0.014*	0.336	0.0333	0.056	0.169	0.711	0.507	*<0.014*	0.424	0.154	4.43	0.744	1.87	2.44	0.0577	0.547	0.267	0.108	0.255	1.3	0.84	0.572	0.0444	1.21	3.38	*<0.014*
Chrysene	mg/kg	<0.01	n.v.	n.v.	n.v.	1.54	1.83	*<0.01*	*<0.01*	*<0.01*	0.305	0.0206	0.0585	0.189	0.604	0.412	*<0.01*	0.373	0.113	3.18	0.589	1.56	2.02	0.0564	0.604	0.316	0.111	0.306	1.05	0.726	0.505	0.0275	0.903	3.05	*<0.01*
Benzo(b)fluoranthene	mg/kg	<0.015	n.v.	n.v.	n.v.	1.91	2.34	*<0.015*	*<0.015*	*<0.015*	0.538	0.0503	0.0863	0.311	1.24	0.57	*<0.015*	0.591	0.164	4.55	1.12	2.26	3.25	0.0815	1	0.456	0.127	0.488	2.22	0.918	0.993	0.0712	1.4	3.9	*<0.015*
Benzo(k)fluoranthene	mg/kg	<0.014	n.v.	n.v.	n.v.	0.968	0.959	*<0.014*	*<0.014*	*<0.014*	0.204	0.0193	0.0415	0.132	0.502	0.308	*<0.014*	0.262	0.0911	2.1	0.497	1.06	1.54	0.0294	0.363	0.162	0.0722	0.198	0.864	0.416	0.385	0.0294	0.529	1.67	*<0.014*
Indeno(1,2,3-cd)pyrene	mg/kg	<0.018	n.v.	n.v.	n.v.	0.921	1	*<0.018*	*<0.018*	*<0.018*	0.283	0.0282	0.0598	0.192	0.741	0.318	*<0.018*	0.294	0.112	1.82	0.543	1.31	2.5	0.0433	0.517	0.237	0.0572	0.218	1.07	0.443	0.453	0.0362	0.566	1.63	*<0.018*
Dibenzo(a,h)anthracene	mg/kg	<0.023	n.v.	n.v.	n.v.	0.264	0.3	*<0.023*	*<0.023*	*<0.023*	0.0829	*<0.023*	*<0.023*	0.0592	0.218	0.0938	*<0.023*	0.087	0.0303	0.588	0.151	0.358	0.697	*<0.023*	0.12	0.066	*<0.023*	0.0682	0.306	0.151	0.129	*<0.023*	0.169	0.505	*<0.023*
Benzo(g,h,i)perylene	mg/kg	<0.024	n.v.	n.v.	n.v.	1.11	1.21	*<0.024*	*<0.024*	*<0.024*	0.35	0.0352	0.0793	0.243	0.906	0.369	*<0.024*	0.362	0.143	1.88	0.635	1.59	3.02	0.0558	0.629	0.317	0.0609	0.288	1.23	0.568	0.551	0.046	0.675	1.83	*<0.024*
PAH, Total Detected USEPA 16	mg/kg	<0.118	n.v.	n.v.	n.v.	22.1	23.2	*<0.118*	*<0.118*	*<0.118*	3.85	0.286	0.684	2.22	8.59	5.41	*<0.118*	4.54	1.57	43.2	8.02	20.9	29.7	0.593	6.95	3.53	1.42	3.33	14.7	11.8	6.51	0.395	11.9	35	*<0.118*
Polychlorinated Biphenyls, Dioxins & Furans																																		
PCB congener 81	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 77	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 123	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 114	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 105	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 118	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 126	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 167	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 156	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 157	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 169	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB congener 189	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,4,6,7,8 HpCDD	µg/kg	*<0.000002*	n.v.	n.v.	n.v.	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table E.1.3. Area 3 - W5 & W7 Soil Screening

					Sample ID:	W7WS311	W7WS311	W7WS311
					Sample Depth (m):	0.1-0.3	0.8-0.9	2.8-2.9
					Date Sampled:	20/04/2017	20/04/2017	20/04/2017
					Geology:	MG	MG	RT
			Human Health GAC/SGV					
Analyte	**Units**	**LOD**	**Resi W HG Veg**	**Resi WO HG Veg**	**Commercial**			
Asbestos								
Asbestos Identification	-		n.v.	n.v.	n.v.	Soil containing loose fibres and ACM debris - chrysotile.	Chrysotile as loose fibres in soil.	-
Asbestos Quantification - Gravimetric - %	%	<0.001	n.v.	n.v.	n.v.	-	-	-
Asbestos Quantification - PCOM Evaluation - %	%	<0.001	n.v.	n.v.	n.v.	-	-	-
Asbestos Quantification - Total - %	%	<0.001	n.v.	n.v.	n.v.	-	-	-
Soil Properties								
pH	pH Units	<1	n.a.	n.a.	n.a.	8.81	8.75	8.49
Soil Organic Matter (SOM)	%	<0.35	n.a.	n.a.	n.a.	-	-	*<0.35*
Inorganics								
Ammonia (Exchangeable) as NH_4	mg/kg	<15	n.v.	n.v.	n.v.	-	*<15*	-
Cyanide, Free	mg/kg	<1	15	15	78	*<1*	*<1*	*<1*
Cyanide, Complex	mg/kg	<0.5-1	15	15	78	*<1*	*<1*	*<1*
Cyanide, Total	mg/kg	<1	15	15	78	*<1*	*<1*	*<1*
Metals								
Arsenic	mg/kg	<0.6	32	35	635	8.32	9.93	6.3
Barium	mg/kg	<0.6	1,210	1,350	22,100	-	-	-
Beryllium	mg/kg	<0.01	1.7	1.7	12	-	-	-
Boron, water soluble	mg/kg	<1	300	10,500	207,000	-	-	-
Cadmium	mg/kg	<0.02	12	87	223	0.324	0.344	0.464
Chromium, Hexavalent	mg/kg	<0.6	4.5	4.5	24	*<0.6*	*<0.6*	*<0.6*
Chromium, Total	mg/kg	<0.9	1,590	1,590	9,550	8.68	6.71	22.8
Copper	mg/kg	<1.4	2,490	7,520	69,800	15.8	32.2	12.1
Lead	mg/kg	<0.7	148	188	1,390	102	155	12.1
Mercury	mg/kg	<0.14	39	56	1,110	0.81	0.879	0.663
Nickel	mg/kg	<0.2	126	181	1,710	10.1	13.0	30.1
Selenium	mg/kg	<1	258	430	12,300	*<1*	*<1*	*<1*
Tin	mg/kg	<0.24	7,360	16,000	429,000	4.24	5.81	-
Zinc	mg/kg	<1.9	3,860	40,400	NRP	98.7	95.6	45.6
Organo Tins								
Monobutyl Tin	mg/kg	<0.1	n.v.	n.v.	n.v.	*<0.1*	*<0.1*	-
Monophenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	*<0.02*	*<0.02*	-
Dibutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	*<0.02*	*<0.02*	-
Diphenyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	*<0.02*	*<0.02*	-
Tributyl Tin	mg/kg	<0.02	0.26	2	123	*<0.02*	*<0.02*	-
Triphenyl Tin	mg/kg	<0.05	n.v.	n.v.	n.v.	*<0.05*	*<0.05*	-
Tetrabutyl Tin	mg/kg	<0.02	n.v.	n.v.	n.v.	*<0.02*	*<0.02*	-
Petroleum Hydrocarbons								
Aliphatics >C5-C6	mg/kg	<0.01	42	42	3,190	*<0.01*	*<0.01*	*<0.01*
Aliphatics >C6-C8	mg/kg	<0.01	103	104	7,780	*<0.01*	*<0.01*	*<0.01*
Aliphatics >C8-C10	mg/kg	<0.01	27	27	2,000	*<0.01*	0.0133	*<0.01*
Aliphatics >C10-C12	mg/kg	<0.01	132	132	9,690	*<0.01*	0.0588	*<0.01*
Aliphatics >C12-C16	mg/kg	<0.1	1,030	1,030	58,800	*<0.1*	0.528	0.984
Aliphatics >C16-C21	mg/kg	<0.1			NRP	*<0.1*	1.24	2.28
Aliphatics >C21-C35	mg/kg	<0.1	88,400	89,100	NRP	4.85	10.8	4.2
Aliphatics >C35-C44	mg/kg	<0.1	88,400	89,100	NRP	0.712	3.1	*<0.1*
Total Aliphatics >C12-C44	mg/kg	<0.1	n.v.	n.v.	n.v.	5.56	15.6	7.46
Aromatics >EC5-EC7	mg/kg	<0.01	72	372	26,200	*<0.01*	*<0.01*	*<0.01*
Aromatics >EC7-EC8	mg/kg	<0.01	130	853	56,100	*<0.01*	*<0.01*	*<0.01*
Aromatics >EC8-EC10	mg/kg	<0.01	34	47	3,460	*<0.01*	0.0144	*<0.01*
Aromatics >EC10-EC12	mg/kg	<0.01	74	248	16,200	*<0.01*	0.0389	*<0.01*
Aromatics >EC12-EC16	mg/kg	<0.1	141	1,430	36,200	0.616	0.488	1.22
Aromatics >EC16-EC21	mg/kg	<0.1	249	1,340	28,600	7.26	6.19	2.59
Aromatics >EC21-EC35	mg/kg	<0.1	873	1,340	28,600	40.5	24.5	4.16
Aromatics >EC35-EC44	mg/kg	<0.1	873	1,340	28,600	23.1	11.6	1.53
Total Aromatics >EC12-EC44	mg/kg	<0.1	n.v.	n.v.	n.v.	71.5	42.7	9.49
Total Aliphatics & Aromatics >C5-C44	mg/kg	<0.1	n.v.	n.v.	n.v.	77.1	58.5	17.0
Polyaromatic Hydrocarbons								
Benzo(a)pyrene	mg/kg	<0.015	1.6	1.7	38	1.17	0.656	*<0.015*
Naphthalene	mg/kg	<0.009	2.3	2.3	193	0.0434	0.0376	*<0.009*
Acenaphthylene	mg/kg	<0.012	n.v.	n.v.	n.v.	0.0508	0.0298	*<0.012*
Acenaphthene	mg/kg	<0.008	n.v.	n.v.	n.v.	0.0196	0.0455	*<0.008*
Fluorene	mg/kg	<0.01	n.v.	n.v.	n.v.	*<0.01*	0.0335	*<0.01*
Phenanthrene	mg/kg	<0.015	n.v.	n.v.	n.v.	0.319	0.475	*<0.015*
Anthracene	mg/kg	<0.016	n.v.	n.v.	n.v.	0.136	0.13	*<0.016*
Fluoranthene	mg/kg	<0.017	n.v.	n.v.	n.v.	1.08	1.09	*<0.017*
Pyrene	mg/kg	<0.015	n.v.	n.v.	n.v.	1.01	0.957	*<0.015*
Benz(a)anthracene	mg/kg	<0.014	n.v.	n.v.	n.v.	0.827	0.554	*<0.014*
Chrysene	mg/kg	<0.01	n.v.	n.v.	n.v.	0.615	0.533	*<0.01*
Benzo(b)fluoranthene	mg/kg	<0.015	n.v.	n.v.	n.v.	1.43	0.708	*<0.015*
Benzo(k)fluoranthene	mg/kg	<0.014	n.v.	n.v.	n.v.	0.546	0.395	*<0.014*
Indeno(1,2,3-cd)pyrene	mg/kg	<0.018	n.v.	n.v.	n.v.	0.667	0.398	*<0.018*
Dibenzo(a,h)anthracene	mg/kg	<0.023	n.v.	n.v.	n.v.	0.191	0.117	*<0.023*
Benzo(g,h,i)perylene	mg/kg	<0.024	n.v.	n.v.	n.v.	0.807	0.542	*<0.024*
PAH, Total Detected USEPA 16	mg/kg	<0.118	n.v.	n.v.	n.v.	8.92	6.7	*<0.118*
Polychlorinated Biphenyls, Dioxins & Furans								
PCB congener 81	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 77	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 123	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 114	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 105	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 118	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 126	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 167	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 156	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 157	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 169	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
PCB congener 189	µg/kg	<3	n.v.	n.v.	n.v.	-	-	-
1,2,3,4,6,7,8 HpCDD	µg/kg	*<0.0000002*	n.v.	n.v.	n.v.	-	-	-
1,2,3,4,6,7,8 HpCDF	µg/kg	*<0.0000019*	n.v.	n.v.	n.v.	-	-	-
1,2,3,4,7,8 HxCDD	µg/kg	*<0.0000016*	n.v.	n.v.	n.v.	-	-	-
1,2,3,4,7,8 HxCDF	µg/kg	*<0.0000025*	n.v.	n.v.	n.v.	-	-	-
1,2,3,4,7,8,9 HpCDF	µg/kg	*<0.0000019*	n.v.	n.v.	n.v.	-	-	-
1,2,3,6,7,8 HxCDD	µg/kg	*<0.0000016*	n.v.	n.v.	n.v.	-	-	-
1,2,3,6,7,8 HxCDF	µg/kg	*<0.0000025*	n.v.	n.v.	n.v.	-	-	-
1,2,3,7,8 PeCDD	µg/kg	*<0.0000014*	n.v.	n.v.	n.v.	-	-	-
1,2,3,7,8 PeCDF	µg/kg	*<0.000003*	n.v.	n.v.	n.v.	-	-	-
1,2,3,7,8,9 HxCDD	µg/kg	*<0.0000033*	n.v.	n.v.	n.v.	-	-	-
1,2,3,7,8,9 HxCDF	µg/kg	*<0.0000013*	n.v.	n.v.	n.v.	-	-	-
2,3,4,6,7,8 HxCDF	µg/kg	*<0.0000013*	n.v.	n.v.	n.v.	-	-	-
2,3,4,7,8 PeCDF	µg/kg	*<0.000001*	n.v.	n.v.	n.v.	-	-	-
2,3,7,8 TCDD	µg/kg	*<0.0000092*	n.v.	n.v.	n.v.	-	-	-
2,3,7,8 TCDF	µg/kg	*<0.0000014*	n.v.	n.v.	n.v.	-	-	-
OCDD	µg/kg	*<0.000042*	n.v.	n.v.	n.v.	-	-	-
OCDF	µg/kg	*<0.0000033*	n.v.	n.v.	n.v.	-	-	-
Sum of detected dioxins, furans and/or dioxin-like PCBs	µg/kg		8	8	240			
Detected Semi-Volatile Organic Compounds								
Benzo(a)anthracene	mg/kg	<0.1	n.v.	n.v.	n.v.	1.24	-	*<0.1*
Chrysene	mg/kg	<0.1	n.v.	n.v.	n.v.	1.27	-	*<0.1*
Detected Volatile Organic Compounds								
not detected	mg/kg	various	various	various	various	*n.d.*	*n.d.*	*n.d.*

Appendix E.2

WATER SCREENING ASSESSMENT

Table E.2.1.Tipner West - Level 1 Controlled Waters QRA (Aquifer Receptor)

| | | | | | AREA 1 - Tipner Firing Range | | | | |

Table E.2.2. Tipner West - Level 1 Controlled Waters QRA (Surface Water Receptor)

					AREA 1 - Tipner Firing Range												AREA 2 - Former MOD Landfill							AREA 3 - Historical Barracks				
				Sub Area:	W8				W9								W3	W4						W5			W7	
				Location:	W8WS319	W8WS320	W8WS321	W8WS317C	BH202	W3BH301	BH201	BH208	W9BH310	WS202	WS204	WS212	BH209	BH207	W3BH301	W4BH304	W4BH304	W4BH305	W4BH306	W4BH306	W4WS314	W5BH303	W5BH302	W5BH302	W7WS308	W7WS311
				Sample Depth (m	0.40-0.60	0.10-0.30	0.20-0.30	1.55-1.75	0.30-	0.35-0.50	1.00-	1.00-	0.80-1.00	1.00-	0.20-	0.65-	1.00-	0.70-	6.50-6.70	0.30-	4.60-	0.90-1.00	0.90-1.00	2.20-2.50	1.35-1.50	3.70-	0.90-1.00	5.80-6.00	0.30-	0.80-0.90
				Date Sampled:	24/04/2017	24/04/2017	25/04/2017	24/04/2017	19/08/2016	10/04/2017	19/08/2016	12/08/2016	25/04/2017	18/08/2016	19/08/2016	19/08/2016	11/08/2016	17/08/2016	11/04/2017	19/04/2017	19/04/2017	19/04/2017	20/04/2017	20/04/2017	19/04/2017	13/04/2017	12/04/2017	12/04/2017	20/04/2017	20/04/2017
				Geology:	MG	MG	MG	RT	TS	TS	MG	MG	MG	MG	MG	MG	RT	LMBE	LECH	MG	MG	MG	MG	MG	MG	MG	LECH	MG	MG
	Units	LOD	Screening Criteria Value	Source																								
Inorganics																												
Ammoniacal Nitrogen as N	µg/l	<200	21	EQS-AA	<200	<200	<200	<200	21.2	-	18.2	<233	<200	25.8	35.3	37.1	<233	21.0	-	<200	<200	<200	684	1,030	912	-	-	-	<200	<200
pH	pH Units	0.01	n.v.		7.95	7.94	7.93	8.02	-	10.06	-	-	7.88	-	-	-	-	-	-	7.51	8.72	-	8.2	8.15	-	-	-	-	8	8.78
Cyanide, Free	µg/l	<2.5	1	EQS-AA	<2.5	<2.5	<2.5	<2.5	<2.5	-	<2.5	-	<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	<2.5	<2.5	-	-	-	<2.5	<2.5
Dissolved Metals																													
Arsenic	µg/l	<0.5	25	EQS-AA	1.63	4.39	4.58	<0.51	<0.51	11.5	0.663	4.68	0.575	0.986	0.611	<0.51	0.604	0.724	0.696	0.657	<0.51	0.858	1.24	1.63	4.07	<0.51	<0.51	<0.51	3.28	11.8
Cadmium	µg/l	<0.08	0.2	EQS-AA	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Chromium, Hexavalent	µg/l	<30	0.6	EQS-AA	<30	<30	<30	<30	<30	-	<30	<30	<30	<30	<30	<30	<30	<30	-	-	-	<30	<30	<30	<30	-	-	-	<30	<30
Chromium	µg/l	<1.2	n.v.		1.35	2.46	<1	<1	<1.2	4.64	1.22	8.09	<1	<1.2	<1.2	1.21	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	2.33	4.86	<1.2	6.79	<1.2	<1.2	<1.2
Copper	µg/l	<0.85	3.76	EQS-AA	12.5	13.1	18.4	0.342	0.938	23.9	1.97	19.0	3.87	20.3	1.69	<0.85	<0.85	5.96	<0.85	3.36	<0.85	7.54	1.04	14.0	87.6	<0.85	3.72	<0.85	1.52	<0.85
Lead	µg/l	<0.1	1.3	EQS-AA	2.13	1.01	2.66	<0.2	0.148	4.1	1.92	11.1	1.74	8.79	0.289	0.401	0.271	1.53	0.246	0.562	<0.1	0.267	1.15	2.46	0.656	<0.1	0.202	<0.1	1.64	0.866
Mercury	µg/l	<0.01	n.v.		<0.01	0.0203	<0.01	<0.01	<0.01	0.0137	<0.01	0.286	<0.01	<0.01	<0.01	<0.01	<0.01	0.0129	<0.01	<0.01	<0.01	<0.01	<0.01	0.0201	<0.01	<0.01	<0.01	<0.01	0.0115	0.0238
Nickel	µg/l	<0.44	8.6	EQS-AA	1.27	0.758	1.43	0.902	<0.44	0.635	<0.44	1.55	0.407	1.29	0.604	<0.44	<0.44	0.729	<0.44	0.771	<0.44	0.996	0.952	5.66	1.29	<0.44	0.511	<0.44	<0.44	<0.44
Selenium	µg/l	<0.81	n.v.		0.621	0.801	<0.5	<0.5	<0.81	1.36	<0.81	<0.81	<0.5	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	0.826	<0.81	<0.81	<0.81	<0.81	<0.81
Tin	µg/l	<0.36	n.v.		<0.36	<0.36	<0.36	<0.36	-	0.363	-	-	<0.36	-	-	-	-	-	0.572	<0.36	<0.36	<0.36	<0.36	0.371	-	-	-	-	<0.36	<0.36
Zinc	µg/l	<1.3	7.9	EQS-AA	2.99	1.96	2.11	<1	<1.3	3.46	3.03	5.75	9.66	2.66	2.23	2.07	2.36	1.7	<1.3	1.53	<1.3	2.18	<1.3	22.4	1.41	<1.3	2.93	<1.3	<1.3	<1.3
Organo Tins																														
Dibutyl tin	µg/l	<0.005	n.v.		<0.005	0.0179	0.0158	-	-	0.0221	-	-	<0.005	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	-	-	-	<0.005	<0.005
Tributyl tin	µg/l	<0.001	n.v.		<0.001	0.0217	0.0322	-	-	0.0736	-	-	<0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	<0.001
Tetrabutyl tin	µg/l	<0.002	n.v.		<0.002	<0.002	<0.002	-	-	<0.002	-	-	<0.002	-	-	-	-	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	-	<0.002	<0.002
Triphenyl tin	µg/l	<0.001	n.v.		<0.001	0.00116	<0.001	-	-	<0.001	-	-	<0.001	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	<0.001	<0.001
Petroleum Hydrocarbons																														
Aliphatics >C5-C6	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35	µg/l	<10	n.v.		<10	1,090	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35	µg/l	<10	n.v.		<10	1,090	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	µg/l	<10	8	CL:AIRE	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	74	CL:AIRE	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	<10	20	CL:AIRE	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	µg/l	<10	2	CL:AIRE	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16	µg/l	<10	2	CL:AIRE	<10	19	<10	<10	<10	<10	-	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	29	<10	<10	<10	<10	<10
Aromatics >EC16-EC21	µg/l	<10	0.1	CL:AIRE	<10	12	<10	<10	<10	<10	-	61	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	30	<10	<10	<10	<10	<10
Aromatics >EC21-EC35	µg/l	<10	0.00017	CL:AIRE 2	<10	2,140	<10	<10	<10	<10	-	28	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	15	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35	µg/l	<10	n.v.		<10	2,170	<10	<10	<10	<10	-	119	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	74	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35	µg/l	<10	n.v.		<10	3,260	<10	<10	<10	<10	-	123	<10	<10	<10	<10	<10	<10	<10	12	<10	<10	<10	<10	92	<10	<10	<10	<10	<10
Polyaromatic Hydrocarbons (PAHs)																														
Benzo(a)pyrene	µg/l	<0.009	0.00017	EQS-AA	0.0092	<0.009	0.0171	<0.009	<0.009	<0.009	<0.009	0.379	<0.009	0.0103	<0.009	<0.009	0.0133	0.00932	0.0112	<0.009	<0.009	<0.009	<0.009	0.022	<0.009	<0.009	<0.009	0.0191	0.0128	0.0098
Naphthalene	µg/l	<0.1	2	EQS-AA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.163	0.138	1.58	<0.1	0.569	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	µg/l	<0.023	n.v.		0.0433	<0.023	0.0273	<0.023	<0.023	<0.023	<0.023	0.501	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	0.0343	<0.023	<0.023	<0.023	<0.023	0.0459	<0.023	<0.023	<0.023	0.0577	0.0278	0.0327
Benzo(k)fluoranthene	µg/l	<0.027	n.v.		<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	0.183	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	0.0281	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	0.047	<0.027	<0.027
Benzo(g,h,i)perylene	µg/l	<0.016	n.v.		<0.016	<0.016	0.0207	<0.016	<0.016	<0.016	<0.016	0.488	<0.016	<0.016	<0.016	<0.016	<0.016	0.0306	0.0372	<0.016	<0.016	<0.016	<0.016	0.0352	<0.016	<0.016	<0.016	0.057	0.0258	0.0208
Indeno(1,2,3-cd)pyrene	µg/l	<0.014	n.v.		<0.014	<0.014	0.0142	<0.014	<0.014	<0.014	<0.014	0.32	<0.014	<0.014	<0.014	<0.014	0.0196	<0.014	0.0313	<0.014	<0.014	<0.014	<0.014	0.0278	<0.014	<0.014	<0.014	0.0327	0.0174	0.0159
Acenaphthene	µg/l	<0.015	n.v.		0.0187	<0.015	0.0171	<0.015	<0.015	0.0182	0.0279	5.25	<0.015	0.0424	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0161	0.319	0.242	1.61	<0.015	0.225	<0.015	0.116	0.0911
Acenaphthylene	µg/l	<0.011	n.v.		<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.0983	<0.011	<0.011	<0.011	<0.011	<0.011	0.0129	<0.011	<0.011	<0.011	<0.011	<0.011	0.0113	0.0435	<0.011	<0.012	<0.013	<0.014	<0.015
Fluoranthene	µg/l	<0.017	0.0063	EQS-AA	0.042	<0.017	0.096	<0.017	<0.017	0.0543	0.0253	5.72	0.0311	0.165	0.0182	<0.017	<0.017	0.0525	0.021	0.0375	<0.017	<0.017	0.0714	0.207	0.607	<0.017	0.176	0.0223	0.126	0.0515
Anthracene	µg/l	<0.015	0.1	EQS-AA	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.176	<0.015	0.0447	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0563	0.105	0.291	<0.015	0.0897	<0.015	0.0384	0.0198
Phenanthrene	µg/l	<0.022	n.v.		0.0646	<0.022	0.0636	<0.022	<0.022	0.0999	0.0594	0.035	0.0583	0.202	<0.022	<0.022	<0.022	0.0991	<0.022	0.0436	<0.022	0.0537	0.39	0.532	1.72	<0.022	0.555	<0.022	0.271	0.137
Fluorene	µg/l	<0.014	n.v.		<0.014	<0.014	<0.014	<0.014	<0.014	0.014	0.0148	0.616	<0.014	0.0233	<0.014	<0.014	<0.014	<0.014	<0.014	0.0147	<0.014	<0.014	0.194	0.229	0.683	<0.014	0.124	<0.014	0.0488	0.028
Chrysene	µg/l	<0.013	n.v.		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.512	<0.013	0.0148	<0.013	<0.013	0.0213	<0.013	0.0366	<0.013	<0.013	<0.013	<0.013	0.0324	<0.013	<0.013	<0.013	0.037	0.0246	0.0229
Pyrene	µg/l	<0.014	n.v.		0.0344	<0.015	0.0645	<0.015	<0.015	0.0421	0.0172	3.76	0.0231	0.119	<0.014	<0.014	0.0154	0.0407	0.0225	0.0244	<0.014	<0.014	0.0435	0.18	0.39	<0.014	0.12	0.0211	0.0905	0.0407
Benzo(a)anthracene	µg/l	<0.017	n.v.		<0.017	<0.017	0.0236	<0.017	<0.017	<0.017	<0.017	0.6	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.0415	<0.017	<0.017	<0.017	<0.017	0.0247	<0.017	<0.017	<0.017	0.0422	0.0215	<0.017
Dibenzo(a,h)anthracene	µg/l	<0.016	n.v.		<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0962	<0.016	<0.016	<0.016	<0.016	0.0211	<0.016	0.0303	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0423	<0.016	<0.016
PAH, Total Detected USEPA 16	µg/l	<0.344	n.v.		<0.344	<0.344	0.344	<0.344	<0.344	<0.344	<0.344	18.7	<0.344	0.622	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	1.24	1.83	6.92	<0.344	1.86	<0.344	0.82	0.47
Polychlorinated Biphenyls																														
PCB congener 118	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 77	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 81	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 105	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 114	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 123	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 126	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 156	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 157	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 167	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 169	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
PCB congener 189	µg/l	<0.015	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	-	-
Detected Semi-Volatile Organic Compounds																														
none detected	µg/l	various	various		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n.d.	-	-	n.d.	n.d.	-	n.d.	-	-	n.d.	-
Detected Volatile Organic Compounds																														
Trichloroethene	µg/l	<1	10	EQS-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	1.16	<1	-	<1	-	-	<1	-
Toluene	µg/l	<1	74	EQS-AA	<1	<1	<1	<1	<4	<1	-	<4	<1	<4	<4	<4	<4	<4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.05	<0.001

EQS – Water Framework directive (Standards and Classification) Directions (England and Wales) 2015, EQS Transitional waters – Annual Average

CL:AIRE - naphthalene proxy EQS, 2015

CL:AIRE 2 - benzo(a)pyrene proxy EQS, 2015

Table E.2.3 Tipner West - Level 2 Controlled Waters QRA (Aquifer Receptor)

					AREA 1 - Tipner Firing Range																AREA 2 - Former MOD Landfill									AREA 3 - Historical Barracks
				Sub Area:	W8				W9												W3			W4						W7
				Location:	W8WS317	W8WS318	W8WS319	W8WS320	BH208	BH208	WS210	BH207	WS209	W9WS325	BH204	BH205	BH209	W9BH309	W9BH310	BH203	W3WS304	W3WS301	W3BH301	W4WS312	W4WS313	W4WS315	W4BH304	W4BH305	W7WS309
				Date Sampled:	07/08/2017	08/08/2017	08/08/2017	08/08/2017	07/08/2017	08/08/2017	08/08/2017	07/08/2017	07/08/2017	08/08/2017	07/08/2017	07/08/2017	08/08/2017	08/08/2017	08/08/2017	07/08/2017	03/08/2017	03/08/2017	03/08/2017	07/08/2017	07/08/2017	08/08/2017	07/08/2017	07/08/2017	02/08/2017
				Aquifer:	SUPERFICIAL DEPOSITS				MADE GROUND			SUPERFICIAL DEPOSITS			LAMBETH GROUP					CHALK	MADE GROUND	SUPERFICIAL DEPOSITS	CHALK	MADE GROUND			CHALK		CHALK
	Units	LOD	Screening Criteria Value	Source																									
Carbon																													
Dissolved Organic Carbon	µg/l	<3,000	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<3,000	-	-	13,000	-	-	-	-	-	3,670
Inorganics																													
Nitrite as NO_2	µg/l	<50	500	UK DWS	<50	503	<50	<50	<50	<50	214	-	-	55	<50	-	<50	1,400	144	<50	114	<50	<50	61	<50	<50	<50	<50	55
Nitrate as NO_3	µg/l	<300	50,000	UK DWS	<300	2,650	2,180	<300	<1500	<300	1,270	-	-	<300	1,420	-	3,250	1,450	<300	<300	420	12,800	<300	<300	<300	<300	<300	<300	45,500
Ammoniacal Nitrogen as NH_4	µg/l	<300	500	UK DWS	<300	<300	<300	<300	499	1,130	1,160	-	-	3,020	<300	-	<300	1,630	1,340	<300	1,080	<300	1,990	13,200	3,720	5,820	3,630	2,400	<300
Sulphate	µg/l	<2000	250,000	UK DWS	257,000	351,000	118,000	338,000	37,000	38,300	29,400	-	-	125,000	135,000	-	44,100	1,220,000	255,000	683,000	540,000	74,200	1,130,000	282,000	458,000	87,400	161,000	187,000	78,600
Chloride	µg/l	<2000	250,000	UK DWS	110,000	50,200	99,700	135,000	60,900	-	-	-	-	-	215,000	-	-	-	-	5,150,000	195,000	65,200	3,460,000	158,000	176,000	83,800	70,800	326,000	197,000
Cyanide, Total	µg/l	<5	50	UK DWS	<5	-	-	<5	<5	-	-	-	-	-	<5	-	-	<5	<5	<5	-	<5	-	<5	<5	<5	<5	<5	<5
Hardness, Total as $CaCO_3$	µg/l	<1000	n.v.		889,000	442,000	576,000	688,000	90,500	-	-	-	-	-	527,000	-	-	-	-	1,890,000	972,000	257,000	1,510,000	880,000	839,000	907,000	541,000	371,000	447,000
Metals																													
Arsenic	µg/l	<2	10	UK DWS	16.6	21.2	2.43	6.22	42.3	8.27	13.0	10.3	29.1	7.37	4.04	<2	2.21	8.04	6.25	12.2	21.5	2.79	24.0	31.3	6.26	2.46	<2	18.5	3.03
Cadmium	µg/l	<0.5	5	UK DWS	1.3	<0.5	<0.5	<0.5	1.08	<0.5	1.25	<0.5	1.27	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/l	<3	50	UK DWS	82.7	24.1	<3	7.02	91.4	5.56	16.2	13.5	65.9	6.93	<3	4.44	<3	<3	<3	<3	40.0	<3	<3	<3	<3	3.3	4.25	6.31	7.75
Copper	µg/l	<4	2,000	UK DWS	115	52.8	<4	10.7	464	51.2	30.0	32.8	180	4.72	10.2	7.99	<4	7.06	4.81	<4	255	18.2	15.5	8.58	<4	<4	<4	5.45	7.1
Lead	µg/l	<0.5	10	UK DWS	268	104	0.71	6.05	1,010	181	89.5	51.2	316	5.98	5.59	8.96	3.47	11	1.66	0.695	1,290	2.02	1.48	13.0	1.57	0.935	<0.5	11.4	7.68
Mercury	µg/l	<0.02	1	UK DWS	0.36	0.203	<0.02	<0.02	0.866	0.0326	0.314	0.0304	0.515	0.0405	<0.02	<0.02	<0.02	0.0212	<0.02	<0.02	0.127	0.0622	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	µg/l	<0.5	20	UK DWS	91.4	29.4	5.8	16.5	230	30.4	53.5	33.9	157	17	20.2	9.76	4.63	199	23.7	15.4	74	6.80	16.4	6.33	11.8	6.74	6.82	10.9	10.10
Selenium	µg/l	<1	10	UK DWS	2.17	4.71	4.21	4.71	3.36	12.3	<1	2.24	2.57	2.72	7.93	1.32	3.49	22.8	17.0	42.0	6.27	12.0	32.6	2.75	2.34	4.52	1.78	5.66	7.7
Zinc	µg/l	<3	n.v.		391	155	27.2	34.3	1,170	121	73.5	78.5	448	17.6	47.2	12.6	8.76	138	18.0	14.3	615	21.0	28.9	34.5	5.50	3.71	10.6	23.3	22.8
Organo Tins																													
Dibutyl tin	µg/l	<0.005	n.v.		<0.005	<0.005	<0.005	0.005	<0.03	<0.005	<0.03	<0.005	<0.005	0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tributyl tin	µg/l	<0.001	n.v.		<0.001	<0.001	<0.001	0.00943	<0.006	<0.001	<0.006	<0.001	<0.001	0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.00956	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrabutyl tin	µg/l	<0.002	n.v.		<0.002	<0.002	<0.002	0.002	<0.012	<0.002	<0.012	<0.002	<0.002	0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Triphenyl tin	µg/l	<0.001	n.v.		<0.001	<0.001	<0.001	0.001	<0.006	<0.001	<0.006	<0.001	<0.001	0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Petroleum Hydrocarbons																													
Aliphatics >C5-C6	µg/l	<10	15,000	WHO	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	µg/l	<10	15,000	WHO	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	µg/l	<10	300	WHO	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	µg/l	<10	300	WHO	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16	µg/l	<10	300	WHO	<10	<10	<10	<10	<10	<10	<10	12	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21	µg/l	<10	n.v.		40	47	<10	<10	<10	<10	30	67	10	<10	<10	<10	<10	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35	µg/l	<10	n.v.		344	251	<10	46	28	<10	179	155	<10	<10	<10	<10	<10	26	<10	<10	<10	<10	<10	<10	<10	<10	<10	15	<10
Total Aliphatics >C12-C35	µg/l	<10	n.v.		384	298	<10	46	28	<10	209	234	10	<10	<10	<10	<10	66	<10	<10	<10	<10	<10	<10	<10	<10	<10	15	<10
Aromatics >EC5-EC7	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	<10	500	WHO	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	µg/l	<10	90	WHO	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16	µg/l	<10	90	WHO	11	<10	<10	<10	17	<10	14	<10	<10	<10	<10	<10	<10	<10	<10	<10	13	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21	µg/l	<10	90	WHO	43	34	<10	<10	20	<10	43	<10	<10	<10	<10	<10	<10	<10	<10	<10	32	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35	µg/l	<10	90	WHO	248	172	<10	<10	64	<10	177	<10	<10	<10	<10	<10	<10	<10	<10	<10	96	<10	<10	<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35	µg/l	<10	n.v.		302	206	<10	<10	101	<10	234	<10	<10	<10	<10	<10	<10	<10	<10	<10	141	<10	<10	<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35	µg/l	<10	n.v.		686	504	<10	46	146	66	462	236	10	82	71	<10	46	66	<10	<10	157	<10	<10	27	<10	<10	<10	15	<10
Polyaromatic Hydrocarbons																													
Benzo(a)pyrene	µg/l	<0.009	0.01	UK DWS	5.29	1.51	<0.009	<0.009	0.0785	0.021	0.0723	<0.009	0.013	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	3.01	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	0.0159	0.0127
Naphthalene	µg/l	<0.1	n.v.		<0.1	<0.1	1.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.23	<0.1	0.163	<0.1	<0.1	<0.1	<0.1	<0.1	0.412	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	µg/l	<0.023			6.82	1.93	<0.023	<0.023	0.157	0.0357	0.114	<0.023	0.0438	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	4.07	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Benzo(k)fluoranthene	µg/l	<0.027	0.1	UK DWS (sum of 4)	2.76	0.782	<0.027	<0.027	<0.027	<0.027	0.0461	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	1.61	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027
Benzo(g,h,i)perylene	µg/l	<0.016			3.51	1.51	<0.016	<0.016	0.126	0.0221	0.0522	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	2.03	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Indeno(1,2,3-cd)pyrene	µg/l	<0.014			2.92	1.18	<0.014	<0.014	0.1	0.0196	0.0395	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	1.78	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
Acenaphthene	µg/l	<0.015	n.v.		0.0202	<0.015	0.0862	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0536	<0.015	<0.015	<0.015	0.535	0.581	<0.015	0.0383	<0.015
Acenaphthylene	µg/l	<0.011	n.v.		0.0217	0.0204	0.0185	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.0461	<0.011	<0.011	<0.011	0.019	0.0247	<0.011	<0.011	<0.011
Fluoranthene	µg/l	<0.017	n.v.		0.616	0.386	0.0925	<0.017	0.0326	0.0905	0.114	<0.017	0.0262	<0.017	<0.017	0.0851	0.0216	<0.017	<0.017	0.0229	3.12	<0.017	<0.017	<0.017	0.269	0.064	<0.017	0.0275	<0.017
Anthracene	µg/l	<0.015	n.v.		0.0766	0.0408	0.0208	<0.015	<0.015	0.0162	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.341	<0.015	<0.015	<0.015	0.0403	0.0287	<0.015	<0.015	<0.015
Phenanthrene	µg/l	<0.022	n.v.		0.222	0.0788	0.0525	<0.022	<0.022	<0.022	0.0319	<0.022	<0.022	<0.022	<0.022	0.0225	<0.022	<0.022	<0.022	<0.022	0.668	<0.022	<0.022	<0.022	<0.022	0.0317	<0.022	0.0265	<0.022
Fluorene	µg/l	<0.014	n.v.		0.0216	<0.014	0.0393	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0523	<0.014	<0.014	<0.014	0.234	0.0962	<0.014	0.0178	<0.014
Chrysene	µg/l	<0.013	n.v.		0.831	0.481	<0.013	<0.013	0.12	0.0245	0.0555	<0.013	<0.013	<0.013	<0.013	0.0172	<0.013	<0.013	<0.013	<0.013	2.03	<0.013	<0.013	<0.013	0.0173	<0.013	<0.013	<0.013	<0.013
Pyrene	µg/l	<0.015	n.v.		0.932	0.403	0.183	0.0185	0.0756	0.0528	0.13	<0.015	0.122	0.0152	0.025	0.0805	0.0358	<0.015	<0.015	0.036	2.32	<0.015	0.0196	0.0205	0.206	0.0624	<0.015	0.0236	<0.015
Benzo(a)anthracene	µg/l	<0.017	n.v.		0.782	0.379	<0.017	<0.017	0.107	<0.017	0.0845	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	2.02	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.0177	<0.017
Dibenzo(a,h)anthracene	µg/l	<0.016	n.v.		0.734	0.322	<0.016	<0.016	0.118	<0.016	0.0163	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.578	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
PAH, Total Detected USEPA 16	µg/l	<0.344	n.v.		25.6	9.01	2.3	<0.344	0.916	<0.344	0.757	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	23.7	<0.344	0.432	<0.344	1.32	0.889	<0.344	<0.344	<0.344
Polychlorinated Biphenyls																													
PCB congener 118	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 77	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 81	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 105	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 114	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 123	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 126	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 156	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 157	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 167	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 169	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 189	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
Detected Semi-Volatile Organic Compounds																													
Benzo(a)pyrene	µg/l	<1	0.01	UK DWS	<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	2.09	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	µg/l	<1			<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	3.08	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(k)fluoranthene	µg/l	<1	0.1	UK DWS (sum of 4)	<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.25	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/l	<1			<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.55	<1	<1	<1	<1	<1	<1	<1	<1
Indeno(1,2,3-cd)pyrene	µg/l	<1			<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.21	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.79	<1	<1	<1	<1	<1	<1	<1	<1
Chrysene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.54	<1	<1	<1	<1	<1	<1	<1	<1
Fluoranthene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	2.45	<1	<1	<1	<1	<1	<1	<1	<1
Pyrene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.84	<1	<1	<1	<1	<1	<1	<1	<1
bis(2-Ethylhexyl) phthalate	µg/l	<2	8	WHO	9.61	2.1	<2	<2	<16	<2	<16	<2	<8	<2	<2	<2	<2	<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Dimethyl phthalate	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	2.24	<1	<1	<1	<1	<1	<1	<1	<1
Detected Volatile Organic Compounds																													
Trichloroethene	µg/l	<1	10	UK DWS (summed with PCE)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.34	<1	<1	<1	<1	<1
Chlorobenzene	µg/l	<1	300	WHO	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.14	<1	<1	<1	<1	<1
Miscellaneous Organics																													
PFBA (Perfluoro-n-butanoic acid) 357-22-44	µg/l	<0.002	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.02
PFPA (Perfluoro-n-pentanoic acid) 2706-90-3	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFHxA (Perfluoro-n-hexanoic acid) 307-24-4	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFBS (Perfluoro-1-butanesulfonate) 375-73-5	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFHpA (Perfluoro-n-heptanoic acid) 375-85-9	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
6:2 PTS (Perfluoro-octane sulfonate 6:2) 27619-97-	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFOA (Perfluoro-n-octanoic acid) 335-67-1	µg/l	<0.00065	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0065
PFHxS (Perfluoro-1-hexanesulfonate) 355-46-4	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFNA (Perfluoro-n-nonanoic acid) 375-95-1	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFHpS (Perfluoro-1-heptanesulfonate) 375-92-8	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFDA (Perfluoro-n-decanoic acid) 335-76-2	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
Linear PFOS (Perfluoro-1-octanesulfonate)	µg/l	<0.00065	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0065
Branched PFOS	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFUnA (Perfluoro-n-undecanoic acid) 2508-94-8	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFDoA (Perfluoro-n-dodecanoic acid) 307-55-1	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFOSA (Perfluoro-octanesulfonamide) 754-91-6	µg/l	<0.002	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.02
PFDS (Perfluoro-n-decanesulfonate) 2806-15-7	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFPeS (Perfluoro-n-pentanesulfonate) 3872-25-1	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
Total PFOS	µg/l	<0.001	1	UK DWS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0165

UKDWS - Statutory Instrument 2016 No.614, Water, England and Wales The Water Supply (Water Quality) Regulations 2016
WHO - World Health Organization (WHO), 2008. Petroleum products in drinking-water. Background document for development of WHO guidelines for drinking water quality. WHO/SDE/WSH/05.08/123.

Table E.2.4 Tipner West - Level 2 Controlled Waters QRA (Surface Water Receptor)

				AREA 1 - Tipner Firing Range																AREA 2 - Former MOD Landfill								AREA 3 - Historical Barracks
			Sub Area:	W8				W9												W3			W4					W7
			Location:	W8WS317	W8WS318	W8WS319	W8WS320	BH208	BH208	WS210	BH207	WS209	W9WS325	BH204	BH205	BH209	W9BH309	W9BH310	BH203	W3WS304	W3WS301	W3BH001	W4WS312	W4WS313	W4WS315	W4BH304	W4BH305	W7WS309
			Date Sampled:	07/08/2017	08/08/2017	08/08/2017	08/08/2017	07/08/2017	08/08/2017	08/08/2017	07/08/2017	07/08/2017	08/08/2017	07/08/2017	07/08/2017	08/08/2017	09/08/2017	08/08/2017	07/08/2017	03/08/2017	03/08/2017	03/08/2017	07/08/2017	07/08/2017	08/08/2017	07/08/2017	07/08/2017	02/08/2017
			Aquifer:	SUPERFICIAL DEPOSITS				MADE GROUND		SUPERFICIAL DEPOSITS				LAMBETH GROUP					CHALK	MADE GROUND	SUPERFICIAL DEPOSITS	CHALK	MADE GROUND			CHALK		CHALK
	Units	LOD	Screening Criteria Value	Source																								
Carbon																												
Dissolved Organic Carbon	µg/l	<3,000	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<3,000	-	-	13,000	-	-	-	-	-	3,670
Inorganics																												
Nitrite as NO_2	µg/l	<50	n.v.		<50	503	<50	<50	<50	<50	214	-	-	55	<50	-	<50	1,400	144	<50	114	<50	<50	61	<50	<50	<50	55
Nitrate as NO_3	µg/l	<300	n.v.		<300	2,650	2,180	<300	<1500	<300	1,270	-	-	<300	1,420	-	3,250	1,450	<300	<300	420	12,800	<300	<300	<300	<300	<300	<300	45,500
Ammoniacal Nitrogen as NH_4	µg/l	<300			<300	<300	<300	<300	499	1,130	1,160	-	-	3,020	<300	-	<300	1,630	1,340	<300	1,080	<300	1,990	13,200	3,720	5,820	3,630	2,400	<300
Ammoniacal Nitrogen as NH_3 (calculated)	µg/l		21	EQS-AA					366	5	63			21			5	12			6		21	366	45	51	32	29	
Sulphate	µg/l	<2000	n.v.		257,000	351,000	118,000	338,000	37,000	38,300	29,400	-	-	125,000	135,000	-	44,100	1,220,000	255,000	683,000	540,000	74,200	1,130,000	282,000	458,000	87,400	161,000	187,000	78,600
Chloride	µg/l	<2000	n.v.		110,000	50,200	99,700	135,000	60,900	-	-	-	-	-	215,000	-	-	-	-	5,150,000	195,000	65,200	3,460,000	158,000	176,000	83,800	70,800	326,000	197,000
Cyanide, Total	µg/l	<5	1	EQS-AA	<5	-	<5	-	<5	-	-	-	-	-	<5	-	-	<5	<5	-	-	<5	-	<5	<5	<5	<5	<5	<5
Hardness, Total as $CaCO_3$	µg/l	<1000	n.v.		889,000	442,000	576,000	688,000	90,500	-	-	-	-	527,000	-	-	-	-	1,890,000	972,000	257,000	1,510,000	880,000	839,000	907,000	541,000	371,000	447,000
Metals																												
Arsenic	µg/l	<2	25	EQS-AA	16.6	21.2	2.43	6.22	42.3	8.27	13.0	10.3	29.1	7.37	4.04	<2	2.21	8.04	6.25	12.2	21.5	2.79	24.0	31.3	6.26	2.46	<2	18.5	3.03
Cadmium	µg/l	<0.5	0.2	EQS-AA	1.3	<0.5	<0.5	<0.5	1.08	<0.5	1.25	<0.5	1.27	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/l	<3	0.6	EQS-AA	82.7	24.1	<3	7.02	91.4	5.56	16.2	13.5	65.9	6.93	<3	4.44	<3	<3	<3	<3	40.0	<3	<3	<3	<3	3.3	4.25	6.31	7.75
Copper	µg/l	<4	3.76	EQS-AA	115	52.8	<4	10.7	464	51.2	30.0	32.8	180	4.72	10.2	7.99	<4	7.06	4.81	<4	255	18.2	15.5	8.58	<4	<4	<4	5.45	7.1
Lead	µg/l	<0.5	1.3	EQS-AA	268	104	0.71	6.05	1,010	181	89.5	51.2	316	5.98	5.59	8.96	3.47	11	1.66	0.695	1,290	2.02	1.48	13.0	1.57	0.935	<0.5	11.4	7.68
Mercury	µg/l	<0.02	n.v.		0.36	0.203	<0.02	<0.02	0.866	0.0326	0.314	0.0304	0.515	0.0405	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.127	0.0622	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	µg/l	<0.5	8.6	EQS-AA	91.4	29.4	5.8	16.5	230	30.4	53.5	33.9	157	17	20.2	9.76	4.63	199	23.7	15.4	74	6.80	16.4	6.33	11.9	6.74	6.82	10.9	10.10
Selenium	µg/l	<1	n.v.		2.17	4.71	4.21	4.71	3.36	12.3	<1	2.24	2.57	2.72	7.93	1.32	3.49	22.8	17.0	42.0	6.27	12.0	32.6	2.75	2.34	4.52	1.78	5.66	7.7
Zinc	µg/l	<3	7.9	EQS-AA	391	155	27.2	34.3	1,170	121	73.5	78.5	448	17.6	47.2	12.6	8.76	138	18.0	14.3	615	21.0	28.9	34.5	5.50	3.71	10.6	23.3	22.8
Organo Tins																												
Dibutyl tin	µg/l	<0.005	n.v.		<0.005	<0.005	<0.005	0.005	<0.03	<0.005	<0.03	<0.005	<0.005	0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tributyl tin	µg/l	<0.001	0.0002	EQS-AA	<0.001	<0.001	<0.001	0.00943	<0.006	<0.001	<0.006	<0.001	<0.001	0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.00956	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrabutyl tin	µg/l	<0.002	n.v.		<0.002	<0.002	<0.002	0.002	<0.012	<0.002	<0.012	<0.002	<0.002	0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Triphenyl tin	µg/l	<0.001	n.v.		<0.001	<0.001	<0.001	0.001	<0.006	<0.001	<0.006	<0.001	<0.001	0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Petroleum Hydrocarbons																												
Aliphatics >C5-C6	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16	µg/l	<10	n.v.		<10	<10	<10	<10	<10	<10	<10	12	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21	µg/l	<10	n.v.		40	47	<10	<10	<10	<10	30	67	10	<10	<10	<10	<10	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35	µg/l	<10	n.v.		344	251	<10	46	28	<10	179	155	<10	<10	<10	<10	<10	26	<10	<10	<10	<10	<10	<10	<10	<10	15	<10	<10
Total Aliphatics >C12-C35	µg/l	<10	n.v.		384	298	<10	46	28	<10	209	234	10	<10	<10	<10	<10	66	<10	<10	<10	<10	<10	<10	<10	<10	15	<10	<10
Aromatics >EC5-EC7	µg/l	<10	8	CL:AIRE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	µg/l	<10	74	CL:AIRE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	µg/l	<10	20	CL:AIRE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	µg/l	<10	2	CL:AIRE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16	µg/l	<10	2	CL:AIRE	11	<10	<10	<10	17	<10	14	<10	<10	<10	<10	<10	<10	<10	<10	<10	13	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21	µg/l	<10	0.1	CL:AIRE	43	34	<10	<10	20	<10	43	<10	<10	<10	<10	<10	<10	<10	<10	<10	32	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35	µg/l	<10	0.00017	CL:AIRE 2	248	172	<10	<10	64	<10	177	<10	<10	<10	<10	<10	<10	<10	<10	<10	96	<10	<10	<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35	µg/l	<10	n.v.		302	206	<10	<10	101	<10	234	<10	<10	<10	<10	<10	<10	<10	<10	<10	141	<10	<10	<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35	µg/l	<10	n.v.		686	504	<10	46	146	66	462	236	10	82	71	<10	46	66	<10	<10	157	<10	<10	27	<10	<10	15	<10	<10
Polyaromatic Hydrocarbons																												
Benzo(a)pyrene	µg/l	<0.009	0.00017	EQS-AA	5.29	1.51	<0.009	<0.009	0.0785	0.021	0.0723	<0.009	0.013	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	3.01	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	0.0159	0.0127
Naphthalene	µg/l	<0.1	2	EQS-AA	<0.1	<0.1	1.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.23	<0.1	0.163	<0.1	<0.1	<0.1	<0.1	<0.1	0.412	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	µg/l	<0.023	n.v.		6.82	1.93	<0.023	<0.023	0.157	0.0357	0.114	<0.023	0.0438	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	4.07	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Benzo(k)fluoranthene	µg/l	<0.027	n.v.		2.76	0.782	<0.027	<0.027	<0.027	<0.027	0.0461	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	1.61	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027
Benzo(g,h,i)perylene	µg/l	<0.016	n.v.		3.51	1.51	<0.016	<0.016	0.126	0.0221	0.0522	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	2.03	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Indeno(1,2,3-cd)pyrene	µg/l	<0.014	n.v.		2.92	1.18	<0.014	<0.014	0.1	0.0196	0.0395	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	1.78	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
Acenaphthene	µg/l	<0.015	n.v.		0.0202	<0.015	0.0862	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0536	<0.015	<0.015	<0.015	<0.015	0.535	0.581	0.0383	<0.015
Acenaphthylene	µg/l	<0.011	n.v.		0.0217	0.0204	0.0185	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.0461	<0.011	<0.011	<0.011	<0.011	0.019	0.0247	<0.011	<0.011
Fluoranthene	µg/l	<0.017	0.0063	EQS-AA	0.616	0.386	0.0925	<0.017	0.0326	0.0905	0.114	<0.017	0.0262	<0.017	<0.017	0.0851	0.0216	<0.017	<0.017	0.0229	3.12	<0.017	<0.017	<0.017	<0.017	0.269	0.064	<0.017	0.0275	<0.017
Anthracene	µg/l	<0.015	0.1	EQS-AA	0.0766	0.0408	0.0208	<0.015	<0.015	0.0162	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.341	<0.015	<0.015	<0.015	0.0403	0.0287	<0.015	<0.015	<0.015
Benzo(ghi)perylene	µg/l	<0.022	n.v.		0.222	0.0788	0.0525	<0.022	<0.022	<0.022	0.0319	<0.022	<0.022	<0.022	<0.022	0.0225	<0.022	<0.022	<0.022	<0.022	0.668	<0.022	<0.022	<0.022	<0.022	0.0317	<0.022	0.0265	<0.022
Fluorene	µg/l	<0.014	n.v.		0.0216	<0.014	0.0393	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0523	<0.014	<0.014	<0.014	<0.014	0.234	0.0962	<0.014	0.0178	<0.014
Chrysene	µg/l	<0.013	n.v.		0.831	0.481	<0.013	<0.013	0.12	0.0245	0.0555	<0.013	<0.013	<0.013	<0.013	0.0172	<0.013	<0.013	<0.013	<0.013	2.03	<0.013	<0.013	<0.013	0.0173	<0.013	<0.013	<0.013	<0.013
Pyrene	µg/l	<0.015	n.v.		0.932	0.403	0.183	0.0185	0.0756	0.0528	0.13	<0.015	0.122	0.0152	0.025	0.0805	0.0358	<0.015	<0.015	0.036	2.32	<0.015	0.0196	0.0205	0.206	0.0624	<0.015	0.0236	<0.015
Benzo(a)anthracene	µg/l	<0.017	n.v.		0.782	0.379	<0.017	<0.017	0.107	<0.017	0.0845	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	2.02	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.0177	<0.017
Dibenzo(a,h)anthracene	µg/l	<0.016	n.v.		0.734	0.322	<0.016	<0.016	0.118	<0.016	0.0163	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.578	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
PAH, Total Detected USEPA 16	µg/l	<0.344	n.v.		25.6	9.01	2.3	<0.344	0.916	<0.344	0.757	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	<0.344	23.7	<0.344	0.432	<0.344	1.32	0.889	<0.344	<0.344	<0.344
Polychlorinated Biphenyls																												
PCB congener 118	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 77	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 81	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 105	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 114	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 123	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 126	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 156	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 157	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 167	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 169	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
PCB congener 189	µg/l	<0.015	n.v.		-	<0.015	-	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-	-	<0.015	-	-	<0.015	-	-	-
Detected Semi-Volatile Organic Compounds																												
Benzo(a)pyrene	µg/l	<1	0.00017	EQS-AA	<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	2.09	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	3.08	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(k)fluoranthene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.25	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.55	<1	<1	<1	<1	<1	<1	<1	<1
Indeno(1,2,3-cd)pyrene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.21	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.79	<1	<1	<1	<1	<1	<1	<1	<1
Chrysene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.54	<1	<1	<1	<1	<1	<1	<1	<1
Fluoranthene	µg/l	<1	0.0063	EQS-AA	<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	2.45	<1	<1	<1	<1	<1	<1	<1	<1
Pyrene	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	1.84	<1	<1	<1	<1	<1	<1	<1	<1
bis(2-Ethylhexyl) phthalate	µg/l	<2	1.3	EQS-AA	9.61	2.1	<2	<2	<16	<2	<16	<2	<8	<2	<2	<2	<2	<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Dimethyl phthalate	µg/l	<1	n.v.		<4	<1	<1	<1	<8	<1	<8	<1	<4	<1	<1	<1	<1	<2	<1	<1	2.24	<1	<1	<1	<1	<1	<1	<1	<1
Detected Volatile Organic Compounds																												
Trichloroethene	µg/l	<1	10	EQS-AA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.34	<1	<1	<1	<1	<1
Chlorobenzene	µg/l	<1	n.v.		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.14	<1	<1	<1	<1	<1
Miscellaneous Organics																												
PFBA (Perfluoro-n-butanoic acid) 357-22-44	µg/l	<0.002	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.02
PFPA (Perfluoro-n-pentanoic acid) 2706-90-3	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFHxA (Perfluoro-n-hexanoic acid) 307-24-4	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFBS (Perfluoro-1-butanesulfonate) 375-73-5	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFHpA (Perfluoro-n-heptanoic acid) 375-85-9	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
6:2 PTS (Perfluoro-octane sulfonate 6:2) 27619-97-	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFOA (Perfluoro-n-octanoic acid) 335-67-1	µg/l	<0.00065	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0065
PFHxS (Perfluoro-1-hexanesulfonate) 355-46-4	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFNA (Perfluoro-n-nonanoic acid) 375-95-1	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFHpS (Perfluoro-1-heptanesulfonate) 375-92-8	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFDA (Perfluoro-n-decanoic acid) 335-76-2	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
Linear PFOS (Perfluoro-1-octanesulfonate)	µg/l	<0.00065	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0065
Branched PFOS	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFUnA (Perfluoro-n-undecanoic acid) 2508-94-8	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFDoA (Perfluoro-n-dodecanoic acid) 307-55-1	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFOSA (Perfluoro-octanesulfonamide) 754-91-6	µg/l	<0.002	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.02
PFDS (Perfluoro-n-decanesulfonate) 2806-15-7	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
PFPeS (Perfluoro-n-pentanesulfonate) 3872-25-1	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
Total PFOS	µg/l	<0.001	n.v.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0165

EQS – Water Framework directive (Standards and Classification) Directions (England and Wales) 2015, EQS Transitional waters – Annual Average

CL:AIRE - naphthalene proxy EQS, 2015

CL:AIRE 2 - benzo(a)pyrene proxy EQS, 2015

Appendix E.3

RISK ASSESSMENT APPROACH

HUMAN HEALTH RISK ASSESSMENT WSP APPROACH

In the absence of a comprehensive set of SGVs it is down to individual practitioners to derive their own GACs. WSP has used the approach provided within SR2, SR3, SP1010, CLEA Workbook v1.071and SR46 to produce a set of minimal risk GACs. The chemical-specific data within two key publications were considered during their production: CL:AIRE 20107 and LQM 20158. Both documents provide comprehensive sets of GACs for different contaminants of concern.

The LQM Suitable For Use Levels (S4ULs) have selected exposure parameters someway between those of the SR3 land uses and the C4SL exposure scenarios. This approach was rejected by WSP as not representing minimal risk, however, the LQM S4UL document was critically reviewed and the approach and chemical input parameters were utilised where considered to be appropriate.

A C4SL Working Group is planning to derive a larger set of C4SLs during 2016, and it is understood that this will include a critical review of the chemical input data for all selected substances. This may lead to further amendments to the chemical input data used in the WSP in-house screening values. It is considered likely that the contaminant list will crossover with the current CL:AIRE GACs. As such, this document was not critically reviewed by WSP .

WSP 's current approach to the assessment of risks to human health is to continue to evaluate minimal risk through the use of SGVs and in-house derived GACs, and to use the published C4SLs as a secondary tier of assessment until such time as additional suitable C4SLs are published and/or in-house values are derived.

EXPOSURE MODELS

LAND USES

WSP has largely adopted the exposure assumptions of the generic land use scenarios included within SR3 with two additional public open space scenarios included within SP1010:

- Residential with homegrown produce consumption
- Residential without homegrown produce consumption
- Allotments
- Commercial
- Public open space near residential housing (POSresi)
- Public park (POSpark)

Exceptions are described in the following Sections.

SOIL PROPERTIES

SR3 assumes a sandy loam soil with a pH of 7 and Soil Organic Matter (SOM) content of 6% for its generic land uses, based on the geographical spread of topsoils in the UK. WSP has adopted these default values. In addition, GACs based on SOM of 1% and 2.5% have also been derived based on common experience of the nature of Made Ground and lack of topsoil on many brownfield sites.

RECEPTOR CHARACTERISTICS AND BEHAVIOURS

SP1010 provides some updated exposure parameters for long-term inhalation rates9 and the consumption rates for homegrown produce10 compared to those provided in SR3. This data was used to derived WSP 's

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[6] Environment Agency '*CLEA Software (Version 1.05) Handbook (and Software)',* Report SC050021/SR4. September 2009.
[7] CL:AIRE 'The EIC/AGS/CL:AIRE *Soil Generic Assessment Criteria for Human Health Risk Assessment'.* ISBN 978-1-05046-20-1. January 2010.
[8] Nathanail et al '*The LQM/CIEH S4ULs for Human Health Risk Assessment*', Land Quality Press, ISBN 978-0-9931084-0-2. 2015.
[9] USEPA, National Centre for Environmental Assessment '*Exposure Factors Handbook: 2011 Edition'* EPA/600/R-09/052F. September 2011.
[10] National Diet and Nutrition Survey 2008/2009 to 2010/2011.

GACs. The changes in inhalation rates do not apply to the allotment generic land use scenario. These are based on the breathing rates for short-term exposure of light to moderate intensity activity which were derived from a study that was not updated in USEPA 2011, so the SR3 rates were retained.

CHEMICAL DATA

PHYSICO-CHEMICAL PARAMETERS

Physico-chemical properties for the contaminants for which GACs have been derived have been obtained following critical review of the following hierarchy of data sources:

Environment Agency/Defra SGV reports where available.

Environment Agency 'Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values', Report SC050021/SR7, November 2008.

Published fate and transport reviews within Nathanail et. al 2015 and CL:AIRE 2010.
Where appropriate, and where sufficient data is available, values were adjusted to reflect a UK soil temperature of 10ºC (e.g. Kaw).

TOXICOLOGICAL DATA

Toxicological data for the derivation of minimal risk Health Criteria Values (HCV) for each contaminant was selected with due regard to the approach presented in SR2. Where appropriate, the following hierarchy of data sources was used:

UK toxicity reviews published by authoritative bodies including:
- EA
- Public Health England (PHE)
- Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT)
- Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC)

Authoritative European sources such as European Food Standards Agency (EFSA)

International organisations including:
- World Health Organisation (WHO)
- Joint FAO/WHO Expert Committee on Food Additives (JECFA)

Authoritative country-specific sources including:
- United States Environmental Protection Agency (USEPA)
- US Agency for Toxic Substances and Disease Registry (ATSDR)
- US Integrated Risk Information System (IRIS)
- Netherlands National Institute for Public Health and the Environment (RIVM)

Factors such as the applicability of the data to human health (e.g. epidemiological vs. animal studies), the quality of the data, the level of uncertainty in the results and the age of the data were also taken into account in the final selection. Details for specific substances are available on request.

MEAN DAILY INTAKES

Estimations of background exposure for each threshold substance have been updated. In line with the SR2 approach, the exposure from non-threshold substances in the soil does not take into account exposure from other sources, and as such GACs were derived without consideration of the Mean Daily Intakes (MDI) for those substances.

The data published by the EA in its series of TOX reports between 2002 and 2009 was evaluated to determine whether the values were considered to remain valid today. Values from these current UK published sources were not amended unless they were considered to be significantly different so that the GACs remained as comparable as possible with the still commonly used SGVs.

Oral Mean Daily Intakes

Oral MDI were generally estimated as the sum of exposure via the ingestion of food and drinking water using the default adult physiological parameters presented in Table 3.3 of SR2.

Data on the exposure of substances from food ingestion was generally obtained from UK Total Diet Studies (TDS) published by the Food Standards Agency (FSA) and its predecessor the Ministry of Agriculture, Fisheries and Food (MAFF) and from studies commissioned by COT. Where no UK-specific data was available, MDI were derived from the European Food Safety Authority (EFSA), Health Canada and US sources. This was a rare occurrence, and in these instances, the data was evaluated to determine its applicability to the UK.

Data on the concentrations of substances in tap water was obtained from a variety of sources. UK data was used where available, with preference given to Drinking Water Inspectorate (DWI) 2014 data from water company tap water testing (LOD, 1st and 99th percentile data is available). Where the substance was not included in tap water testing, other UK sources of information were considered including:

- DWI data from water company tap water testing from previous years;
- COT; and
- FSA.

Where UK data was not available, a number of other data sources were considered, largely WHO International Programme on Chemical Safety (IPCS) Concise International Chemical Assessment Documents (CICADs) and background documents for the development of Guidelines for Drinking Water Quality, using professional judgement on the relevance of the data to the UK. The final decision on the MDI from drinking water was made using professional judgement on the balance of relevance and probability, taking into account the detection limit where not detected, Koc and solubility, reduction in use of the substance, banned substances, tight controls (e.g. on explosives) and with due consideration to the SR2 instruction that “if no data or information in background exposure are available, background exposure should be assumed to be negligible and the MDI set to zero….”.

Data from other countries was generally not used because it was considered that the hydrogeology of these countries along with industrial practices were unlikely to be reflective of the UK.

Inhalation Mean Daily Intakes

Inhalation MDIs were based on estimates of average daily exposure by the inhalation pathway and calculated using the default adult physiological parameters presented in Table 3.3 of SR2.

The inhalation MDIs were generally estimated using background exposure data from the UK, derived from Defra's UK-AIR: Air Information Resource11, which provides ambient air quality data from a number of sites forming a UK-wide monitoring network. The MDIs for heavy metals were based on rolling annual average metal mass concentration data from Defra's UK Heavy Metals Monitoring Network from the period October 2009 to September 201012.

Information for some substances was obtained from UK sources including Environment Agency TOX reports and data from the UK Expert Panel on Air Quality Standards (EPAQS). Where recent UK data was not available, data was sourced from the International Programme on Chemical Safety (IPCS), the World Health Organisation (WHO), the Agency for Toxic Substances and Diseases Registry (ATSDR), Health Canada, and various other peer-reviewed sources summarised by LQM/CIEH13.

For other substances, where no data or information on background exposure was available, background exposure was assumed to be negligible and the MDI set at 0.5*TDI in accordance with guidance in SR2.

PLANT UPTAKE

Soil to plant concentration factors are available in CLEA v1.071 for arsenic, cadmium, hexavalent chromium, lead, mercury, nickel and selenium. For all remaining inorganic chemicals, concentration factors were obtained using the PRISM model. Substance-specific correction factors have been selected in accordance with the guidance established within SR3. This is consistent to the approach utilised in the derivation of the LQM S4UL values and the EIC/AGS/CL:AIRE GAC.

Where there is a lack of appropriate data to enable the derivation of specific soil to plant concentrations factors for organic chemicals, plant uptake was modelled within CLEA v1.071 using the generic equations recommended within SR3, as follows:

- Green Vegetables – Ryan et al. (1988);
- Root Vegetables – Trapp (2002);
- Tuber Vegetables – Trapp et al. (2007); and
- Tree Fruit – Trapp et al. (2003).

There are no suitable models available for modelling uptake for herbaceous fruit or shrub fruit. Exposure is considered negligible.

SOIL SATURATION LIMITS

GACs are not limited to their theoretical soil saturation within CLEA, although where either the aqueous or the vapour-based saturation is exceeded, this is highlighted within the Workbook (compared with the lower of the two values). This affects pathways which depend on partitioning calculations so in reality this only affects the vapour pathways and is relevant to organic substances and other substances, such as elemental mercury, that have a significant volatile component. However, the Workbook highlights saturation for direct contact pathways to indicate to the user where further qualitative consideration of free phase contamination at surface may be required.

Where the lower of the two saturation limits is exceeded and the vapour pathway is the only exposure route being considered, the chronic risks to human health are likely to be negligible. Further evaluation could be undertaken using an alternative model suitable for evaluating non-aqueous phase liquids (NAPLs), such as the Johnson & Ettinger (J&E) approach described in USEPA 2003. However, WSP considers that if NAPLs

[11] Crown 2016 copyright Defra via uk-air.defra.gov.uk, licenced under the Open Government Licence (OGL).
[12] Defra, 20143 Spreadsheet of historic data for multiple years for the Metals network. Available online at: http://uk-air.defra.gov.uk/data/metals-data. [Accessed 13/03/2016].
[13] LQM/CIEH, 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment.

are suspected, given the known limitations and over-simplifications of J&E, soil vapour monitoring is a more accurate way of assessing potential risks.

Where the lower saturation limit is exceeded for the vapour pathway and a number of exposure routes are being considered, then the contribution from the NAPL via vapour inhalation to the overall exposure can be evaluated using the procedure provided in SR4. WSP would evaluate this as part of a DQRA process or through soil vapour monitoring on-site to determine site-specific soil vapour concentrations.

CHEMICAL SPECIFIC ASSUMPTIONS

CYANIDES

Cyanide has high acute toxicity, and short term exposure is an important consideration when assessing the risks from soils contaminated with cyanide. The primary risk to human receptors from free cyanide in soils is an acute risk.

There is no current UK guidance available for calculating acute risks from free cyanide. Consequently, GAC for acute exposure were derived using the algorithms presented in MADEP 199214 and assuming a one-off ingestion of 10g of soil (this conservative value has been taken as an upper bound estimate for pica amongst children). Receptor body weights have been selected according to the critical receptor for each exposure scenario.

The lowest of the chronic and acute GAC for each land use scenario were adopted by WSP .

LEAD

The SGV for lead was withdrawn by the EA in 2009, and in 2011 the EA withdrew their published TOX report in light of new scientific evidence. The C4SL for lead was derived using the latest scientific evidence from a large human dataset. As such, no chemical-specific margin was applied in the derivation of the C4SL for lead. It may be possible for WSP to derive a GAC for lead using the same dataset and applying a chemical-specific margin, but the value is likely to be lower than UK natural background concentrations. Therefore, WSP has adopted the toxicological data used to derive the C4SLs in deriving the GAC for lead until such time as alternative GACs are published by an authoritative body. The relative bioavailability was set at 100% in line with the approach taken for other GACs, whereas the C4SL assumes 60% for soil and 64% for airborne dust. Thus, the WSP GAC are lower than the C4SLs.

POLYCYCLIC AROMATIC HYDROCARBONS

WSP 's approach to the assessment of polycyclic aromatic hydrocarbons (PAHs) uses the surrogate marker approach. BaP was used as a surrogate marker for all genotoxic PAHs in line with the Health Protection Agency 201015 recommendations and SP1010. This assumes that the PAH profile of the data is similar to that of the coal tars used in the Culp et al oral carcinogenicity study from which the toxicity data for BaP was produced. In reality, this profile has been shown by HPA to be applicable on the majority of contaminated sites based on assessment of sites across the country.

The alternative is the Toxic Equivalency Factor (TEF) approach which uses a reference compound and assigns TEFs for other compounds based on estimates of potency. Key uncertainties with this approach include the assumption that all compounds have the same toxic mechanism of action within the body and that no compounds with a greater potency than the reference compound are present. It is considered by the HPA that the TEF approach is likely to under predict the true carcinogenicity of PAHs and therefore favours the surrogate marker approach.

For these reasons, WSP considers that the adoption of BaP as a surrogate marker for genotoxic PAHs as opposed to the TEF approach is reasonable, even in cases where the PAH profile may differ from that of the

[14] MADEP '*Background Documentation for the Development of an "Available Cyanide" Benchmark Concentration'* 1992. http://www.mass.gov/dep/toxics/cn_soil.htm

[15] HPA Contaminated Land Information Sheet '*Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)* 2010

Culp et al study. In addition, WSP has derived a GAC for naphthalene, which is commonly a risk driver due to its high volatility, relative to other PAH compounds, as an indicator compound for threshold PAHs.

CHEMICAL GROUPS

For a number of chemical groups, the available toxicity data is for combinations of chemicals. Given that the physico-chemical parameters may differ between the chemicals, the GACs for the chemicals within the groups has been calculated and then the lowest GAC selected to represent the entire group. This was the approach taken by the EA for m-, o- and p-xylenes, and has also been adopted by WSP for:

- 2-chlorophenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol and 2,3,4,6-tetrachlorophenol;
- 2-, 3- and 4-methylphenol (total cresols);
- aldrin and dieldrin; and
- α- and β-endosulphan.

DIOXINS, FURANS AND DIOXIN-LIKE PCBS

With respect to dioxins, furans and dioxin-like PCBs, an evaluation of the concentrations of the detected PCDDs, PCDFs and the dioxin-like PCBs in the soil samples that were analysed indicated, in many cases, an approximate correlation to the relative percentages by weight of the median urban concentrations described in Table 4 of SC050021 / Dioxins SGV16. The evaluation was not undertaken statistically due to the number of concentrations that were below the limit of detection and also the wide range of detection limits that skewed the data when taken into account. However, the method was adopted to provide a generic understanding of the significance of the PCDD, PCDF and PCB concentrations encountered. As such, it was considered relevant to use the standard SGVs as an indicator of potential risks to human health.

It is noted that the SGVs are based on 6% SOM. However, given that SOM is not relevant to the dominant exposure pathway of ingestion, this is not considered to be a significant issue. It is also noted that the exposure parameters used to derive the SGVs are not identical to those adopted by WSP's which are based on more recent publications. However, the amended exposure parameters relate to inhalation and plant uptake which are not relevant to the dominant exposure pathway of ingestion and so the SGVs are considered to be suitable to use.

It is recognised that the generic assessment of risks to human health from PCDDs, PCDFs and PCBs is an approximation to determine where additional evaluation may be required.

The Hazard Index (HI) approach described in Appendix 1 of SC050021 / Dioxins SGV was considered and tested. Exposure Factors (EF) were derived using WSP's exposure assumptions detailed in Appendix C and assuming a concentration in soil of 1 ngkg-1 as the method requires. The EFs and the detected concentrations for each soil sample that was analysed were input into the EA's dioxins_site_specific_worksheet.xls to allow the Total WHO-TEQ Average Daily Exposure (ADE) for each soil sample to be compared to the TDSI where ADE/TDSI = Hazard Index. Where concentrations were below detection or dioxins, furans or PCBs had not been analysed the concentrations were excluded from the work sheet (rather than including half the limit of detection which, it was considered, would skew the data). Using this method, none of the HIs that were calculated identified potentially significant risks to human health which significantly contradicted the assessment of the data against the SGVs. This is due to the wide range of TEQs between the dioxins and furans and the PCBs which skewed the data, and as such, the HIs have not be reported here due to lack of conservatism.

EXPOSURE TO VAPOURS

INHALATION OF MEASURED VAPOURS

WSP has derived a set of soil vapour GACs (GACsv) that allow for the assessment of measured site soil vapour concentrations, using J&E, in order to establish potential risks via indoor inhalation of vapours. This methodology enables a more robust assessment of exposure via the inhalation of soil vapours indoors than

[16] Environment Agency '*Soil Guideline Values for dioxins, furans and dioxin-like PCBs in soil*'

using CLEA-derived soil GAC, as it is based upon measured soil vapour concentrations beneath the site. It also allows for the assessment of vapours from all source terms (i.e. groundwater, soil or NAPL). Outdoor inhalation was not included. WSP considers that the indoor inhalation pathway is the significantly dominant risk-driver.

The generic land use scenarios within CLEA (residential and commercial) that were used to derive the soil GAC were used to define the receptor and building characteristics for the soil vapour GAC. Only residential and commercial generic land use scenarios include the indoor inhalation of vapours pathway.

The GACsv were derived for three different soil types; sand, sandy loam and clay, reflecting the importance of this parameter within the J&E model. A depth to contamination of 0.85m below the base of the building foundation was assumed (i.e. 1m below ground level). This differs from the depth assumed for the soil GAC (0.5m bgl), but was selected by WSP as a reasonable worst case scenario. It is acknowledged that the J&E commonly over-predicts indoor vapour concentrations. In particular, it will significantly over-predict vapour concentrations for suspended floor slabs, which many new builds are constructed with, it does not take into account lateral migration and assumes an infinite source of contamination at steady state conditions. In addition, it is common for soil gas/vapour wells to be installed with at least 1m of plain riser at the surface and this equates to a total depth of 0.85m below the building foundation plus a 0.15m thick foundation, and so is more representative of the depth that samples will be taken from.

The TDSIs and IDs for each substance were converted from µgkg-1bwday-1 to µgm-3 using the standard conversions quoted in Table 3.3 of SR2, thereby replacing the need to model Cair in the equation:

$$C_{air} = \alpha . C_{vap} . 1{,}000{,}000 cm^3 m^{-3}$$

Where:

Cair is the concentration of vapours within the building, mg-3

α is the steady state attenuation coefficient between soil and indoor air, dimensionless

Cvap is the soil vapour concentration, mgcm-3

The target concentrations within indoor air for each substance (Cair) are a function of receptor inhalation rates and occupancy periods, as defined by the site conceptual exposure model (assuming standard CLEA occupancy periods and receptors).

The attenuation factor was calculated using J&E (Equation 10.4 in SR3) and the resulting Cvap is equivalent to the GACsv for the modelled exposure scenario.

Where the calculated GACsv for a substance exceeds the vapour saturation limit, no GACsv has been proposed.

INHALATION OF GROUNDWATER-DERIVED VAPOURS

The CLEA model does not have the capacity to derive GACs to assess vapours derived from dissolved phase contamination. WSP has derived a set of groundwater GACs (GACgw) to evaluate the potential risks through the indoor inhalation of groundwater-derived vapours by first applying the approach described above for the derivation of the WSP GACsv to determine the acceptable concentration in soil vapour directly above the water table.

The depth to groundwater was assumed to be 1m bgl (i.e. 0.85m below the base of the building foundation). This depth was considered to be more representative of commonly encountered groundwater conditions than the 0.5m below the base of the building foundation (i.e. 0.65m bgl) that is used by CLEA for an unsaturated source present in the overlying soil.

The GACgw was then back-calculated from the GACsv using the air-water partition coefficient (Kaw) for each substance.

Where the calculated GACgw for a substance exceeds the solubility limit, no GACgw has been proposed.

CONTROLLED WATER RISK ASSESSMENT UK APPROACH

LEGISLATION

The EU Water Framework Directive 2000/60/EC (WFD) is designed to:

- protect, improve and enhance the status and to prevent further deterioration of aquatic ecosystems and associated wetlands which depend on the aquatic ecosystems.
- promote the sustainable use of water.
- reduce and reverse all pollution of water, especially by 'priority' and 'priority hazardous' substances.

River Basin Management (RBM) Plans are part of the WFD strategic framework and are based on detailed analysis of the impacts of human activity on the water environment. They are designed to protect and improve the quality of our water environment and are reviewed and updated every six years. They include improvement measures to progress all ground and surface water bodies to 'Good' status by 2021. The latest system of standards and classification are set out in the 2015 Directions for England and Wales17 and Scotland18&19, and also listed for Scotland in WAT-SG-5320.

- The EU Groundwater Daughter Directive 2006/118/EC (GWDD) further protects groundwater. It states that hazardous substances must be prevented from entering groundwater and that non-hazardous substances should be limited from entering groundwater to concentrations that do not cause pollution.

The Environmental Quality Standards Directive (EQSD), also known as the Priority Substances Directive 2008/105/EC (PSD) as amended by 2013/39/EU, further protects surface waters and defines Environmental Quality Standards for hazardous and non-hazardous substances in surface waters.

GROUNDWATER BODY CLASSIFICATION

Groundwater bodies are classified on their quantitative and chemical status. The quantitative status is not generally relevant to controlled waters risk assessments The chemical status requires analytical data collected by the Environment Agency (EA), Natural Resources Wales (NRW) and the Scottish Environment Protection Agency (SEPA) across the water body to be evaluated against five sets of Threshold Values which are used by the regulators to decide if further, specific evaluation is required. They are not used to classify the groundwater bodies' chemical status and the 2014 and 2015 Standards Directions state that they should not be used as part of site-specific investigations.

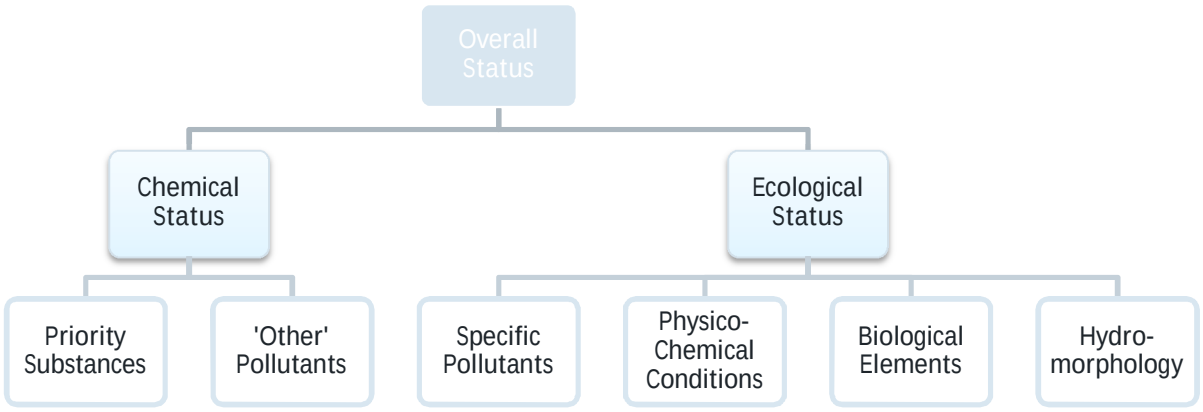
SURFACE WATER BODY CLASSIFICATION

Environmental Quality Standards (EQSs) are used by the EA, NRW and SEPA to characterise, monitor and classify water bodies and to help these regulators establish measures to progress all water bodies to 'Good' status. For surface water bodies the following applies:

- Chemical status is determined on a 'Good' or 'Fail' basis.
- Ecological status is determined on a scale of 'High', 'Good', 'Moderate', 'Poor' and 'Bad'.
- The overall ecological status is determined by the lowest classification of all the parameters that are assessed.
- For an overall 'Good' status both ecological and chemical status must be at least 'Good' (see **Figure E1**).

[17] The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015
[18] The Scotland River Basin District (Standards) Directions 2014
[19] The Scotland River Basin District (Standards) Amendment Directions 2015
[20] SEPA '*Supporting Guidance (WAT-SG-53): Environmental Quality Standards and Standards for Discharges to Surface Waters'* v6. December 2015

Figure E1: Elements of Water Body Status Classification



Priority substances – are defined by the European Commission (EC) and are reviewed every six years to ensure they stay relevant and that EQSs are up to date.

Other pollutants – not priority substances, but defined by the EC and the EQSs are identical to those laid down in legislation applied prior to 13 January 2009.

Specific pollutants - European Union (EU) Member states are required to identify nationally significant pollutants to support the assessment of 'Good' ecological status.

Physico-chemical conditions - includes parameters such as dissolved oxygen, pH, ammonia and phosphate that define the general chemistry of the surface water body and may influence the degree to which an aquatic ecosystem can thrive.

Biological elements – the condition and abundance of fish and invertebrates within the surface water body including the presence of invasive species.

Hydromorphology – includes water flow, sediment composition and the structure of the habitat and its ability to support an aquatic ecosystem.

GUIDANCE ON THE SELECTION OF ASSESSMENT CRITERIA

The Remedial Targets Methodology (RTM)21 is the framework for controlled waters risk assessment which is used in England and Wales. The equivalent document used for the water environment in Scotland is WAT-PS-10-0122. Although the RTM preceded the formal adoption of the WFD in England and Wales, the

[21] EA *'Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination'* 2006.
[22] SEPA *'Position Statement (WAT-PS-10-01): Assigning Groundwater Assessment Criteria for Pollutant Inputs'* v3.0, August 2014.

document was cognisant of the requirements of the forthcoming WFD i.e. no discernible entry of hazardous substances into groundwater bodies, and no new pollution by non-hazardous substances. The methodology for the selection of assessment criteria in both documents states that where a hazardous substance is present in the soil beneath the site but is yet to enter groundwater, no discernible entry of that hazardous substance into groundwater is allowed. This effectively requires the allowable concentration of the contaminant of concern within the groundwater body to be either background or the limit of detection. The EA and SEPA use a published set of Minimum Reporting Values (MRVs) to support the assessment of 'discernible entry'.

With respect to groundwater, where a hazardous substance has already entered the groundwater body to a discernible level, the regulators generally allow appropriate quality standards to be used to quantify the risk to allow pragmatic remedial targets and to take into account the requirements of other legislation such as Part 2A and NPPF.

Where non-hazardous pollutants enter groundwater, no new pollution (or substantial risk of pollution) of groundwater is allowable and quality standards are generally an acceptable concentration.

Where the receptor is a surface water body or groundwater-dependent terrestrial ecosystem quality standards are acceptable irrespective of whether the substance is hazardous or non-hazardous.

Both RTM and WAT-PS-10-01 state that any standard used should be relevant to the current or intended use of the aquifer and that they should be 'fit for purpose' in terms of the specific period of time over which they should be measured.

CONTROLLED WATER RISK ASSESSMENT WSP APPROACH

OVERVIEW

WSP follows the RTM approach in England and Wales and the WAT-PS-10-01 approach in Scotland to assess the potential or actual risks to water bodies on sites that it investigates. In deriving a hierarchy of assessment concentrations with which to quantify the risks, WSP uses relevant EU and UK legislation and World Health Organisation (WHO) guidance, considers the background quality of the water resources and takes account of the current and feasible future uses of the resource. In Scotland the assessment concentrations are referred to as 'assessment limits' and in England as 'target concentrations'.

For all substances that are detected in groundwater, the quantitative risk assessment is undertaken by comparing the modelled or actual concentration in water to an appropriate published standard where one is available; this is the target concentration / assessment limit. The selection of the standards is described in further detail in the following Sections.

Where hazardous substances are either detected in soil leachates or are calculated using theoretical partitioning equations, an evaluation is undertaken to determine if discernible concentrations have entered the groundwater. This information is used to determine the most appropriate target concentration / assessment limit to adopt with which to evaluate the potential risks from the contaminants in the unsaturated zone. Where no published standards are available, WSP determines on a case-by-case basis whether site-specific or chemical-specific targets should be derived through additional research or studies.

WSP seeks to ensure that the best available limit of detections (LOD) are achieved for analysis that it commissions. Where this is the case and the LOD is greater than a published target standard, WSP will not conclude that a potential risk exists to the relevant water body. This is in line with the approach that the EA and SEPA take in determining the classification status of the water bodies.

APPROACH TO HAZARDOUS SUBSTANCES

For sites in England and Wales, WSP evaluates the soil leachate analytical results or theoretical partitioning calculations for hazardous substances as listed on the EA website23 (updated 13 January 2017). For sites in Scotland, the MRVs provided in Annex 4 of WAT-PS-10-01 are used and these are the same as those produced by the EA. Where an MRV is not available, the limit of detection is used for hazardous substances.

Where groundwater analytical results are also available these are evaluated alongside the unsaturated concentration data to determine if the hazardous substances have entered the groundwater by a discernible amount (taken to be the MRV or limit of detection). If hazardous substances are detected in the groundwater, then the quantitative risk assessment of the soil concentrations continues using published standards appropriate for drinking water (see 'Impact to Drinking Water' below). If the hazardous substances have not yet entered the groundwater, then the soil concentrations are evaluated using the MRVs/LODs.

[23] https://www.gov.uk/government/publications/values-for-groundwater-risk-assessments/hazardous-substances-to-groundwater-minimum-reporting-values

IMPACT TO AQUATIC LIFE IN SURFACE WATERS

Although the surface water EQSs are primarily designed to support the EA and SEPA in their programmes of classification and monitoring of the quality of surface water bodies across England, Wales and Scotland under their WFD and EQSD obligations, the EQSs are also commonly used by contaminated land professionals to quantitatively evaluate the potential impact of site-specific ground contamination to surface waters. This approach is also suggested in RTM and WAT-PS-10-01.

The 2014 and 2015 Standards Directions provide EQSs for the assessment of ecological and chemical surface water body status. When quantifying potential impacts to surface waters, WSP's approach is to focus on the chemical status by evaluating the 'priority' and 'other' pollutants that are listed in those Directions. In addition, the 'specific' pollutants, (which are actually part of the evaluation of ecological status), are also assessed. These three classes of pollutants are used by the EA to mark the boundary between a Good status surface water and failing quality. As such, exceedances of these EQSs can be considered to highlight a potential risk that the surface water will not achieve or maintain its 'Good' status, which contravenes the requirements of the WFD. WSP adopts this approach irrespective of whether the EA or SEPA has determined if the surface water body requires an assessment of chemical status or not, so as to ensure that the requirements of the WFD are met for all surface water bodies that it evaluates in the context of ground contamination.

The EQSs are designed to be applied over a specific period of time. WSP selects the annual average or long term mean as the target concentration for each priority substance, specific pollutant and other pollutant. In most cases, the number of groundwater sampling events will be limited and as such, there are limitations to this approach that WSP highlights on a case by case basis.

A number of EQSs do not come into force until 22 December 2018. WSP may use these values because they can be used as an indicator of long term contamination issues that may pose issues for a site in the near future. This is determined on a case-by-case basis.

Maximum Allowable Concentration (MAC) EQSs are designed to assess acute exposure of the aquatic environment to pollutants. As such, WSP does not consider the use of MACs to be appropriate to use as a target concentration in the majority of cases. An exception could be the evaluation of potential ecological risks to a surface water from a one-off catastrophic spill or leak in an emergency response scenario.

WSP does not assess the potential ecological risks posed by physico-chemical quality elements on a regular basis. pH, dissolved oxygen, biological oxygen demand, acid neutralising capacity, phosphorus, temperature and salinity are considered too unstable to be modelled from groundwater to surface water and these parameters are only measured in the receiving surface water body.

Where a published EQS is not available, WSP follows the WAT-PS-10-01 guidance for sites in Scotland and applies non-WFD EQSs. These comprise repealed Dangerous Substances Directive (DSD) substances as well as EQSs from other sources that should be used with caution. For sites in England and Wales, WSP uses the EA's operational environmental quality standards for Enivironmental Permitting which are essentially the repealed DSD substances that are applied in Scotland. WSP uses the proposed ethylbenzene EQS from R&D Technical Report P2-115/TR4 200224 for sites in England and Wales. This is equivalent to the SEPA non-statutory EQS.

[24] EA '*Proposed Environmental Quality Standards for Ethylbenzene in Water*' R&D Technical Report P2-115/TR4. 2002.

With respect to petroleum hydrocarbons, WSP refers to the CL:AIRE 2017 guidance25 in order to derive alternative assessment criteria. In cases where no equivalent VOC, SVOC or PAH data is available, the following proxy compounds are used:

- Aromatic EC5-EC7 benzene (EC6.5)
- Aromatic >EC6-EC7 benzene (EC6.5)
- Aromatic >EC6-EC8 benzene (EC6.5)
- Aromatic >EC7-EC8 toluene (EC7.6)
- Aromatic >EC8-EC10 ethylbenzene (EC8.5)
- Aromatic >EC10-EC12 naphthalene (EC11.7)
- Aromatic >EC12-EC16 naphthalene (EC11.7)
- Aromatic >EC16-EC21 anthracene (EC19.4)
- Aromatic >EC21-EC35 benzo(a)pyrene (EC31.3)

IMPACT TO DRINKING WATER

ABSTRACTION FOR PUBLIC POTABLE SUPPLY

In line with the RTM and WAT-PS-10-01, WSP uses drinking water quality standards to evaluate the potential risk to aquifers from both the perspective of current abstraction for potable supply and also to evaluate the risk to future resource potential. The sources of drinking water standards are applied by WSP in the following hierarchy with the UK Drinking Water Standards (DWS) as the first tier:

- UK Water Supply (Water Quality) Regulations of England, Wales and Scotland
- EC Drinking Water Directive 1998
- WHO Drinking Water Guidelines 2011
- WHO Petroleum Products in Drinking Water 2008

RTM does not advocate country-specific standards outside the UK.

In Scotland, SEPA's published Resource Protection Values (RPVs) use the published US EPA National Primary Drinking Water Regulations where they are more conservative than the WHO standards. Where no RPV exists, WSP applies the remainder of the WHO standards as a second, non-statutory tier.

ABSTRACTION FOR PRIVATE SUPPLY

The Private Water Supplies Regulations of England, Scotland and Wales prescribe maximum concentrations and values of inorganic and organic constituents as well as radioactivity and bacteria for natural waters intended for private supply. The concentrations and values are the same as those for public potable supply.

ABSTRACTION FOR BOTTLED WATER

The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations of England, Scotland and Wales prescribe maximum concentrations and values of inorganic and organic constituents as well as radioactivity and bacteria for natural waters intended for sale for human consumption.

OTHER RECEPTORS

WSP also considers other less common controlled waters receptors, where applicable, including but not limited to:

[25] CL:AIRE '*Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies'* v1.1 March 2017.

- The Bathing Water Regulations 2013 which provides standards for the classification of the quality of bathing waters at specified locations on the basis of intestinal enterococci and E. coli levels.
- WAT-SG-53, Table 9a: Operational Standards for Aquaculture which provides the operational water quality standards used by SEPA for regulating the use of chemicals in aquaculture.

Appendix F

LABORATORY DATA

Unit 7-8 Hawarden Business Park
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Hawarden
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CH5 3US
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Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	15 December 2017
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	170422-94
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	436980

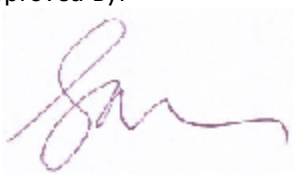
This report has been revised and directly supersedes 436858 in its entirety.

We received 15 samples on Saturday April 22, 2017 and 8 of these samples were scheduled for analysis which was completed on Friday May 12, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:



Sonia McWhan
Operations Manager

1291

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CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15383756	no id	ES		
15383761	TRIP BLANK HOS30	ES		
15383790	W4BH305	ES	0.10 - 0.30	19/04/2017
15383796	W4BH305	ES	0.90 - 1.00	19/04/2017
15383768	W4BH305	ES	1.85 - 2.00	19/04/2017
15383806	W4BH305	ES	2.50 - 3.00	19/04/2017
15383812	W4BH305	ES	4.50 - 4.60	19/04/2017
15383822	W4BH305	ES	6.20 - 6.50	19/04/2017
15383779	W5HP306	ES	0.10 - 0.20	19/04/2017
15383785	W5HP306	ES	0.80 - 1.00	19/04/2017
15383832	W4WS314	ES	0.00 - 0.20	19/04/2017
15383838	W4WS314	ES	0.70 - 0.90	19/04/2017
15383843	W4WS314	ES	1.35 - 1.50	19/04/2017
15383763	W4WS316	ES	0.10 - 0.20	19/04/2017
15383774	W4WS315A	ES	0.10 - 0.30	19/04/2017

Maximum Sample/Coolbox Temperature (°C) : 7.8

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

Validated

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15383790			15383796			15383779			15383785			15383838			15383843			15383763	
			Customer Sample Reference	W4BH305			W4BH305			W5HP306			W5HP306			W4WS314			W4WS314			W4WS316	
			AGS Reference	ES			ES			ES			ES			ES			ES			ES	
			Depth (m)	0.10 - 0.30			0.90 - 1.00			0.10 - 0.20			0.80 - 1.00			0.70 - 0.90			1.35 - 1.50			0.10 - 0.20	
			Container	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2						X												X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2					X											X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 8		X			X			X			X			X			X			X	
CEN Readings	All	NDPs: 0 Tests: 2						X												X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X		
Dioxins/Furans (S)*	All	NDPs: 0 Tests: 1				X																	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2						X												X			
Dissolved Tin by ICPMS	All	NDPs: 0 Tests: 1						X															
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 2						X												X			
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 2						X												X			
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X			
GRO by GC-FID (W)	All	NDPs: 0 Tests: 2						X												X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X		

| 15383774 | | |

CERTIFICATE OF ANALYSIS

Validated

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Results Legend

X Test

N No Determination Possible

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UNS - Unspecified Solid
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SW - Surface Water
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PL - Prepared Leachate
PR - Process Water
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US - Untreated Sewage
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UNL - Unspecified Liquid
SL - Sludge
G - Gas
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Lab Sample No(s)			15383790			15383796			15383779			15383785			15383838			15383843			15383763		
Customer Sample Reference			W4BH305			W4BH305			W5HP306			W5HP306			W4WS314			W4WS314			W4WS316		
AGS Reference			ES			ES			ES			ES			ES			ES			ES		
Depth (m)			0.10 - 0.30			0.90 - 1.00			0.10 - 0.20			0.80 - 1.00			0.70 - 0.90			1.35 - 1.50			0.10 - 0.20		
Container			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2					X												X				
Low Level Cyanide (W)	All	NDPs: 0 Tests: 1					X																
Mercury Dissolved	All	NDPs: 0 Tests: 2					X												X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X		
Organotins in Aqueous Samples	All	NDPs: 0 Tests: 1					X																
Organotins on soils*	All	NDPs: 0 Tests: 1				X																	
PAH by GCMS	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X		
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 2					X												X				
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 1					X																
PCBs by GCMS	All	NDPs: 0 Tests: 1				X																	
pH	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1				X																	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 1					X																
Total Organic Carbon	All	NDPs: 0 Tests: 3				X						X											

| 15383774 | | |

CERTIFICATE OF ANALYSIS

Validated

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)				15383790			15383796			15383779			15383785			15383838			15383843			15383763
Customer Sample Reference				W4BH305			W4BH305			W5HP306			W5HP306			W4WS314			W4WS314			W4WS316
AGS Reference				ES			ES			ES			ES			ES			ES			ES
Depth (m)				0.10 - 0.30			0.90 - 1.00			0.10 - 0.20			0.80 - 1.00			0.70 - 0.90			1.35 - 1.50			0.10 - 0.20
Container				250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)
Sample Type				S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
TPH CWG (W)	All	NDPs: 0 Tests: 2						X												X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X			
VOC MS (W)	All	NDPs: 0 Tests: 2						X												X			

15383774		W4WS315A		ES		0.10 - 0.30	
15383763		W4WS316		ES		0.10 - 0.20	
S	60g VOC (ALE215)	S	400g Tub (ALE214)	S	250g Amber Jar (ALE210)	S	60g VOC (ALE215)
					X		
X						X	

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15383790	W4BH305	0.10 - 0.30	Light Brown	Sandy Silt Loam	Stones	Tile/Insulation Board
15383796	W4BH305	0.90 - 1.00	Dark Brown	Sandy Clay	Brick	Stones
15383779	W5HP306	0.10 - 0.20	Light Brown	Silty Clay Loam	Brick	Stones
15383785	W5HP306	0.80 - 1.00	Dark Brown	Clay Loam	Brick	Stones
15383838	W4WS314	0.70 - 0.90	Light Brown	Sand	Brick	Tile/Insulation Board
15383843	W4WS314	1.35 - 1.50	Dark Brown	Sandy Loam	Brick	Stones
15383763	W4WS316	0.10 - 0.20	Dark Brown	Sandy Loam	Brick	Stones
15383774	W4WS315A	0.10 - 0.30	Dark Brown	Sandy Loam	Brick	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH305	W4BH305	W5HP306	W5HP306	W4WS314	W4WS314
			Depth (m)	0.10 - 0.30	0.90 - 1.00	0.10 - 0.20	0.80 - 1.00	0.70 - 0.90	1.35 - 1.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	22/04/2017	22/04/2017	22/04/2017	22/04/2017	22/04/2017	22/04/2017
			SDG Ref	170422-94	170422-94	170422-94	170422-94	170422-94	170422-94
			Lab Sample No.(s)	15383790	15383796	15383779	15383785	15383838	15383843
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		13	18	14	20	16	6
Exchangeable Ammonia as NH4	<15 mg/kg	TM024			<15 M				16.9 M
Soil Organic Matter (SOM)	<0.35 %	TM132			4.67 #		2.62 #		
pH	1 pH Units	TM133		8.33 M	8.14 M	8.5 M	8.17 M	10.7 M	10.6 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
PCB congener 118	<3 µg/kg	TM168			<3 M				
PCB congener 81	<3 µg/kg	TM168			<3 M				
PCB congener 77	<3 µg/kg	TM168			<3 M				
PCB congener 123	<3 µg/kg	TM168			<3 M				
PCB congener 114	<3 µg/kg	TM168			<3 M				
PCB congener 105	<3 µg/kg	TM168			<3 M				
PCB congener 126	<3 µg/kg	TM168			<3 M				
PCB congener 167	<3 µg/kg	TM168			<3 M				
PCB congener 156	<3 µg/kg	TM168			<3 M				
PCB congener 157	<3 µg/kg	TM168			<3 M				
PCB congener 169	<3 µg/kg	TM168			<3 M				
PCB congener 189	<3 µg/kg	TM168			<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168			<36				
Arsenic	<0.6 mg/kg	TM181		9.21 M	6.7 M	21 M	13.8 M	9.87 M	7.87 M
Cadmium	<0.02 mg/kg	TM181		0.808 M	0.381 M	0.196 M	<0.02 M	9.54 M	2.29 M
Chromium	<0.9 mg/kg	TM181		19.3 M	10.6 M	13 M	14.3 M	76.6 M	21.2 M
Copper	<1.4 mg/kg	TM181		67.7 M	54.1 M	80.8 M	29.5 M	1370 M	275 M
Lead	<0.7 mg/kg	TM181		74.5 M	116 M	246 M	58.4 M	492 M	178 M
Mercury	<0.14 mg/kg	TM181		0.622 M	0.528 M	1.01 M	0.681 M	0.984 M	0.471 M
Nickel	<0.2 mg/kg	TM181		17.2 M	11.2 M	16.6 M	18.3 M	109 M	24.5 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181			5.08 #				
Zinc	<1.9 mg/kg	TM181		188 M	113 M	182 M	56.3 M	3690 M	1140 M

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS316	W4WS315A
			Depth (m)	0.10 - 0.20	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017
			Sampled Time	.	.
			Date Received	22/04/2017	22/04/2017
			SDG Ref	170422-94	170422-94
			Lab Sample No.(s)	15383763	15383774
			AGS Reference	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		7.5	9.9
Soil Organic Matter (SOM)	<0.35 %	TM132			2.31 #
pH	1 pH Units	TM133		8.75 M	8.74 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1	<1
Arsenic	<0.6 mg/kg	TM181		9.73 M	8.97 M
Cadmium	<0.02 mg/kg	TM181		0.301 M	0.425 M
Chromium	<0.9 mg/kg	TM181		11.9 M	14 M
Copper	<1.4 mg/kg	TM181		31.6 M	54.6 M
Lead	<0.7 mg/kg	TM181		635 M	97.5 M
Mercury	<0.14 mg/kg	TM181		0.425 M	0.406 M
Nickel	<0.2 mg/kg	TM181		13.2 M	16.6 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		119 M	181 M

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Dioxins/Furans (S)*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W4BH305
Depth (m)	0.90 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2017
Sampled Time	.
Date Received	22/04/2017
SDG Ref	170422-94
Lab Sample No.(s)	15383796
AGS Reference	ES

Component	LOD/Units	Method	
1,2,3,4,6,7,8 HpCDD*	ng/kg	SUB	<0.0017
1,2,3,4,6,7,8 HpCDF*	ng/kg	SUB	<0.0015
1,2,3,4,7,8 HxCDD*	ng/kg	SUB	<0.0014
1,2,3,4,7,8 HxCDF*	ng/kg	SUB	<0.0015
1,2,3,4,7,8,9 HpCDF*	ng/kg	SUB	<0.0016
1,2,3,6,7,8 HxCDD*	ng/kg	SUB	<0.0014
1,2,3,6,7,8 HxCDF*	ng/kg	SUB	<0.0015
1,2,3,7,8 PeCDD*	ng/kg	SUB	<0.0014
1,2,3,7,8 PeCDF*	ng/kg	SUB	<0.0012
1,2,3,7,8,9 HxCDD*	ng/kg	SUB	<0.0014
1,2,3,7,8,9 HxCDF*	ng/kg	SUB	<0.0015
2,3,4,6,7,8 HxCDF*	ng/kg	SUB	<0.0015
2,3,4,7,8 PeCDF*	ng/kg	SUB	<0.0012
2,3,7,8 TCDD*	ng/kg	SUB	<0.00057
2,3,7,8, TCDF*	ng/kg	SUB	<0.0029
OCDD*	ng/kg	SUB	<0.0021
OCDF*	ng/kg	SUB	<0.0023
I-PCDD/F-TEQ Lower Bound*	ng/kg	SUB	0
I-PCDD/F-TEQ Upper Bound*	ng/kg	SUB	0.0033

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W4BH305
Depth (m)	0.90 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2017
Sampled Time	.
Date Received	22/04/2017
SDG Ref	170422-94
Lab Sample No.(s)	15383796
AGS Reference	ES

Component	LOD/Units	Method	
Dibutyl Tin*	mg/kg	SUB	0.07
Tributyl Tin*	mg/kg	SUB	<0.02
Triphenyl Tin*	mg/kg	SUB	<0.05
Tetrabutyl Tin*	mg/kg	SUB	<0.02
Monobutyl Tin*	mg/kg	SUB	<0.1
Monophenyl Tin*	mg/kg	SUB	<0.02
Diphenyl Tin*	mg/kg	SUB	<0.02

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH305	W4BH305	W5HP306	W5HP306	W4WS314	W4WS314
			Depth (m)	0.10 - 0.30	0.90 - 1.00	0.10 - 0.20	0.80 - 1.00	0.70 - 0.90	1.35 - 1.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	22/04/2017	22/04/2017	22/04/2017	22/04/2017	22/04/2017	22/04/2017
			SDG Ref	170422-94	170422-94	170422-94	170422-94	170422-94	170422-94
			Lab Sample No.(s)	15383790	15383796	15383779	15383785	15383838	15383843
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		90.6	84.9	91.6	85.8	96	87
Acenaphthene-d10 % recovery**	%	TM218		90.8	83.8	92.8	82.4	96.7	85.9
Phenanthrene-d10 % recovery**	%	TM218		88.3	79.6	88.6	77.9	93.4	82.1
Chrysene-d12 % recovery**	%	TM218		91.9	79.1	89.6	76.4	94.4	83.7
Perylene-d12 % recovery**	%	TM218		103	88.8	100	87.2	107	96.8
Naphthalene	<9 µg/kg	TM218		43 M	17.3 M	35.3 M	<9 M	42.5 M	254 M
Acenaphthylene	<12 µg/kg	TM218		55.7 M	17 M	31.8 M	<12 M	26.4 M	514 M
Acenaphthene	<8 µg/kg	TM218		89 M	22.7 M	14.8 M	<8 M	64.7 M	1050 M
Fluorene	<10 µg/kg	TM218		83.9 M	15.8 M	12.8 M	<10 M	56.9 M	854 M
Phenanthrene	<15 µg/kg	TM218		1300 M	219 M	219 M	<15 M	521 M	7650 M
Anthracene	<16 µg/kg	TM218		312 M	59.1 M	55.8 M	<16 M	117 M	2630 M
Fluoranthene	<17 µg/kg	TM218		2600 M	517 M	492 M	34.2 M	762 M	13800 M
Pyrene	<15 µg/kg	TM218		1940 M	408 M	436 M	27.7 M	580 M	11800 M
Benz(a)anthracene	<14 µg/kg	TM218		1430 M	346 M	336 M	33.3 M	398 M	7180 M
Chrysene	<10 µg/kg	TM218		1150 M	296 M	305 M	20.6 M	351 M	5790 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		2210 M	471 M	538 M	50.3 M	520 M	10600 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		721 M	160 M	204 M	19.3 M	219 M	4290 M
Benzo(a)pyrene	<15 µg/kg	TM218		1780 M	392 M	456 M	37.8 M	496 M	10900 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		1240 M	243 M	283 M	28.2 M	322 M	5780 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		355 M	69.4 M	82.9 M	<23 M	86.4 M	1600 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		1470 M	300 M	350 M	35.2 M	385 M	6980 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		16800	3550	3850	286	4950	91700

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS316	W4WS315A
			Depth (m)	0.10 - 0.20	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017
			Sampled Time	.	.
			Date Received	22/04/2017	22/04/2017
			SDG Ref	170422-94	170422-94
			Lab Sample No.(s)	15383763	15383774
			AGS Reference	ES	ES
Naphthalene-d8 % recovery**	%	TM218		93.5	90.7
Acenaphthene-d10 % recovery**	%	TM218		93.3	91.9
Phenanthrene-d10 % recovery**	%	TM218		89.9	88.8
Chrysene-d12 % recovery**	%	TM218		91	91.1
Perylene-d12 % recovery**	%	TM218		106	106
Naphthalene	<9 µg/kg	TM218		36.2 M	45 M
Acenaphthylene	<12 µg/kg	TM218		104 M	163 M
Acenaphthene	<8 µg/kg	TM218		37.9 M	67.2 M
Fluorene	<10 µg/kg	TM218		35.6 M	66 M
Phenanthrene	<15 µg/kg	TM218		378 M	800 M
Anthracene	<16 µg/kg	TM218		189 M	343 M
Fluoranthene	<17 µg/kg	TM218		1030 M	2540 M
Pyrene	<15 µg/kg	TM218		1040 M	2490 M
Benz(a)anthracene	<14 µg/kg	TM218		895 M	2350 M
Chrysene	<10 µg/kg	TM218		797 M	1890 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		1600 M	2450 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		711 M	1460 M
Benzo(a)pyrene	<15 µg/kg	TM218		1680 M	3540 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		1070 M	1940 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		312 M	571 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		1300 M	2300 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		11200	23000

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W4BH305
Depth (m)	0.90 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2017
Sampled Time	.
Date Received	22/04/2017
SDG Ref	170422-94
Lab Sample No.(s)	15383796
AGS Reference	ES

Component	LOD/Units	Method	
Phenol	<100 µg/kg	TM157	<100
Pentachlorophenol	<100 µg/kg	TM157	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100
Nitrobenzene	<100 µg/kg	TM157	<100
Isophorone	<100 µg/kg	TM157	<100
Hexachloroethane	<100 µg/kg	TM157	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100
Diethyl phthalate	<100 µg/kg	TM157	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100
Dibenzofuran	<100 µg/kg	TM157	<100
Carbazole	<100 µg/kg	TM157	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100
Azobenzene	<100 µg/kg	TM157	<100
4-Nitrophenol	<100 µg/kg	TM157	<100
4-Nitroaniline	<100 µg/kg	TM157	<100
4-Methylphenol	<100 µg/kg	TM157	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100
4-Chloroaniline	<100 µg/kg	TM157	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100
3-Nitroaniline	<100 µg/kg	TM157	<100
2-Nitrophenol	<100 µg/kg	TM157	<100
2-Nitroaniline	<100 µg/kg	TM157	<100
2-Methylphenol	<100 µg/kg	TM157	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4BH305	0.90 - 1.00	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383796	ES
2-Chlorophenol	<100 µg/kg	TM157	<100								
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100								
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100								
2,4-Dimethylphenol	<100 µg/kg	TM157	<100								
2,4-Dichlorophenol	<100 µg/kg	TM157	<100								
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100								
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100								
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100								
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100								
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100								
2-Chloronaphthalene	<100 µg/kg	TM157	<100								
2-Methylnaphthalene	<100 µg/kg	TM157	<100								
Benzo(a)anthracene	<100 µg/kg	TM157	262								
Chrysene	<100 µg/kg	TM157	285								
Naphthalene	<100 µg/kg	TM157	<100								
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100								

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH305	W4BH305	W5HP306	W5HP306	W4WS314	W4WS314
			Depth (m)	0.10 - 0.30	0.90 - 1.00	0.10 - 0.20	0.80 - 1.00	0.70 - 0.90	1.35 - 1.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	22/04/2017	22/04/2017	22/04/2017	22/04/2017	22/04/2017	22/04/2017
			SDG Ref	170422-94	170422-94	170422-94	170422-94	170422-94	170422-94
			Lab Sample No.(s)	15383790	15383796	15383779	15383785	15383838	15383843
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		60	94	83	71	73	34
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 M	70.2 M	<44 M	<44 M	94 M	865 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	10.7	16
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	15.7	<10	<10	15.5	43.6
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	16.9	<10	<10	13.1	262
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	10.9	<10	<10	11.9	217
Aliphatics >C12-C16	<100 µg/kg	TM173		<100	731	<100	<100	<100	320
Aliphatics >C16-C21	<100 µg/kg	TM173		1950	878	<100	<100	2180	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		30700	13700	6430	2140	22700	<100
Aliphatics >C35-C44	<100 µg/kg	TM173		24300	5510	532	<100	10900	4290
Total Aliphatics >C12-C44	<100 µg/kg	TM173		56900	20800	6960	2140	35800	4610
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	22.6	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	13.3	<10	<10	11.9	174
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	<10	<10	<10	145
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	<100	509	<100	<100	9800
Aromatics >EC16-EC21	<100 µg/kg	TM173		4420	2600	3550	<100	2180	73700
Aromatics >EC21-EC35	<100 µg/kg	TM173		58900	24600	22900	6860	19800	457000
Aromatics >EC35-EC44	<100 µg/kg	TM173		51500	14800	9140	1980	14000	446000
Aromatics >EC40-EC44	<100 µg/kg	TM173		23500	6620	3150	<100	5970	205000
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		115000	42000	36100	8840	36000	987000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		172000	62900	43000	11000	71900	992000
Aromatics >EC16-EC35	<100 µg/kg	TM173		63300	27200	26400	6860	22000	530000

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS316	W4WS315A
			Depth (m)	0.10 - 0.20	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017
			Sampled Time	.	.
			Date Received	22/04/2017	22/04/2017
			SDG Ref	170422-94	170422-94
			Lab Sample No.(s)	15383763	15383774
			AGS Reference	ES	ES
GRO Surrogate % recovery**	%	TM089		72	64
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 M	<44 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		1590	2860
Aliphatics >C16-C21	<100 µg/kg	TM173		7140	8730
Aliphatics >C21-C35	<100 µg/kg	TM173		145000	50400
Aliphatics >C35-C44	<100 µg/kg	TM173		168000	38000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		322000	100000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		1250	8210
Aromatics >EC16-EC21	<100 µg/kg	TM173		9960	56300
Aromatics >EC21-EC35	<100 µg/kg	TM173		174000	177000
Aromatics >EC35-EC44	<100 µg/kg	TM173		226000	109000
Aromatics >EC40-EC44	<100 µg/kg	TM173		112000	48300
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		412000	351000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		734000	451000
Aromatics >EC16-EC35	<100 µg/kg	TM173		184000	233000

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4BH305	0.10 - 0.30	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383790	ES
			W4BH305	0.90 - 1.00	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383796	ES
			W5HP306	0.10 - 0.20	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383779	ES
			W5HP306	0.80 - 1.00	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383785	ES
			W4WS314	0.70 - 0.90	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383838	ES
			W4WS314	1.35 - 1.50	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383843	ES
Dibromofluoromethane**	%	TM116		103							
Toluene-d8**	%	TM116		98.7							
4-Bromofluorobenzene**	%	TM116		96.2							
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M							
Chloromethane	<7 µg/kg	TM116		<70 #							
Vinyl Chloride	<6 µg/kg	TM116		<60 M							
Bromomethane	<10 µg/kg	TM116		<100 M							
Chloroethane	<10 µg/kg	TM116		<100 M							
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M							
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #							
Carbon Disulphide	<7 µg/kg	TM116		<70 M							
Dichloromethane	<10 µg/kg	TM116		<100 #							
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M			
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M							
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M							
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M							
2,2-Dichloropropane	<10 µg/kg	TM116		<100							
Bromochloromethane	<10 µg/kg	TM116		<100 M							
Chloroform	<8 µg/kg	TM116		<80 M							
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M							
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M							
Carbontetrachloride	<10 µg/kg	TM116		<100 M							
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M							
Benzene	<9 µg/kg	TM116	<90 M	<90 M	<90 M	<90 M	<90 M	<90 M			
Trichloroethene	<9 µg/kg	TM116		<90 #							
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M							
Dibromomethane	<9 µg/kg	TM116		<90 M							
Bromodichloromethane	<7 µg/kg	TM116		<70 M							
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M							
Toluene	<7 µg/kg	TM116	<70 M	<70 M	<70 M	<70 M	<70 M	<70 M			
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100							
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M							

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH305	W4BH305	W5HP306	W5HP306	W4WS314	W4WS314
			Depth (m)	0.10 - 0.30	0.90 - 1.00	0.10 - 0.20	0.80 - 1.00	0.70 - 0.90	1.35 - 1.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	22/04/2017	22/04/2017	22/04/2017	22/04/2017	22/04/2017	22/04/2017
			SDG Ref	170422-94	170422-94	170422-94	170422-94	170422-94	170422-94
			Lab Sample No.(s)	15383790	15383796	15383779	15383785	15383838	15383843
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116			<70 M				
Tetrachloroethene	<5 µg/kg	TM116			<50 M				
Dibromochloromethane	<10 µg/kg	TM116			<100 M				
1,2-Dibromoethane	<10 µg/kg	TM116			<100 M				
Chlorobenzene	<5 µg/kg	TM116			<50 M				
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M				
Ethylbenzene	<4 µg/kg	TM116	<40 M	<40 M		<40 M	<40 M	<40 M	<40 M
p/m-Xylene	<10 µg/kg	TM116	<100 #	<100 #		<100 #	<100 #	<100 #	<100 #
o-Xylene	<10 µg/kg	TM116	<100 M	<100 M		<100 M	<100 M	<100 M	<100 M
Styrene	<10 µg/kg	TM116			<100 #				
Bromoform	<10 µg/kg	TM116			<100 M				
Isopropylbenzene	<5 µg/kg	TM116			<50 #				
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M				
1,2,3-Trichloropropane	<16 µg/kg	TM116			<160 M				
Bromobenzene	<10 µg/kg	TM116			<100 M				
Propylbenzene	<10 µg/kg	TM116			<100 M				
2-Chlorotoluene	<9 µg/kg	TM116			<90 M				
1,3,5-Trimethylbenzene	<8 µg/kg	TM116			<80 M				
4-Chlorotoluene	<10 µg/kg	TM116			<100 M				
tert-Butylbenzene	<14 µg/kg	TM116			<140 M				
1,2,4-Trimethylbenzene	<9 µg/kg	TM116			<90 #				
sec-Butylbenzene	<10 µg/kg	TM116			<100				
4-Isopropyltoluene	<10 µg/kg	TM116			<100 M				
1,3-Dichlorobenzene	<8 µg/kg	TM116			<80 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116			<50 M				
n-Butylbenzene	<11 µg/kg	TM116			<110				
1,2-Dichlorobenzene	<10 µg/kg	TM116			<100 M				
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116			<140 M				
Tert-amyl methyl ether	<10 µg/kg	TM116	<100 #	<100 #		<100 #	<100 #	<100 #	<100 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116			<200				
Hexachlorobutadiene	<20 µg/kg	TM116			<200				
Naphthalene	<13 µg/kg	TM116			<130 M				

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4BH305	0.10 - 0.30	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383790	ES
			W4BH305	0.90 - 1.00	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383796	ES
			W5HP306	0.10 - 0.20	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383779	ES
			W5HP306	0.80 - 1.00	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383785	ES
			W4WS314	0.70 - 0.90	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383838	ES
			W4WS314	1.35 - 1.50	Soil/Solid (S)	19/04/2017	.	22/04/2017	170422-94	15383843	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200 #							

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS316	W4WS315A
			Depth (m)	0.10 - 0.20	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017
			Sampled Time	.	.
			Date Received	22/04/2017	22/04/2017
			SDG Ref	170422-94	170422-94
			Lab Sample No.(s)	15383763	15383774
			AGS Reference	ES	ES
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<100 M	<100 M
Benzene	<9 µg/kg	TM116		<90 M	<90 M
Toluene	<7 µg/kg	TM116		<70 M	<70 M
Ethylbenzene	<4 µg/kg	TM116		<40 M	<40 M
p/m-Xylene	<10 µg/kg	TM116		<100 #	<100 #
o-Xylene	<10 µg/kg	TM116		<100 M	<100 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<100 #	<100 #

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH305 ES 0.10 - 0.30 SOLID 19/04/2017 00:00:00 25/04/2017 11:28:58 170422-94 15383790 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH305 ES 0.90 - 1.00 SOLID 19/04/2017 00:00:00 25/04/2017 11:30:53 170422-94 15383796 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5HP306 ES 0.10 - 0.20 SOLID 19/04/2017 00:00:00 24/04/2017 15:10:46 170422-94 15383779 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5HP306 ES 0.80 - 1.00 SOLID 19/04/2017 00:00:00 24/04/2017 15:06:40 170422-94 15383785 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS314 ES 0.70 - 0.90 SOLID 19/04/2017 00:00:00 25/04/2017 10:32:49 170422-94 15383838 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG: 170422-94 **Client Reference:** 70015362 **Report Number:** 436980
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 436858

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS314 ES 1.35 - 1.50 SOLID 19/04/2017 00:00:00 24/04/2017 15:09:23 170422-94 15383843 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS316 ES 0.10 - 0.20 SOLID 19/04/2017 00:00:00 24/04/2017 15:11:53 170422-94 15383763 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS315A ES 0.10 - 0.30 SOLID 19/04/2017 00:00:00 24/04/2017 15:08:15 170422-94 15383774 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170422-94
Lab Sample Number(s)	15383796
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH305 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.000858	<0.00051	0.00858	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	0.0000161	<0.000015	0.000161	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
PCB congener 118	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.0000537	<0.000022	0.000537	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
PCB congener 77	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
PCB congener 81	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Pyrene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
PCB congener 105	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
PCB congener 114	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Surrogate	-	<0	-	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.00754	<0.00085	0.0754	<0.0085	-	-	-
PCB congener 123	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	0.000267	<0.0001	0.00267	<0.001	-	-	-
PCB congener 126	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	7.99
Conductivity (µS/cm)	188.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:35:46

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170422-94
Lab Sample Number(s)	15383796
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH305 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
PCB congener 156	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
PCB congener 157	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
PCB congener 167	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Nickel	0.000996	<0.00044	0.00996	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
PCB congener 169	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
PCB congener 189	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00218	<0.0013	0.0218	<0.013	-	-	-
SVOC MS (W) - Aqueous							
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,5-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,6-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dimethylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,6-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chloronaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylnaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
3-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Bromophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloro-3-methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	7.99
Conductivity (µS/cm)	188.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:35:46

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170422-94
Lab Sample Number(s)	15383796
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH305 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
SVOC MS (W) - Aqueous							
4-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Azobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethyl)ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethoxy)methane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-ethylhexyl) phthalate	<0.002	<0.002	<0.02	<0.02	-	-	-
Butylbenzyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbazole	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibenzofuran	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-butyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Diethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Dimethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-Octyl phthalate	<0.005	<0.005	<0.05	<0.05	-	-	-
Hexachlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Pentachlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Phenol	<0.001	<0.001	<0.01	<0.01	-	-	-
N-nitrosodi-n-propylamine	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Nitrobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Isophorone	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorocyclopentadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	7.99
Conductivity (µS/cm)	188.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:35:46

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
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Case	
SDG	170422-94
Lab Sample Number(s)	15383796
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH305 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Dibromofluoromethane	-	<0	-	<0	-	-	-
Toluene-d8	-	<0	-	<0	-	-	-
4-Bromofluorobenzene	-	<0	-	<0	-	-	-
Dichlorodifluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Vinyl Chloride	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichlorofluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbon Disulphide	<0.001	<0.001	<0.01	<0.01	-	-	-
Dichloromethane	<0.003	<0.003	<0.03	<0.03	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroform	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbontetrachloride	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromodichloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	7.99
Conductivity (µS/cm)	188.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:35:46

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170422-94
Lab Sample Number(s)	15383796
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH305 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Tetrachloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromoethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Styrene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromoform	<0.001	<0.001	<0.01	<0.01	-	-	-
Isopropylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Propylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Sec-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Isopropyltoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
n-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromo-3-Chloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Naphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	7.99
Conductivity (µS/cm)	188.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:35:46

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170422-94
Lab Sample Number(s)	15383796
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH305 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
1,2,3-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	7.99
Conductivity (µS/cm)	188.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:35:46

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.38
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94
Particle Size <4mm	>95%		

Case	
SDG	170422-94
Lab Sample Number(s)	15383843
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4WS314 ESZ
Depth (m)	1.35 - 1.50

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	0.912	<0.2	9.12	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00407	<0.00051	0.0407	<0.0051	-	-	-
Naphthalene (diss.filt)	0.00158	<0.0001	0.0158	<0.001	-	-	-
Acenaphthene (diss.filt)	0.00161	<0.000015	0.0161	<0.00015	-	-	-
Acenaphthylene (diss.filt)	0.0000435	<0.000011	0.000435	<0.00011	-	-	-
Fluoranthene (diss.filt)	0.000607	<0.000017	0.00607	<0.00017	-	-	-
Anthracene (diss.filt)	0.000291	<0.000015	0.00291	<0.00015	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.00172	<0.000022	0.0172	<0.00022	-	-	-
Fluorene (diss.filt)	0.000683	<0.000014	0.00683	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	0.00486	<0.0012	0.0486	<0.012	-	-	-
Pyrene (diss.filt)	0.00039	<0.000015	0.0039	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.0876	<0.00085	0.876	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	0.000656	<0.0001	0.00656	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	0.00129	<0.00044	0.0129	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	0.00692	<0.000344	0.0692	<0.00344	-	-	-
Selenium	0.000826	<0.00081	0.00826	<0.0081	-	-	-
Zinc	0.00141	<0.0013	0.0141	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	10.62
Conductivity (µS/cm)	359.00
Temperature (°C)	18.80
Volume Leachant (Litres)	0.894

Mcerts Certification does not apply to leachates

15/12/2017 12:35:46

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.38
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94
Particle Size <4mm	>95%		

Case	
SDG	170422-94
Lab Sample Number(s)	15383843
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4WS314 ESZ
Depth (m)	1.35 - 1.50

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	0.029	<0.01	0.29	<0.1	-	-	-
Aromatics >EC16-EC21	0.03	<0.01	0.3	<0.1	-	-	-
Aromatics >EC21-EC35	0.015	<0.01	0.15	<0.1	-	-	-
Total Aromatics >EC12-EC35	0.074	<0.01	0.74	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	0.092	<0.01	0.92	<0.1	-	-	-
Aromatics >EC16-EC35	0.045	<0.01	0.45	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	10.62
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Temperature (°C)	18.80
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Mcerts Certification does not apply to leachates

15/12/2017 12:35:46

Table of Results - Appendix

Method No	Reference	Description
PM001		Preparation of Samples for Metals Analysis
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM279		Determination of Low Level Easily Liberatable (Free) Cyanides and Total Cyanides in Waters using the Skalar SANS+ System Segmented Flow Analyser
TM283		Determination of Dissolved Niobium, Tungsten, and Zirconium in Water Matrices by ICP-MS
TM328		

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Test Completion Dates

Lab Sample No(s)	15383790	15383796	15383779	15383785	15383838	15383843	15383763	15383774
Customer Sample Ref.	W4BH305	W4BH305	W5HP306	W5HP306	W4WS314	W4WS314	W4WS316	W4WS315A
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.10 - 0.30	0.90 - 1.00	0.10 - 0.20	0.80 - 1.00	0.70 - 0.90	1.35 - 1.50	0.10 - 0.20	0.10 - 0.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen		28-Apr-2017				28-Apr-2017		
Ammonium Soil by Titration		26-Apr-2017				26-Apr-2017		
Asbestos ID in Solid Samples	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
CEN 10:1 Leachate (1 Stage)		28-Apr-2017				25-Apr-2017		
CEN Readings		27-Apr-2017				26-Apr-2017		
Cyanide Comp/Free/Total/Thiocyanate	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
Dioxins/Furans (S)*		12-May-2017						
Dissolved Metals by ICP-MS		27-Apr-2017				27-Apr-2017		
Dissolved Tin by ICPMS		28-Apr-2017						
EPH CWG (Aliphatic) Aqueous GC (W)		27-Apr-2017				27-Apr-2017		
EPH CWG (Aliphatic) GC (S)	27-Apr-2017	26-Apr-2017	27-Apr-2017	26-Apr-2017	27-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
EPH CWG (Aromatic) Aqueous GC (W)		27-Apr-2017				27-Apr-2017		
EPH CWG (Aromatic) GC (S)	27-Apr-2017	26-Apr-2017	27-Apr-2017	26-Apr-2017	27-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
GRO by GC-FID (S)	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017
GRO by GC-FID (W)		27-Apr-2017				27-Apr-2017		
Hexavalent Chromium (s)	27-Apr-2017	26-Apr-2017	27-Apr-2017	26-Apr-2017	27-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
Hexavalent Chromium (w)		27-Apr-2017				27-Apr-2017		
Low Level Cyanide (W)		28-Apr-2017						
Mercury Dissolved		27-Apr-2017				28-Apr-2017		
Metals in solid samples by OES	27-Apr-2017	26-Apr-2017	27-Apr-2017	26-Apr-2017	27-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
Organotins in Aqueous Samples		02-May-2017						
Organotins on soils*		08-May-2017						
PAH by GCMS	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
PAH in waters by GC-MS (diss.filt)		28-Apr-2017				28-Apr-2017		
PCB Congeners - Aqueous (W)		27-Apr-2017						
PCBs by GCMS		27-Apr-2017						
pH	26-Apr-2017	27-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
Sample description	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
Semi Volatile Organic Compounds		27-Apr-2017						
SVOC MS (W) - Aqueous		28-Apr-2017						
Total Organic Carbon		27-Apr-2017		27-Apr-2017				27-Apr-2017
TPH CWG (W)		27-Apr-2017				27-Apr-2017		
TPH CWG GC (S)	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017
VOC MS (S)	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
VOC MS (W)		28-Apr-2017				28-Apr-2017		

CERTIFICATE OF ANALYSIS

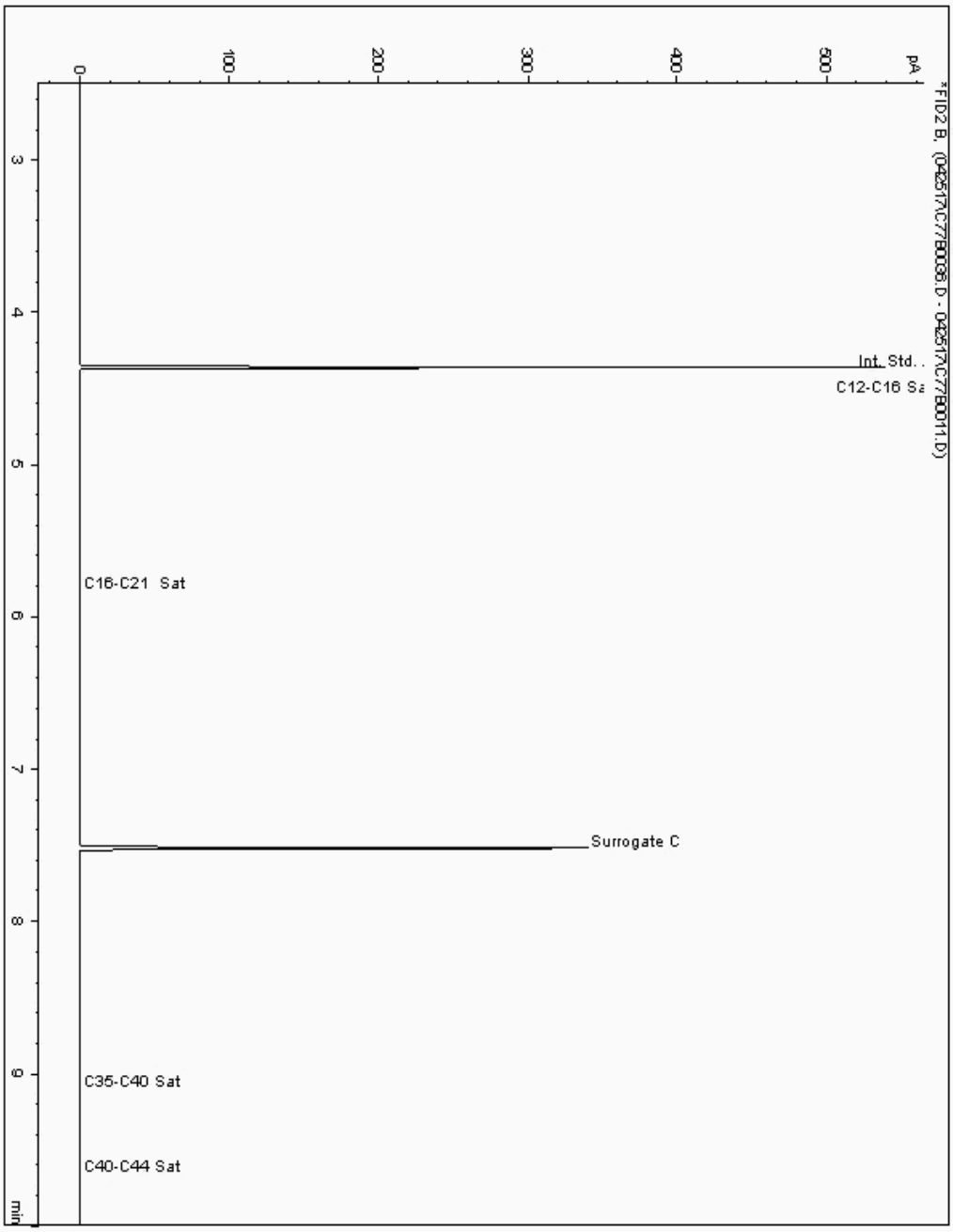
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15389368 **Sample ID :** W4WS314 **Depth :** 1.35 - 1.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412874-
Date Acquired : 4/25/2017 11:30:14 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

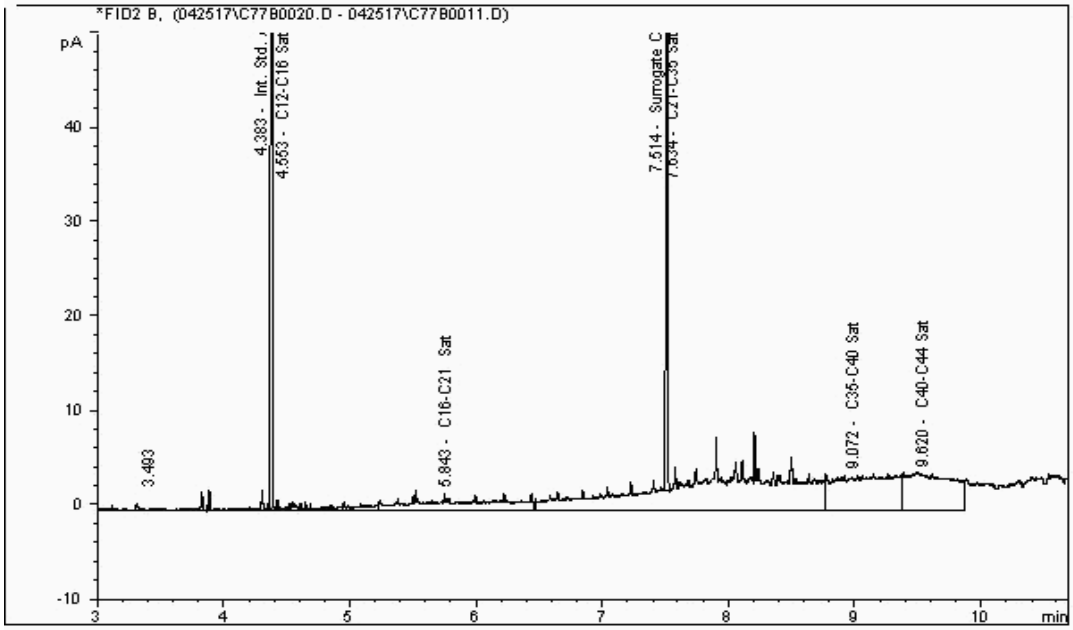
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15389416 **Sample ID :** W4WS315A **Depth :** 0.10 - 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412740-
Date Acquired : 25/04/2017 16:53:11 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

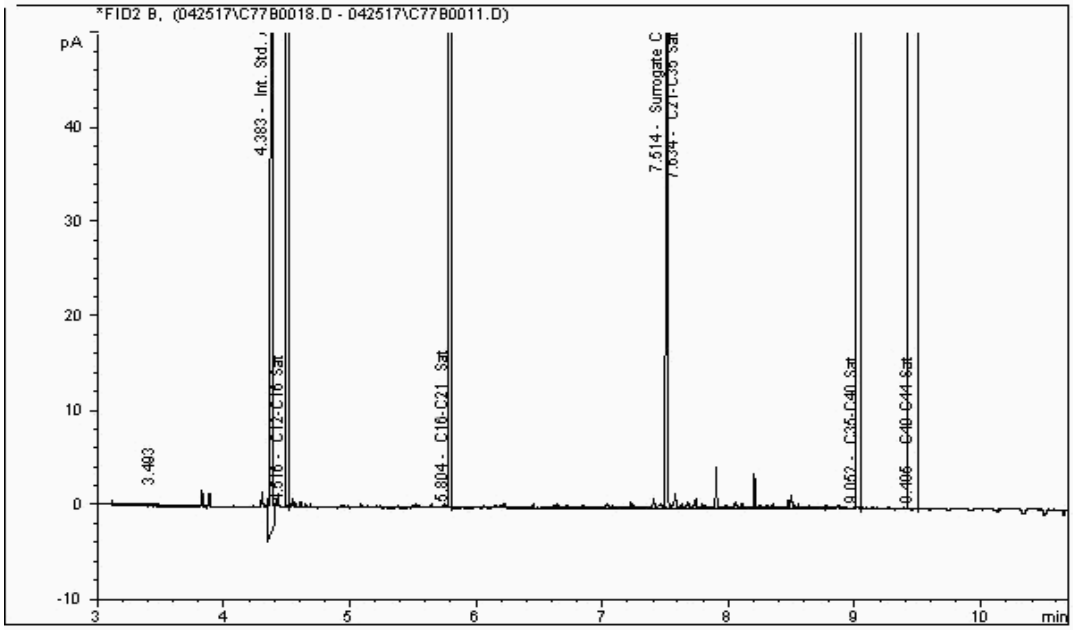
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15389460 **Sample ID :** W5HP306 **Depth :** 0.80 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412787-
Date Acquired : 25/04/2017 16:12:35 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

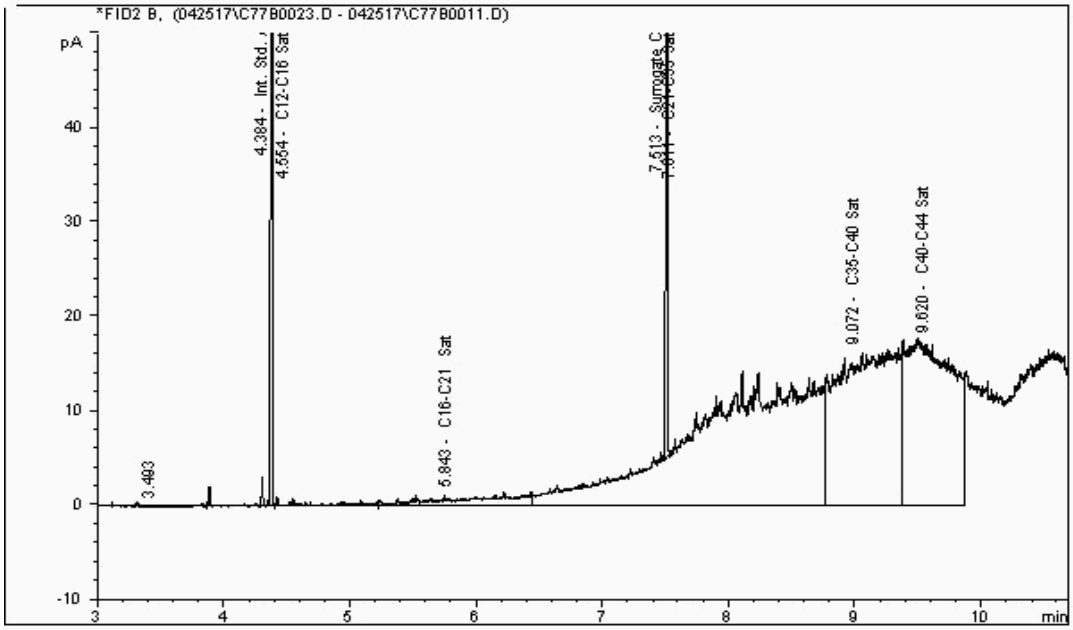
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15389539 **Sample ID :** W4WS316 **Depth :** 0.10 - 0.20

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412711-
Date Acquired : 25/04/2017 17:37:19 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

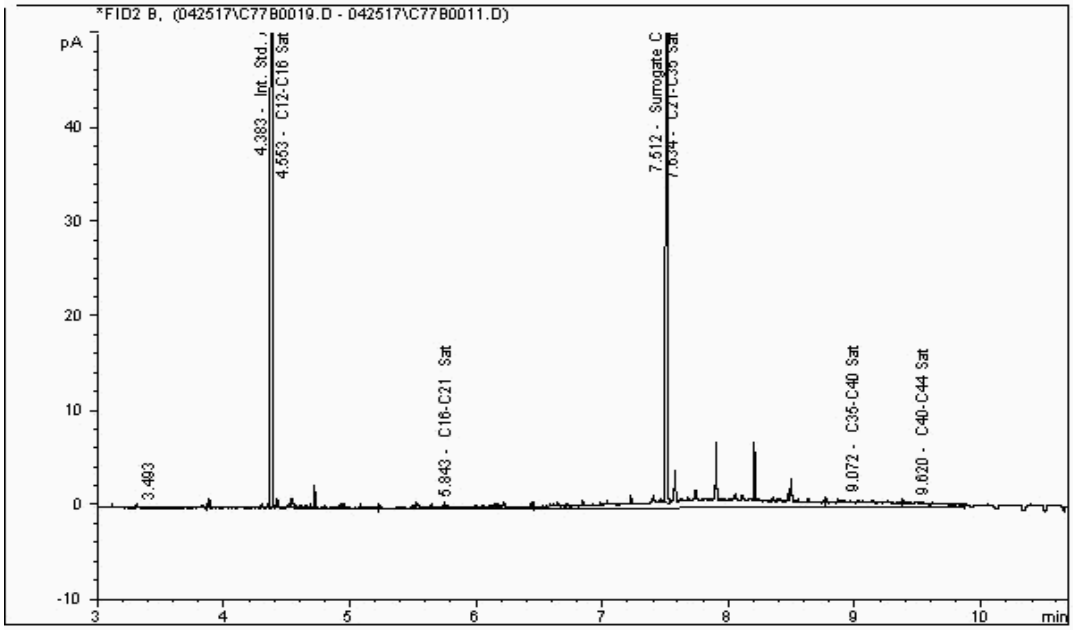
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15389585 **Sample ID :** W4BH305 **Depth :** 0.90 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412847-
Date Acquired : 25/04/2017 16:33:03 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

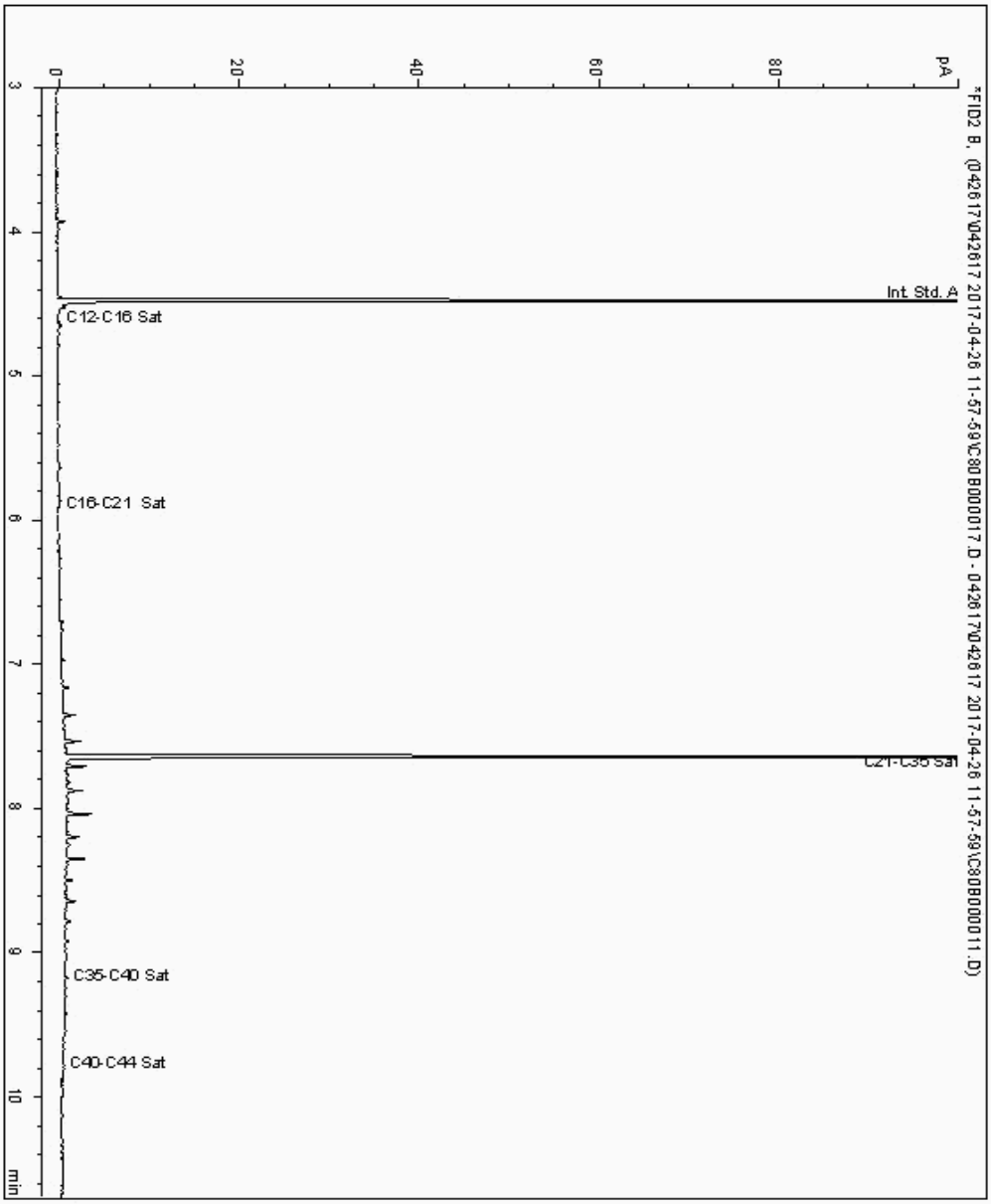
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15391651 **Sample ID :** W4WS314 **Depth :** 0.70 - 0.90

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412823-
Date Acquired : 26/04/17 17:21:29
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

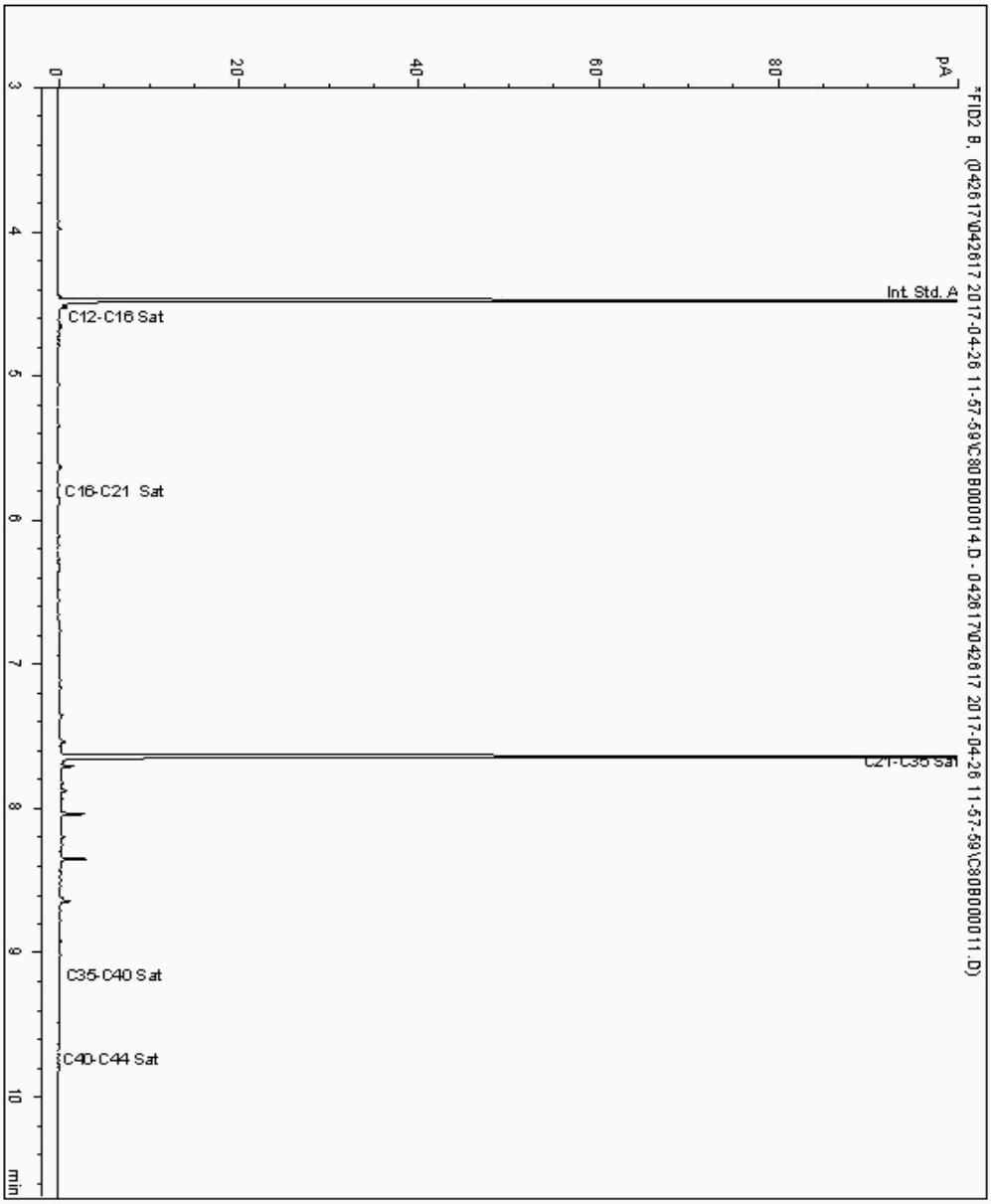
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15391827 **Sample ID :** W5HP306 **Depth :** 0.10 - 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412770-
Date Acquired : 26/04/17 16:28:30
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

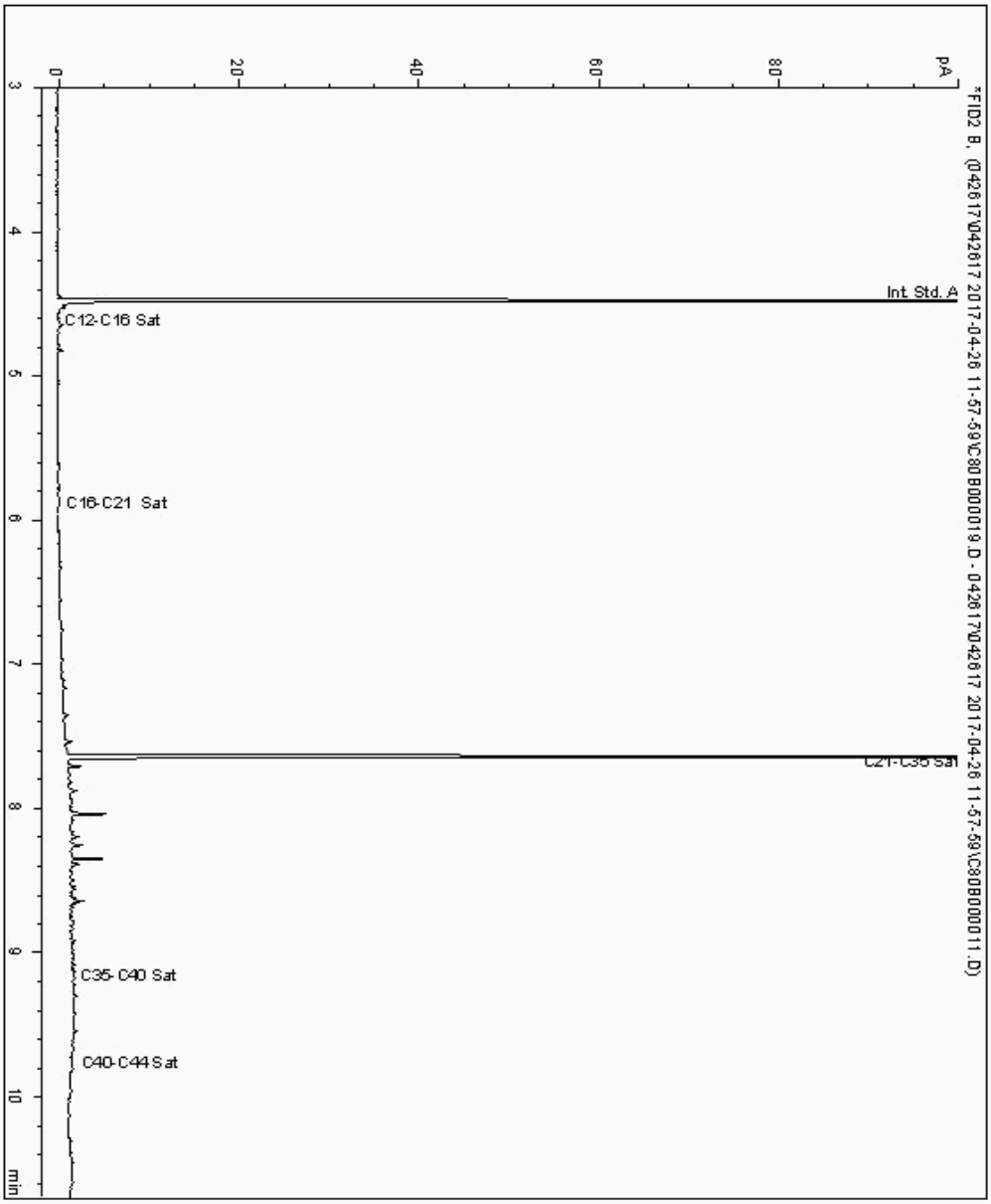
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15392080 **Depth :** 0.10 - 0.30
Sample ID : W4BH305

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412806-
Date Acquired : 26/04/17 17:53:54
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

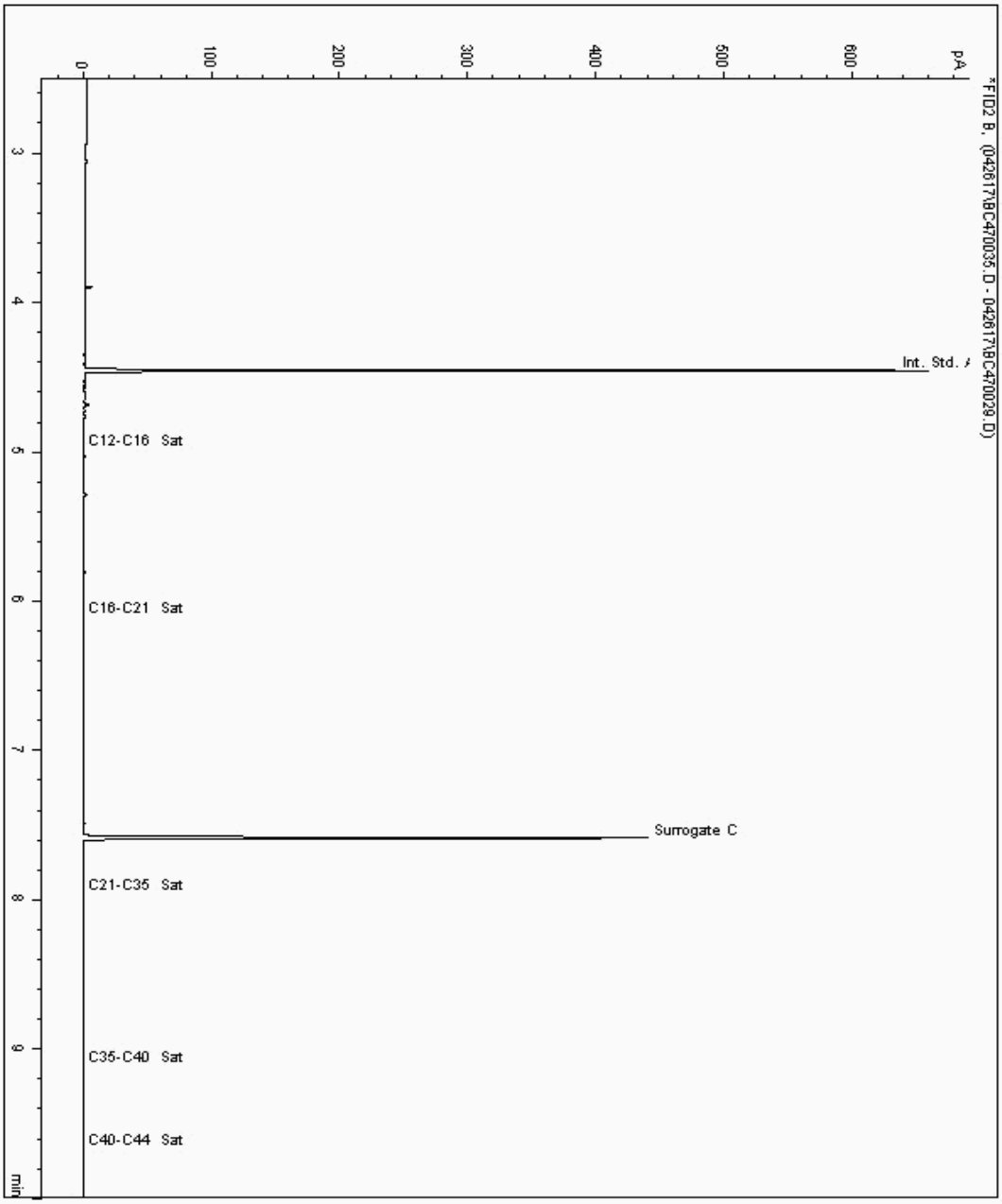
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15401298 **Sample ID :** W4WS314 **Depth :** 1.35 - 1.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412889-
Date Acquired : 27/04/17 10:59:55 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

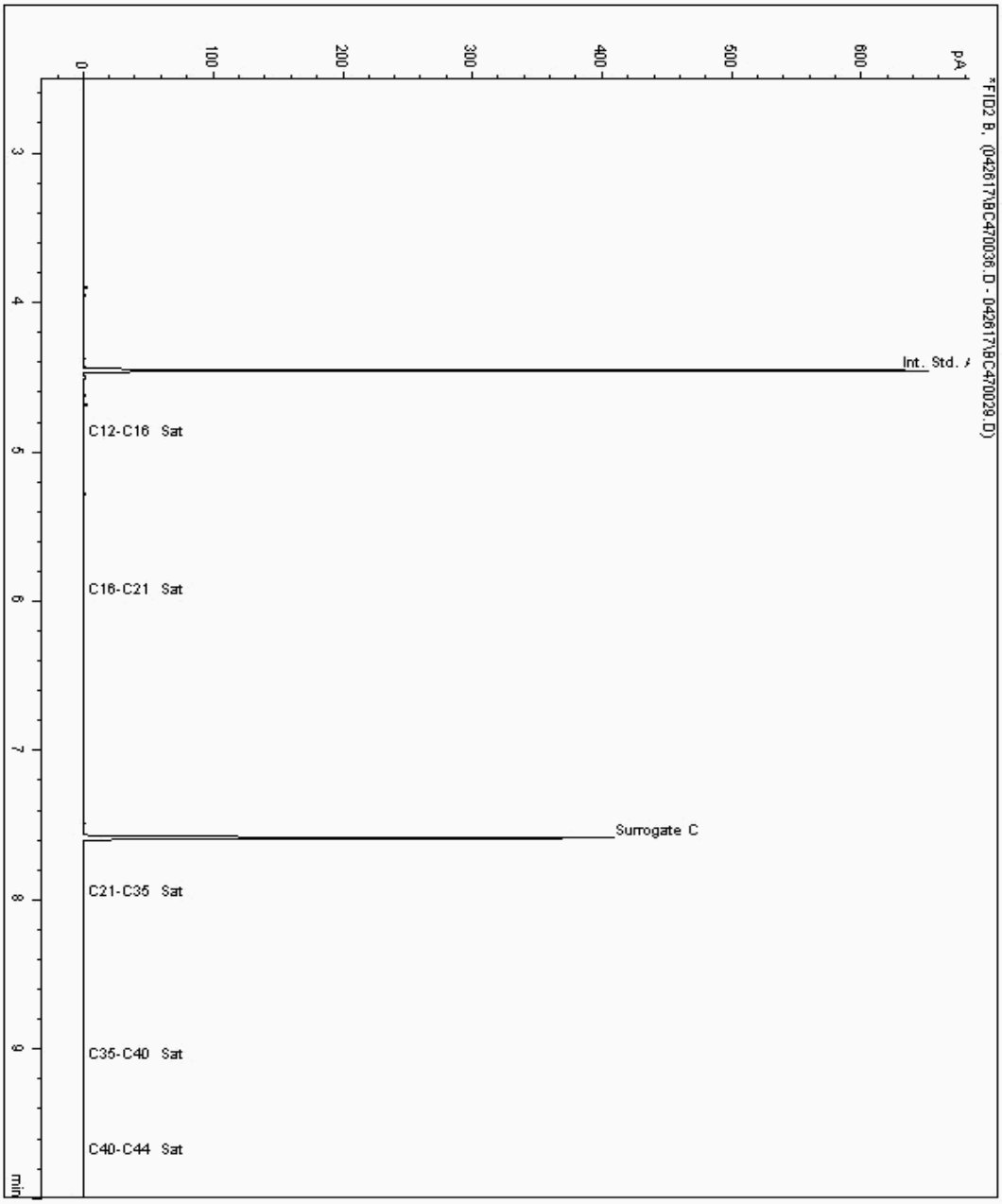
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15402837 **Sample ID :** W4BH305 **Depth :** 0.90 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412905-
Date Acquired : 27/04/17 11:18:47 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.022



CERTIFICATE OF ANALYSIS

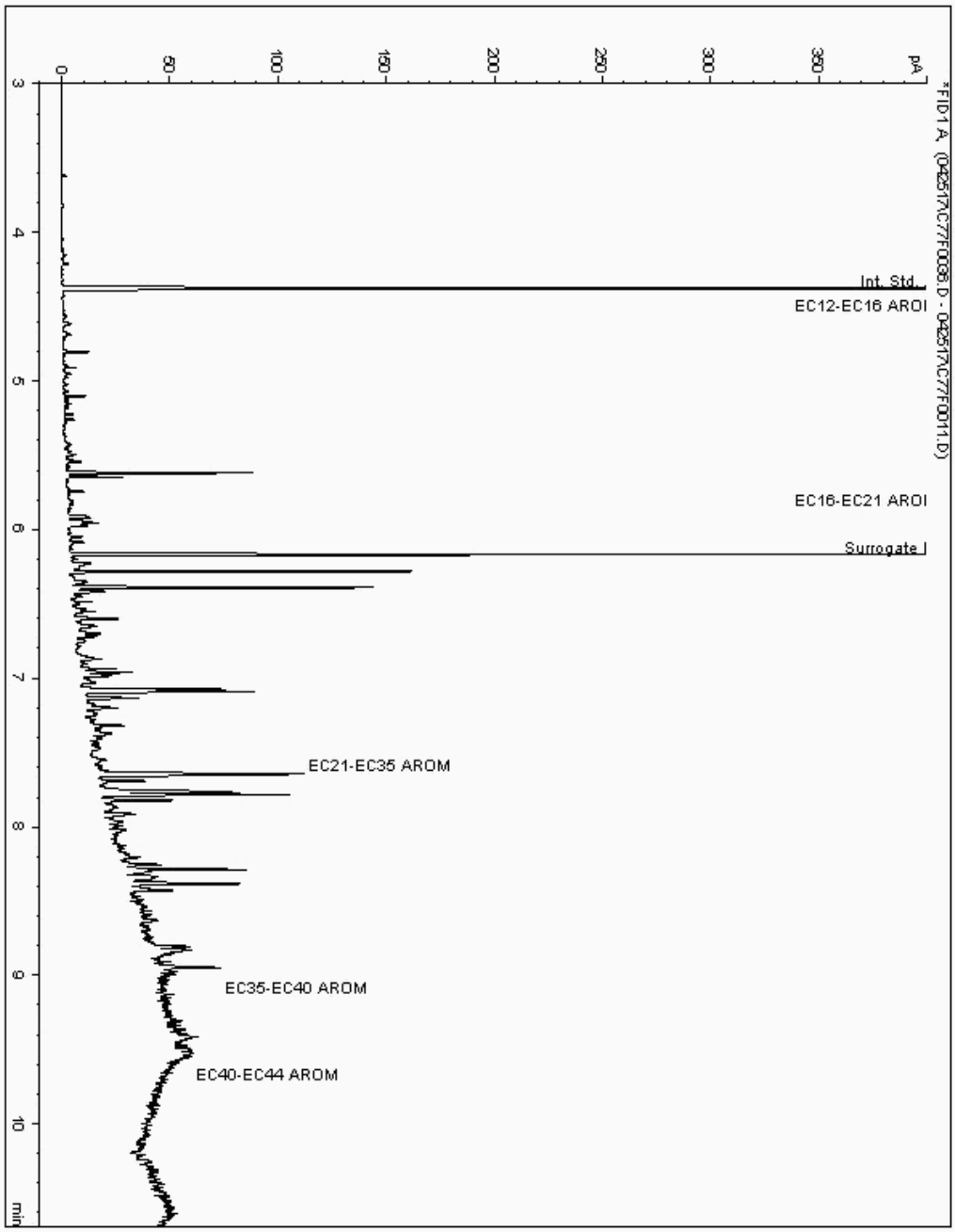
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15389368 **Sample ID :** W4WS314 **Depth :** 1.35 - 1.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14412875-
Date Acquired : 4/25/2017 11:30:14 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

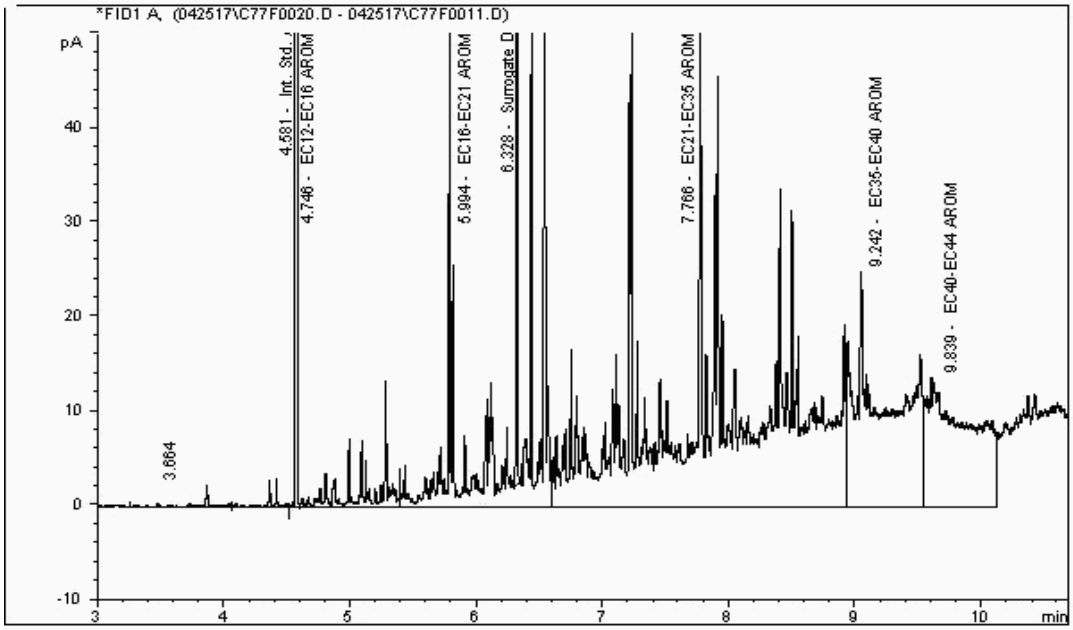
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15389416 **Sample ID :** W4WS315A **Depth :** 0.10 - 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412741-
Date Acquired : 25/04/2017 16:53:11 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

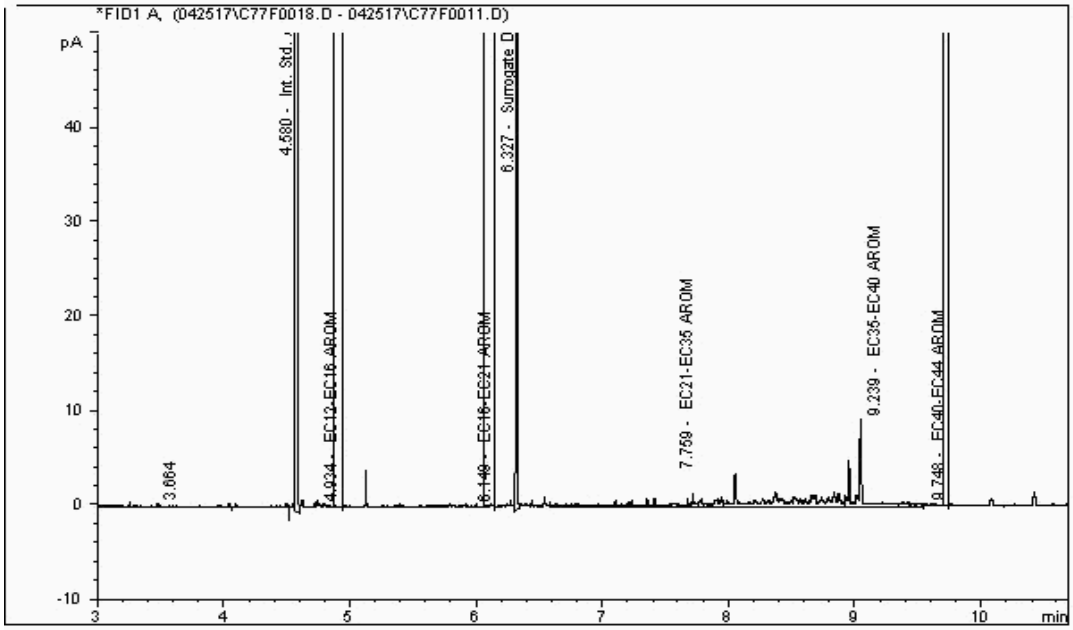
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15389460 **Sample ID :** W5HP306 **Depth :** 0.80 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412788-
Date Acquired : 25/04/2017 16:12:34 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

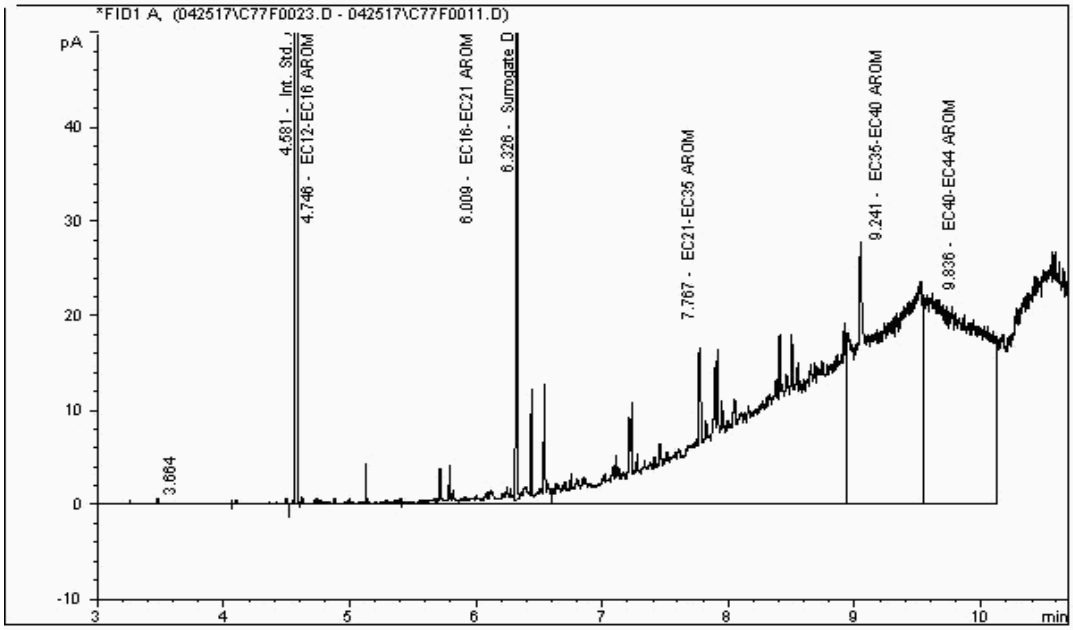
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15389539 **Sample ID :** W4WS316 **Depth :** 0.10 - 0.20

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412712-
Date Acquired : 25/04/2017 17:37:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

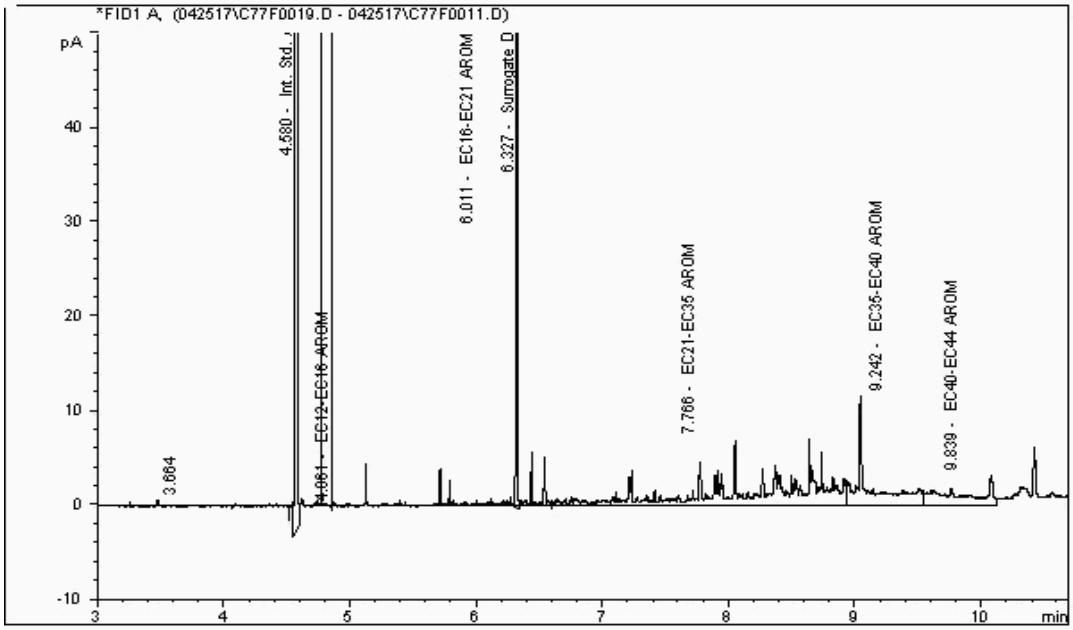
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15389585 **Sample ID :** W4BH305 **Depth :** 0.90 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412848-
Date Acquired : 25/04/2017 16:33:02 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

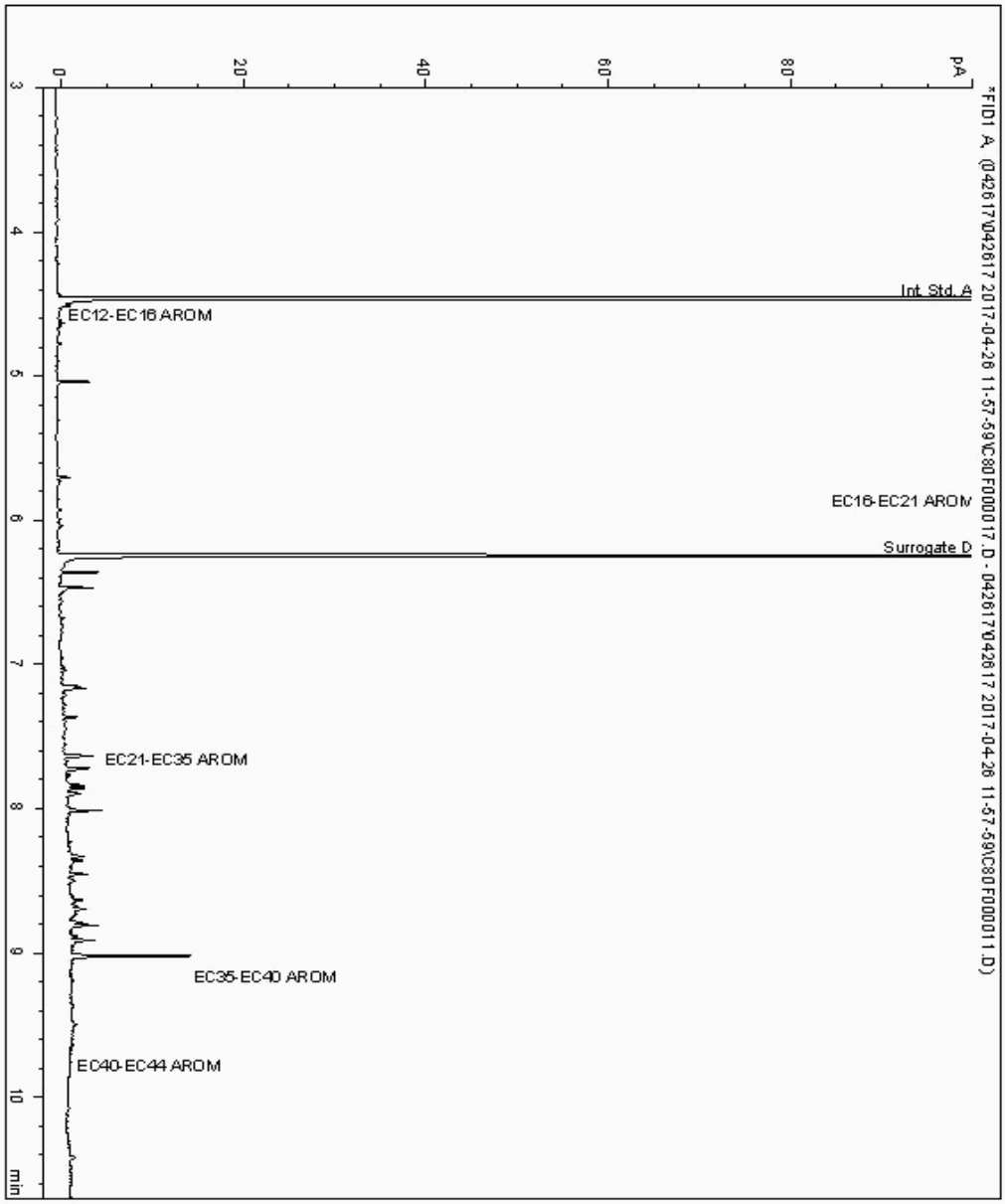
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15391651 **Sample ID :** W4WS314 **Depth :** 0.70 - 0.90

Speciated TPH - AROMS (C12 - C44)

Sample Identity: 14412824-
Date Acquired : 26/04/17 17:21:29
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

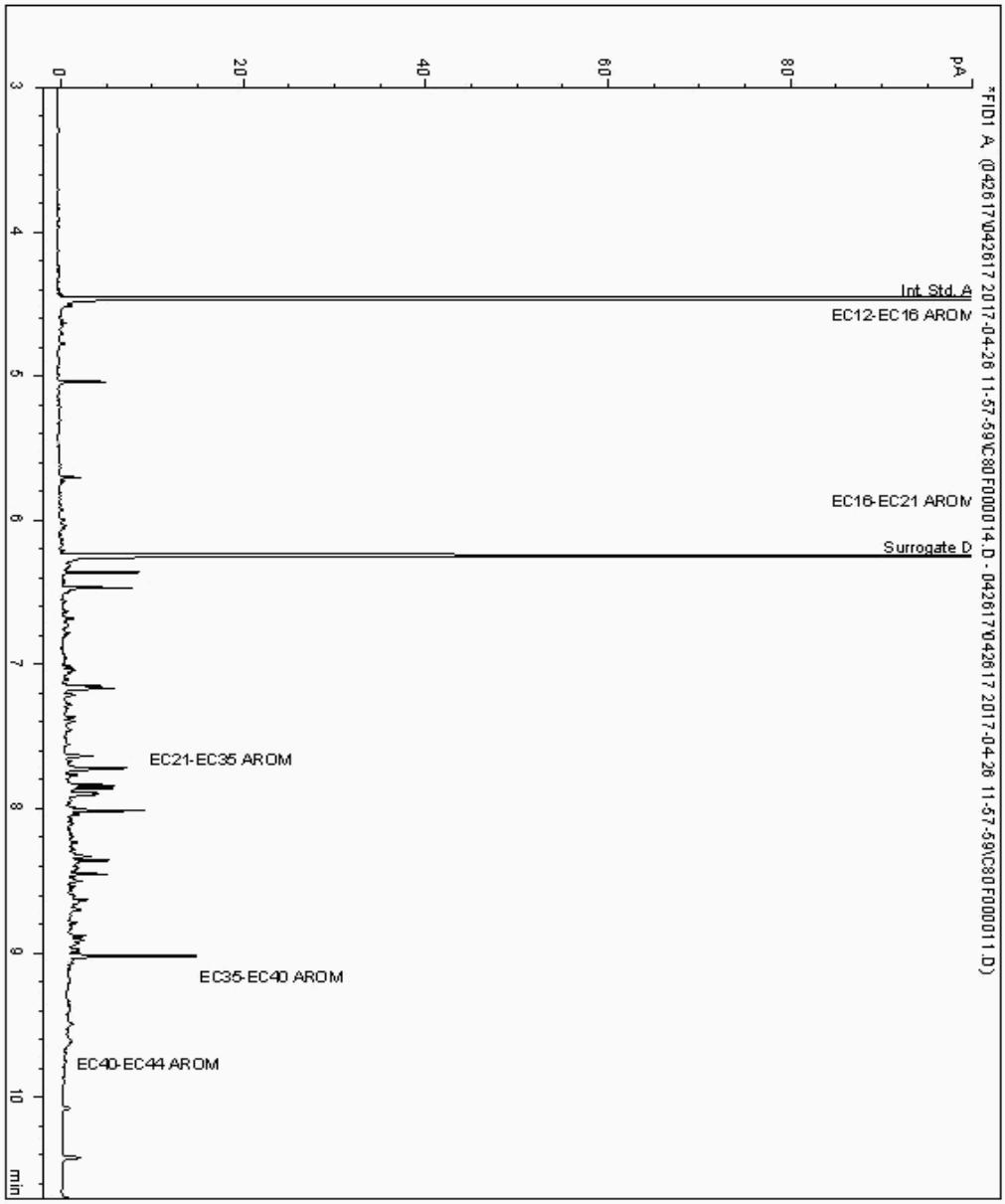
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15391827 **Sample ID :** W5HP306 **Depth :** 0.10 - 0.20

Speciated TPH - AROMS (C12 - C44)

Sample Identity: 14412771-
Date Acquired : 26/04/17 16:28:30
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

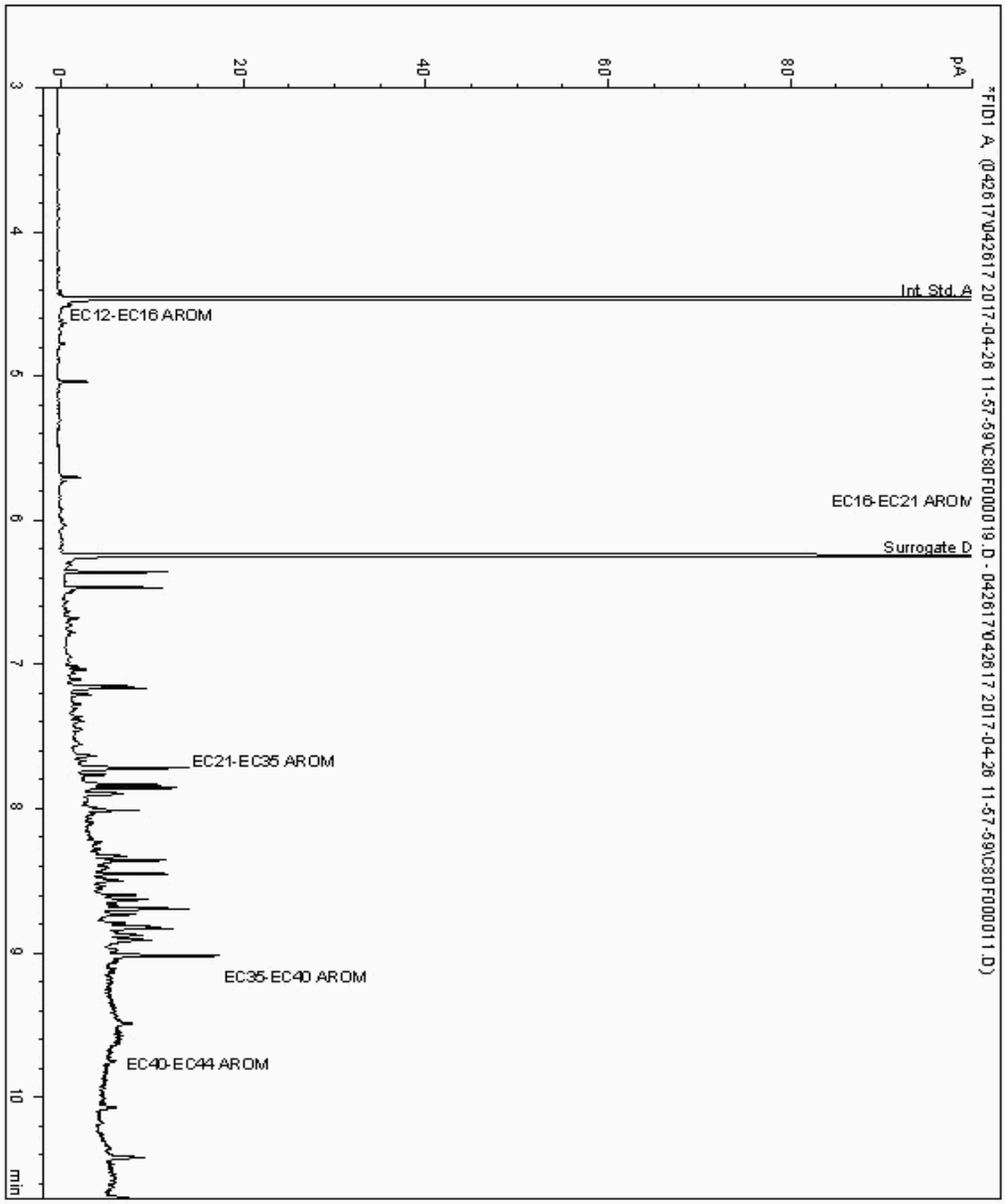
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15392080 **Sample ID :** W4BH305 **Depth :** 0.10 - 0.30

Speciated TPH - AROMS (C12 - C44)

Sample Identity: 14412807-
Date Acquired : 26/04/17 17:53:54
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

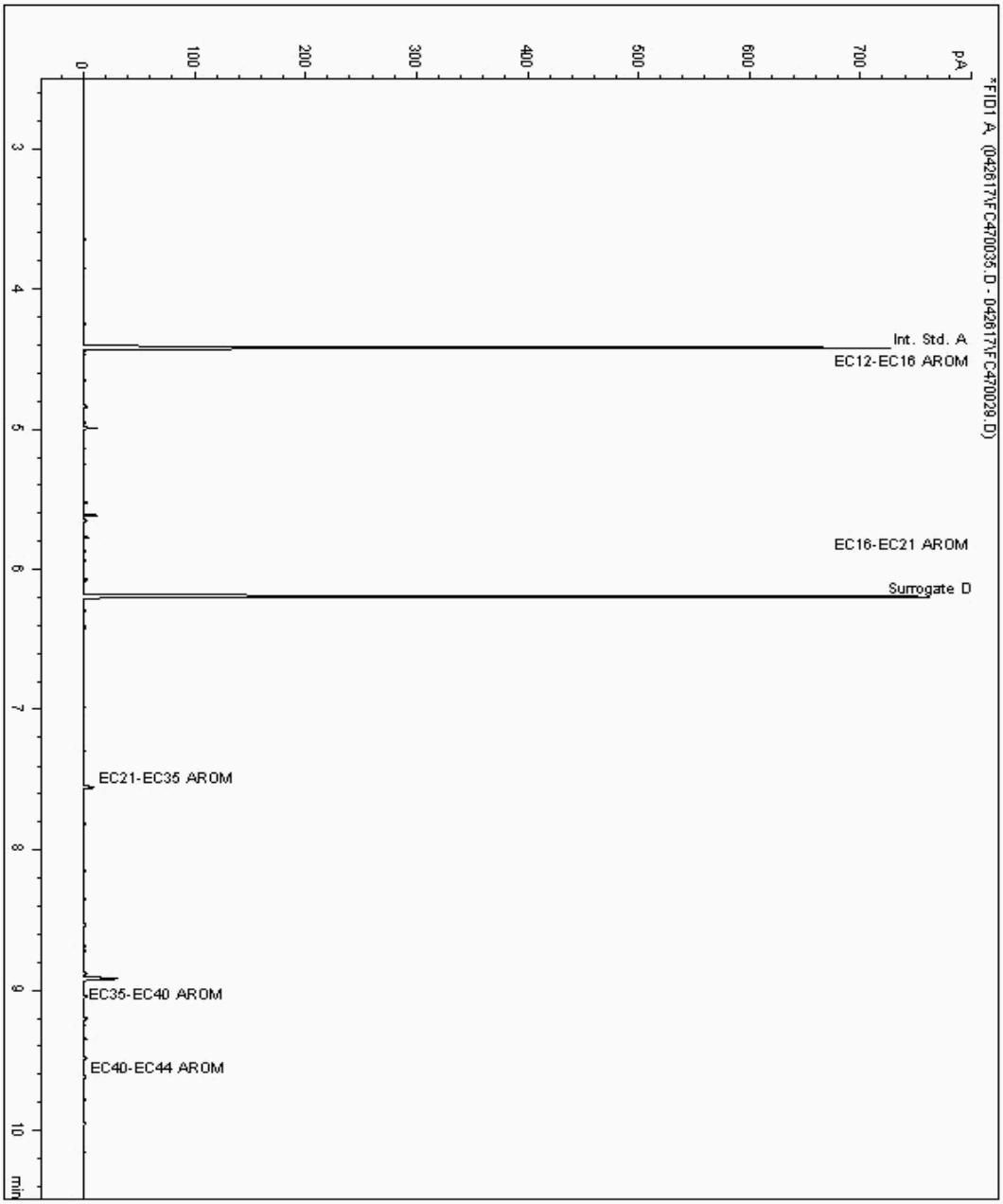
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15401298 **Sample ID :** W4WS314 **Depth :** 1.35 - 1.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14412890-
Date Acquired : 27/04/17 10:59:55 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

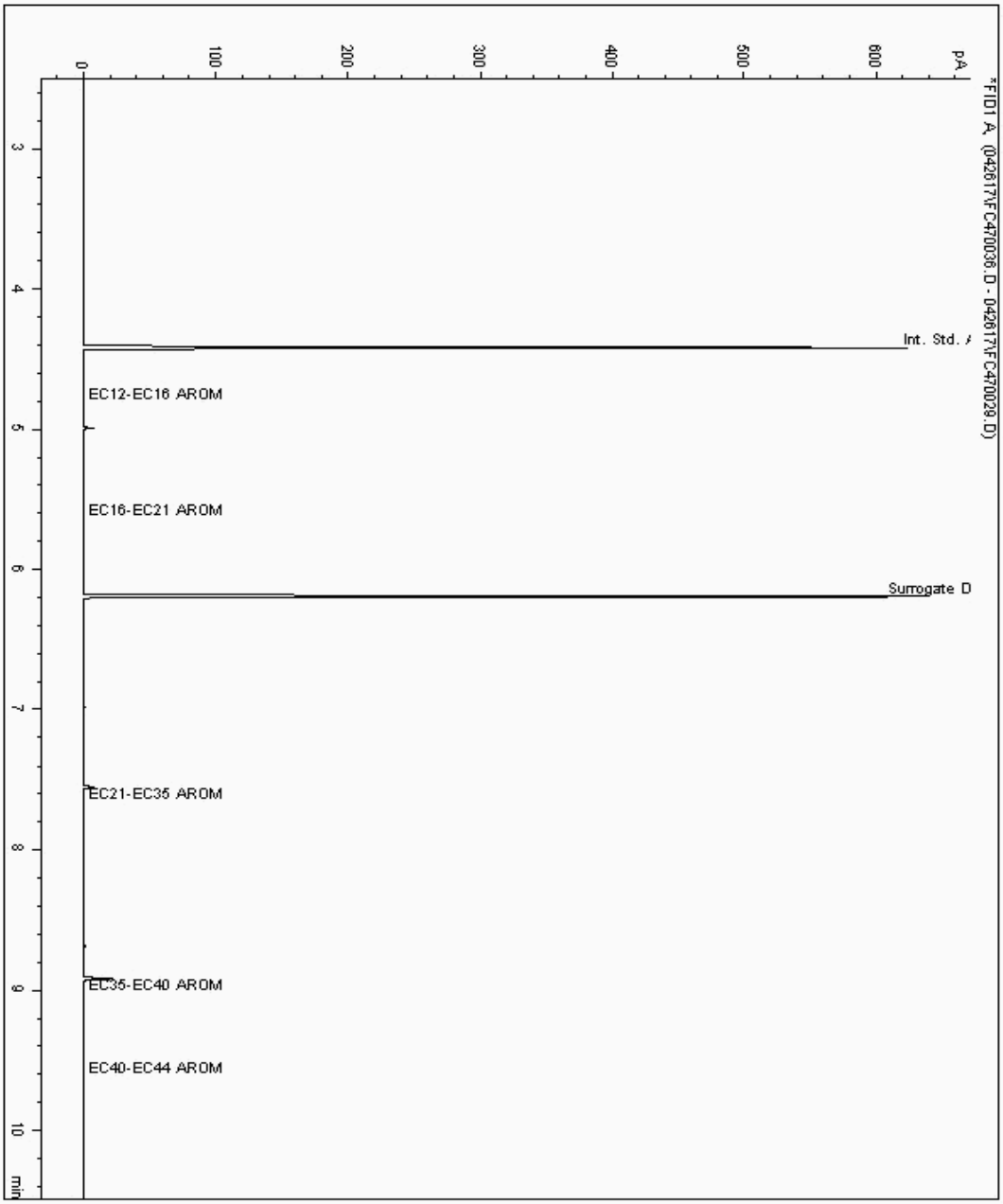
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15402837 **Sample ID :** W4BH305 **Depth :** 0.90 - 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14412906-
Date Acquired : 27/04/17 11:18:47 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.022



CERTIFICATE OF ANALYSIS

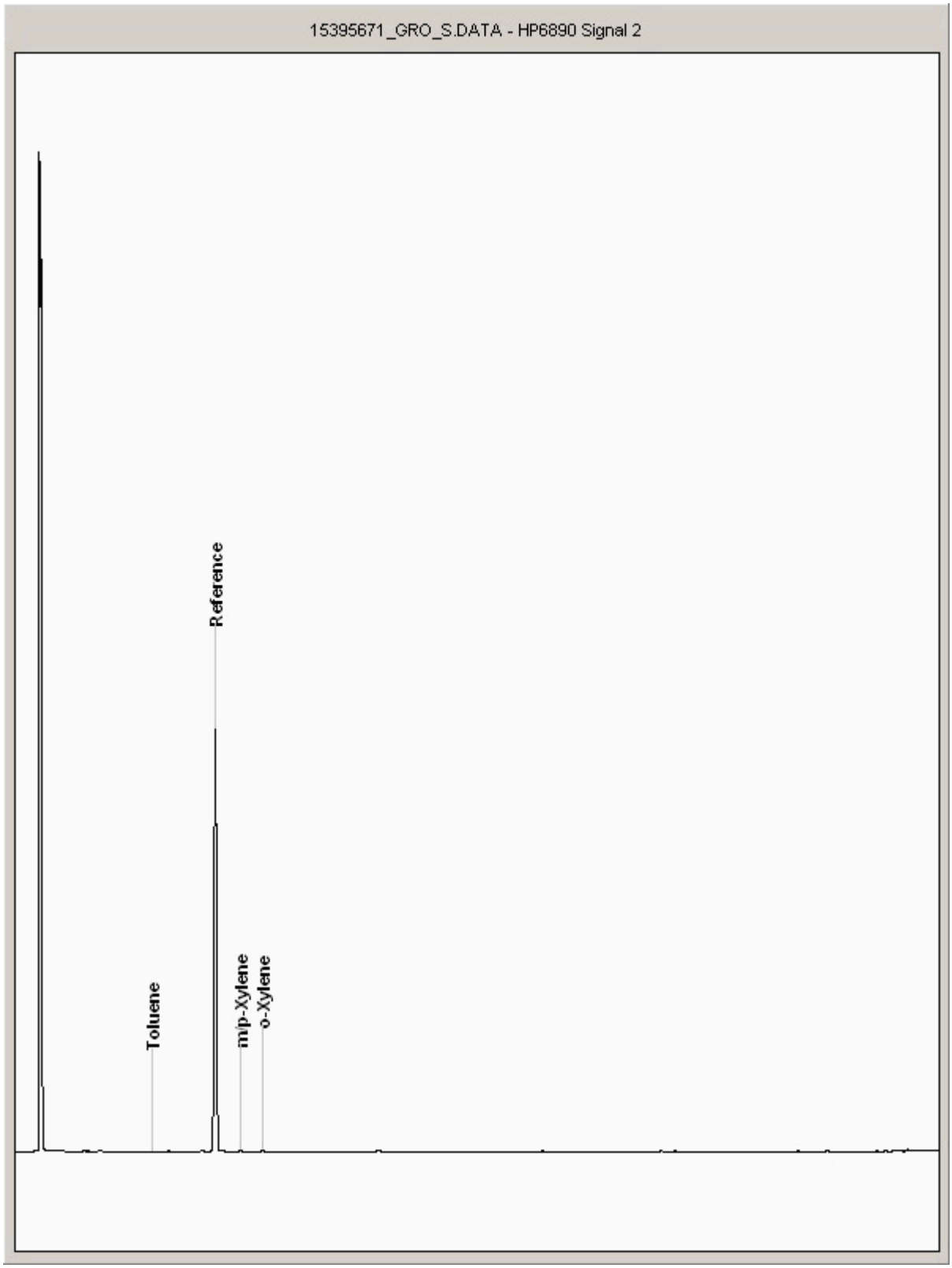
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15395671
Sample ID : W4BH305

Depth : 0.10 - 0.30



CERTIFICATE OF ANALYSIS

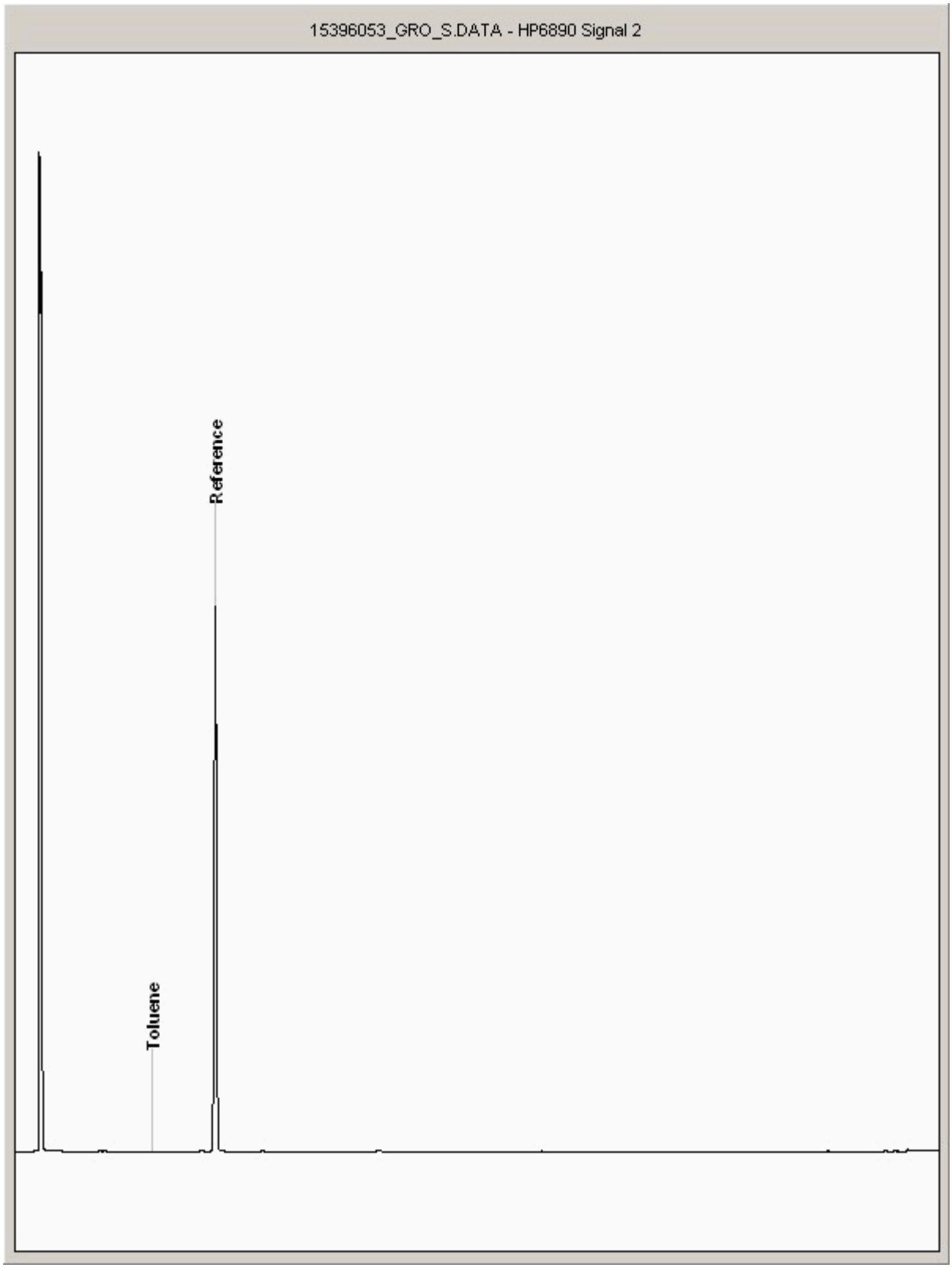
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15396053
Sample ID : W5HP306

Depth : 0.10 - 0.20



CERTIFICATE OF ANALYSIS

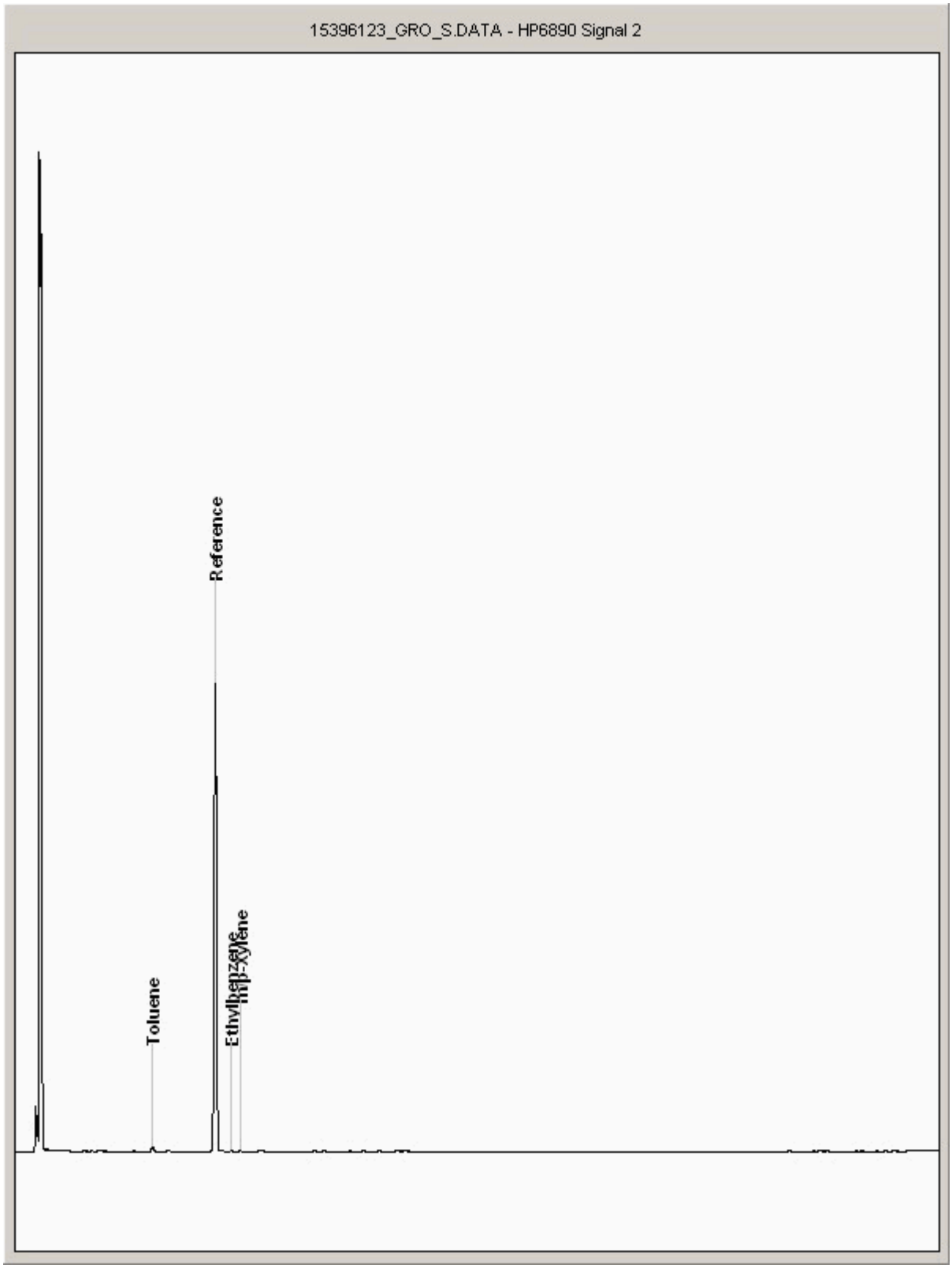
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15396123
Sample ID : W4WS314

Depth : 0.70 - 0.90



CERTIFICATE OF ANALYSIS

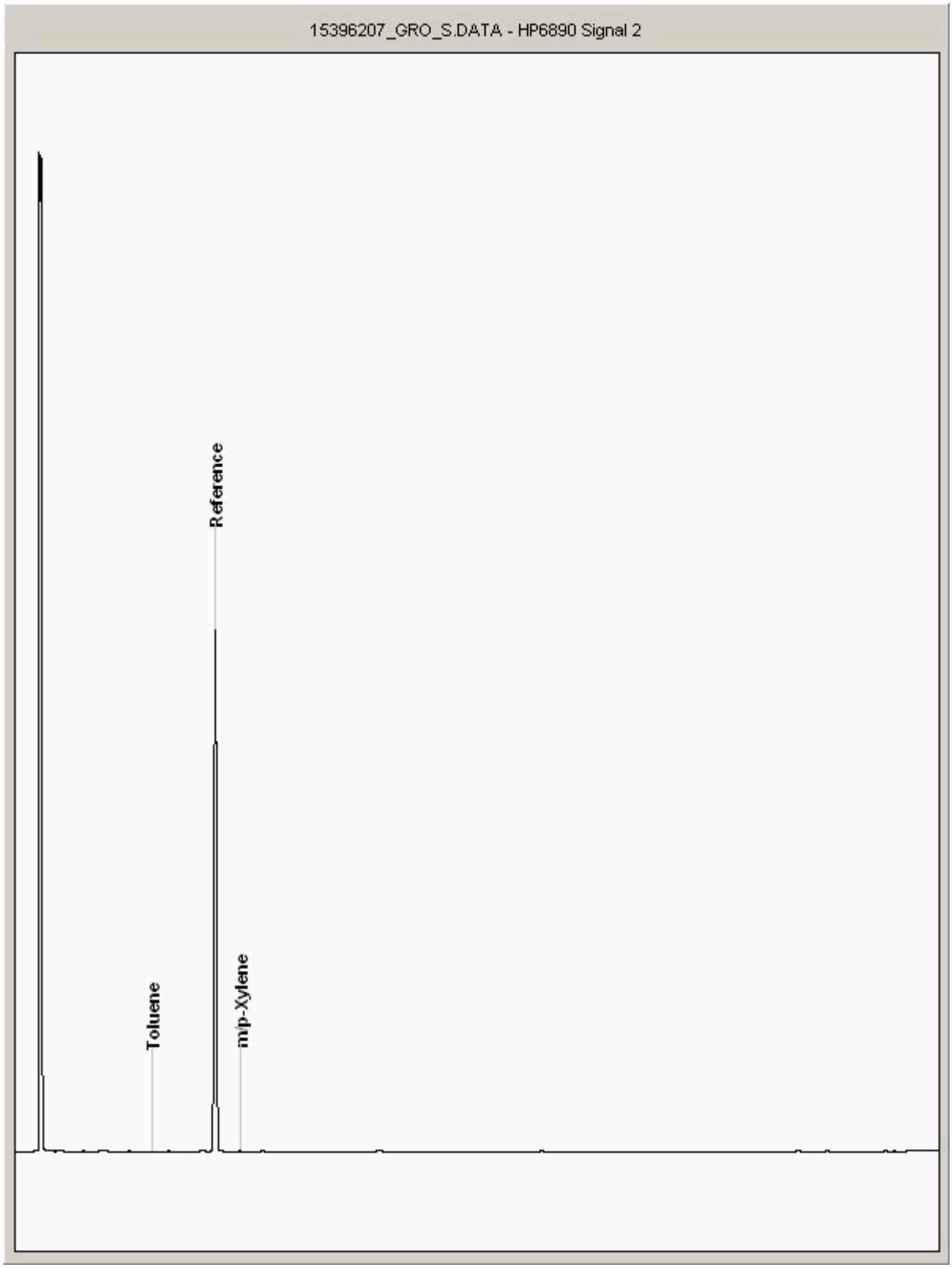
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15396207
Sample ID : W4BH305

Depth : 0.90 - 1.00



CERTIFICATE OF ANALYSIS

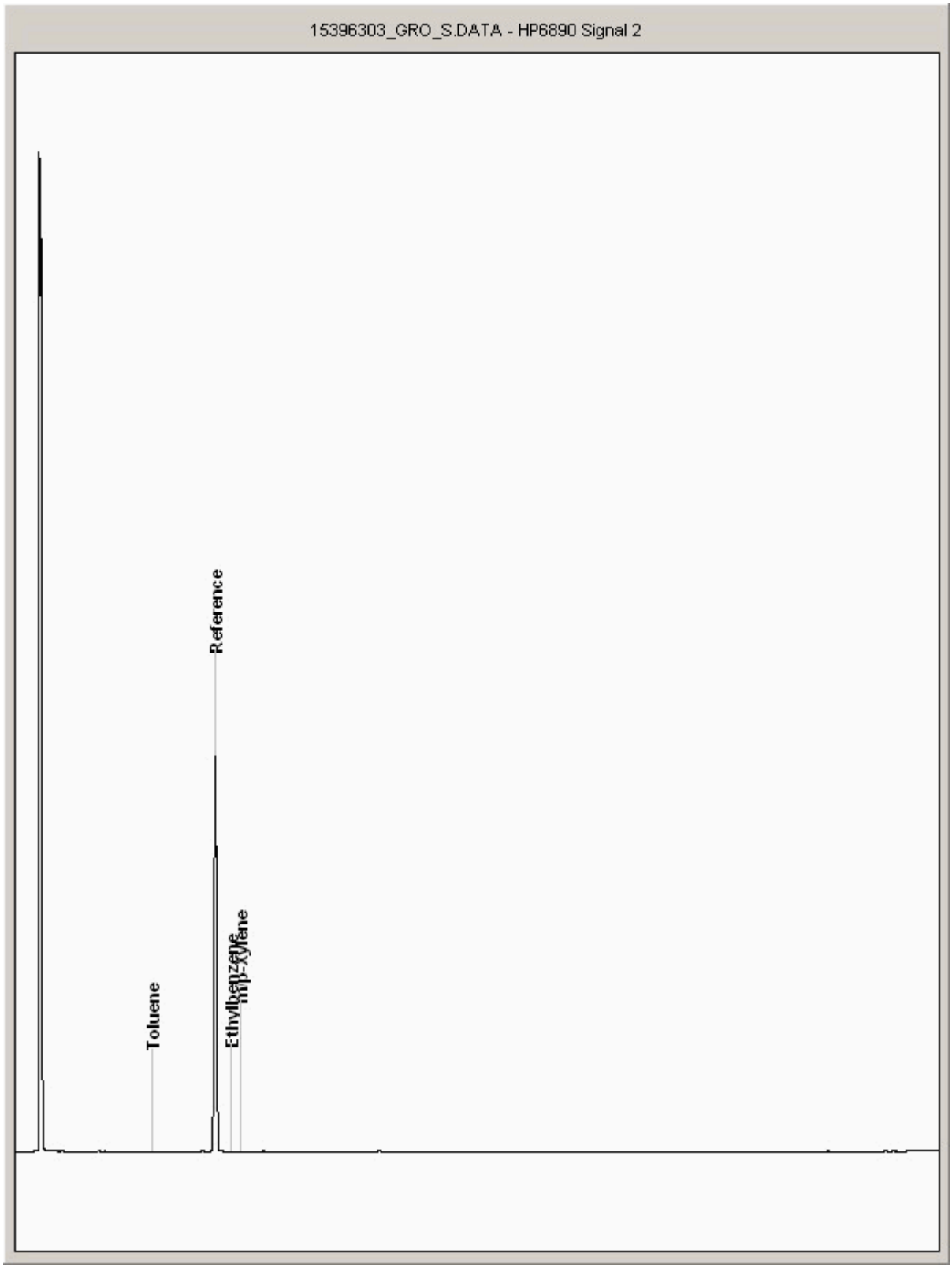
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15396303
Sample ID : W4WS315A

Depth : 0.10 - 0.30



CERTIFICATE OF ANALYSIS

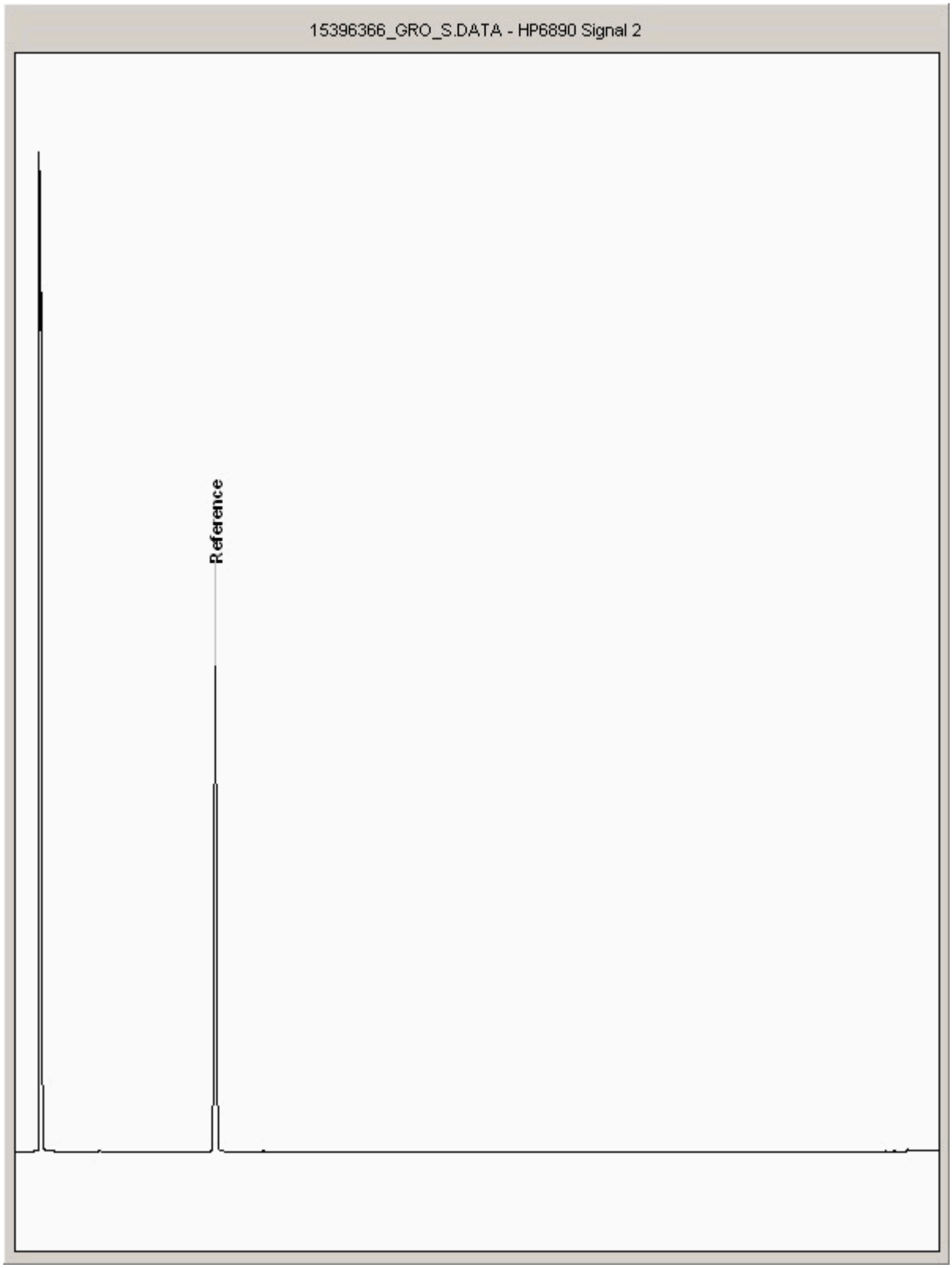
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15396366
Sample ID : W5HP306

Depth : 0.80 - 1.00



CERTIFICATE OF ANALYSIS

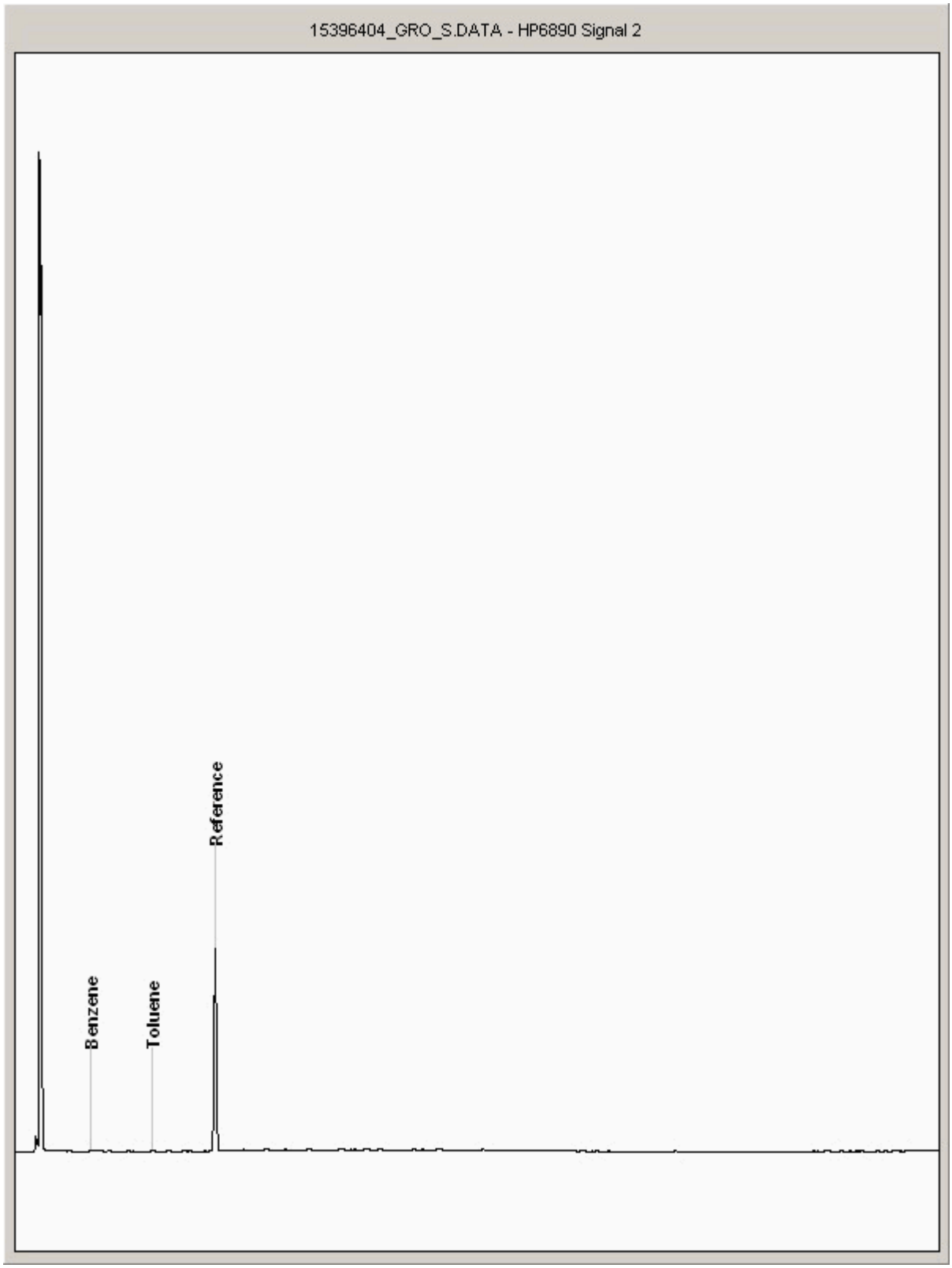
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15396404
Sample ID : W4WS314

Depth : 1.35 - 1.50



CERTIFICATE OF ANALYSIS

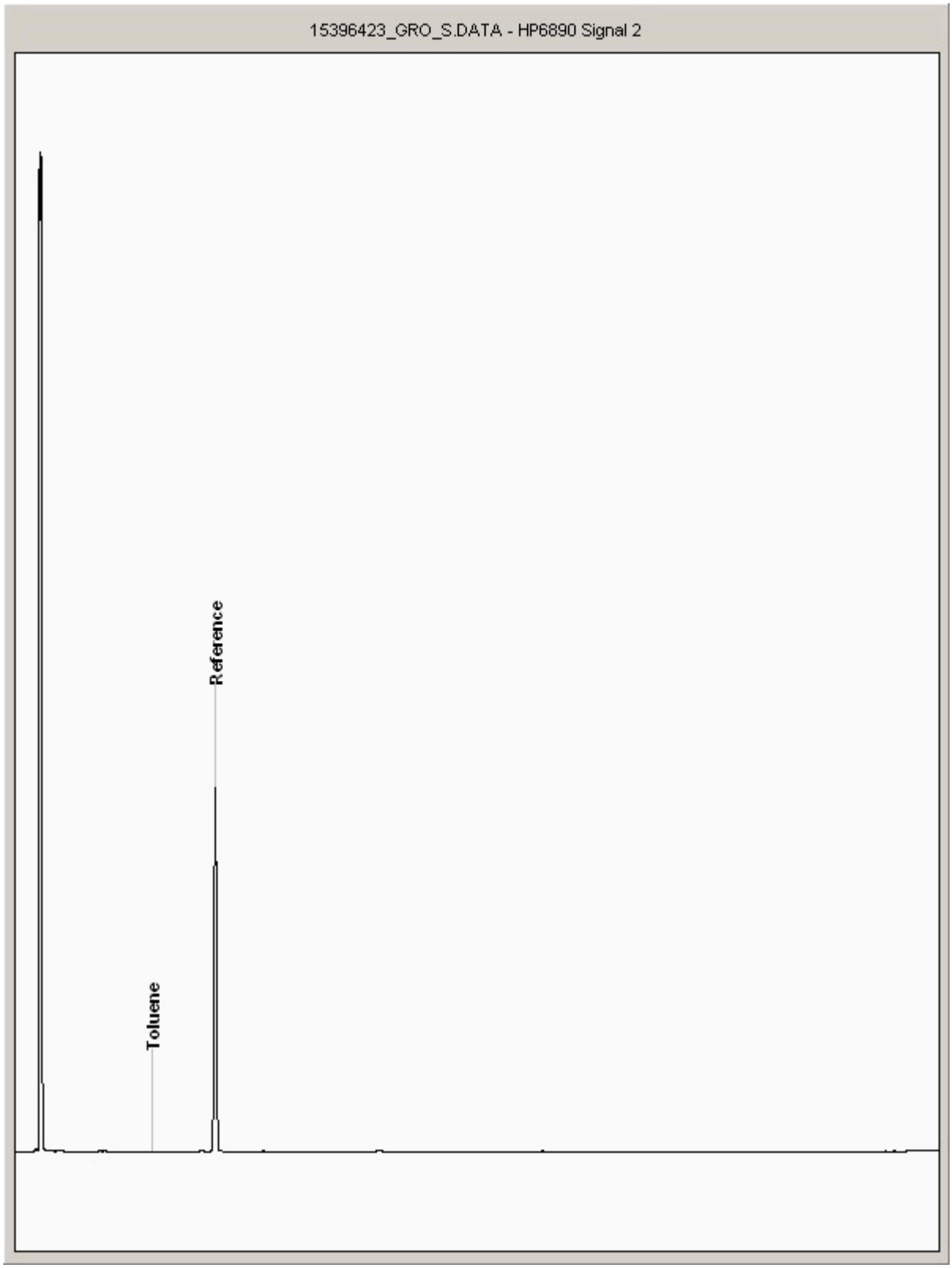
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15396423
Sample ID : W4WS316

Depth : 0.10 - 0.20



CERTIFICATE OF ANALYSIS

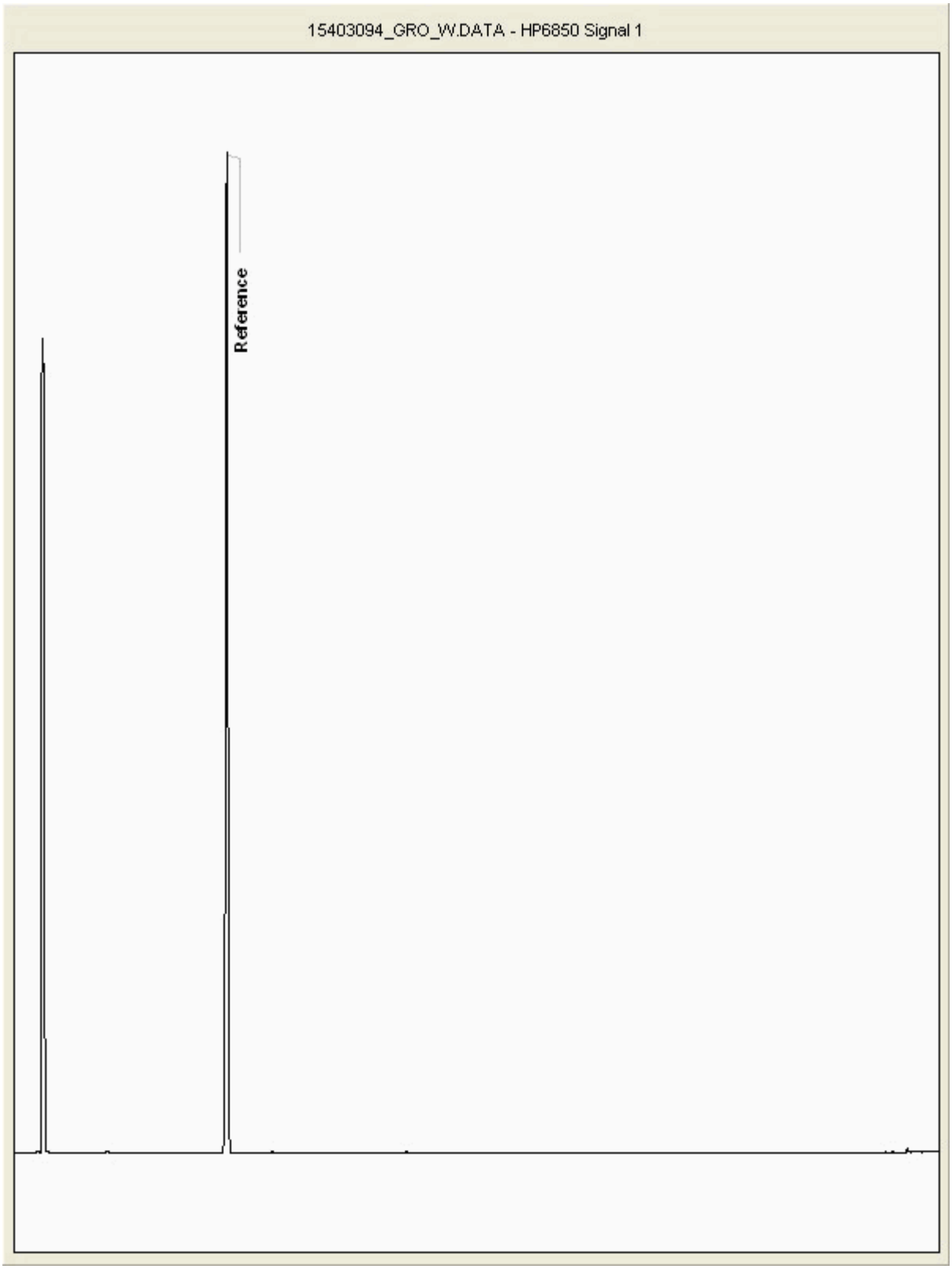
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15403094
Sample ID : W4BH305

Depth : 0.90 - 1.00



CERTIFICATE OF ANALYSIS

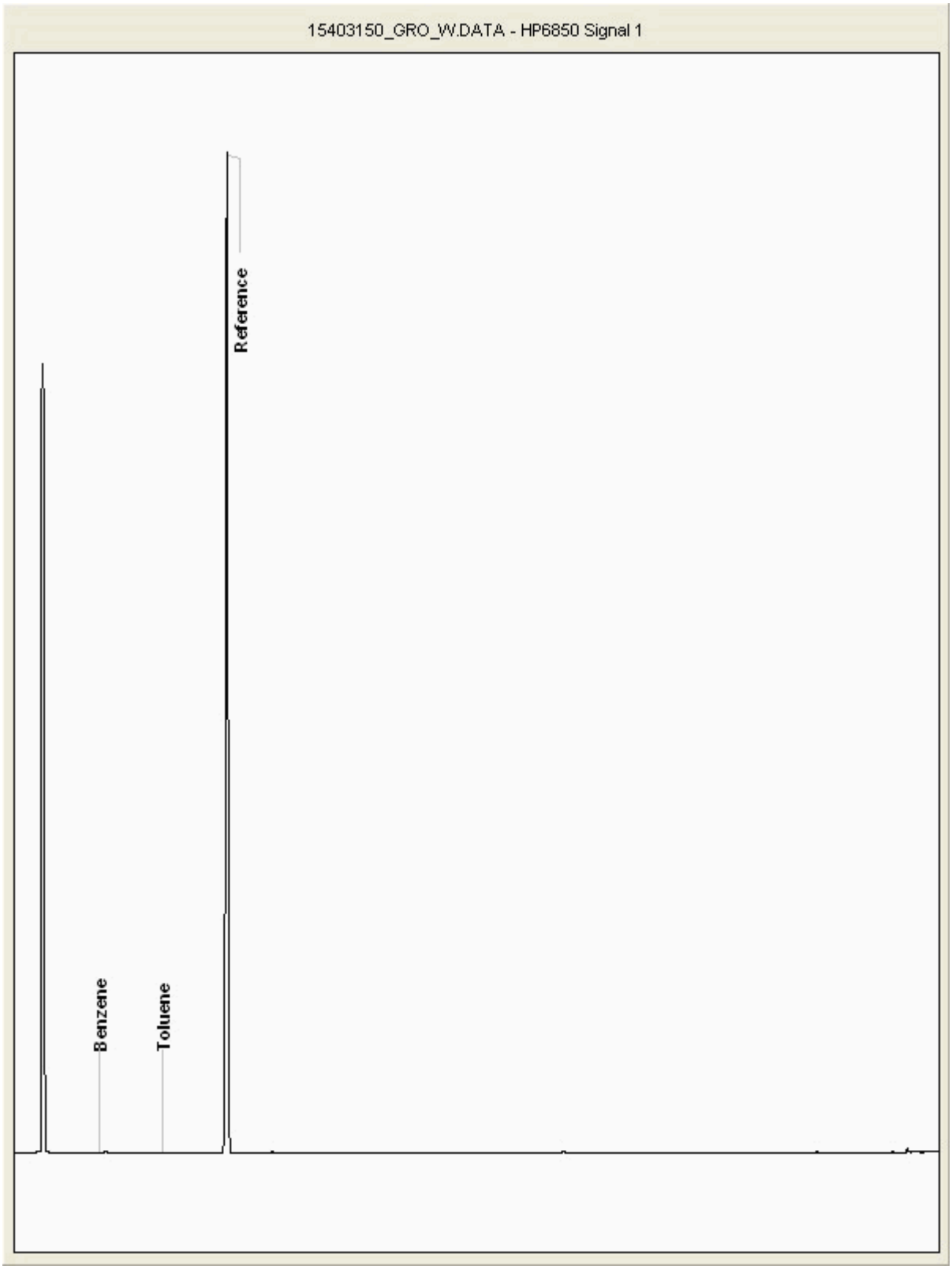
SDG:	170422-94	**Client Reference:**	70015362	**Report Number:**	436980
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	436858

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15403150
Sample ID : W4WS314

Depth : 1.35 - 1.50



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Certificate of Analysis

Report No.: 17-61413-1

Issue No.: **1**
Date of Issue **08/05/2017**

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	33617
Customer Reference:	170422-94
Quotation Reference:	161220/03
Description:	1 soil sample
Date Received:	26/04/2017
Date Started:	02/05/2017
Date Completed:	05/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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A member of the RPS Group plc. Terms and conditions apply - copy on request

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Results Summary

Report No.: 17-61413-1

Customer Reference: 170422-94

Customer Order No: 33617

					Customer Sample No	**15389615**
					Customer Sample ID	W4BH305
					RPS Sample No	327633
					Sample Type	**SOIL**
					Sample Depth (m)	0.9-1
					Sampling Date	19/04/2017
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	0.07
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

CERTIFICATE OF ANALYSIS

Work Order	: **PR1712830**	Issue Date	: 12-May-2017
Client	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: Hawarden Subcontracting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: hawsub@alcontrol.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Facsimile	: ----	Facsimile	: +420 284 081 635
Project	: 170422-94	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 02-May-2017
C-O-C number	: ----	Quote number	: PR2017ALSAL-GB0002 (CZ-251-17-0022)
Site	: ----	Date of test	: 04-May-2017 - 11-May-2017
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.
The laboratory declares that the test results relate only to the listed samples.

Responsible for accuracy

Testing Laboratory Accredited by CAI according to CSN EN ISO/IEC 17025:2005

Signatories		*Position*
Zdeněk Jirák		Environmental Business Unit Manager

Analytical Results

Sub-Matrix: SOIL			Client sample ID	15415815 W4BH305		----		----	
			Laboratory sample ID	PR1712830-001		----		----	
			Client sampling date / time	19-Apr-2017 00:00		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.1	%	**82.4**	± 6.0%	----	----	----	----
PCDDs and PCDFs (Dioxins and Furans)									
2378-TCDD	S-DFHMS03	-	ng/g DW	<0.00057	----	----	----	----	----
12378-PeCDD	S-DFHMS03	-	ng/g DW	<0.0014	----	----	----	----	----
123478-HxCDD	S-DFHMS03	-	ng/g DW	<0.0014	----	----	----	----	----
123678-HxCDD	S-DFHMS03	-	ng/g DW	<0.0014	----	----	----	----	----
123789-HxCDD	S-DFHMS03	-	ng/g DW	<0.0014	----	----	----	----	----
1234678-HpCDD	S-DFHMS03	-	ng/g DW	<0.0017	----	----	----	----	----
OCDD	S-DFHMS03	-	ng/g DW	<0.0021	----	----	----	----	----
2378-TCDF	S-DFHMS03	-	ng/g DW	<0.0029	----	----	----	----	----
12378-PeCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	----	----	----	----
23478-PeCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	----	----	----	----
123478-HxCDF	S-DFHMS03	-	ng/g DW	<0.0015	----	----	----	----	----
123678-HxCDF	S-DFHMS03	-	ng/g DW	<0.0015	----	----	----	----	----
123789-HxCDF	S-DFHMS03	-	ng/g DW	<0.0015	----	----	----	----	----
234678-HxCDF	S-DFHMS03	-	ng/g DW	<0.0015	----	----	----	----	----
1234678-HpCDF	S-DFHMS03	-	ng/g DW	<0.0016	----	----	----	----	----
1234789-HpCDF	S-DFHMS03	-	ng/g DW	<0.0016	----	----	----	----	----
OCDF	S-DFHMS03	-	ng/g DW	<0.0023	----	----	----	----	----
TEQ-Lowerbound	S-DFHMS03	-	ng/g DW	**0**	----	----	----	----	----
TEQ-Upperbound	S-DFHMS03	-	ng/g DW	**0.0033**	----	----	----	----	----

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, delivery date in brackets without a time component will be displayed instead. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: V Raji 906 Pardubice - Zelene Predmesti Czech Republic 530 02	
S-DFHMS03	CZ_SOP_D06_06_175 - except chap. 10.2.3.1, 10.2.3.7, 10.2.3.8, 10.2.5 (US EPA 1613-modified, CSN P CEN/TS 16190-modified): Determination of tetra- to octa-chlorinated dioxins and furanes by isotope dilution method using HRGC-HRMS and calculation of TEQ parameters from measured values. The samples were stored in laboratory in the darkness and under temperature <4°C. Actual LOQ are noticed in the annex.
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.

A `*` symbol preceeding any method indicates non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information.
The calculation methods of summation parameters are available on request in the client service.

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjecte to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	15 December 2017
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	170425-61
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	436986

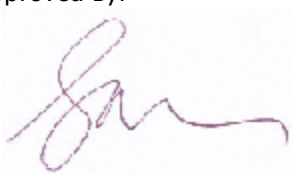
This report has been revised and directly supersedes 409098 in its entirety.

We received 60 samples on Tuesday April 25, 2017 and 44 of these samples were scheduled for analysis which was completed on Thursday May 18, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:



Sonia McWhan
Operations Manager

1291

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Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15393773	W4BH306	ES	0.10 - 0.30	20/04/2017
15393785	W4BH306	ES	0.90 - 1.00	20/04/2017
15393791	W4BH306	ES	2.20 - 2.50	20/04/2017
15393798	W4BH306	ES	3.50 - 3.80	20/04/2017
15393807	W4BH306	ES	5.00 - 5.30	20/04/2017
15393822	W4BH306	ES	7.50 - 7.80	20/04/2017
15393639	W4TP307	ES	0.35	21/04/2017
15393653	W4TP307	ES	1.00	21/04/2017
15393655	W4TP307	ES	3.00	21/04/2017
15393625	W4TP308	ES	0.40	21/04/2017
15393631	W4TP308	ES	1.70	21/04/2017
15393606	W4TP309	ES	0.10	21/04/2017
15393611	W4TP309	ES	1.00	21/04/2017
15393619	W4TP309	ES	2.50	21/04/2017
15393590	W4TP310	ES	0.40	21/04/2017
15393596	W4TP310	ES	1.25	21/04/2017
15393601	W4TP310	ES	2.90	21/04/2017
15393744	W4TP311	ES	0.60	21/04/2017
15393736	W4TP311	ES	1.70	21/04/2017
15393757	W4TP311	ES	3.00	21/04/2017
15393661	W4TP312	ES	0.40	21/04/2017
15393673	W4TP312	ES	1.90	21/04/2017
15394027	W4TP313	ES	0.30	21/04/2017
15394032	W4TP313	ES	0.70	21/04/2017
15393585	W4TP313	ES	2.20	21/04/2017
15393834	W4TP314	ES	0.25	21/04/2017
15393919	W4TP314	ES	0.90	21/04/2017
15393998	W4TP314	ES	1.50	21/04/2017
15394019	W4TP314	ES	2.65	21/04/2017
15393715	W4TP315	ES	0.10	21/04/2017
15393728	W4TP315	ES	0.90	21/04/2017
15393690	W4TP316	ES	0.40	21/04/2017
15393699	W4TP316	ES	1.30	21/04/2017
15393707	W4TP316	ES	2.20	21/04/2017
15393579	W5TP301	ES	0.15	21/04/2017
15393646	W5TP301	ES	0.50	21/04/2017
15393722	W5TP301	ES	2.50	21/04/2017
15393679	W5TP304	ES	0.20	21/04/2017
15393684	W5TP304	ES	0.50	21/04/2017
15393988	W4WS316	ES	1.75 - 1.90	20/04/2017
15394008	W4WS316	ES	2.30 - 2.40	20/04/2017
15393843	W7WS308	ES	0.30	20/04/2017
15393859	W7WS308	ES	0.80	20/04/2017
15393867	W7WS308	ES	1.70	20/04/2017
15393872	W7WS308	ES	2.40	20/04/2017
15393880	W7WS308	ES	3.50	20/04/2017
15393886	W7WS309	ES	0.30	20/04/2017
15393897	W7WS309	ES	0.90	20/04/2017
15393903	W7WS309	ES	1.70	20/04/2017
15393908	W7WS309	ES	2.40	20/04/2017

CERTIFICATE OF ANALYSIS

Validated

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15393913	W7WS309	ES	3.50	20/04/2017
15393925	W7WS309	ES	4.70	20/04/2017
15393962	W7WS310	ES	0.00 - 0.20	20/04/2017
15393967	W7WS310	ES	1.00 - 1.10	20/04/2017
15393973	W7WS310	ES	1.85 - 1.90	20/04/2017
15393980	W7WS310	ES	2.80 - 2.90	20/04/2017
15393930	W7WS311	ES	0.10 - 0.30	20/04/2017
15393936	W7WS311	ES	0.80 - 0.90	20/04/2017
15393946	W7WS311	ES	1.50 - 1.60	20/04/2017
15393955	W7WS311	ES	2.80 - 2.90	20/04/2017

Maximum Sample/Coolbox Temperature (°C) : 7.4

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			15393773			15393785			15393791			15393798			15393807			15393653			15393655			15393625			15393631
Lab Sample No(s)																											
Customer Sample Reference			W4BH306			W4BH306			W4BH306			W4BH306			W4BH306			W4TP307			W4TP307			W4TP308			W4TP308
AGS Reference			ES			ES			ES			ES			ES			ES			ES			ES			ES
Depth (m)			0.10 - 0.30			0.90 - 1.00			2.20 - 2.50			3.50 - 3.80			5.00 - 5.30			1.00			3.00			0.40			1.70
Container			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)		250g Amber Jar (ALE210)	60g VOC (ALE215)		400g Tub (ALE214)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)				
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4					X			X																		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 10				X			X			X			X			X										
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 39		X			X			X								X	X			X			X		X
CEN Readings	All	NDPs: 0 Tests: 4					X			X																		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 40	X			X			X			X			X			X	X		X			X			X
Dioxins/Furans (S)*	All	NDPs: 6 Tests: 3				X			N			X						N										
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4					X			X																		
Dissolved Tin by ICPMS	All	NDPs: 0 Tests: 4					X			X																		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4					X			X																		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 44	X			X			X			X			X			X	X		X			X			X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4					X			X																		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 44	X			X			X			X			X			X	X		X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 44			X			X			X		X			X		X		X			X			X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 4					X			X																		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 44	X			X			X			X			X			X	X		X			X			X

15393744	W4TP311	ES	0.60	400g Tub (ALE214)	S			X		X					X		X			X
15393601	W4TP310	ES	2.90	60g VOC (ALE215)	S														X		
				400g Tub (ALE214)	S			X													
				250g Amber Jar (ALE210)	S					X					X		X			X
15393596	W4TP310	ES	1.25	60g VOC (ALE215)	S														X		
				400g Tub (ALE214)	S			X													
				250g Amber Jar (ALE210)	S					X					X		X			X
15393590	W4TP310	ES	0.40	60g VOC (ALE215)	S														X		
				400g Tub (ALE214)	S			X													
				250g Amber Jar (ALE210)	S					X					X		X			X
15393619	W4TP309	ES	2.50	60g VOC (ALE215)	S														X		
				400g Tub (ALE214)	S			X													
				250g Amber Jar (ALE210)	S					X					X		X			X
15393611	W4TP309	ES	1.00	60g VOC (ALE215)	S														X		
				400g Tub (ALE214)	S			X													
				250g Amber Jar (ALE210)	S					X					X		X			X
15393606	W4TP309	ES	0.10	60g VOC (ALE215)	S														X		
				400g Tub (ALE214)	S			X													
				250g Amber Jar (ALE210)	S					X					X		X			X
15393631	W4TP308	ES	1.70	60g VOC (ALE215)	S														X		

CERTIFICATE OF ANALYSIS

Validated

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15393773			15393785			15393791			15393798		15393807	15393653		15393655			15393625			15393631	
Customer Sample Reference			W4BH306			W4BH306			W4BH306			W4BH306		W4BH306	W4TP307		W4TP307			W4TP308			W4TP308	
AGS Reference			ES			ES			ES			ES		ES	ES		ES			ES			ES	
Depth (m)			0.10 - 0.30			0.90 - 1.00			2.20 - 2.50			3.50 - 3.80		5.00 - 5.30	1.00		3.00			0.40			1.70	
Container			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	400g Tub (ALE214)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)		
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 4					X			X														
Low Level Cyanide (W)	All	NDPs: 0 Tests: 4					X			X														
Mercury Dissolved	All	NDPs: 0 Tests: 4					X			X														
Metals in solid samples by OES	All	NDPs: 0 Tests: 44	X			X			X			X		X	X	X	X		X				X	
Organotins in Aqueous Samples	All	NDPs: 0 Tests: 4					X			X														
Organotins on soils*	All	NDPs: 0 Tests: 13							X						X									
PAH by GCMS	All	NDPs: 0 Tests: 44	X			X			X			X		X	X	X	X		X				X	
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 4					X			X														
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 2					X			X														
PCBs by GCMS	All	NDPs: 0 Tests: 8							X			X			X									
pH	All	NDPs: 0 Tests: 44	X			X			X			X		X	X	X	X		X				X	
pH Value	All	NDPs: 0 Tests: 4					X			X														
Sample description	All	NDPs: 0 Tests: 44	X			X			X			X		X	X	X	X		X				X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 23				X			X			X			X									X
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 3					X			X														

| 15393744 | W4TP311 | ES | 0.60 | 400g Tub (ALE214) | S | | |

CERTIFICATE OF ANALYSIS

Validated

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
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TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)				15393773			15393785			15393791			15393798		15393807		15393653		15393655		15393625		15393631
Customer Sample Reference				W4BH306			W4BH306			W4BH306			W4BH306		W4BH306		W4TP307		W4TP307		W4TP308		W4TP308
AGS Reference				ES			ES			ES			ES		ES		ES		ES		ES		ES
Depth (m)				0.10 - 0.30			0.90 - 1.00			2.20 - 2.50			3.50 - 3.80		5.00 - 5.30		1.00		3.00		0.40		1.70
Container				250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	400g Tub (ALE214)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)
Sample Type				S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
TPH CWG (W)	All	NDPs: 0 Tests: 4						X			X												
TPH CWG GC (S)	All	NDPs: 0 Tests: 44		X			X			X			X		X		X	X		X			X
VOC MS (S)	All	NDPs: 0 Tests: 44				X			X			X		X		X	X		X			X	
VOC MS (W)	All	NDPs: 0 Tests: 4						X			X												

15393744	W4TP311	ES	0.60	400g Tub (ALE214)	S			X		
15393601	W4TP310	ES	2.90	60g VOC (ALE215)	S				X	
				400g Tub (ALE214)	S					
				250g Amber Jar (ALE210)	S			X		
15393596	W4TP310	ES	1.25	60g VOC (ALE215)	S				X	
				400g Tub (ALE214)	S					
				250g Amber Jar (ALE210)	S			X		
15393590	W4TP310	ES	0.40	60g VOC (ALE215)	S				X	
				400g Tub (ALE214)	S					
				250g Amber Jar (ALE210)	S			X		
15393619	W4TP309	ES	2.50	60g VOC (ALE215)	S				X	
				400g Tub (ALE214)	S					
				250g Amber Jar (ALE210)	S			X		
15393611	W4TP309	ES	1.00	60g VOC (ALE215)	S				X	
				400g Tub (ALE214)	S					
				250g Amber Jar (ALE210)	S			X		
15393606	W4TP309	ES	0.10	60g VOC (ALE215)	S				X	
				400g Tub (ALE214)	S					
				250g Amber Jar (ALE210)	S			X		
15393631	W4TP308	ES	1.70	60g VOC (ALE215)	S				X	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
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TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15393744	15393736		15393661		15393673			15394027			15394032			15393585			15393919		15394019
			Customer Sample Reference	W4TP311	W4TP311		W4TP312		W4TP312			W4TP313			W4TP313			W4TP313			W4TP314		W4TP314
			AGS Reference	ES	ES		ES		ES			ES			ES			ES			ES		ES
			Depth (m)	0.60	1.70		0.40		1.90			0.30			0.70			2.20			0.90		2.65
			Container	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammonium Soil by Titration	All	NDPs: 0 Tests: 10												X						X			X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 39		X		X		X			X			X			X			X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 40		X		X		X						X			X			X			X
Dioxins/Furans (S)*	All	NDPs: 6 Tests: 3												N						N			N
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 44		X		X		X			X			X			X			X			X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 44		X		X		X			X			X			X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 44	X		X		X		X				X			X			X			X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 44		X		X		X			X			X			X			X			X
Metals in solid samples by OES	All	NDPs: 0 Tests: 44		X		X		X			X			X			X			X			X
Organotins on soils*	All	NDPs: 0 Tests: 13						X						X						X			X
PAH by GCMS	All	NDPs: 0 Tests: 44		X		X		X			X			X			X			X			X
PCBs by GCMS	All	NDPs: 0 Tests: 8												X						X			X
pH	All	NDPs: 0 Tests: 44		X		X		X			X			X			X			X			X
Sample description	All	NDPs: 0 Tests: 44		X		X		X			X			X			X			X			X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 23		X				X									X			X			X

| | | |

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
TPH CWG GC (S)	All	NDPs: 0 Tests: 44	15393744	W4TP311	ES	0.60	60g VOC (ALE215)	S
			15393736	W4TP311	ES	1.70	400g Tub (ALE214)	S
			15393736	W4TP311	ES	1.70	60g VOC (ALE215)	S
			15393661	W4TP312	ES	0.40	400g Tub (ALE214)	S
			15393661	W4TP312	ES	0.40	60g VOC (ALE215)	S
			15393673	W4TP312	ES	1.90	400g Tub (ALE214)	S
			15393673	W4TP312	ES	1.90	60g VOC (ALE215)	S
			15394027	W4TP313	ES	0.30	250g Amber Jar (ALE210)	S
			15394027	W4TP313	ES	0.30	400g Tub (ALE214)	S
			15394027	W4TP313	ES	0.30	60g VOC (ALE215)	S
			15394032	W4TP313	ES	0.70	250g Amber Jar (ALE210)	S
			15394032	W4TP313	ES	0.70	400g Tub (ALE214)	S
			15394032	W4TP313	ES	0.70	60g VOC (ALE215)	S
			15393585	W4TP313	ES	2.20	250g Amber Jar (ALE210)	S
			15393585	W4TP313	ES	2.20	400g Tub (ALE214)	S
			15393585	W4TP313	ES	2.20	60g VOC (ALE215)	S
			15393919	W4TP314	ES	0.90	250g Amber Jar (ALE210)	S
			15393919	W4TP314	ES	0.90	400g Tub (ALE214)	S
			15393919	W4TP314	ES	0.90	60g VOC (ALE215)	S
			15394019	W4TP314	ES	2.65	250g Amber Jar (ALE210)	S
				X			400g Tub (ALE214)	
			X		X		60g VOC (ALE215)	
				X			400g Tub (ALE214)	
			X		X		60g VOC (ALE215)	
				X			400g Tub (ALE214)	
			X		X		60g VOC (ALE215)	
							250g Amber Jar (ALE210)	
							400g Tub (ALE214)	
				X			60g VOC (ALE215)	
				X			250g Amber Jar (ALE210)	
							400g Tub (ALE214)	
				X			60g VOC (ALE215)	
				X			250g Amber Jar (ALE210)	
							400g Tub (ALE214)	
				X			60g VOC (ALE215)	
							250g Amber Jar (ALE210)	
VOC MS (S)	All	NDPs: 0 Tests: 44	X		X		60g VOC (ALE215)	S
				X			400g Tub (ALE214)	S
			X		X		60g VOC (ALE215)	S
				X			400g Tub (ALE214)	S
			X		X		60g VOC (ALE215)	S
				X			400g Tub (ALE214)	S
			X		X		60g VOC (ALE215)	S
							250g Amber Jar (ALE210)	S
							400g Tub (ALE214)	S
				X			60g VOC (ALE215)	S
				X			250g Amber Jar (ALE210)	S
							400g Tub (ALE214)	S
				X			60g VOC (ALE215)	S
				X			250g Amber Jar (ALE210)	S

15393684	W5TP304	ES	0.50	400g Tub (ALE214)	S		X		
15393679	W5TP304	ES	0.20	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S				
				250g Amber Jar (ALE210)	S		X		
15393646	W5TP301	ES	0.50	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S		X		
15393579	W5TP301	ES	0.15	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S		X		
15393707	W4TP316	ES	2.20	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S		X		
15393699	W4TP316	ES	1.30	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S		X		
15393690	W4TP316	ES	0.40	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S		X		
15393728	W4TP315	ES	0.90	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S		X		
15393715	W4TP315	ES	0.10	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S		X		
15394019	W4TP314	ES	2.65	60g VOC (ALE215)	S				X
				400g Tub (ALE214)	S				

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
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DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15393684	15394008		15393843	15393872		15393897	15393903		15393962		15393967
			Customer Sample Reference	W5TP304	W4WS316		W7WS308	W7WS308		W7WS309	W7WS309		W7WS310		W7WS310
			AGS Reference	ES	ES		ES	ES		ES	ES		ES		ES
			Depth (m)	0.50	2.30 - 2.40		0.30	2.40		0.90	1.70		0.00 - 0.20		1.00 - 1.10
			Container	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4						X													
Ammonium Soil by Titration	All	NDPs: 0 Tests: 10				X															
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 39						X				X			X			X			X
CEN Readings	All	NDPs: 0 Tests: 4						X													
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 40		X		X			X		X			X						X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4						X													
Dissolved Tin by ICPMS	All	NDPs: 0 Tests: 4						X													
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4						X													
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 44		X		X			X		X			X			X			X	
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4						X													
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 44		X		X			X		X			X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 44	X		X			X		X			X			X			X			X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 4						X													
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 44		X		X			X		X			X			X			X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 4						X													

15393955	W7WS311	ES	2.80 - 2.90	60g VOC (ALE215)	S															X				
				250g Amber Jar (ALE210)	S						X					X			X				X		
15393936	W7WS311	ES	0.80 - 0.90	60g VOC (ALE215)	S															X				
				400g Tub (ALE214)	S	X		X		X			X		X		X					X			X
				250g Amber Jar (ALE210)	S		X				X					X			X				X		
15393930	W7WS311	ES	0.10 - 0.30	60g VOC (ALE215)	S															X				
				400g Tub (ALE214)	S			X																	
				250g Amber Jar (ALE210)	S						X					X			X				X		
15393980	W7WS310	ES	2.80 - 2.90	60g VOC (ALE215)	S															X				
				400g Tub (ALE214)	S			X																	
				250g Amber Jar (ALE210)	S						X					X			X				X		

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15393684	15394008		15393843	15393872		15393897		15393903		15393962		15393967
			Customer Sample Reference	W5TP304	W4WS316		W7WS308	W7WS308		W7WS309		W7WS309		W7WS310		W7WS310
			AGS Reference	ES	ES		ES	ES		ES		ES		ES		ES
			Depth (m)	0.50	2.30 - 2.40		0.30	2.40		0.90		1.70		0.00 - 0.20		1.00 - 1.10
			Container	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Low Level Cyanide (W)	All	NDPs: 0 Tests: 4						X													
Mercury Dissolved	All	NDPs: 0 Tests: 4						X													
Metals in solid samples by OES	All	NDPs: 0 Tests: 44		X		X			X		X			X			X			X	
Organotins in Aqueous Samples	All	NDPs: 0 Tests: 4						X													
Organotins on soils*	All	NDPs: 0 Tests: 13				X					X									X	
PAH by GCMS	All	NDPs: 0 Tests: 44		X		X			X		X			X			X			X	
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 4						X													
pH	All	NDPs: 0 Tests: 44		X		X			X		X			X			X			X	
pH Value	All	NDPs: 0 Tests: 4						X													
Sample description	All	NDPs: 0 Tests: 44		X		X			X		X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 23				X					X									X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 3						X													
Total Organic Carbon	All	NDPs: 0 Tests: 3				X					X										
TPH CWG (W)	All	NDPs: 0 Tests: 4						X													
TPH CWG GC (S)	All	NDPs: 0 Tests: 44		X		X			X		X			X			X			X	

15393955	W7WS311	ES	2.80 - 2.90	60g VOC (ALE215)	S																		
				250g Amber Jar (ALE210)	S			X			X		X		X	X		X			X
15393936	W7WS311	ES	0.80 - 0.90	60g VOC (ALE215)	S																		
				400g Tub (ALE214)	S	X	X		X			X		X						X			
				250g Amber Jar (ALE210)	S			X		X	X		X		X								X
15393930	W7WS311	ES	0.10 - 0.30	60g VOC (ALE215)	S																		
				400g Tub (ALE214)	S																		
				250g Amber Jar (ALE210)	S			X		X	X		X		X	X							X
15393980	W7WS310	ES	2.80 - 2.90	60g VOC (ALE215)	S																		
				400g Tub (ALE214)	S																		
				250g Amber Jar (ALE210)	S			X			X		X		X								X

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	15393684	15394008		15393843	15393872		15393897		15393903		15393962			15393967									
Customer Sample Reference	W5TP304	W4WS316		W7WS308	W7WS308		W7WS309		W7WS309		W7WS310			W7WS310									
AGS Reference	ES	ES		ES	ES		ES		ES		ES			ES									
Depth (m)	0.50	2.30 - 2.40		0.30	2.40		0.90		1.70		0.00 - 0.20			1.00 - 1.10									
Container	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)
Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
VOC MS (S) All — NDPs: 0 Tests: 44	X		X			X		X			X			X			X			X			X
VOC MS (W) All — NDPs: 0 Tests: 4					X																		

15393955	W7WS311	ES	2.80 - 2.90	60g VOC (ALE215)	S		X		
				250g Amber Jar (ALE210)	S				
15393936	W7WS311	ES	0.80 - 0.90	60g VOC (ALE215)	S		X		
				400g Tub (ALE214)	S				X
				250g Amber Jar (ALE210)	S				
15393930	W7WS311	ES	0.10 - 0.30	60g VOC (ALE215)	S		X		
				400g Tub (ALE214)	S				
				250g Amber Jar (ALE210)	S				
15393980	W7WS310	ES	2.80 - 2.90	60g VOC (ALE215)	S		X		
				400g Tub (ALE214)	S				
				250g Amber Jar (ALE210)	S				

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15393773	W4BH306	0.10 - 0.30	Dark Brown	Loamy Sand	Stones	Vegetation
15393785	W4BH306	0.90 - 1.00	Dark Brown	Clay	Stones	Vegetation
15393791	W4BH306	2.20 - 2.50	Dark Brown	Sandy Clay	Stones	Vegetation
15393798	W4BH306	3.50 - 3.80	Light Brown	Clay	Stones	N/A
15393807	W4BH306	5.00 - 5.30	Beige	Clay	Stones	N/A
15393653	W4TP307	1.00	Red	Silty Clay Loam	Oil/Petroleum	Vegetation
15393655	W4TP307	3.00	Black	Sandy Clay Loam	Stones	Brick
15393625	W4TP308	0.40	Dark Brown	Sandy Clay Loam	Brick	Stones
15393631	W4TP308	1.70	Dark Brown	Sandy Clay Loam	Brick	Stones
15393606	W4TP309	0.10	Black	Sandy Silt Loam	Brick	Vegetation
15393611	W4TP309	1.00	Light Brown	Sandy Silt Loam	Stones	Vegetation
15393619	W4TP309	2.50	Dark Brown	Sandy Clay Loam	Vegetation	Crushed Brick
15393590	W4TP310	0.40	Dark Brown	Sandy Clay Loam	Stones	Vegetation
15393596	W4TP310	1.25	Black	Sandy Silt Loam	Brick	Stones
15393601	W4TP310	2.90	Dark Brown	Sandy Clay	Vegetation	Stones
15393736	W4TP311	1.70	Dark Brown	Sandy Clay	Stones	Vegetation
15393744	W4TP311	0.60	Dark Brown	Silty Clay Loam	Brick	Stones
15393661	W4TP312	0.40	Grey	Sandy Loam	Brick	Stones
15393673	W4TP312	1.90	Dark Brown	Sandy Clay Loam	Stones	Vegetation
15393585	W4TP313	2.20	Dark Brown	Sandy Clay Loam	Metal	Stones
15394027	W4TP313	0.30	Dark Brown	Sandy Clay Loam	Stones	Vegetation
15394032	W4TP313	0.70	Dark Brown	Sandy Silt Loam	Brick	Stones
15393919	W4TP314	0.90	Dark Brown	Sandy Clay Loam	Stones	Vegetation
15394019	W4TP314	2.65	Dark Brown	Sandy Clay Loam	Stones	Vegetation
15393715	W4TP315	0.10	Light Brown	Loamy Sand	Vegetation	Concrete/Aggregate
15393728	W4TP315	0.90	Dark Brown	Loamy Sand	Crushed Brick	Vegetation
15393690	W4TP316	0.40	Dark Brown	Loamy Sand	Stones	Vegetation
15393699	W4TP316	1.30	Dark Brown	Loamy Sand	Fibres	Stones
15393707	W4TP316	2.20	Dark Brown	Sandy Clay Loam	Concrete/Aggregate	Vegetation
15393579	W5TP301	0.15	Dark Brown	Loamy Sand	Crushed Brick	Vegetation
15393646	W5TP301	0.50	Dark Brown	Loamy Sand	Vegetation	Stones
15393679	W5TP304	0.20	Dark Brown	Sandy Clay Loam	Brick	Vegetation
15393684	W5TP304	0.50	Light Brown	Silty Clay Loam	Stones	Vegetation
15394008	W4WS316	2.30 - 2.40	Dark Brown	Silty Clay Loam	Stones	N/A
15393843	W7WS308	0.30	Light Brown	Sandy Loam	Brick	Stones
15393872	W7WS308	2.40	Dark Brown	Sandy Clay	Stones	N/A
15393897	W7WS309	0.90	Dark Brown	Sandy Silt Loam	Brick	Stones
15393903	W7WS309	1.70	Light Brown	Sand	Brick	Stones

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

			Colour	Description	Inclusions	Inclusions 2
15393962	W7WS310	0.00 - 0.20	Dark Brown	Sandy Clay	Stones	Vegetation
15393967	W7WS310	1.00 - 1.10	Light Brown	Silty Clay Loam	Crushed Brick	Stones
15393980	W7WS310	2.80 - 2.90	Light Brown	Clay	Stones	Vegetation
15393930	W7WS311	0.10 - 0.30	Dark Brown	Loamy Sand	Vegetation	Stones
15393936	W7WS311	0.80 - 0.90	Dark Brown	Sand	Brick	Stones
15393955	W7WS311	2.80 - 2.90	Light Brown	Clay	Stones	N/A

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			W4BH306	W4BH306	W4BH306	W4BH306	W4BH306	W4TP307
			0.10 - 0.30 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393773 ES	0.90 - 1.00 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393785 ES	2.20 - 2.50 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393791 ES	3.50 - 3.80 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393798 ES	5.00 - 5.30 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393807 ES	1.00 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393653 ES
Moisture Content Ratio (% of as received sample)	%	PM024	7.3	18	19	8.6	7.7	5.4
Exchangeable Ammonia as NH4	<15 mg/kg	TM024		<15 M	<15 M	25.3 M	<15 M	<15 M
pH	1 pH Units	TM133	9.07 M	8.33 M	7.81 M	9.5 M	9.83 M	6.76 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	51 #
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	2.66 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	2.66	<1	<1	<1
PCB congener 118	<3 µg/kg	TM168			227 M	<3 M		415 M
PCB congener 81	<3 µg/kg	TM168			<3 M	<3 M		<3 M
PCB congener 77	<3 µg/kg	TM168			<3 M	<3 M		<3 M
PCB congener 123	<3 µg/kg	TM168			8.37 M	<3 M		5.41 M
PCB congener 114	<3 µg/kg	TM168			<3 M	<3 M		<3 M
PCB congener 105	<3 µg/kg	TM168			78.7 M	<3 M		164 M
PCB congener 126	<3 µg/kg	TM168			<3 M	<3 M		<3 M
PCB congener 167	<3 µg/kg	TM168			13 M	<3 M		18.9 M
PCB congener 156	<3 µg/kg	TM168			33.9 M	<3 M		60.6 M
PCB congener 157	<3 µg/kg	TM168			9.36 M	<3 M		14.3 M
PCB congener 169	<3 µg/kg	TM168			<3 M	<3 M		<3 M
PCB congener 189	<3 µg/kg	TM168			<3 M	<3 M		<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168			370	<36		678
Arsenic	<0.6 mg/kg	TM181	9.4 M	8.95 M	18.7 M	6.94 M	5.4 M	2.19 M
Cadmium	<0.02 mg/kg	TM181	0.351 M	0.531 M	2.65 M	0.79 M	0.28 M	0.565 M
Chromium	<0.9 mg/kg	TM181	15.5 M	20.6 M	55.9 M	11.5 M	35.6 M	336 M
Copper	<1.4 mg/kg	TM181	47.7 M	31.3 M	1140 M	6.2 M	12.2 M	44.3 M
Lead	<0.7 mg/kg	TM181	109 M	69.8 M	1340 M	6.68 M	2800 M	55800 M
Mercury	<0.14 mg/kg	TM181	0.921 M	0.587 M	15.3 M	0.412 M	0.58 M	1.55 M
Nickel	<0.2 mg/kg	TM181	19.1 M	16.5 M	81.4 M	15.2 M	13.2 M	4.87 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181			81.3 #			3.85 #
Zinc	<1.9 mg/kg	TM181	154 M	83.5 M	1670 M	28.9 M	425 M	4180 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP307	W4TP308	W4TP308	W4TP309	W4TP309	W4TP309
			Depth (m)	3.00	0.40	1.70	0.10	1.00	2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393655	15393625	15393631	15393606	15393611	15393619
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		18	17	14	20	17	16
pH	1 pH Units	TM133		8.3 M	8.2 M	8.41 M	8.17 M	6.81 M	8.13 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
Arsenic	<0.6 mg/kg	TM181		15.9 M	15.3 M	11.6 M	16 M	14.4 M	26.9 M
Cadmium	<0.02 mg/kg	TM181		2.61 M	0.804 M	0.382 M	1.25 M	<0.02 M	1.47 M
Chromium	<0.9 mg/kg	TM181		31.6 M	17.2 M	10.4 M	550 M	14.9 M	29 M
Copper	<1.4 mg/kg	TM181		338 M	129 M	65.9 M	489 M	14.9 M	499 M
Lead	<0.7 mg/kg	TM181		554 M	622 M	398 M	786 M	49 M	700 M
Mercury	<0.14 mg/kg	TM181		1.4 M	1.12 M	0.746 M	2.64 M	0.498 M	2.17 M
Nickel	<0.2 mg/kg	TM181		40 M	23.8 M	13.6 M	97.4 M	10.1 M	60.1 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181						2.59 #	
Zinc	<1.9 mg/kg	TM181		863 M	392 M	206 M	841 M	42.9 M	1560 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP310	W4TP310	W4TP310	W4TP311	W4TP311	W4TP312
			Depth (m)	0.40	1.25	2.90	0.60	1.70	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393590	15393596	15393601	15393744	15393736	15393661
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		11	18	14	14	16	8.9
pH	1 pH Units	TM133		8.31 M	8.06 M	8.35 M	8.41 M	8.56 M	9 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
Arsenic	<0.6 mg/kg	TM181		20.6 M	15.5 M	12.4 M	13.9 M	7.69 M	8.92 M
Cadmium	<0.02 mg/kg	TM181		0.241 M	1.81 M	<0.02 M	0.977 M	0.525 M	1.47 M
Chromium	<0.9 mg/kg	TM181		13.9 M	33.6 M	24.5 M	13.9 M	27.5 M	17.6 M
Copper	<1.4 mg/kg	TM181		23.9 M	561 M	21.8 M	165 M	46.5 M	350 M
Lead	<0.7 mg/kg	TM181		487 M	922 M	31.1 M	290 M	55.4 M	147 M
Mercury	<0.14 mg/kg	TM181		0.543 M	4.32 M	0.591 M	1.03 M	0.542 M	0.691 M
Nickel	<0.2 mg/kg	TM181		14.4 M	44.8 M	25.2 M	23.9 M	30.8 M	32.4 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		152 M	1300 M	71.9 M	535 M	150 M	626 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP312	W4TP313	W4TP313	W4TP313	W4TP314	W4TP314
			Depth (m)	1.90	0.30	0.70	2.20	0.90	2.65
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393673	15394027	15394032	15393585	15393919	15394019
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		15	18	15	16	13	24
Exchangeable Ammonia as NH4	<15 mg/kg	TM024				<15 M		<15 M	35.6 M
pH	1 pH Units	TM133		8.23 M	8.33 M	8.16 M	8.02 M	10.1 M	8.1 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M		<1 M	2.56 M	<1 M	1.59 M
Cyanide, Free	<1 mg/kg	TM153		<1 M		<1 M	<1 M	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1		<1	2.45	<1	1.53
PCB congener 118	<3 µg/kg	TM168				130 M		58.1 M	160 M
PCB congener 81	<3 µg/kg	TM168				<3 M		<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168				<3 M		<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168				<3 M		<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168				<3 M		<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168				45.5 M		22.1 M	53.1 M
PCB congener 126	<3 µg/kg	TM168				<3 M		<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168				14.1 M		<3 M	7.02 M
PCB congener 156	<3 µg/kg	TM168				31.9 M		7.25 M	21.6 M
PCB congener 157	<3 µg/kg	TM168				6.28 M		<3 M	5.81 M
PCB congener 169	<3 µg/kg	TM168				<3 M		<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168				<3 M		<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168				228		87.4	247
Arsenic	<0.6 mg/kg	TM181		20.1 M	20.7 M	7.73 M	12.2 M	7.83 M	26.8 M
Cadmium	<0.02 mg/kg	TM181		2.55 M	0.632 M	0.182 M	0.915 M	0.0797 M	0.683 M
Chromium	<0.9 mg/kg	TM181		77.4 M	21 M	9.15 M	16.1 M	10.4 M	18.1 M
Copper	<1.4 mg/kg	TM181		625 M	207 M	59.2 M	260 M	24.7 M	499 M
Lead	<0.7 mg/kg	TM181		1110 M	509 M	150 M	828 M	81.5 M	1710 M
Mercury	<0.14 mg/kg	TM181		1.93 M	2.15 M	0.703 M	1.93 M	0.404 M	2.55 M
Nickel	<0.2 mg/kg	TM181		54.4 M	27.4 M	12.5 M	25.7 M	10.1 M	40.3 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181		68.7 #		6.11 #		4.4 #	13.2 #
Zinc	<1.9 mg/kg	TM181		1450 M	467 M	156 M	883 M	88.1 M	615 M

CERTIFICATE OF ANALYSIS

SDG: 170425-61 **Client Reference:** 70015362 **Report Number:** 436986
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 409098

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP315	W4TP315	W4TP316	W4TP316	W4TP316	W5TP301
			Depth (m)	0.10	0.90	0.40	1.30	2.20	0.15
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393715	15393728	15393690	15393699	15393707	15393579
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		5.3	20	13	14	12	10
pH	1 pH Units	TM133		8.08 M	7.85 M	8.3 M	8.21 M	7.22 M	8.19 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	
PCB congener 118	<3 µg/kg	TM168						213 M	
PCB congener 81	<3 µg/kg	TM168						<3 M	
PCB congener 77	<3 µg/kg	TM168						<3 M	
PCB congener 123	<3 µg/kg	TM168						<3 M	
PCB congener 114	<3 µg/kg	TM168						<3 M	
PCB congener 105	<3 µg/kg	TM168						55.8 M	
PCB congener 126	<3 µg/kg	TM168						<3 M	
PCB congener 167	<3 µg/kg	TM168						15.6 M	
PCB congener 156	<3 µg/kg	TM168						36.5 M	
PCB congener 157	<3 µg/kg	TM168						9.15 M	
PCB congener 169	<3 µg/kg	TM168						<3 M	
PCB congener 189	<3 µg/kg	TM168						<3 M	
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168						330	
Arsenic	<0.6 mg/kg	TM181		9.12 M	12.1 M	11.6 M	24.4 M	14.2 M	9.71 M
Cadmium	<0.02 mg/kg	TM181		0.873 M	1.27 M	2.58 M	1.56 M	2.16 M	0.284 M
Chromium	<0.9 mg/kg	TM181		21.9 M	20.4 M	13.4 M	31.3 M	9.55 M	12.9 M
Copper	<1.4 mg/kg	TM181		73.6 M	256 M	65.5 M	401 M	626 M	29.6 M
Lead	<0.7 mg/kg	TM181		234 M	584 M	293 M	714 M	623 M	133 M
Mercury	<0.14 mg/kg	TM181		0.553 M	1.4 M	0.743 M	1.46 M	1.11 M	0.523 M
Nickel	<0.2 mg/kg	TM181		16.5 M	26.9 M	18.6 M	42.3 M	54.8 M	12.8 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181						33.5 #	
Zinc	<1.9 mg/kg	TM181		252 M	572 M	268 M	670 M	642 M	128 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			W5TP301	W5TP304	W5TP304	W4WS316	W7WS308	W7WS308
			0.50 / Soil/Solid (S) / 21/04/2017 / . / 25/04/2017 / 170425-61 / 15393646 / ES	0.20 / Soil/Solid (S) / 21/04/2017 / . / 25/04/2017 / 170425-61 / 15393679 / ES	0.50 / Soil/Solid (S) / 21/04/2017 / . / 25/04/2017 / 170425-61 / 15393684 / ES	2.30 - 2.40 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15394008 / ES	0.30 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393843 / ES	2.40 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393872 / ES
Moisture Content Ratio (% of as received sample)	%	PM024	9.2	9.5	13	15	7	16
Exchangeable Ammonia as NH4	<15 mg/kg	TM024					<15 M	
Soil Organic Matter (SOM)	<0.35 %	TM132					3.14 #	
pH	1 pH Units	TM133	8.43 M	8.55 M	8.59 M	8.33 M	8.67 M	9.21 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1
PCB congener 118	<3 µg/kg	TM168			<3 M			
PCB congener 81	<3 µg/kg	TM168			<3 M			
PCB congener 77	<3 µg/kg	TM168			<3 M			
PCB congener 123	<3 µg/kg	TM168			<3 M			
PCB congener 114	<3 µg/kg	TM168			<3 M			
PCB congener 105	<3 µg/kg	TM168			<3 M			
PCB congener 126	<3 µg/kg	TM168			<3 M			
PCB congener 167	<3 µg/kg	TM168			<3 M			
PCB congener 156	<3 µg/kg	TM168			<3 M			
PCB congener 157	<3 µg/kg	TM168			<3 M			
PCB congener 169	<3 µg/kg	TM168			<3 M			
PCB congener 189	<3 µg/kg	TM168			<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168			<36			
Arsenic	<0.6 mg/kg	TM181	10.4 M	10.7 M	8.97 M	6.98 M	21.7 M	8.1 M
Cadmium	<0.02 mg/kg	TM181	0.934 M	0.223 M	0.186 M	0.701 M	0.196 M	0.3 M
Chromium	<0.9 mg/kg	TM181	15.1 M	11.7 M	11.5 M	14.5 M	6.57 M	16.4 M
Copper	<1.4 mg/kg	TM181	63.4 M	89.4 M	19 M	62.6 M	31.8 M	10.6 M
Lead	<0.7 mg/kg	TM181	403 M	374 M	68.8 M	63 M	128 M	16.8 M
Mercury	<0.14 mg/kg	TM181	0.475 M	5.85 M	0.643 M	0.417 M	0.566 M	0.393 M
Nickel	<0.2 mg/kg	TM181	13 M	14 M	15 M	20.3 M	13.9 M	16.9 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181					7.74 #	
Zinc	<1.9 mg/kg	TM181	285 M	180 M	76.3 M	201 M	135 M	33.2 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference
Moisture Content Ratio (% of as received sample)	%	PM024	W7WS309	0.90 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393897 / ES
Soil Organic Matter (SOM)	<0.35 %	TM132	2.55 #	
pH	1 pH Units	TM133	8.71 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	
Cyanide, Total	<1 mg/kg	TM153	<1 M	
Cyanide, Free	<1 mg/kg	TM153	<1 M	
Cyanide, Complex	<1 mg/kg	TM153	<1	
Arsenic	<0.6 mg/kg	TM181	18.2 M	
Cadmium	<0.02 mg/kg	TM181	0.121 M	
Chromium	<0.9 mg/kg	TM181	9.12 M	
Copper	<1.4 mg/kg	TM181	43.5 M	
Lead	<0.7 mg/kg	TM181	180 M	
Mercury	<0.14 mg/kg	TM181	0.629 M	
Nickel	<0.2 mg/kg	TM181	15.5 M	
Selenium	<1 mg/kg	TM181	<1 #	
Tin	<0.24 mg/kg	TM181	11.7 #	
Zinc	<1.9 mg/kg	TM181	135 M	

Component	LOD/Units	Method	W7WS309	W7WS310	W7WS310	W7WS310	W7WS311
Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference			1.70 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393903 / ES	0.00 - 0.20 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393962 / ES	1.00 - 1.10 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393967 / ES	2.80 - 2.90 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393980 / ES	0.10 - 0.30 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393930 / ES
Moisture Content Ratio (% of as received sample)	%	PM024	7.4	13	19	21	9.2
Soil Organic Matter (SOM)	<0.35 %	TM132					
pH	1 pH Units	TM133	9.21 M	8.47 M	8.36 M	8.33 M	8.81 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M		<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 M		<1 M	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153	<1		<1	<1	<1
Arsenic	<0.6 mg/kg	TM181	7.61 M	11.6 M	11.6 M	11.5 M	8.32 M
Cadmium	<0.02 mg/kg	TM181	0.102 M	<0.02 M	<0.02 M	0.581 M	0.324 M
Chromium	<0.9 mg/kg	TM181	3.11 M	15.2 M	29.1 M	34.5 M	8.68 M
Copper	<1.4 mg/kg	TM181	7.59 M	20.3 M	26.9 M	28.9 M	15.8 M
Lead	<0.7 mg/kg	TM181	30.3 M	84.9 M	65.1 M	23.8 M	102 M
Mercury	<0.14 mg/kg	TM181	0.268 M	0.67 M	0.88 M	0.696 M	0.81 M
Nickel	<0.2 mg/kg	TM181	5.2 M	15.6 M	26.3 M	52.5 M	10.1 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181			18.2 #		4.24 #
Zinc	<1.9 mg/kg	TM181	95.8 M	102 M	83.8 M	97.5 M	98.7 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	
			W7WS311	W7WS311
			Depth (m)	0.80 - 0.90	2.80 - 2.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017
			Sampled Time	.	.
			Date Received	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61
			Lab Sample No.(s)	15393936	15393955
			AGS Reference	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024	9.9	15
Exchangeable Ammonia as NH4	<15 mg/kg	TM024	<15 M	
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #
pH	1 pH Units	TM133	8.75 M	8.49 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153	<1	<1
Arsenic	<0.6 mg/kg	TM181	9.93 M	6.3 M
Cadmium	<0.02 mg/kg	TM181	0.344 M	0.464 M
Chromium	<0.9 mg/kg	TM181	6.71 M	22.8 M
Copper	<1.4 mg/kg	TM181	32.2 M	12.1 M
Lead	<0.7 mg/kg	TM181	155 M	12.1 M
Mercury	<0.14 mg/kg	TM181	0.879 M	0.663 M
Nickel	<0.2 mg/kg	TM181	13 M	30.1 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #
Tin	<0.24 mg/kg	TM181	5.81 #	
Zinc	<1.9 mg/kg	TM181	95.6 M	45.6 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Dioxins/Furans (S)*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH306	W4BH306	W5TP304			
			Depth (m)	0.90 - 1.00	3.50 - 3.80	0.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	20/04/2017	20/04/2017	21/04/2017			
			Sampled Time	.	.	.			
			Date Received	25/04/2017	25/04/2017	25/04/2017			
			SDG Ref	170425-61	170425-61	170425-61			
			Lab Sample No.(s)	15393785	15393798	15393684			
			AGS Reference	ES	ES	ES			
1,2,3,4,6,7,8 HpCDD*	ng/kg	SUB		<0.0026	<0.0041	<0.002			
1,2,3,4,6,7,8 HpCDF*	ng/kg	SUB		<0.013	<0.0017	<0.0019			
1,2,3,4,7,8 HxCDD*	ng/kg	SUB		<0.0013	<0.0022	<0.0016			
1,2,3,4,7,8 HxCDF*	ng/kg	SUB		<0.0014	<0.0012	<0.0025			
1,2,3,4,7,8,9 HpCDF*	ng/kg	SUB		<0.0065	<0.0017	<0.0019			
1,2,3,6,7,8 HxCDD*	ng/kg	SUB		<0.0013	<0.0022	<0.0016			
1,2,3,6,7,8 HxCDF*	ng/kg	SUB		<0.0014	<0.0012	<0.0025			
1,2,3,7,8 PeCDD*	ng/kg	SUB		<0.0011	<0.0012	<0.0014			
1,2,3,7,8 PeCDF*	ng/kg	SUB		<0.0012	<0.00064	<0.001			
1,2,3,7,8,9 HxCDD*	ng/kg	SUB		<0.0013	<0.0022	<0.0033			
1,2,3,7,8,9 HxCDF*	ng/kg	SUB		<0.0014	<0.0012	<0.0013			
2,3,4,6,7,8 HxCDF*	ng/kg	SUB		<0.0014	<0.0012	<0.0013			
2,3,4,7,8 PeCDF*	ng/kg	SUB		<0.0012	<0.00064	<0.001			
2,3,7,8 TCDD*	ng/kg	SUB		<0.00098	<0.00072	<0.0092			
2,3,7,8, TCDF*	ng/kg	SUB		<0.0028	<0.00056	<0.0014			
OCDD*	ng/kg	SUB		<0.046	<0.0071	<0.042			
OCDF*	ng/kg	SUB		<0.0022	<0.0058	<0.0033			
I-PCDD/F-TEQ Lower Bound*	ng/kg	SUB		0	0	0			
I-PCDD/F-TEQ Upper Bound*	ng/kg	SUB		0.0037	0.003	0.0038			

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Organotins on soils*

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH306	W4TP307	W4TP309	W4TP312	W4TP313	W4TP314
			Depth (m)	2.20 - 2.50	1.00	1.00	1.90	0.70	0.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393791	15393653	15393611	15393673	15394032	15393919
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP314	W4TP316	W7WS308	W7WS309	W7WS310	W7WS311
			Depth (m)	2.65	2.20	0.30	0.90	1.00 - 1.10	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15394019	15393707	15393843	15393897	15393967	15393930
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.			W7WS311
Depth (m)			0.80 - 0.90
Sample Type			Soil/Solid (S)
Date Sampled			20/04/2017
Sampled Time			.
Date Received			25/04/2017
SDG Ref			170425-61
Lab Sample No.(s)			15393936
AGS Reference			ES
Component	**LOD/Units**	**Method**	
Dibutyl Tin*	mg/kg	SUB	<0.02
Tributyl Tin*	mg/kg	SUB	<0.02
Triphenyl Tin*	mg/kg	SUB	<0.05
Tetrabutyl Tin*	mg/kg	SUB	<0.02
Monobutyl Tin*	mg/kg	SUB	<0.1
Monophenyl Tin*	mg/kg	SUB	<0.02
Diphenyl Tin*	mg/kg	SUB	<0.02

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			W4BH306	W4BH306	W4BH306	W4BH306	W4BH306	W4TP307
			0.10 - 0.30 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393773 ES	0.90 - 1.00 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393785 ES	2.20 - 2.50 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393791 ES	3.50 - 3.80 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393798 ES	5.00 - 5.30 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393807 ES	1.00 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393653 ES
Naphthalene-d8 % recovery**	%	TM218	89.8	88.2	104	95.3	97	82.7
Acenaphthene-d10 % recovery**	%	TM218	86.6	83.6	101	91.8	94.2	99.5
Phenanthrene-d10 % recovery**	%	TM218	84.7	81.3	101	87.7	91.4	97.9
Chrysene-d12 % recovery**	%	TM218	85.7	79	102	80.4	91.4	102
Perylene-d12 % recovery**	%	TM218	98.7	89.7	117	83.7	99.8	109
Naphthalene	<9 µg/kg	TM218	30.4 M	24.5 M	1790 M	<9 M	<9 M	108000 M
Acenaphthylene	<12 µg/kg	TM218	95.8 M	<12 M	241 M	<12 M	<12 M	331 M
Acenaphthene	<8 µg/kg	TM218	47.7 M	<8 M	2690 M	<8 M	<8 M	6950 M
Fluorene	<10 µg/kg	TM218	67 M	<10 M	2560 M	<10 M	<10 M	6720 M
Phenanthrene	<15 µg/kg	TM218	736 M	119 M	12600 M	<15 M	<15 M	27900 M
Anthracene	<16 µg/kg	TM218	260 M	43.4 M	3240 M	<16 M	<16 M	3980 M
Fluoranthene	<17 µg/kg	TM218	1830 M	276 M	17100 M	<17 M	<17 M	23600 M
Pyrene	<15 µg/kg	TM218	1610 M	236 M	14000 M	<15 M	<15 M	17000 M
Benz(a)anthracene	<14 µg/kg	TM218	1070 M	193 M	9380 M	<14 M	<14 M	9900 M
Chrysene	<10 µg/kg	TM218	840 M	157 M	8050 M	<10 M	<10 M	9220 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	1600 M	336 M	11100 M	<15 M	<15 M	11100 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	598 M	130 M	4080 M	<14 M	<14 M	3870 M
Benzo(a)pyrene	<15 µg/kg	TM218	1360 M	271 M	9890 M	<15 M	<15 M	5650 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	777 M	193 M	4740 M	<18 M	<18 M	3660 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	216 M	<23 M	1580 M	<23 M	<23 M	1180 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	913 M	240 M	5150 M	<24 M	<24 M	4060 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	12000	2220	108000	<118	<118	243000

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP307	W4TP308	W4TP308	W4TP309	W4TP309	W4TP309
			Depth (m)	3.00	0.40	1.70	0.10	1.00	2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393655	15393625	15393631	15393606	15393611	15393619
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		94.4	102	114	107	97.9	101
Acenaphthene-d10 % recovery**	%	TM218		90.8	105	110	104	98.5	103
Phenanthrene-d10 % recovery**	%	TM218		90.1	102	105	102	90.1	96.2
Chrysene-d12 % recovery**	%	TM218		94.8	100	109	109	90.2	102
Perylene-d12 % recovery**	%	TM218		109	110	120	124	102	117
Naphthalene	<9 µg/kg	TM218		341 M	86.5 M	223 M	291 M	<9 M	260 M
Acenaphthylene	<12 µg/kg	TM218		328 M	292 M	1130 M	197 M	<12 M	294 M
Acenaphthene	<8 µg/kg	TM218		254 M	59.8 M	1090 M	371 M	<8 M	1040 M
Fluorene	<10 µg/kg	TM218		210 M	182 M	1020 M	342 M	<10 M	1030 M
Phenanthrene	<15 µg/kg	TM218		2190 M	3150 M	11900 M	1890 M	<15 M	5540 M
Anthracene	<16 µg/kg	TM218		889 M	400 M	3830 M	686 M	<16 M	1720 M
Fluoranthene	<17 µg/kg	TM218		7220 M	5610 M	26700 M	4270 M	41.5 M	9030 M
Pyrene	<15 µg/kg	TM218		6320 M	4280 M	23500 M	3790 M	34.4 M	8430 M
Benz(a)anthracene	<14 µg/kg	TM218		4840 M	2590 M	17100 M	2810 M	46.2 M	5710 M
Chrysene	<10 µg/kg	TM218		3590 M	2230 M	12700 M	2180 M	14.8 M	4350 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		6600 M	3670 M	20100 M	4770 M	35.9 M	8830 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		2480 M	1460 M	8680 M	1750 M	<14 M	3560 M
Benzo(a)pyrene	<15 µg/kg	TM218		6420 M	2830 M	18300 M	3710 M	<15 M	7430 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		3590 M	1590 M	8730 M	2250 M	<18 M	4120 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		1060 M	464 M	2380 M	657 M	<23 M	1290 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		4120 M	1780 M	9610 M	2670 M	<24 M	4820 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		50400	30700	167000	32600	173	67500

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP310	W4TP310	W4TP310	W4TP311	W4TP311	W4TP312
			Depth (m)	0.40	1.25	2.90	0.60	1.70	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393590	15393596	15393601	15393744	15393736	15393661
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		96.9	102	96.3	93	94.5	95.5
Acenaphthene-d10 % recovery**	%	TM218		98.2	103	97.2	93.6	92.3	97.5
Phenanthrene-d10 % recovery**	%	TM218		93.9	95.1	91.8	92.2	89.3	90.8
Chrysene-d12 % recovery**	%	TM218		92.9	95.2	89.9	87.2	90	87.8
Perylene-d12 % recovery**	%	TM218		102	112	98	95.2	98.9	98.7
Naphthalene	<9 µg/kg	TM218		27.1 M	188 M	<9 M	161 M	16.8 M	252 M
Acenaphthylene	<12 µg/kg	TM218		69.1 M	203 M	<12 M	151 M	48.2 M	548 M
Acenaphthene	<8 µg/kg	TM218		18.7 M	332 M	<8 M	325 M	<8 M	432 M
Fluorene	<10 µg/kg	TM218		29.2 M	335 M	<10 M	198 M	<10 M	386 M
Phenanthrene	<15 µg/kg	TM218		385 M	2710 M	<15 M	1730 M	123 M	3330 M
Anthracene	<16 µg/kg	TM218		111 M	908 M	<16 M	618 M	62.3 M	1250 M
Fluoranthene	<17 µg/kg	TM218		1110 M	6650 M	<17 M	5180 M	621 M	8120 M
Pyrene	<15 µg/kg	TM218		957 M	5660 M	<15 M	4940 M	537 M	7720 M
Benz(a)anthracene	<14 µg/kg	TM218		686 M	4060 M	<14 M	2750 M	439 M	4790 M
Chrysene	<10 µg/kg	TM218		618 M	3440 M	<10 M	2350 M	390 M	3940 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		928 M	6240 M	<15 M	4870 M	445 M	9580 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		338 M	2360 M	<14 M	1900 M	267 M	3700 M
Benzo(a)pyrene	<15 µg/kg	TM218		742 M	5110 M	<15 M	3990 M	501 M	7890 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		385 M	2830 M	<18 M	2180 M	280 M	4260 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		105 M	799 M	<23 M	635 M	78.4 M	1090 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		441 M	3200 M	<24 M	2650 M	311 M	5170 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		6960	45000	<118	34600	4120	62400

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP312	W4TP313	W4TP313	W4TP313	W4TP314	W4TP314
			Depth (m)	1.90	0.30	0.70	2.20	0.90	2.65
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393673	15394027	15394032	15393585	15393919	15394019
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		113	96	91.7	101	87.5	96
Acenaphthene-d10 % recovery**	%	TM218		111	98.1	88	100	83.8	96.3
Phenanthrene-d10 % recovery**	%	TM218		108	94.5	87	97.5	82.3	90.1
Chrysene-d12 % recovery**	%	TM218		114	90.9	95.7	97.7	82.4	87
Perylene-d12 % recovery**	%	TM218		124	99.3	109	109	93.6	98.2
Naphthalene	<9 µg/kg	TM218		297 M	47.6 M	1010 M	716 M	42.9 M	51.9 M
Acenaphthylene	<12 µg/kg	TM218		271 M	24.8 M	111 M	119 M	99.2 M	34.3 M
Acenaphthene	<8 µg/kg	TM218		325 M	29.8 M	871 M	409 M	43.7 M	189 M
Fluorene	<10 µg/kg	TM218		376 M	23.3 M	809 M	337 M	33.6 M	147 M
Phenanthrene	<15 µg/kg	TM218		3860 M	283 M	3280 M	1740 M	647 M	1030 M
Anthracene	<16 µg/kg	TM218		1190 M	69.8 M	940 M	585 M	212 M	254 M
Fluoranthene	<17 µg/kg	TM218		7190 M	565 M	4820 M	3210 M	1730 M	3830 M
Pyrene	<15 µg/kg	TM218		6190 M	475 M	3730 M	3040 M	1710 M	2670 M
Benz(a)anthracene	<14 µg/kg	TM218		4260 M	355 M	2590 M	2070 M	1090 M	2410 M
Chrysene	<10 µg/kg	TM218		3860 M	250 M	2090 M	1590 M	874 M	2390 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		5730 M	584 M	3410 M	3090 M	1730 M	3770 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		2320 M	168 M	1510 M	1100 M	635 M	1320 M
Benzo(a)pyrene	<15 µg/kg	TM218		5080 M	417 M	2850 M	2600 M	1430 M	1990 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		2950 M	250 M	1530 M	1720 M	803 M	1290 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		779 M	79 M	505 M	470 M	221 M	469 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		3550 M	328 M	1790 M	1940 M	962 M	1420 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		48200	3950	31900	24700	12300	23300

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP315	W4TP315	W4TP316	W4TP316	W4TP316	W5TP301
			Depth (m)	0.10	0.90	0.40	1.30	2.20	0.15
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393715	15393728	15393690	15393699	15393707	15393579
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		95.7	99	101	96.7	106	108
Acenaphthene-d10 % recovery**	%	TM218		96.9	102	98.6	98.6	108	104
Phenanthrene-d10 % recovery**	%	TM218		94.3	98.8	95	94	103	101
Chrysene-d12 % recovery**	%	TM218		92.1	101	91.7	94.2	101	93.3
Perylene-d12 % recovery**	%	TM218		102	110	106	106	115	99
Naphthalene	<9 µg/kg	TM218		30.7 M	227 M	50 M	<45 M	46.6 M	10.1 M
Acenaphthylene	<12 µg/kg	TM218		101 M	275 M	43.8 M	77.2 M	56.2 M	13.4 M
Acenaphthene	<8 µg/kg	TM218		26.3 M	210 M	18.1 M	68.4 M	78.6 M	<8 M
Fluorene	<10 µg/kg	TM218		24.1 M	180 M	25.2 M	<50 M	106 M	<10 M
Phenanthrene	<15 µg/kg	TM218		411 M	2340 M	190 M	881 M	319 M	36.4 M
Anthracene	<16 µg/kg	TM218		174 M	767 M	77 M	306 M	141 M	<16 M
Fluoranthene	<17 µg/kg	TM218		1830 M	6270 M	547 M	3070 M	1260 M	88.8 M
Pyrene	<15 µg/kg	TM218		1690 M	5250 M	481 M	2620 M	1170 M	82.9 M
Benz(a)anthracene	<14 µg/kg	TM218		1480 M	3780 M	403 M	1690 M	908 M	56 M
Chrysene	<10 µg/kg	TM218		1260 M	2910 M	379 M	1320 M	784 M	58.5 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		2400 M	5520 M	737 M	2540 M	1940 M	86.3 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		798 M	1920 M	273 M	902 M	578 M	41.5 M
Benzo(a)pyrene	<15 µg/kg	TM218		1860 M	4420 M	529 M	2200 M	1310 M	71.3 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		1120 M	2580 M	360 M	1190 M	794 M	59.8 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		279 M	729 M	92.2 M	391 M	202 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		1350 M	3140 M	440 M	1500 M	934 M	79.3 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		14800	40500	4650	18800	10600	684

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5TP301	W5TP304	W5TP304	W4WS316	W7WS308	W7WS308
			Depth (m)	0.50	0.20	0.50	2.30 - 2.40	0.30	2.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393646	15393679	15393684	15394008	15393843	15393872
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		107	95.6	94.2	84.5	100	112
Acenaphthene-d10 % recovery**	%	TM218		103	98	95.7	80.5	97.6	109
Phenanthrene-d10 % recovery**	%	TM218		98.3	94.8	91.1	78.1	94.3	104
Chrysene-d12 % recovery**	%	TM218		93.2	96.2	90.1	70.9	97.3	102
Perylene-d12 % recovery**	%	TM218		101	101	101	75.8	108	111
Naphthalene	<9 µg/kg	TM218		25.9 M	94.5 M	38.1 M	14.4 M	66.5 M	283 M
Acenaphthylene	<12 µg/kg	TM218		74.4 M	318 M	57.6 M	<12 M	124 M	26.5 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	16.5 M	198 M	49.1 M	316 M
Fluorene	<10 µg/kg	TM218		<10 M	216 M	14.2 M	111 M	43.6 M	323 M
Phenanthrene	<15 µg/kg	TM218		104 M	3930 M	348 M	379 M	742 M	1840 M
Anthracene	<16 µg/kg	TM218		36.1 M	1370 M	100 M	114 M	205 M	482 M
Fluoranthene	<17 µg/kg	TM218		235 M	8420 M	1210 M	282 M	1950 M	2110 M
Pyrene	<15 µg/kg	TM218		235 M	6660 M	1020 M	218 M	1720 M	1560 M
Benz(a)anthracene	<14 µg/kg	TM218		169 M	4430 M	744 M	114 M	1300 M	840 M
Chrysene	<10 µg/kg	TM218		189 M	3180 M	589 M	80.5 M	1050 M	726 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		311 M	4550 M	1120 M	107 M	2220 M	918 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		132 M	2100 M	497 M	44.7 M	864 M	416 M
Benzo(a)pyrene	<15 µg/kg	TM218		212 M	3650 M	935 M	85.2 M	1780 M	817 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		192 M	1820 M	543 M	38.9 M	1070 M	443 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		59.2 M	588 M	151 M	<23 M	306 M	151 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		243 M	1880 M	635 M	46.3 M	1230 M	568 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		2220	43200	8020	1830	14700	11800

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS309	W7WS309	W7WS310	W7WS310	W7WS310	W7WS311
			Depth (m)	0.90	1.70	0.00 - 0.20	1.00 - 1.10	2.80 - 2.90	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393897	15393903	15393962	15393967	15393980	15393930
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		94.8	98.6	94.6	105	94.7	94.6
Acenaphthene-d10 % recovery**	%	TM218		96.6	101	94.1	104	95.9	94.1
Phenanthrene-d10 % recovery**	%	TM218		93.6	95.5	91.2	99.4	92.3	92.3
Chrysene-d12 % recovery**	%	TM218		87.9	89.5	87.4	98.9	87.6	88.7
Perylene-d12 % recovery**	%	TM218		95.6	96.8	91.5	107	96.1	96.4
Naphthalene	<9 µg/kg	TM218		51.3 M	<9 M	22.9 M	46.1 M	<9 M	43.4 M
Acenaphthylene	<12 µg/kg	TM218		57.2 M	<12 M	62.5 M	135 M	<12 M	50.8 M
Acenaphthene	<8 µg/kg	TM218		21.1 M	<8 M	66.1 M	58.6 M	<8 M	19.6 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	50.9 M	55.5 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		387 M	<15 M	1100 M	1740 M	<15 M	319 M
Anthracene	<16 µg/kg	TM218		88.2 M	<16 M	328 M	777 M	<16 M	136 M
Fluoranthene	<17 µg/kg	TM218		822 M	48 M	2060 M	6980 M	<17 M	1080 M
Pyrene	<15 µg/kg	TM218		712 M	42.2 M	1700 M	5810 M	<15 M	1010 M
Benz(a)anthracene	<14 µg/kg	TM218		572 M	44.4 M	1210 M	3380 M	<14 M	827 M
Chrysene	<10 µg/kg	TM218		505 M	27.5 M	903 M	3050 M	<10 M	615 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		993 M	71.2 M	1400 M	3900 M	<15 M	1430 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		385 M	29.4 M	529 M	1670 M	<14 M	546 M
Benzo(a)pyrene	<15 µg/kg	TM218		780 M	50.2 M	1090 M	3450 M	<15 M	1170 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		453 M	36.2 M	566 M	1630 M	<18 M	667 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		129 M	<23 M	169 M	505 M	<23 M	191 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		551 M	46 M	675 M	1830 M	<24 M	807 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		6510	395	11900	35000	<118	8920

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS311	W7WS311
			Depth (m)	0.80 - 0.90	2.80 - 2.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017
			Sampled Time	.	.
			Date Received	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61
			Lab Sample No.(s)	15393936	15393955
			AGS Reference	ES	ES
Naphthalene-d8 % recovery**	%	TM218		99.8	82.8
Acenaphthene-d10 % recovery**	%	TM218		94.6	75.6
Phenanthrene-d10 % recovery**	%	TM218		92.7	70.1
Chrysene-d12 % recovery**	%	TM218		89.8	65
Perylene-d12 % recovery**	%	TM218		94.7	74.8
Naphthalene	<9 µg/kg	TM218		37.6 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		29.8 M	<12 M
Acenaphthene	<8 µg/kg	TM218		45.5 M	<8 M
Fluorene	<10 µg/kg	TM218		33.5 M	<10 M
Phenanthrene	<15 µg/kg	TM218		475 M	<15 M
Anthracene	<16 µg/kg	TM218		130 M	<16 M
Fluoranthene	<17 µg/kg	TM218		1090 M	<17 M
Pyrene	<15 µg/kg	TM218		957 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		554 M	<14 M
Chrysene	<10 µg/kg	TM218		533 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		708 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		395 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		656 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		398 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		117 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		542 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		6700	<118

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH306	W4BH306	W4BH306	W4TP307	W4TP308	W4TP309
			Depth (m)	0.90 - 1.00	2.20 - 2.50	3.50 - 3.80	1.00	1.70	1.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393785	15393791	15393798	15393653	15393631	15393611
			AGS Reference	ES	ES	ES	ES	ES	ES
Phenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	529	<100	<2000	<500	<100
Dibenzofuran	<100 µg/kg	TM157		<100	575	<100	4900	966	<100
Carbazole	<100 µg/kg	TM157		<100	306	<100	<2000	1800	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH306	W4BH306	W4BH306	W4TP307	W4TP308	W4TP309
			Depth (m)	0.90 - 1.00	2.20 - 2.50	3.50 - 3.80	1.00	1.70	1.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393785	15393791	15393798	15393653	15393631	15393611
			AGS Reference	ES	ES	ES	ES	ES	ES
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	229	<100	23400	<500	<100
Benzo(a)anthracene	<100 µg/kg	TM157		281	4430	<100	7820	23300	<100
Chrysene	<100 µg/kg	TM157		277	4340	<100	9150	22200	<100
Naphthalene	<100 µg/kg	TM157		<100	433	<100	116000	<500	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<2000	<500	<100

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP309	W4TP310	W4TP311	W4TP312	W4TP313	W4TP314
			Depth (m)	2.50	1.25	1.70	1.90	2.20	0.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393619	15393596	15393736	15393673	15393585	15393919
			AGS Reference	ES	ES	ES	ES	ES	ES
Phenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<500	<100	256	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<500	<100	258	232	<100
Carbazole	<100 µg/kg	TM157		130	<500	<100	232	145	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	1590
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<500	<100	<100	220	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP309	W4TP310	W4TP311	W4TP312	W4TP313	W4TP314
			Depth (m)	2.50	1.25	1.70	1.90	2.20	0.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393619	15393596	15393736	15393673	15393585	15393919
			AGS Reference	ES	ES	ES	ES	ES	ES
2-Chlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<500	<100	<100	284	<100
Benzo(a)anthracene	<100 µg/kg	TM157		1590	9410	<100	4180	1370	874
Chrysene	<100 µg/kg	TM157		1710	8780	<100	4240	1460	905
Naphthalene	<100 µg/kg	TM157		<100	<500	<100	155	558	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP314	W4TP315	W4TP316	W4TP316	W4TP316	W5TP304
			Depth (m)	2.65	0.90	0.40	1.30	2.20	0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15394019	15393728	15393690	15393699	15393707	15393684
			AGS Reference	ES	ES	ES	ES	ES	ES
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	1180	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		602	<100	356	134	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	144	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	10600	471	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	169	<100	151	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP314	W4TP315	W4TP316	W4TP316	W4TP316	W5TP304
			Depth (m)	2.65	0.90	0.40	1.30	2.20	0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15394019	15393728	15393690	15393699	15393707	15393684
			AGS Reference	ES	ES	ES	ES	ES	ES
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	246	<100	247	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		352	1950	326	1970	242	543
Chrysene	<100 µg/kg	TM157		376	2140	380	2120	394	583
Naphthalene	<100 µg/kg	TM157		<100	194	<100	116	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS308	W7WS309	W7WS310	W7WS311	W7WS311
			Depth (m)	0.30	0.90	1.00 - 1.10	0.10 - 0.30	2.80 - 2.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393843	15393897	15393967	15393930	15393955
			AGS Reference	ES	ES	ES	ES	ES
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS308	W7WS309	W7WS310	W7WS311	W7WS311	
			Depth (m)	0.30	0.90	1.00 - 1.10	0.10 - 0.30	2.80 - 2.90	
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	
			Sampled Time	.	.	.	.	.	
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	
			Lab Sample No.(s)	15393843	15393897	15393967	15393930	15393955	
			AGS Reference	ES	ES	ES	ES	ES	
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
Benzo(a)anthracene	<100 µg/kg	TM157		1450	549	<100	1240	<100	
Chrysene	<100 µg/kg	TM157		1620	644	<100	1270	<100	
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			W4BH306	W4BH306	W4BH306	W4BH306	W4BH306	W4TP307
			0.10 - 0.30 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393773 ES	0.90 - 1.00 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393785 ES	2.20 - 2.50 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393791 ES	3.50 - 3.80 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393798 ES	5.00 - 5.30 Soil/Solid (S) 20/04/2017 . 25/04/2017 170425-61 15393807 ES	1.00 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393653 ES
GRO Surrogate % recovery**	%	TM089	64	47	63	90	72	51 2
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44 M	<44 M	2030 M	<44 M	<44 M	2130000 3 M
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	19.8	<10	<10	<200 3
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	43.4	<10	<10	6000 3
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	295	<10	<10	628000 3
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	879	<10	<10	563000 3
Aliphatics >C12-C16	<100 µg/kg	TM173	1010	<100	31500	<100	<100	1200000
Aliphatics >C16-C21	<100 µg/kg	TM173	5870	812	81200	<100	147	120000
Aliphatics >C21-C35	<100 µg/kg	TM173	71500	8670	345000	11500	15800	186000
Aliphatics >C35-C44	<100 µg/kg	TM173	52800	1130	128000	1210	1550	30600
Total Aliphatics >C12-C44	<100 µg/kg	TM173	131000	10600	585000	12700	17500	1540000
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<200 3
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<200 3
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	203	<10	<10	555000 3
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	585	<10	<10	376000 3
Aromatics >EC12-EC16	<100 µg/kg	TM173	181	<100	53400	327	340	361000
Aromatics >EC16-EC21	<100 µg/kg	TM173	13900	6260	<100	408	201	248000
Aromatics >EC21-EC35	<100 µg/kg	TM173	117000	29500	219000	4810	3430	776000
Aromatics >EC35-EC44	<100 µg/kg	TM173	120000	11800	100000	1120	363	138000
Aromatics >EC40-EC44	<100 µg/kg	TM173	56300	4590	37000	344	<100	68500
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	251000	47600	373000	6670	4330	1520000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	382000	58200	960000	19400	21800	5190000
Aromatics >EC16-EC35	<100 µg/kg	TM173	131000	35700	219000	5220	3630	1020000

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP307	W4TP308	W4TP308	W4TP309	W4TP309	W4TP309
			Depth (m)	3.00	0.40	1.70	0.10	1.00	2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393655	15393625	15393631	15393606	15393611	15393619
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		58	67	87	60	123	43
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		171 M	<44 M	<44 M	483 M	<44 M	3280 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	12.5	<10	13.1
Aliphatics >C6-C8	<10 µg/kg	TM089		31.7	<10	<10	31.3	<10	27.4
Aliphatics >C8-C10	<10 µg/kg	TM089		36.6	<10	<10	86.3	<10	630
Aliphatics >C10-C12	<10 µg/kg	TM089		35.4	<10	<10	170	<10	1310
Aliphatics >C12-C16	<100 µg/kg	TM173		2000	4440	2340	10800	<100	7810
Aliphatics >C16-C21	<100 µg/kg	TM173		12200	6710	8010	52000	<100	51900
Aliphatics >C21-C35	<100 µg/kg	TM173		121000	19100	56000	285000	200	337000
Aliphatics >C35-C44	<100 µg/kg	TM173		58000	5040	19600	77700	<100	102000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		193000	35300	85900	425000	200	499000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		29.3	<10	<10	63.8	<10	430
Aromatics >EC10-EC12	<10 µg/kg	TM089		23.2	<10	<10	114	<10	872
Aromatics >EC12-EC16	<100 µg/kg	TM173		13400	48600	8900	5390	<100	2660
Aromatics >EC16-EC21	<100 µg/kg	TM173		104000	259000	102000	47500	<100	28300
Aromatics >EC21-EC35	<100 µg/kg	TM173		235000	492000	515000	225000	229	217000
Aromatics >EC35-EC44	<100 µg/kg	TM173		109000	137000	180000	95900	373	96600
Aromatics >EC40-EC44	<100 µg/kg	TM173		46700	50700	63800	36100	<100	36500
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		461000	937000	805000	374000	602	344000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		655000	972000	891000	799000	805	846000
Aromatics >EC16-EC35	<100 µg/kg	TM173		338000	751000	617000	273000	229	245000

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP310	W4TP310	W4TP310	W4TP311	W4TP311	W4TP312
			Depth (m)	0.40	1.25	2.90	0.60	1.70	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393590	15393596	15393601	15393744	15393736	15393661
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		109	63	106	71	123	44
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 M	289 M	126 M	369 M	<44 M	<44 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	18.3	<10	17.4	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	39	11.6	41.8	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	69.5	24.4	70.8	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	62.2	39.4	95.1	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		<100	17600	1180	5580	455	10600
Aliphatics >C16-C21	<100 µg/kg	TM173		<100	55700	3920	17800	774	33600
Aliphatics >C21-C35	<100 µg/kg	TM173		9030	636000	18700	111000	8420	326000
Aliphatics >C35-C44	<100 µg/kg	TM173		10900	255000	5660	125000	1640	360000
Total Aliphatics >C12-C44	<100 µg/kg	TM173		19900	964000	29500	259000	11300	730000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	18.6	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	54.9	19.7	63.8	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	41.5	26.7	62.6	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		449	11500	984	4480	<100	5500
Aromatics >EC16-EC21	<100 µg/kg	TM173		4640	44500	9920	37400	<100	64500
Aromatics >EC21-EC35	<100 µg/kg	TM173		64100	279000	27800	215000	3740	543000
Aromatics >EC35-EC44	<100 µg/kg	TM173		84900	142000	12100	198000	5610	683000
Aromatics >EC40-EC44	<100 µg/kg	TM173		35500	51900	5270	90700	2830	334000
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		154000	477000	50800	455000	9360	1300000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		174000	1440000	80400	714000	20600	2030000
Aromatics >EC16-EC35	<100 µg/kg	TM173		68800	323000	37700	253000	3740	608000

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP312	W4TP313	W4TP313	W4TP313	W4TP314	W4TP314
			Depth (m)	1.90	0.30	0.70	2.20	0.90	2.65
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393673	15394027	15394032	15393585	15393919	15394019
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		52	49	62	29	101	26
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		184 M	2280 M	7970 M	7330 M	65.6 M	1160 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	18.9	15.5	<10	24.9
Aliphatics >C6-C8	<10 µg/kg	TM089		15.3	27.8	80.2	140	<10	117
Aliphatics >C8-C10	<10 µg/kg	TM089		47.2	963	1980	2070	12.7	368
Aliphatics >C10-C12	<10 µg/kg	TM089		38.9	339	2340	1950	<10	231
Aliphatics >C12-C16	<100 µg/kg	TM173		4420	105	10300	29100	898	2590
Aliphatics >C16-C21	<100 µg/kg	TM173		28100	541	44200	163000	7050	15200
Aliphatics >C21-C35	<100 µg/kg	TM173		223000	3960	173000	499000	51400	93100
Aliphatics >C35-C44	<100 µg/kg	TM173		97700	<100	39100	89700	20200	35500
Total Aliphatics >C12-C44	<100 µg/kg	TM173		353000	4610	267000	781000	79600	146000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	12.1	355	42.8	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		43.7	708	1620	1800	18.4	261
Aromatics >EC10-EC12	<10 µg/kg	TM089		26	225	1560	1300	<10	153
Aromatics >EC12-EC16	<100 µg/kg	TM173		8790	<100	6800	6980	822	883
Aromatics >EC16-EC21	<100 µg/kg	TM173		65900	394	26300	52700	13600	13400
Aromatics >EC21-EC35	<100 µg/kg	TM173		285000	5880	95000	230000	113000	95100
Aromatics >EC35-EC44	<100 µg/kg	TM173		156000	2720	37800	68900	43100	53400
Aromatics >EC40-EC44	<100 µg/kg	TM173		60000	1320	14400	24400	18400	21700
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		516000	9000	166000	359000	171000	163000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		870000	15900	441000	1150000	250000	310000
Aromatics >EC16-EC35	<100 µg/kg	TM173		351000	6270	121000	283000	127000	109000

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4TP315	0.10	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393715	ES
			W4TP315	0.90	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393728	ES
			W4TP316	0.40	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393690	ES
			W4TP316	1.30	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393699	ES
			W4TP316	2.20	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393707	ES
			W5TP301	0.15	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393579	ES
GRO Surrogate % recovery**	%	TM089	31	86	49	49	39	92			
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	82.4 M	274 M	88.6 M	<44 M	71.2 M	<44 M			
Aliphatics >C5-C6	<10 µg/kg	TM089	20.1	13.8	<10	<10	<10	<10			
Aliphatics >C6-C8	<10 µg/kg	TM089	24.3	36.3	10.4	<10	12.4	<10			
Aliphatics >C8-C10	<10 µg/kg	TM089	16.9	52.5	19.6	<10	15.8	<10			
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	57.5	23	<10	12.4	<10			
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	3400	<100	2880	16900	1050			
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	10700	2130	24400	58600	7360			
Aliphatics >C21-C35	<100 µg/kg	TM173	50800	77300	24700	167000	321000	53500			
Aliphatics >C35-C44	<100 µg/kg	TM173	54500	47500	11400	74700	146000	19800			
Total Aliphatics >C12-C44	<100 µg/kg	TM173	105000	139000	38100	269000	543000	81600			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	28.8	<10	<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	11.6	42.5	13.8	<10	14.7	<10			
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	38.8	15	<10	<10	<10			
Aromatics >EC12-EC16	<100 µg/kg	TM173	1910	2510	706	1500	5400	233			
Aromatics >EC16-EC21	<100 µg/kg	TM173	22000	20600	7720	17900	30100	4520			
Aromatics >EC21-EC35	<100 µg/kg	TM173	145000	137000	86500	178000	196000	45300			
Aromatics >EC35-EC44	<100 µg/kg	TM173	142000	91600	39500	129000	163000	37500			
Aromatics >EC40-EC44	<100 µg/kg	TM173	68100	39100	16600	55500	75300	16200			
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	311000	252000	134000	327000	395000	87500			
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	416000	391000	173000	596000	938000	169000			
Aromatics >EC16-EC35	<100 µg/kg	TM173	167000	158000	94200	196000	226000	49800			

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5TP301	W5TP304	W5TP304	W4WS316	W7WS308	W7WS308
			Depth (m)	0.50	0.20	0.50	2.30 - 2.40	0.30	2.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393646	15393679	15393684	15394008	15393843	15393872
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		66	73	108	120	73	135
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		116 M	<44 M	<44 M	1290 M	<44 M	<44 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	19.9	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	252	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		52.8	<10	<10	507	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		432	1150	<100	<100	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		4840	5470	<100	1540	1580	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		38000	61900	3620	7610	27800	3290
Aliphatics >C35-C44	<100 µg/kg	TM173		10900	17700	<100	711	19100	1150
Total Aliphatics >C12-C44	<100 µg/kg	TM173		54200	86200	3620	9860	48400	4440
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	168	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		35.2	<10	<10	338	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		923	2130	531	958	885	490
Aromatics >EC16-EC21	<100 µg/kg	TM173		9290	25700	6660	3320	7620	3460
Aromatics >EC21-EC35	<100 µg/kg	TM173		40800	96300	21600	7570	61100	10900
Aromatics >EC35-EC44	<100 µg/kg	TM173		21400	48200	9250	3190	54300	6230
Aromatics >EC40-EC44	<100 µg/kg	TM173		8620	19400	3670	1230	25000	2720
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		72400	172000	38000	15000	124000	21100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		127000	258000	41700	26200	172000	25500
Aromatics >EC16-EC35	<100 µg/kg	TM173		50100	122000	28300	10900	68700	14400

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS309	W7WS309	W7WS310	W7WS310	W7WS310	W7WS311
			Depth (m)	0.90	1.70	0.00 - 0.20	1.00 - 1.10	2.80 - 2.90	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393897	15393903	15393962	15393967	15393980	15393930
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		86	95	54	108	112	95
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 M	<44 M	<44 M	<44 M	<44 M	<44 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		523	111	<100	<100	<100	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		1810	197	<100	<100	<100	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		13500	698	2600	1820	<100	4850
Aliphatics >C35-C44	<100 µg/kg	TM173		6660	<100	<100	1750	<100	712
Total Aliphatics >C12-C44	<100 µg/kg	TM173		22500	1010	2600	3570	<100	5560
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	<100	508	<100	<100	616
Aromatics >EC16-EC21	<100 µg/kg	TM173		5280	622	1530	<100	<100	7260
Aromatics >EC21-EC35	<100 µg/kg	TM173		52800	3320	9440	2520	<100	40500
Aromatics >EC35-EC44	<100 µg/kg	TM173		30000	2660	5080	5590	<100	23100
Aromatics >EC40-EC44	<100 µg/kg	TM173		12600	1820	2200	2940	<100	10300
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		88100	6600	16600	8110	<100	71500
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		111000	7620	19200	11700	<100	77100
Aromatics >EC16-EC35	<100 µg/kg	TM173		58100	3940	11000	2520	<100	47800

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS311	W7WS311
			Depth (m)	0.80 - 0.90	2.80 - 2.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017
			Sampled Time	.	.
			Date Received	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61
			Lab Sample No.(s)	15393936	15393955
			AGS Reference	ES	ES
GRO Surrogate % recovery**	%	TM089		80	114
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		147 M	<44 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		13.3	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		58.8	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		528	984
Aliphatics >C16-C21	<100 µg/kg	TM173		1240	2280
Aliphatics >C21-C35	<100 µg/kg	TM173		10800	4200
Aliphatics >C35-C44	<100 µg/kg	TM173		3100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173		15600	7460
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		14.4	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		38.9	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		488	1220
Aromatics >EC16-EC21	<100 µg/kg	TM173		6190	2590
Aromatics >EC21-EC35	<100 µg/kg	TM173		24500	4160
Aromatics >EC35-EC44	<100 µg/kg	TM173		11600	1530
Aromatics >EC40-EC44	<100 µg/kg	TM173		4680	886
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		42700	9490
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		58500	17000
Aromatics >EC16-EC35	<100 µg/kg	TM173		30600	6740

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			W4BH306	W4BH306	W4BH306	W4BH306	W4BH306	W4TP307
			0.10 - 0.30 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393773 / ES	0.90 - 1.00 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393785 / ES	2.20 - 2.50 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393791 / ES	3.50 - 3.80 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393798 / ES	5.00 - 5.30 / Soil/Solid (S) / 20/04/2017 / . / 25/04/2017 / 170425-61 / 15393807 / ES	1.00 / Soil/Solid (S) / 21/04/2017 / . / 25/04/2017 / 170425-61 / 15393653 / ES
Dibromofluoromethane**	%	TM116		106	105	99.9		99.4 2
Toluene-d8**	%	TM116		98.5	97.5	98		97.1 2
4-Bromofluorobenzene**	%	TM116		109	95.1	100		95.3 2
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M	<60 M	<60 M		<60 2 M
Chloromethane	<7 µg/kg	TM116		<70 #	<70 #	<70 #		<70 2 #
Vinyl Chloride	<6 µg/kg	TM116		<60 M	<60 M	<60 M		<60 2 M
Bromomethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Chloroethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M	<60 M	<60 M		<60 2 M
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #	<100 #	<100 #		<100 2 #
Carbon Disulphide	<7 µg/kg	TM116		<70 M	<70 M	<70 M		<70 2 M
Dichloromethane	<10 µg/kg	TM116		<100 #	<100 #	<100 #		<100 2 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<100 2 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M	<80 M	<80 M		<80 2 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M	<60 M	<60 M		<60 2 M
2,2-Dichloropropane	<10 µg/kg	TM116		<100	<100	<100		<100 2
Bromochloromethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Chloroform	<8 µg/kg	TM116		<80 M	<80 M	<80 M		<80 2 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M	<70 M	<70 M		<70 2 M
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Carbontetrachloride	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M	<50 M	<50 M		<50 2 M
Benzene	<9 µg/kg	TM116	<90 M	<90 M	<90 M	<90 M	<90 M	<90 2 M
Trichloroethene	<9 µg/kg	TM116		<90 #	<90 #	<90 #		<90 2 #
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Dibromomethane	<9 µg/kg	TM116		<90 M	<90 M	<90 M		<90 2 M
Bromodichloromethane	<7 µg/kg	TM116		<70 M	<70 M	<70 M		<70 2 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Toluene	<7 µg/kg	TM116	<70 M	<70 M	<70 M	<70 M	<70 M	<70 2 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100	<100	<100		<100 2
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M

CERTIFICATE OF ANALYSIS

SDG: 170425-61 Client Reference: 70015362 Report Number: 436986
Location: City Deal Tipner West Order Number: 70015362-CS2 Superseded Report: 409098

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH306	W4BH306	W4BH306	W4BH306	W4BH306	W4TP307
			Depth (m)	0.10 - 0.30	0.90 - 1.00	2.20 - 2.50	3.50 - 3.80	5.00 - 5.30	1.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393773	15393785	15393791	15393798	15393807	15393653
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116		<70 M	<70 M	<70 M		<70 2 M
Tetrachloroethene	<5 µg/kg	TM116		<50 M	<50 M	<50 M		<50 2 M
Dibromochloromethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
1,2-Dibromoethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Chlorobenzene	<5 µg/kg	TM116		<50 M	<50 M	<50 M		<50 2 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Ethylbenzene	<4 µg/kg	TM116	<40 M	<40 M	<40 M	<40 M	<40 M	831 2 M
p/m-Xylene	<10 µg/kg	TM116	<100 #	<100 #	<100 #	<100 #	<100 #	9840 2 #
o-Xylene	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	2250 2 M
Styrene	<10 µg/kg	TM116		<100 #	<100 #	<100 #		<100 2 #
Bromoform	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Isopropylbenzene	<5 µg/kg	TM116		<50 #	<50 #	<50 #		1160 2 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
1,2,3-Trichloropropane	<16 µg/kg	TM116		<160 M	<160 M	<160 M		<160 2 M
Bromobenzene	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
Propylbenzene	<10 µg/kg	TM116		<100 M	<100 M	<100 M		2250 2 M
2-Chlorotoluene	<9 µg/kg	TM116		<90 M	<90 M	<90 M		<90 2 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<80 M	<80 M	<80 M		10200 2 M
4-Chlorotoluene	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
tert-Butylbenzene	<14 µg/kg	TM116		<140 M	<140 M	<140 M		<140 2 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<90 #	<90 #	<90 #		26700 2 #
sec-Butylbenzene	<10 µg/kg	TM116		<100	<100	<100		2090 2
4-Isopropyltoluene	<10 µg/kg	TM116		<100 M	<100 M	<100 M		2200 2 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<80 M	<80 M	<80 M		<80 2 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<50 M	<50 M	<50 M		<50 2 M
n-Butylbenzene	<11 µg/kg	TM116		<110	<110	<110		<110 2
1,2-Dichlorobenzene	<10 µg/kg	TM116		<100 M	<100 M	<100 M		<100 2 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<140 M	<140 M	<140 M		<140 2 M
Tert-amyl methyl ether	<10 µg/kg	TM116	<100 #	<100 #	<100 #	<100 #	<100 #	<100 2 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<200	<200	<200		<200 2
Hexachlorobutadiene	<20 µg/kg	TM116		<200	<200	<200		<200 2
Naphthalene	<13 µg/kg	TM116		<130 M	<130 M	<130 M		3260 2 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4BH306	0.10 - 0.30	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393773	ES
			W4BH306	0.90 - 1.00	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393785	ES
			W4BH306	2.20 - 2.50	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393791	ES
			W4BH306	3.50 - 3.80	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393798	ES
			W4BH306	5.00 - 5.30	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393807	ES
			W4TP307	1.00	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393653	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200 #				<200 #		<200 #	
										<200 2 #	

CERTIFICATE OF ANALYSIS

SDG: 170425-61 Client Reference: 70015362 Report Number: 436986
Location: City Deal Tipner West Order Number: 70015362-CS2 Superseded Report: 409098

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP307	W4TP308	W4TP308	W4TP309	W4TP309	W4TP309
			Depth (m)	3.00	0.40	1.70	0.10	1.00	2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393655	15393625	15393631	15393606	15393611	15393619
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116				96.5		100	96.4
Toluene-d8**	%	TM116				97.1		95.5	90.6
4-Bromofluorobenzene**	%	TM116				97.7		97.9	83.3
Dichlorodifluoromethane	<6 µg/kg	TM116				<60 M		<60 M	<60 M
Chloromethane	<7 µg/kg	TM116				<70 #		<70 #	<70 #
Vinyl Chloride	<6 µg/kg	TM116				<60 M		<60 M	<60 M
Bromomethane	<10 µg/kg	TM116				<100 M		<100 M	<100 M
Chloroethane	<10 µg/kg	TM116				<100 M		<100 M	<100 M
Trichlorofluorormethane	<6 µg/kg	TM116				<60 M		<60 M	<60 M
1,1-Dichloroethene	<10 µg/kg	TM116				<100 #		<100 #	<100 #
Carbon Disulphide	<7 µg/kg	TM116				<70 M		<70 M	<70 M
Dichloromethane	<10 µg/kg	TM116				<100 #		<100 #	<100 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116				<100 M		<100 M	<100 M
1,1-Dichloroethane	<8 µg/kg	TM116				<80 M		<80 M	<80 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116				<60 M		<60 M	<60 M
2,2-Dichloropropane	<10 µg/kg	TM116				<100		<100	<100
Bromochloromethane	<10 µg/kg	TM116				<100 M		<100 M	<100 M
Chloroform	<8 µg/kg	TM116				<80 M		<80 M	<80 M
1,1,1-Trichloroethane	<7 µg/kg	TM116				<70 M		<70 M	<70 M
1,1-Dichloropropene	<10 µg/kg	TM116				<100 M		<100 M	<100 M
Carbontetrachloride	<10 µg/kg	TM116				<100 M		<100 M	<100 M
1,2-Dichloroethane	<5 µg/kg	TM116				<50 M		<50 M	<50 M
Benzene	<9 µg/kg	TM116	<90 M	<90 M	<90 M	<90 M	<90 M	<90 M	<90 M
Trichloroethene	<9 µg/kg	TM116				<90 #		<90 #	<90 #
1,2-Dichloropropane	<10 µg/kg	TM116				<100 M		<100 M	<100 M
Dibromomethane	<9 µg/kg	TM116				<90 M		<90 M	<90 M
Bromodichloromethane	<7 µg/kg	TM116				<70 M		<70 M	<70 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116				<100 M		<100 M	<100 M
Toluene	<7 µg/kg	TM116	<70 M	<70 M	<70 M	<70 M	<70 M	<70 M	<70 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116				<100		<100	<100
1,1,2-Trichloroethane	<10 µg/kg	TM116				<100 M		<100 M	<100 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP307	W4TP308	W4TP308	W4TP309	W4TP309	W4TP309
			Depth (m)	3.00	0.40	1.70	0.10	1.00	2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393655	15393625	15393631	15393606	15393611	15393619
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116				<70 M		<70 M	<70 M
Tetrachloroethene	<5 µg/kg	TM116				<50 M		<50 M	<50 M
Dibromochloromethane	<10 µg/kg	TM116				<100 M		<100 M	<100 M
1,2-Dibromoethane	<10 µg/kg	TM116				<100 M		<100 M	<100 M
Chlorobenzene	<5 µg/kg	TM116				<50 M		<50 M	<50 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116				<100 M		<100 M	<100 M
Ethylbenzene	<4 µg/kg	TM116	<40 M	<40 M	<40 M	<40 M	<40 M	<40 M	<40 M
p/m-Xylene	<10 µg/kg	TM116	<100 #	<100 #	<100 #	<100 #	<100 #	<100 #	<100 #
o-Xylene	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M
Styrene	<10 µg/kg	TM116			<100 #		<100 #	<100 #	
Bromoform	<10 µg/kg	TM116			<100 M		<100 M	<100 M	
Isopropylbenzene	<5 µg/kg	TM116			<50 #		<50 #	<50 #	
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M		<100 M	<100 M	
1,2,3-Trichloropropane	<16 µg/kg	TM116			<160 M		<160 M	<160 M	
Bromobenzene	<10 µg/kg	TM116			<100 M		<100 M	<100 M	
Propylbenzene	<10 µg/kg	TM116			<100 M		<100 M	<100 M	
2-Chlorotoluene	<9 µg/kg	TM116			<90 M		<90 M	<90 M	
1,3,5-Trimethylbenzene	<8 µg/kg	TM116			<80 M		<80 M	<80 M	
4-Chlorotoluene	<10 µg/kg	TM116			<100 M		<100 M	<100 M	
tert-Butylbenzene	<14 µg/kg	TM116			<140 M		<140 M	<140 M	
1,2,4-Trimethylbenzene	<9 µg/kg	TM116			<90 #		<90 #	<90 #	
sec-Butylbenzene	<10 µg/kg	TM116			<100		<100	<100	
4-Isopropyltoluene	<10 µg/kg	TM116			<100 M		<100 M	<100 M	
1,3-Dichlorobenzene	<8 µg/kg	TM116			<80 M		<80 M	<80 M	
1,4-Dichlorobenzene	<5 µg/kg	TM116			<50 M		<50 M	<50 M	
n-Butylbenzene	<11 µg/kg	TM116			<110		<110	<110	
1,2-Dichlorobenzene	<10 µg/kg	TM116			<100 M		<100 M	<100 M	
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116			<140 M		<140 M	<140 M	
Tert-amyl methyl ether	<10 µg/kg	TM116	<100 #	<100 #	<100 #	<100 #	<100 #	<100 #	
1,2,4-Trichlorobenzene	<20 µg/kg	TM116			<200		<200	<200	
Hexachlorobutadiene	<20 µg/kg	TM116			<200		<200	<200	
Naphthalene	<13 µg/kg	TM116			<130 M		<130 M	<130 M	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4TP307	3.00	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393655	ES
			W4TP308	0.40	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393625	ES
			W4TP308	1.70	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393631	ES
			W4TP309	0.10	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393606	ES
			W4TP309	1.00	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393611	ES
			W4TP309	2.50	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393619	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116									

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP310	W4TP310	W4TP310	W4TP311	W4TP311	W4TP312
			Depth (m)	0.40	1.25	2.90	0.60	1.70	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393590	15393596	15393601	15393744	15393736	15393661
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116		100			96.9		
Toluene-d8**	%	TM116		94.6			95.3		
4-Bromofluorobenzene**	%	TM116		90.7			100		
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M			<60 M		
Chloromethane	<7 µg/kg	TM116		<70 #			<70 #		
Vinyl Chloride	<6 µg/kg	TM116		<60 M			<60 M		
Bromomethane	<10 µg/kg	TM116		<100 M			<100 M		
Chloroethane	<10 µg/kg	TM116		<100 M			<100 M		
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M			<60 M		
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #			<100 #		
Carbon Disulphide	<7 µg/kg	TM116		<70 M			<70 M		
Dichloromethane	<10 µg/kg	TM116		<100 #			<100 #		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<10 M	
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M			<100 M		
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M			<80 M		
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M			<60 M		
2,2-Dichloropropane	<10 µg/kg	TM116		<100			<100		
Bromochloromethane	<10 µg/kg	TM116		<100 M			<100 M		
Chloroform	<8 µg/kg	TM116		<80 M			<80 M		
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M			<70 M		
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M			<100 M		
Carbontetrachloride	<10 µg/kg	TM116		<100 M			<100 M		
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M			<50 M		
Benzene	<9 µg/kg	TM116	<90 M	<90 M	<90 M	<90 M	<90 M	<9 M	
Trichloroethene	<9 µg/kg	TM116		<90 #			<90 #		
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M			<100 M		
Dibromomethane	<9 µg/kg	TM116		<90 M			<90 M		
Bromodichloromethane	<7 µg/kg	TM116		<70 M			<70 M		
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M			<100 M		
Toluene	<7 µg/kg	TM116	<70 M	<70 M	<70 M	<70 M	<70 M	<7 M	
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100			<100		
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M			<100 M		

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP310	W4TP310	W4TP310	W4TP311	W4TP311	W4TP312
			Depth (m)	0.40	1.25	2.90	0.60	1.70	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393590	15393596	15393601	15393744	15393736	15393661
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116			<70 M			<70 M	
Tetrachloroethene	<5 µg/kg	TM116			<50 M			<50 M	
Dibromochloromethane	<10 µg/kg	TM116			<100 M			<100 M	
1,2-Dibromoethane	<10 µg/kg	TM116			<100 M			<100 M	
Chlorobenzene	<5 µg/kg	TM116			<50 M			<50 M	
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M			<100 M	
Ethylbenzene	<4 µg/kg	TM116	<40 M	<40 M	<40 M	<40 M	<40 M	<40 M	<4 M
p/m-Xylene	<10 µg/kg	TM116	<100 #	<100 #	<100 #	<100 #	<100 #	<100 #	<10 #
o-Xylene	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M	<10 M
Styrene	<10 µg/kg	TM116		<100 #			<100 #		
Bromoform	<10 µg/kg	TM116		<100 M			<100 M		
Isopropylbenzene	<5 µg/kg	TM116		<50 #			<50 #		
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M			<100 M		
1,2,3-Trichloropropane	<16 µg/kg	TM116		<160 M			<160 M		
Bromobenzene	<10 µg/kg	TM116		<100 M			<100 M		
Propylbenzene	<10 µg/kg	TM116		<100 M			<100 M		
2-Chlorotoluene	<9 µg/kg	TM116		<90 M			<90 M		
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<80 M			<80 M		
4-Chlorotoluene	<10 µg/kg	TM116		<100 M			<100 M		
tert-Butylbenzene	<14 µg/kg	TM116		<140 M			<140 M		
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<90 #			<90 #		
sec-Butylbenzene	<10 µg/kg	TM116		<100			<100		
4-Isopropyltoluene	<10 µg/kg	TM116		<100 M			<100 M		
1,3-Dichlorobenzene	<8 µg/kg	TM116		<80 M			<80 M		
1,4-Dichlorobenzene	<5 µg/kg	TM116		<50 M			<50 M		
n-Butylbenzene	<11 µg/kg	TM116		<110			<110		
1,2-Dichlorobenzene	<10 µg/kg	TM116		<100 M			<100 M		
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<140 M			<140 M		
Tert-amyl methyl ether	<10 µg/kg	TM116	<100 #	<100 #	<100 #	<100 #	<100 #	<100 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<200			<200		
Hexachlorobutadiene	<20 µg/kg	TM116		<200			<200		
Naphthalene	<13 µg/kg	TM116		<130 M			<130 M		

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4TP310	0.40	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393590	ES
			W4TP310	1.25	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393596	ES
			W4TP310	2.90	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393601	ES
			W4TP311	0.60	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393744	ES
			W4TP311	1.70	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393736	ES
			W4TP312	0.40	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393661	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200 #						<200 #	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP312	W4TP313	W4TP313	W4TP313	W4TP314	W4TP314
			Depth (m)	1.90	0.30	0.70	2.20	0.90	2.65
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393673	15394027	15394032	15393585	15393919	15394019
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116		98.3			108	105	104
Toluene-d8**	%	TM116		92.3			93.5	95.5	94.7
4-Bromofluorobenzene**	%	TM116		90.4			89.7	101	91.4
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M			<60 M	<60 M	<60 M
Chloromethane	<7 µg/kg	TM116		<70 #			<70 #	<70 #	<70 #
Vinyl Chloride	<6 µg/kg	TM116		<60 M			<60 M	<60 M	<60 M
Bromomethane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Chloroethane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M			<60 M	<60 M	<60 M
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #			<100 #	<100 #	<100 #
Carbon Disulphide	<7 µg/kg	TM116		<70 M			<70 M	<70 M	<70 M
Dichloromethane	<10 µg/kg	TM116		<100 #			<100 #	<100 #	<100 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	<100 M	<100 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M			<80 M	<80 M	<80 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M			<60 M	<60 M	<60 M
2,2-Dichloropropane	<10 µg/kg	TM116		<100			<100	<100	<100
Bromochloromethane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Chloroform	<8 µg/kg	TM116		<80 M			<80 M	<80 M	<80 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M			<70 M	<70 M	<70 M
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Carbontetrachloride	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M			<50 M	<50 M	<50 M
Benzene	<9 µg/kg	TM116		<90 M	<90 M	425 M	422 M	<90 M	<90 M
Trichloroethene	<9 µg/kg	TM116		<90 #			<90 #	<90 #	<90 #
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Dibromomethane	<9 µg/kg	TM116		<90 M			<90 M	<90 M	<90 M
Bromodichloromethane	<7 µg/kg	TM116		<70 M			<70 M	<70 M	<70 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Toluene	<7 µg/kg	TM116		<70 M	<70 M	<70 M	<70 M	<70 M	<70 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100			<100	<100	<100
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP312	W4TP313	W4TP313	W4TP313	W4TP314	W4TP314
			Depth (m)	1.90	0.30	0.70	2.20	0.90	2.65
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393673	15394027	15394032	15393585	15393919	15394019
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116		<70 M			<70 M	<70 M	<70 M
Tetrachloroethene	<5 µg/kg	TM116		<50 M			<50 M	<50 M	<50 M
Dibromochloromethane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
1,2-Dibromoethane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Chlorobenzene	<5 µg/kg	TM116		<50 M			<50 M	<50 M	<50 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Ethylbenzene	<4 µg/kg	TM116		<40 M	<40 M	<40 M	53.6 M	<40 M	<40 M
p/m-Xylene	<10 µg/kg	TM116		<100 #	<100 #	<100 #	285 #	<100 #	<100 #
o-Xylene	<10 µg/kg	TM116		<100 M	<100 M	<100 M	131 M	<100 M	<100 M
Styrene	<10 µg/kg	TM116		<100 #			<100 #	<100 #	<100 #
Bromoform	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Isopropylbenzene	<5 µg/kg	TM116		<50 #			<50 #	<50 #	<50 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
1,2,3-Trichloropropane	<16 µg/kg	TM116		<160 M			<160 M	<160 M	<160 M
Bromobenzene	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
Propylbenzene	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
2-Chlorotoluene	<9 µg/kg	TM116		<90 M			<90 M	<90 M	<90 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<80 M			<80 M	<80 M	<80 M
4-Chlorotoluene	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
tert-Butylbenzene	<14 µg/kg	TM116		<140 M			<140 M	<140 M	<140 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<90 #			232 #	<90 #	<90 #
sec-Butylbenzene	<10 µg/kg	TM116		<100			<100	<100	<100
4-Isopropyltoluene	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<80 M			<80 M	<80 M	<80 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<50 M			<50 M	<50 M	<50 M
n-Butylbenzene	<11 µg/kg	TM116		<110			<110	<110	<110
1,2-Dichlorobenzene	<10 µg/kg	TM116		<100 M			<100 M	<100 M	<100 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<140 M			<140 M	<140 M	<140 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	<100 #	<100 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<200			<200	<200	<200
Hexachlorobutadiene	<20 µg/kg	TM116		<200			<200	<200	<200
Naphthalene	<13 µg/kg	TM116		<130 M			<130 M	<130 M	<130 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	W4TP312	1.90	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393673	ES
											<200 #
			W4TP313	0.30	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15394027	ES
			W4TP313	0.70	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15394032	ES
			W4TP313	2.20	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393585	ES
											<200 #
			W4TP314	0.90	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393919	ES
											<200 #
			W4TP314	2.65	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15394019	ES
											<200 #

CERTIFICATE OF ANALYSIS

SDG: 170425-61 Client Reference: 70015362 Report Number: 436986
Location: City Deal Tipner West Order Number: 70015362-CS2 Superseded Report: 409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			W4TP315	W4TP315	W4TP316	W4TP316	W4TP316	W5TP301
			0.10 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393715 ES	0.90 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393728 ES	0.40 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393690 ES	1.30 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393699 ES	2.20 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393707 ES	0.15 Soil/Solid (S) 21/04/2017 . 25/04/2017 170425-61 15393579 ES
Dibromofluoromethane**	%	TM116		105	109	105	108	
Toluene-d8**	%	TM116		92.5	93	97	94.9	
4-Bromofluorobenzene**	%	TM116		93.9	91.3	92.6	92.4	
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M	<60 M	<60 M	<60 M	
Chloromethane	<7 µg/kg	TM116		<70 #	<70 #	<70 #	<70 #	
Vinyl Chloride	<6 µg/kg	TM116		<60 M	<60 M	<60 M	<60 M	
Bromomethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	
Chloroethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M	<60 M	<60 M	<60 M	
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	
Carbon Disulphide	<7 µg/kg	TM116		<70 M	<70 M	<70 M	<70 M	
Dichloromethane	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M	<80 M	<80 M	<80 M	
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M	<60 M	<60 M	<60 M	
2,2-Dichloropropane	<10 µg/kg	TM116		<100	<100	<100	<100	
Bromochloromethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	
Chloroform	<8 µg/kg	TM116		<80 M	<80 M	<80 M	<80 M	
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M	<70 M	<70 M	<70 M	
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	
Carbontetrachloride	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M	<50 M	<50 M	<50 M	
Benzene	<9 µg/kg	TM116	<90 M	<90 M	<90 M	<90 M	<90 M	<90 M
Trichloroethene	<9 µg/kg	TM116		<90 #	<90 #	<90 #	<90 #	
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	
Dibromomethane	<9 µg/kg	TM116		<90 M	<90 M	<90 M	<90 M	
Bromodichloromethane	<7 µg/kg	TM116		<70 M	<70 M	<70 M	<70 M	
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	
Toluene	<7 µg/kg	TM116	<70 M	<70 M	<70 M	<70 M	<70 M	<70 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100	<100	<100	<100	
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	

CERTIFICATE OF ANALYSIS

SDG: 170425-61 Client Reference: 70015362 Report Number: 436986
Location: City Deal Tipner West Order Number: 70015362-CS2 Superseded Report: 409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4TP315	W4TP315	W4TP316	W4TP316	W4TP316	W5TP301
			Depth (m)	0.10	0.90	0.40	1.30	2.20	0.15
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393715	15393728	15393690	15393699	15393707	15393579
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116			<70 M	<70 M	<70 M	<70 M	
Tetrachloroethene	<5 µg/kg	TM116			<50 M	<50 M	<50 M	<50 M	
Dibromochloromethane	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
1,2-Dibromoethane	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
Chlorobenzene	<5 µg/kg	TM116			<50 M	<50 M	<50 M	<50 M	
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
Ethylbenzene	<4 µg/kg	TM116		<40 M	<40 M	<40 M	<40 M	<40 M	<40 M
p/m-Xylene	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	<100 #	<100 #
o-Xylene	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	<100 M	<100 M
Styrene	<10 µg/kg	TM116			<100 #	<100 #	<100 #	<100 #	
Bromoform	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
Isopropylbenzene	<5 µg/kg	TM116			<50 #	<50 #	<50 #	<50 #	
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
1,2,3-Trichloropropane	<16 µg/kg	TM116			<160 M	<160 M	<160 M	<160 M	
Bromobenzene	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
Propylbenzene	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
2-Chlorotoluene	<9 µg/kg	TM116			<90 M	<90 M	<90 M	<90 M	
1,3,5-Trimethylbenzene	<8 µg/kg	TM116			<80 M	<80 M	<80 M	<80 M	
4-Chlorotoluene	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
tert-Butylbenzene	<14 µg/kg	TM116			<140 M	<140 M	<140 M	<140 M	
1,2,4-Trimethylbenzene	<9 µg/kg	TM116			<90 #	<90 #	<90 #	<90 #	
sec-Butylbenzene	<10 µg/kg	TM116			<100	<100	<100	<100	
4-Isopropyltoluene	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
1,3-Dichlorobenzene	<8 µg/kg	TM116			<80 M	<80 M	<80 M	<80 M	
1,4-Dichlorobenzene	<5 µg/kg	TM116			<50 M	<50 M	<50 M	<50 M	
n-Butylbenzene	<11 µg/kg	TM116			<110	<110	<110	<110	
1,2-Dichlorobenzene	<10 µg/kg	TM116			<100 M	<100 M	<100 M	<100 M	
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116			<140 M	<140 M	<140 M	<140 M	
Tert-amyl methyl ether	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	<100 #	<100 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116			<200	<200	<200	<200	
Hexachlorobutadiene	<20 µg/kg	TM116			<200	<200	<200	<200	
Naphthalene	<13 µg/kg	TM116			<130 M	<130 M	<130 M	<130 M	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4TP315	0.10	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393715	ES
			W4TP315	0.90	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393728	ES
			W4TP316	0.40	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393690	ES
			W4TP316	1.30	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393699	ES
			W4TP316	2.20	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393707	ES
			W5TP301	0.15	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393579	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200 #				<200 #		<200 #	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W5TP301	0.50	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393646	ES
			W5TP304	0.20	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393679	ES
			W5TP304	0.50	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393684	ES
			W4WS316	2.30 - 2.40	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15394008	ES
			W7WS308	0.30	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393843	ES
			W7WS308	2.40	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393872	ES
Dibromofluoromethane**	%	TM116			98.3		104		97.6		
Toluene-d8**	%	TM116			96.4		99.3		97.7		
4-Bromofluorobenzene**	%	TM116			97.1		101		97.3		
Dichlorodifluoromethane	<6 µg/kg	TM116			<60 M		<60 M		<60 M		
Chloromethane	<7 µg/kg	TM116			<70 #		<70 #		<70 #		
Vinyl Chloride	<6 µg/kg	TM116			<60 M		<60 M		<60 M		
Bromomethane	<10 µg/kg	TM116			<100 M		<100 M		<100 M		
Chloroethane	<10 µg/kg	TM116			<100 M		<100 M		<100 M		
Trichlorofluorormethane	<6 µg/kg	TM116			<60 M		<60 M		<60 M		
1,1-Dichloroethene	<10 µg/kg	TM116			<100 #		<100 #		<100 #		
Carbon Disulphide	<7 µg/kg	TM116			<70 M		<70 M		<70 M		
Dichloromethane	<10 µg/kg	TM116			<100 #		<100 #		<100 #		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100 M	<100 M	<100 M		<100 M		<100 M	<100 M	
trans-1,2-Dichloroethene	<10 µg/kg	TM116			<100 M		<100 M		<100 M		
1,1-Dichloroethane	<8 µg/kg	TM116			<80 M		<80 M		<80 M		
cis-1,2-Dichloroethene	<6 µg/kg	TM116			<60 M		<60 M		<60 M		
2,2-Dichloropropane	<10 µg/kg	TM116			<100		<100		<100		
Bromochloromethane	<10 µg/kg	TM116			<100 M		<100 M		<100 M		
Chloroform	<8 µg/kg	TM116			<80 M		<80 M		<80 M		
1,1,1-Trichloroethane	<7 µg/kg	TM116			<70 M		<70 M		<70 M		
1,1-Dichloropropene	<10 µg/kg	TM116			<100 M		<100 M		<100 M		
Carbontetrachloride	<10 µg/kg	TM116			<100 M		<100 M		<100 M		
1,2-Dichloroethane	<5 µg/kg	TM116			<50 M		<50 M		<50 M		
Benzene	<9 µg/kg	TM116	<90 M	<90 M	<90 M		<90 M		<90 M	<90 M	
Trichloroethene	<9 µg/kg	TM116			<90 #		<90 #		<90 #		
1,2-Dichloropropane	<10 µg/kg	TM116			<100 M		<100 M		<100 M		
Dibromomethane	<9 µg/kg	TM116			<90 M		<90 M		<90 M		
Bromodichloromethane	<7 µg/kg	TM116			<70 M		<70 M		<70 M		
cis-1,3-Dichloropropene	<10 µg/kg	TM116			<100 M		<100 M		<100 M		
Toluene	<7 µg/kg	TM116	<70 M	<70 M	<70 M		<70 M		<70 M	<70 M	
trans-1,3-Dichloropropene	<10 µg/kg	TM116			<100		<100		<100		
1,1,2-Trichloroethane	<10 µg/kg	TM116			<100 M		<100 M		<100 M		

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5TP301	W5TP304	W5TP304	W4WS316	W7WS308	W7WS308
			Depth (m)	0.50	0.20	0.50	2.30 - 2.40	0.30	2.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393646	15393679	15393684	15394008	15393843	15393872
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116				<70 M	<70 M	<70 M	
Tetrachloroethene	<5 µg/kg	TM116				<50 M	<50 M	<50 M	
Dibromochloromethane	<10 µg/kg	TM116				<100 M	<100 M	<100 M	
1,2-Dibromoethane	<10 µg/kg	TM116				<100 M	<100 M	<100 M	
Chlorobenzene	<5 µg/kg	TM116				<50 M	<50 M	<50 M	
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116				<100 M	<100 M	<100 M	
Ethylbenzene	<4 µg/kg	TM116	<40 M	<40 M	<40 M	<40 M	<40 M	<40 M	
p/m-Xylene	<10 µg/kg	TM116	<100 #	<100 #	<100 #	<100 #	<100 #	<100 #	
o-Xylene	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M	
Styrene	<10 µg/kg	TM116			<100 #	<100 #	<100 #		
Bromoform	<10 µg/kg	TM116			<100 M	<100 M	<100 M		
Isopropylbenzene	<5 µg/kg	TM116			<50 #	<50 #	<50 #		
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M	<100 M	<100 M		
1,2,3-Trichloropropane	<16 µg/kg	TM116			<160 M	<160 M	<160 M		
Bromobenzene	<10 µg/kg	TM116			<100 M	<100 M	<100 M		
Propylbenzene	<10 µg/kg	TM116			<100 M	<100 M	<100 M		
2-Chlorotoluene	<9 µg/kg	TM116			<90 M	<90 M	<90 M		
1,3,5-Trimethylbenzene	<8 µg/kg	TM116			<80 M	<80 M	<80 M		
4-Chlorotoluene	<10 µg/kg	TM116			<100 M	<100 M	<100 M		
tert-Butylbenzene	<14 µg/kg	TM116			<140 M	<140 M	<140 M		
1,2,4-Trimethylbenzene	<9 µg/kg	TM116			<90 #	<90 #	<90 #		
sec-Butylbenzene	<10 µg/kg	TM116			<100	<100	<100		
4-Isopropyltoluene	<10 µg/kg	TM116			<100 M	<100 M	<100 M		
1,3-Dichlorobenzene	<8 µg/kg	TM116			<80 M	<80 M	<80 M		
1,4-Dichlorobenzene	<5 µg/kg	TM116			<50 M	<50 M	<50 M		
n-Butylbenzene	<11 µg/kg	TM116			<110	<110	<110		
1,2-Dichlorobenzene	<10 µg/kg	TM116			<100 M	<100 M	<100 M		
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116			<140 M	<140 M	<140 M		
Tert-amyl methyl ether	<10 µg/kg	TM116	<100 #	<100 #	<100 #	<100 #	<100 #	<100 #	
1,2,4-Trichlorobenzene	<20 µg/kg	TM116			<200	<200	<200		
Hexachlorobutadiene	<20 µg/kg	TM116			<200	<200	<200		
Naphthalene	<13 µg/kg	TM116			<130 M	<130 M	<130 M		

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W5TP301	0.50	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393646	ES
			W5TP304	0.20	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393679	ES
			W5TP304	0.50	Soil/Solid (S)	21/04/2017	.	25/04/2017	170425-61	15393684	ES
			W4WS316	2.30 - 2.40	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15394008	ES
			W7WS308	0.30	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393843	ES
			W7WS308	2.40	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393872	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116			<200 #			<200 #		<200 #	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS309	W7WS309	W7WS310	W7WS310	W7WS310	W7WS311
			Depth (m)	0.90	1.70	0.00 - 0.20	1.00 - 1.10	2.80 - 2.90	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393897	15393903	15393962	15393967	15393980	15393930
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116		102			103		96.8
Toluene-d8**	%	TM116		96.5			98.5		96.6
4-Bromofluorobenzene**	%	TM116		102			101		96.2
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M			<60 M		<60 M
Chloromethane	<7 µg/kg	TM116		<70 #			<70 #		<70 #
Vinyl Chloride	<6 µg/kg	TM116		<60 M			<60 M		<60 M
Bromomethane	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Chloroethane	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M			<60 M		<60 M
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #			<100 #		<100 #
Carbon Disulphide	<7 µg/kg	TM116		<70 M			<70 M		<70 M
Dichloromethane	<10 µg/kg	TM116		<100 #			<100 #		<100 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	<100 M	<100 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M			<100 M		<100 M
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M			<80 M		<80 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M			<60 M		<60 M
2,2-Dichloropropane	<10 µg/kg	TM116		<100			<100		<100
Bromochloromethane	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Chloroform	<8 µg/kg	TM116		<80 M			<80 M		<80 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M			<70 M		<70 M
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Carbontetrachloride	<10 µg/kg	TM116		<100 M			<100 M		<100 M
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M			<50 M		<50 M
Benzene	<9 µg/kg	TM116		<90 M	<90 M	<90 M	<90 M	<90 M	<90 M
Trichloroethene	<9 µg/kg	TM116		<90 #			<90 #		<90 #
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Dibromomethane	<9 µg/kg	TM116		<90 M			<90 M		<90 M
Bromodichloromethane	<7 µg/kg	TM116		<70 M			<70 M		<70 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Toluene	<7 µg/kg	TM116		<70 M	<70 M	<70 M	<70 M	<70 M	<70 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100			<100		<100
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M			<100 M		<100 M

CERTIFICATE OF ANALYSIS

SDG: 170425-61 Client Reference: 70015362 Report Number: 436986
Location: City Deal Tipner West Order Number: 70015362-CS2 Superseded Report: 409098

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS309	W7WS309	W7WS310	W7WS310	W7WS310	W7WS311
			Depth (m)	0.90	1.70	0.00 - 0.20	1.00 - 1.10	2.80 - 2.90	0.10 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61	170425-61	170425-61	170425-61	170425-61
			Lab Sample No.(s)	15393897	15393903	15393962	15393967	15393980	15393930
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116		<70 M			<70 M		<70 M
Tetrachloroethene	<5 µg/kg	TM116		<50 M			<50 M		<50 M
Dibromochloromethane	<10 µg/kg	TM116		<100 M			<100 M		<100 M
1,2-Dibromoethane	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Chlorobenzene	<5 µg/kg	TM116		<50 M			<50 M		<50 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Ethylbenzene	<4 µg/kg	TM116		<40 M	<40 M	<40 M	<40 M	<40 M	<40 M
p/m-Xylene	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	<100 #	<100 #
o-Xylene	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	<100 M	<100 M
Styrene	<10 µg/kg	TM116		<100 #			<100 #		<100 #
Bromoform	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Isopropylbenzene	<5 µg/kg	TM116		<50 #			<50 #		<50 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M			<100 M		<100 M
1,2,3-Trichloropropane	<16 µg/kg	TM116		<160 M			<160 M		<160 M
Bromobenzene	<10 µg/kg	TM116		<100 M			<100 M		<100 M
Propylbenzene	<10 µg/kg	TM116		<100 M			<100 M		<100 M
2-Chlorotoluene	<9 µg/kg	TM116		<90 M			<90 M		<90 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<80 M			<80 M		<80 M
4-Chlorotoluene	<10 µg/kg	TM116		<100 M			<100 M		<100 M
tert-Butylbenzene	<14 µg/kg	TM116		<140 M			<140 M		<140 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<90 #			<90 #		<90 #
sec-Butylbenzene	<10 µg/kg	TM116		<100			<100		<100
4-Isopropyltoluene	<10 µg/kg	TM116		<100 M			<100 M		<100 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<80 M			<80 M		<80 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<50 M			<50 M		<50 M
n-Butylbenzene	<11 µg/kg	TM116		<110			<110		<110
1,2-Dichlorobenzene	<10 µg/kg	TM116		<100 M			<100 M		<100 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<140 M			<140 M		<140 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	<100 #	<100 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<200			<200		<200
Hexachlorobutadiene	<20 µg/kg	TM116		<200			<200		<200
Naphthalene	<13 µg/kg	TM116		<130 M			<130 M		<130 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W7WS309	0.90	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393897	ES
			W7WS309	1.70	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393903	ES
			W7WS310	0.00 - 0.20	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393962	ES
			W7WS310	1.00 - 1.10	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393967	ES
			W7WS310	2.80 - 2.90	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393980	ES
			W7WS311	0.10 - 0.30	Soil/Solid (S)	20/04/2017	.	25/04/2017	170425-61	15393930	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<200 #								
								<200 #			
										<200 #	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS311	W7WS311
			Depth (m)	0.80 - 0.90	2.80 - 2.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017
			Sampled Time	.	.
			Date Received	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61
			Lab Sample No.(s)	15393936	15393955
			AGS Reference	ES	ES
Dibromofluoromethane**	%	TM116			108
Toluene-d8**	%	TM116			98.5
4-Bromofluorobenzene**	%	TM116			100
Dichlorodifluoromethane	<6 µg/kg	TM116			<60 M
Chloromethane	<7 µg/kg	TM116			<70 #
Vinyl Chloride	<6 µg/kg	TM116			<60 M
Bromomethane	<10 µg/kg	TM116			<100 M
Chloroethane	<10 µg/kg	TM116			<100 M
Trichlorofluorormethane	<6 µg/kg	TM116			<60 M
1,1-Dichloroethene	<10 µg/kg	TM116			<100 #
Carbon Disulphide	<7 µg/kg	TM116			<70 M
Dichloromethane	<10 µg/kg	TM116			<100 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<100 M	<100 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116			<100 M
1,1-Dichloroethane	<8 µg/kg	TM116			<80 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116			<60 M
2,2-Dichloropropane	<10 µg/kg	TM116			<100
Bromochloromethane	<10 µg/kg	TM116			<100 M
Chloroform	<8 µg/kg	TM116			<80 M
1,1,1-Trichloroethane	<7 µg/kg	TM116			<70 M
1,1-Dichloropropene	<10 µg/kg	TM116			<100 M
Carbontetrachloride	<10 µg/kg	TM116			<100 M
1,2-Dichloroethane	<5 µg/kg	TM116			<50 M
Benzene	<9 µg/kg	TM116		<90 M	<90 M
Trichloroethene	<9 µg/kg	TM116			<90 #
1,2-Dichloropropane	<10 µg/kg	TM116			<100 M
Dibromomethane	<9 µg/kg	TM116			<90 M
Bromodichloromethane	<7 µg/kg	TM116			<70 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116			<100 M
Toluene	<7 µg/kg	TM116		<70 M	<70 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116			<100
1,1,2-Trichloroethane	<10 µg/kg	TM116			<100 M

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS311	W7WS311
			Depth (m)	0.80 - 0.90	2.80 - 2.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017
			Sampled Time	.	.
			Date Received	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61
			Lab Sample No.(s)	15393936	15393955
			AGS Reference	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116		<70 M	
Tetrachloroethene	<5 µg/kg	TM116		<50 M	
Dibromochloromethane	<10 µg/kg	TM116		<100 M	
1,2-Dibromoethane	<10 µg/kg	TM116		<100 M	
Chlorobenzene	<5 µg/kg	TM116		<50 M	
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M	
Ethylbenzene	<4 µg/kg	TM116	<40 M	<40 M	
p/m-Xylene	<10 µg/kg	TM116	<100 #	<100 #	
o-Xylene	<10 µg/kg	TM116	<100 M	<100 M	
Styrene	<10 µg/kg	TM116		<100 #	
Bromoform	<10 µg/kg	TM116		<100 M	
Isopropylbenzene	<5 µg/kg	TM116		<50 #	
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<100 M	
1,2,3-Trichloropropane	<16 µg/kg	TM116		<160 M	
Bromobenzene	<10 µg/kg	TM116		<100 M	
Propylbenzene	<10 µg/kg	TM116		<100 M	
2-Chlorotoluene	<9 µg/kg	TM116		<90 M	
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<80 M	
4-Chlorotoluene	<10 µg/kg	TM116		<100 M	
tert-Butylbenzene	<14 µg/kg	TM116		<140 M	
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<90 #	
sec-Butylbenzene	<10 µg/kg	TM116		<100	
4-Isopropyltoluene	<10 µg/kg	TM116		<100 M	
1,3-Dichlorobenzene	<8 µg/kg	TM116		<80 M	
1,4-Dichlorobenzene	<5 µg/kg	TM116		<50 M	
n-Butylbenzene	<11 µg/kg	TM116		<110	
1,2-Dichlorobenzene	<10 µg/kg	TM116		<100 M	
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<140 M	
Tert-amyl methyl ether	<10 µg/kg	TM116	<100 #	<100 #	
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<200	
Hexachlorobutadiene	<20 µg/kg	TM116		<200	
Naphthalene	<13 µg/kg	TM116		<130 M	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W7WS311	W7WS311
			Depth (m)	0.80 - 0.90	2.80 - 2.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/04/2017	20/04/2017
			Sampled Time	.	.
			Date Received	25/04/2017	25/04/2017
			SDG Ref	170425-61	170425-61
			Lab Sample No.(s)	15393936	15393955
			AGS Reference	ES	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200 #	

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH306 ES 0.10 - 0.30 SOLID 20/04/2017 00:00:00 26/04/2017 10:26:28 170425-61 15393773 TM048	28/4/17	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH306 ES 0.90 - 1.00 SOLID 20/04/2017 00:00:00 26/04/2017 10:25:01 170425-61 15393785 TM048	28/4/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH306 ES 2.20 - 2.50 SOLID 20/04/2017 00:00:00 26/04/2017 10:23:06 170425-61 15393791 TM048	28/4/17	Chris Swindells	Loose fibres and ACM debris	Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP307 ES 1.00 SOLID 21/04/2017 00:00:00 26/04/2017 11:04:23 170425-61 15393653 TM048	28/4/17	Chris Swindells	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP307 ES 3.00 SOLID 21/04/2017 00:00:00 26/04/2017 10:59:52 170425-61 15393655 TM048	28/4/17	Neville Mann	Loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG: 170425-61 **Client Reference:** 70015362 **Report Number:** 436986
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 409098

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP308 ES 0.40 SOLID 21/04/2017 00:00:00 26/04/2017 08:39:38 170425-61 15393625 TM048	28/4/17	Martin Cotterell	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP308 ES 1.70 SOLID 21/04/2017 00:00:00 26/04/2017 10:44:19 170425-61 15393631 TM048	28/4/17	Neville Mann	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP309 ES 0.10 SOLID 21/04/2017 00:00:00 26/04/2017 11:12:56 170425-61 15393606 TM048	28/4/17	Kevin Bowron	Soil containing loose fibres and debris typical of asbestos lagging	Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP309 ES 1.00 SOLID 21/04/2017 00:00:00 26/04/2017 11:26:53 170425-61 15393611 TM048	28/4/17	Neville Mann	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP309 ES 2.50 SOLID 21/04/2017 00:00:00 26/04/2017 08:44:21 170425-61 15393619 TM048	28/4/17	Lauren Sargeant	Soil containing loose fibres and ACM debris	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP310 ES 0.40 SOLID 21/04/2017 00:00:00 26/04/2017 08:41:25 170425-61 15393590 TM048	28/4/17	Lauren Sargeant	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG: 170425-61 **Client Reference:** 70015362 **Report Number:** 436986
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 409098

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP310 ES 1.25 SOLID 21/04/2017 00:00:00 26/04/2017 10:55:47 170425-61 15393596 TM048	28/4/17	Neville Mann	Loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP310 ES 2.90 SOLID 21/04/2017 00:00:00 26/04/2017 08:46:38 170425-61 15393601 TM048	28/4/17	Neville Mann	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP311 ES 0.60 SOLID 21/04/2017 00:00:00 26/04/2017 12:01:56 170425-61 15393744 TM048	28/4/17	Martin Cotterell	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP311 ES 1.70 SOLID 21/04/2017 00:00:00 26/04/2017 14:04:16 170425-61 15393736 TM048	28/4/17	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP312 ES 0.40 SOLID 21/04/2017 00:00:00 26/04/2017 11:16:17 170425-61 15393661 TM048	28/4/17	Neville Mann	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP312 ES 1.90 SOLID 21/04/2017 00:00:00 26/04/2017 10:53:36 170425-61 15393673 TM048	28/4/17	Kevin Bowron	Soil containing loose fibres and debris typical of asbestos insulation	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG: 170425-61 **Client Reference:** 70015362 **Report Number:** 436986
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 409098

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP313 ES 0.30 SOLID 21/04/2017 00:00:00 26/04/2017 10:52:06 170425-61 15394027 TM048	28/4/17	Lauren Sargeant	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP313 ES 0.70 SOLID 21/04/2017 00:00:00 26/04/2017 09:08:35 170425-61 15394032 TM048	28/4/17	Martin Cotterell	Soil containing loose fibres and debris typical of asbestos insulation	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP313 ES 2.20 SOLID 21/04/2017 00:00:00 26/04/2017 10:53:22 170425-61 15393585 TM048	28/4/17	Kevin Bowron	Soil containing loose fibres and ACM debris	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP314 ES 0.90 SOLID 21/04/2017 00:00:00 26/04/2017 10:51:41 170425-61 15393919 TM048	28/4/17	Lauren Sargeant	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP314 ES 2.65 SOLID 21/04/2017 00:00:00 26/04/2017 11:20:54 170425-61 15394019 TM048	28/4/17	Lauren Sargeant	Soil containing loose fibres and debris typical of asbestos lagging material.	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP315 ES 0.10 SOLID 21/04/2017 00:00:00 26/04/2017 11:16:58 170425-61 15393715 TM048	28/4/17	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG: 170425-61 **Client Reference:** 70015362 **Report Number:** 436986
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 409098

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP315 ES 0.90 SOLID 21/04/2017 00:00:00 26/04/2017 10:55:09 170425-61 15393728 TM048	28/4/17	Martin Cotterell	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP316 ES 0.40 SOLID 21/04/2017 00:00:00 26/04/2017 11:27:09 170425-61 15393690 TM048	28/4/17	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP316 ES 1.30 SOLID 21/04/2017 00:00:00 26/04/2017 11:05:35 170425-61 15393699 TM048	28/4/17	Martin Cotterell	Soil containing loose fibres and debris typical of asbestos bituminous product	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4TP316 ES 2.20 SOLID 21/04/2017 00:00:00 26/04/2017 10:19:29 170425-61 15393707 TM048	28/4/17	Neville Mann	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP301 ES 0.15 SOLID 21/04/2017 00:00:00 26/04/2017 13:44:48 170425-61 15393579 TM048	28/4/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP301 ES 0.50 SOLID 21/04/2017 00:00:00 26/04/2017 13:54:59 170425-61 15393646 TM048	28/4/17	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

Validated

SDG: 170425-61 **Client Reference:** 70015362 **Report Number:** 436986
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 409098

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP304 ES 0.20 SOLID 21/04/2017 00:00:00 26/04/2017 13:53:24 170425-61 15393679 TM048	28/4/17	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP304 ES 0.50 SOLID 21/04/2017 00:00:00 26/04/2017 12:13:55 170425-61 15393684 TM048	28/4/17	Neville Mann	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W7WS308 ES 0.30 SOLID 20/04/2017 00:00:00 26/04/2017 14:24:04 170425-61 15393843 TM048	28/4/17	Neville Mann	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W7WS309 ES 0.90 SOLID 20/04/2017 00:00:00 26/04/2017 14:29:36 170425-61 15393897 TM048	28/4/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W7WS309 ES 1.70 SOLID 20/04/2017 00:00:00 28/04/2017 11:46:08 170425-61 15393903 TM048	02/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W7WS310 ES 0.00 - 0.20 SOLID 20/04/2017 00:00:00 26/04/2017 09:40:18 170425-61 15393962 TM048	28/4/17	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG: 170425-61 **Client Reference:** 70015362 **Report Number:** 436986
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 409098

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W7WS310 ES 1.00 - 1.10 SOLID 20/04/2017 00:00:00 26/04/2017 14:26:36 170425-61 15393967 TM048	28/4/17	Chris Swindells	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W7WS310 ES 2.80 - 2.90 SOLID 20/04/2017 00:00:00 26/04/2017 09:43:05 170425-61 15393980 TM048	28/4/17	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W7WS311 ES 0.10 - 0.30 SOLID 20/04/2017 00:00:00 26/04/2017 09:36:57 170425-61 15393930 TM048	28/4/17	Martin Cotterell	Soil containing loose fibres and ACM debris	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W7WS311 ES 0.80 - 0.90 SOLID 20/04/2017 00:00:00 26/04/2017 09:39:05 170425-61 15393936 TM048	28/4/17	Martin Cotterell	Loose fibres in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393785
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	0.684	<0.2	6.84	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.00124	<0.00051	0.0124	<0.0051	-	-	-
Naphthalene (diss.filt)	0.000163	<0.0001	0.00163	<0.001	-	-	-
Acenaphthene (diss.filt)	0.000319	<0.000015	0.00319	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
PCB congener 118	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	0.0000714	<0.000017	0.000714	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	0.0000563	<0.000015	0.000563	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.00039	<0.000022	0.0039	<0.00022	-	-	-
Fluorene (diss.filt)	0.000194	<0.000014	0.00194	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
PCB congener 77	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
PCB congener 81	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Pyrene (diss.filt)	0.0000435	<0.000015	0.000435	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
PCB congener 105	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
PCB congener 114	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.00104	<0.00085	0.0104	<0.0085	-	-	-
PCB congener 123	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	0.00115	<0.0001	0.0115	<0.001	-	-	-
PCB congener 126	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.03
Conductivity (µS/cm)	160.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393785
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
PCB congener 156	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
PCB congener 157	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
PCB congener 167	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Nickel	0.000952	<0.00044	0.00952	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	0.00124	<0.000344	0.0124	<0.00344	-	-	-
PCB congener 169	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
PCB congener 189	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	<0.0013	<0.0013	<0.013	<0.013	-	-	-
SVOC MS (W) - Aqueous							
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,5-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,6-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dimethylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,6-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chloronaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylnaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
3-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Bromophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloro-3-methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.03
Conductivity (µS/cm)	160.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393785
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
SVOC MS (W) - Aqueous							
4-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Azobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethyl)ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethoxy)methane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-ethylhexyl) phthalate	<0.002	<0.002	<0.02	<0.02	-	-	-
Butylbenzyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbazole	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibenzofuran	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-butyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Diethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Dimethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-Octyl phthalate	<0.005	<0.005	<0.05	<0.05	-	-	-
Hexachlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Pentachlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Phenol	<0.001	<0.001	<0.01	<0.01	-	-	-
N-nitrosodi-n-propylamine	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Nitrobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Isophorone	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorocyclopentadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.03
Conductivity (µS/cm)	160.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393785
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Dibromofluoromethane	-	<0	-	<0	-	-	-
Toluene-d8	-	<0	-	<0	-	-	-
4-Bromofluorobenzene	-	<0	-	<0	-	-	-
Dichlorodifluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Vinyl Chloride	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichlorofluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbon Disulphide	<0.001	<0.001	<0.01	<0.01	-	-	-
Dichloromethane	<0.003	<0.003	<0.03	<0.03	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroform	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbontetrachloride	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichloroethene	0.00116	<0.001	0.0116	<0.01	-	-	-
1,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromodichloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.03
Conductivity (µS/cm)	160.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393785
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Tetrachloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromoethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Styrene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromoform	<0.001	<0.001	<0.01	<0.01	-	-	-
Isopropylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Propylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Sec-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Isopropyltoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
n-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromo-3-Chloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Naphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.03
Conductivity (µS/cm)	160.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393785
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
1,2,3-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.03
Conductivity (µS/cm)	160.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393791
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	2.20 - 2.50

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	1.03	<0.2	10.3	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	0.0000201	<0.00001	0.000201	<0.0001	-	-	-
Tin(diss.filt)	0.000371	<0.00036	0.00371	<0.0036	-	-	-
Arsenic	0.00163	<0.00051	0.0163	<0.0051	-	-	-
Naphthalene (diss.filt)	0.000138	<0.0001	0.00138	<0.001	-	-	-
Acenaphthene (diss.filt)	0.000242	<0.000015	0.00242	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	0.0000113	<0.000011	0.000113	<0.00011	-	-	-
PCB congener 118	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	0.000207	<0.000017	0.00207	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	0.000105	<0.000015	0.00105	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.000532	<0.000022	0.00532	<0.00022	-	-	-
Fluorene (diss.filt)	0.000229	<0.000014	0.00229	<0.00014	-	-	-
Chrysene (diss.filt)	0.0000324	<0.000013	0.000324	<0.00013	-	-	-
PCB congener 77	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Chromium	0.00233	<0.0012	0.0233	<0.012	-	-	-
PCB congener 81	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Pyrene (diss.filt)	0.00018	<0.000015	0.0018	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	0.0000247	<0.000017	0.000247	<0.00017	-	-	-
PCB congener 105	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(b)fluoranthene (diss.filt)	0.0000459	<0.000023	0.000459	<0.00023	-	-	-
PCB congener 114	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.014	<0.00085	0.14	<0.0085	-	-	-
PCB congener 123	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(a)pyrene (diss.filt)	0.000022	<0.000009	0.00022	<0.00009	-	-	-
Lead	0.00246	<0.0001	0.0246	<0.001	-	-	-
PCB congener 126	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.16
Conductivity (µS/cm)	240.00
Temperature (°C)	18.30
Volume Leachant (Litres)	0.879

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393791
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	2.20 - 2.50

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
PCB congener 156	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(g,h,i)perylene (diss.filt)	0.0000352	<0.000016	0.000352	<0.00016	-	-	-
PCB congener 157	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000278	<0.000014	0.000278	<0.00014	-	-	-
PCB congener 167	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Nickel	0.00566	<0.00044	0.0566	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	0.00183	<0.000344	0.0183	<0.00344	-	-	-
PCB congener 169	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
PCB congener 189	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.0224	<0.0013	0.224	<0.013	-	-	-
SVOC MS (W) - Aqueous							
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,5-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,6-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dimethylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,6-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chloronaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylnaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
3-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Bromophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloro-3-methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.16
Conductivity (µS/cm)	240.00
Temperature (°C)	18.30
Volume Leachant (Litres)	0.879

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CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393791
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	2.20 - 2.50

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
SVOC MS (W) - Aqueous							
4-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Azobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethyl)ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethoxy)methane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-ethylhexyl) phthalate	<0.002	<0.002	<0.02	<0.02	-	-	-
Butylbenzyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbazole	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibenzofuran	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-butyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Diethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Dimethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-Octyl phthalate	<0.005	<0.005	<0.05	<0.05	-	-	-
Hexachlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Pentachlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Phenol	<0.001	<0.001	<0.01	<0.01	-	-	-
N-nitrosodi-n-propylamine	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Nitrobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Isophorone	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorocyclopentadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.16
Conductivity (µS/cm)	240.00
Temperature (°C)	18.30
Volume Leachant (Litres)	0.879

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15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393791
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	2.20 - 2.50

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Dibromofluoromethane	-	<0	-	<0	-	-	-
Toluene-d8	-	<0	-	<0	-	-	-
4-Bromofluorobenzene	-	<0	-	<0	-	-	-
Dichlorodifluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Vinyl Chloride	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichlorofluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbon Disulphide	<0.001	<0.001	<0.01	<0.01	-	-	-
Dichloromethane	<0.003	<0.003	<0.03	<0.03	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroform	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbontetrachloride	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromodichloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.16
Conductivity (µS/cm)	240.00
Temperature (°C)	18.30
Volume Leachant (Litres)	0.879

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393791
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	2.20 - 2.50

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Tetrachloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromoethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Styrene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromoform	<0.001	<0.001	<0.01	<0.01	-	-	-
Isopropylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Propylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Sec-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Isopropyltoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
n-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromo-3-Chloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Naphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.16
Conductivity (µS/cm)	240.00
Temperature (°C)	18.30
Volume Leachant (Litres)	0.879

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15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393791
Sampled Date	20-Apr-2017
Customer Sample Ref.	W4BH306 ESZ
Depth (m)	2.20 - 2.50

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
1,2,3-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.16
Conductivity (µS/cm)	240.00
Temperature (°C)	18.30
Volume Leachant (Litres)	0.879

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.53
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393843
Sampled Date	20-Apr-2017
Customer Sample Ref.	W7WS308 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	0.0000115	<0.00001	0.000115	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.00328	<0.00051	0.0328	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	0.000116	<0.000015	0.00116	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	0.000126	<0.000017	0.00126	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	0.0000384	<0.000015	0.000384	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.000271	<0.000022	0.00271	<0.00022	-	-	-
Fluorene (diss.filt)	0.0000488	<0.000014	0.000488	<0.00014	-	-	-
Chrysene (diss.filt)	0.0000246	<0.000013	0.000246	<0.00013	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Pyrene (diss.filt)	0.0000905	<0.000015	0.000905	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	0.0000215	<0.000017	0.000215	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	0.0000278	<0.000023	0.000278	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.00152	<0.00085	0.0152	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	0.0000128	<0.000009	0.000128	<0.00009	-	-	-
Lead	0.00164	<0.0001	0.0164	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	0.0000258	<0.000016	0.000258	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000174	<0.000014	0.000174	<0.00014	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	0.00082	<0.000344	0.0082	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	<0.0013	<0.0013	<0.013	<0.013	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.55
Conductivity (µS/cm)	82.30
Temperature (°C)	19.40
Volume Leachant (Litres)	0.893

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.53
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393843
Sampled Date	20-Apr-2017
Customer Sample Ref.	W7WS308 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
SVOC MS (W) - Aqueous							
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,5-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,6-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dimethylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,6-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chloronaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylnaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
3-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Bromophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloro-3-methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Azobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethyl)ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethoxy)methane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-ethylhexyl) phthalate	<0.002	<0.002	<0.02	<0.02	-	-	-
Butylbenzyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbazole	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibenzofuran	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-butyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Diethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Dimethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-Octyl phthalate	<0.005	<0.005	<0.05	<0.05	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.55
Conductivity (µS/cm)	82.30
Temperature (°C)	19.40
Volume Leachant (Litres)	0.893

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.53
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393843
Sampled Date	20-Apr-2017
Customer Sample Ref.	W7WS308 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
SVOC MS (W) - Aqueous							
Hexachlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Pentachlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Phenol	<0.001	<0.001	<0.01	<0.01	-	-	-
N-nitrosodi-n-propylamine	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Nitrobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Isophorone	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorocyclopentadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Dibromofluoromethane	-	<0	-	<0	-	-	-
Toluene-d8	-	<0	-	<0	-	-	-
4-Bromofluorobenzene	-	<0	-	<0	-	-	-
Dichlorodifluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Vinyl Chloride	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.55
Conductivity (µS/cm)	82.30
Temperature (°C)	19.40
Volume Leachant (Litres)	0.893

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CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.53
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393843
Sampled Date	20-Apr-2017
Customer Sample Ref.	W7WS308 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
Bromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichlorofluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbon Disulphide	<0.001	<0.001	<0.01	<0.01	-	-	-
Dichloromethane	<0.003	<0.003	<0.03	<0.03	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroform	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbontetrachloride	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromodichloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	0.00105	<0.001	0.0105	<0.01	-	-	-
Trans-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Tetrachloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromoethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.55
Conductivity (µS/cm)	82.30
Temperature (°C)	19.40
Volume Leachant (Litres)	0.893

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.53
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393843
Sampled Date	20-Apr-2017
Customer Sample Ref.	W7WS308 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
Styrene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromoform	<0.001	<0.001	<0.01	<0.01	-	-	-
Isopropylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Propylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Sec-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Isopropyltoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
n-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromo-3-Chloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Naphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.55
Conductivity (µS/cm)	82.30
Temperature (°C)	19.40
Volume Leachant (Litres)	0.893

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.1
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393936
Sampled Date	20-Apr-2017
Customer Sample Ref.	W7WS311 ESZ
Depth (m)	0.80 - 0.90

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	0.0000238	<0.00001	0.000238	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.0118	<0.00051	0.118	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	0.0000911	<0.000015	0.000911	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	0.0000515	<0.000017	0.000515	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	0.0000198	<0.000015	0.000198	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.000137	<0.000022	0.00137	<0.00022	-	-	-
Fluorene (diss.filt)	0.000028	<0.000014	0.00028	<0.00014	-	-	-
Chrysene (diss.filt)	0.0000229	<0.000013	0.000229	<0.00013	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Pyrene (diss.filt)	0.0000407	<0.000015	0.000407	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	0.0000327	<0.000023	0.000327	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	<0.00085	<0.00085	<0.0085	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	0.0000098	<0.000009	0.000098	<0.00009	-	-	-
Lead	0.000866	<0.0001	0.00866	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	0.0000208	<0.000016	0.000208	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000159	<0.000014	0.000159	<0.00014	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	0.00047	<0.000344	0.0047	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	<0.0013	<0.0013	<0.013	<0.013	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.76
Conductivity (µS/cm)	69.90
Temperature (°C)	18.80
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.1
Particle Size <4mm	>95%		

Case	
SDG	170425-61
Lab Sample Number(s)	15393936
Sampled Date	20-Apr-2017
Customer Sample Ref.	W7WS311 ESZ
Depth (m)	0.80 - 0.90

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	27-Apr-2017
pH (pH Units)	8.76
Conductivity (µS/cm)	69.90
Temperature (°C)	18.80
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

15/12/2017 12:43:04

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Notification of NDPs (No determination possible)

Date Received : 25/04/2017 13:37:29

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
15393653	W4TP307 ESZ	1.00	Dioxins/Furans (S)*	Unsuitable sample for analysis
15393707	W4TP316 ESZ	2.20	Dioxins/Furans (S)*	Unsuitable sample for analysis
15393919	W4TP314 ESZ	0.90	Dioxins/Furans (S)*	Unsuitable sample for analysis
15394019	W4TP314 ESZ	2.65	Dioxins/Furans (S)*	Unsuitable sample for analysis
15394032	W4TP313 ESZ	0.70	Dioxins/Furans (S)*	Unsuitable sample for analysis
15393791	W4BH306 ESZ	2.20 - 2.50	Dioxins/Furans (S)*	Unsuitable sample for analysis

Table of Results - Appendix

Method No	Reference	Description
ASB_PREP		
PM001		Preparation of Samples for Metals Analysis
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM279		Determination of Low Level Easily Liberatable (Free) Cyanides and Total Cyanides in Waters using the Skalar SANS+ System Segmented Flow Analyser
TM283		Determination of Dissolved Niobium, Tungsten, and Zirconium in Water Matrices by ICP-MS
TM328		

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Test Completion Dates

Lab Sample No(s)	15393773	15393785	15393791	15393798	15393807	15393653	15393655	15393625	15393631	15393606
Customer Sample Ref.	W4BH306	W4BH306	W4BH306	W4BH306	W4BH306	W4TP307	W4TP307	W4TP308	W4TP308	W4TP309
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.10 - 0.30	0.90 - 1.00	2.20 - 2.50	3.50 - 3.80	5.00 - 5.30	1.00	3.00	0.40	1.70	0.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen		02-May-2017	02-May-2017							
Ammonium Soil by Titration		02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017				
Asbestos ID in Solid Samples	02-May-2017	02-May-2017	02-May-2017			02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
CEN 10:1 Leachate (1 Stage)		27-Apr-2017	27-Apr-2017							
CEN Readings		28-Apr-2017	28-Apr-2017							
Cyanide Comp/Free/Total/Thiocyanate	29-Apr-2017	29-Apr-2017	02-May-2017	29-Apr-2017	27-Apr-2017	29-Apr-2017	02-May-2017	02-May-2017	29-Apr-2017	02-May-2017
Dioxins/Furans (S)*		18-May-2017		11-May-2017						
Dissolved Metals by ICP-MS		02-May-2017	02-May-2017							
Dissolved Tin by ICPMS		02-May-2017	02-May-2017							
EPH CWG (Aliphatic) Aqueous GC (W)		02-May-2017	02-May-2017							
EPH CWG (Aliphatic) GC (S)	28-Apr-2017	01-May-2017	28-Apr-2017	27-Apr-2017	27-Apr-2017	01-May-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017
EPH CWG (Aromatic) Aqueous GC (W)		02-May-2017	02-May-2017							
EPH CWG (Aromatic) GC (S)	28-Apr-2017	01-May-2017	28-Apr-2017	27-Apr-2017	27-Apr-2017	01-May-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017
GRO by GC-FID (S)	28-Apr-2017	02-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
GRO by GC-FID (W)		02-May-2017	02-May-2017							
Hexavalent Chromium (s)	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
Hexavalent Chromium (w)		02-May-2017	02-May-2017							
Low Level Cyanide (W)		02-May-2017	02-May-2017							
Mercury Dissolved		02-May-2017	02-May-2017							
Metals in solid samples by OES	28-Apr-2017	28-Apr-2017	28-Apr-2017	02-May-2017	28-Apr-2017	02-May-2017	28-Apr-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017
Organotins in Aqueous Samples		03-May-2017	03-May-2017							
Organotins on soils*			11-May-2017			11-May-2017				
PAH by GCMS	28-Apr-2017	28-Apr-2017	02-May-2017	28-Apr-2017	02-May-2017	02-May-2017	28-Apr-2017	02-May-2017	02-May-2017	28-Apr-2017
PAH in waters by GC-MS (diss.filt)		02-May-2017	02-May-2017							
PCB Congeners - Aqueous (W)		02-May-2017	02-May-2017							
PCBs by GCMS			28-Apr-2017	28-Apr-2017		28-Apr-2017				
pH	27-Apr-2017	27-Apr-2017	27-Apr-2017	26-Apr-2017	26-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
pH Value		02-May-2017	02-May-2017							
Sample description	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
Semi Volatile Organic Compounds		28-Apr-2017	28-Apr-2017	28-Apr-2017		02-May-2017			02-May-2017	
SVOC MS (W) - Aqueous		02-May-2017	02-May-2017							
TPH CWG (W)		02-May-2017	02-May-2017							
TPH CWG GC (S)	28-Apr-2017	02-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
VOC MS (S)	27-Apr-2017	27-Apr-2017	27-Apr-2017	02-May-2017	27-Apr-2017	28-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
VOC MS (W)		29-Apr-2017	29-Apr-2017							

Lab Sample No(s)	15393611	15393619	15393590	15393596	15393601	15393736	15393744	15393661	15393673	15393585
Customer Sample Ref.	W4TP309	W4TP309	W4TP310	W4TP310	W4TP310	W4TP311	W4TP311	W4TP312	W4TP312	W4TP313
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	1.00	2.50	0.40	1.25	2.90	1.70	0.60	0.40	1.90	2.20
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Asbestos ID in Solid Samples	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
Cyanide Comp/Free/Total/Thiocyanate	29-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	29-Apr-2017	29-Apr-2017	02-May-2017	29-Apr-2017	02-May-2017
EPH CWG (Aliphatic) GC (S)	28-Apr-2017	27-Apr-2017	27-Apr-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	01-May-2017	28-Apr-2017
EPH CWG (Aromatic) GC (S)	28-Apr-2017	27-Apr-2017	27-Apr-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	01-May-2017	28-Apr-2017
GRO by GC-FID (S)	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017
Hexavalent Chromium (s)	27-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	27-Apr-2017	02-May-2017	27-Apr-2017
Metals in solid samples by OES	27-Apr-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017
Organotins on soils*	11-May-2017								11-May-2017	
PAH by GCMS	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017	02-May-2017	02-May-2017	28-Apr-2017	02-May-2017
pH	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
Sample description	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
Semi Volatile Organic Compounds	28-Apr-2017	28-Apr-2017		28-Apr-2017		02-May-2017			02-May-2017	28-Apr-2017
TPH CWG GC (S)	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017
VOC MS (S)	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	28-Apr-2017

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Lab Sample No(s)	15394027	15394032	15393919	15394019	15393715	15393728	15393690	15393699	15393707	15393579
Customer Sample Ref.	W4TP313	W4TP313	W4TP314	W4TP314	W4TP315	W4TP315	W4TP316	W4TP316	W4TP316	W5TP301
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.30	0.70	0.90	2.65	0.10	0.90	0.40	1.30	2.20	0.15
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammonium Soil by Titration		02-May-2017	02-May-2017	02-May-2017						
Asbestos ID in Solid Samples	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
Cyanide Comp/Free/Total/Thiocyanate		29-Apr-2017	29-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	
EPH CWG (Aliphatic) GC (S)	01-May-2017	28-Apr-2017	28-Apr-2017	01-May-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017
EPH CWG (Aromatic) GC (S)	01-May-2017	28-Apr-2017	28-Apr-2017	01-May-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017
GRO by GC-FID (S)	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017
Hexavalent Chromium (s)	27-Apr-2017	02-May-2017	02-May-2017	27-Apr-2017	27-Apr-2017	02-May-2017	02-May-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
Metals in solid samples by OES	28-Apr-2017	27-Apr-2017	28-Apr-2017	02-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	02-May-2017	28-Apr-2017	28-Apr-2017
Organotins on soils*		12-May-2017	11-May-2017	11-May-2017					11-May-2017	
PAH by GCMS	02-May-2017	28-Apr-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017
PCBs by GCMS		28-Apr-2017	28-Apr-2017	28-Apr-2017					28-Apr-2017	
pH	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
Sample description	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
Semi Volatile Organic Compounds			28-Apr-2017	28-Apr-2017		02-May-2017	28-Apr-2017	02-May-2017	02-May-2017	
TPH CWG GC (S)	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017
VOC MS (S)	28-Apr-2017	27-Apr-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	27-Apr-2017

Lab Sample No(s)	15393646	15393679	15393684	15394008	15393843	15393872	15393897	15393903	15393962	15393967
Customer Sample Ref.	W5TP301	W5TP304	W5TP304	W4WS316	W7WS308	W7WS308	W7WS309	W7WS309	W7WS310	W7WS310
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.50	0.20	0.50	2.30 - 2.40	0.30	2.40	0.90	1.70	0.00 - 0.20	1.00 - 1.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen					02-May-2017					
Ammonium Soil by Titration					02-May-2017					
Asbestos ID in Solid Samples	02-May-2017	02-May-2017	02-May-2017		02-May-2017		02-May-2017	02-May-2017	02-May-2017	02-May-2017
CEN 10:1 Leachate (1 Stage)					27-Apr-2017					
CEN Readings					28-Apr-2017					
Cyanide Comp/Free/Total/Thiocyanate		29-Apr-2017	29-Apr-2017	29-Apr-2017	27-Apr-2017	29-Apr-2017	29-Apr-2017	29-Apr-2017		02-May-2017
Dioxins/Furans (S)*			18-May-2017							
Dissolved Metals by ICP-MS					02-May-2017					
Dissolved Tin by ICPMS					02-May-2017					
EPH CWG (Aliphatic) Aqueous GC (W)					02-May-2017					
EPH CWG (Aliphatic) GC (S)	01-May-2017	28-Apr-2017	28-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	28-Apr-2017	01-May-2017	27-Apr-2017	28-Apr-2017
EPH CWG (Aromatic) Aqueous GC (W)					02-May-2017					
EPH CWG (Aromatic) GC (S)	01-May-2017	28-Apr-2017	28-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	28-Apr-2017	01-May-2017	27-Apr-2017	28-Apr-2017
GRO by GC-FID (S)	02-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017
GRO by GC-FID (W)					02-May-2017					
Hexavalent Chromium (s)	27-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	27-Apr-2017
Hexavalent Chromium (w)					02-May-2017					
Low Level Cyanide (W)					02-May-2017					
Mercury Dissolved					02-May-2017					
Metals in solid samples by OES	28-Apr-2017	28-Apr-2017	28-Apr-2017	02-May-2017	28-Apr-2017	02-May-2017	27-Apr-2017	28-Apr-2017	27-Apr-2017	28-Apr-2017
Organotins in Aqueous Samples					03-May-2017					
Organotins on soils*					11-May-2017		11-May-2017			11-May-2017
PAH by GCMS	28-Apr-2017	02-May-2017	02-May-2017	28-Apr-2017	02-May-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017
PAH in waters by GC-MS (diss.filt)					02-May-2017					
PCBs by GCMS			28-Apr-2017							
pH	27-Apr-2017	27-Apr-2017	27-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
pH Value					02-May-2017					
Sample description	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
Semi Volatile Organic Compounds			28-Apr-2017		28-Apr-2017		28-Apr-2017			28-Apr-2017
SVOC MS (W) - Aqueous					02-May-2017					
Total Organic Carbon					28-Apr-2017		28-Apr-2017			
TPH CWG (W)					02-May-2017					
TPH CWG GC (S)	02-May-2017	28-Apr-2017	28-Apr-2017	28-Apr-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	28-Apr-2017
VOC MS (S)	28-Apr-2017	27-Apr-2017	27-Apr-2017	02-May-2017	27-Apr-2017	02-May-2017	27-Apr-2017	28-Apr-2017	27-Apr-2017	27-Apr-2017
VOC MS (W)					29-Apr-2017					

CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Lab Sample No(s)	15393980	15393930	15393936	15393955
Customer Sample Ref.	W7WS310	W7WS311	W7WS311	W7WS311
AGS Ref.	ES	ES	ES	ES
Depth	2.80 - 2.90	0.10 - 0.30	0.80 - 0.90	2.80 - 2.90
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen			02-May-2017	
Ammonium Soil by Titration			02-May-2017	
Asbestos ID in Solid Samples	02-May-2017	02-May-2017	02-May-2017	
CEN 10:1 Leachate (1 Stage)			27-Apr-2017	
CEN Readings			28-Apr-2017	
Cyanide Comp/Free/Total/Thiocyanate	29-Apr-2017	02-May-2017	02-May-2017	29-Apr-2017
Dissolved Metals by ICP-MS			02-May-2017	
Dissolved Tin by ICPMS			02-May-2017	
EPH CWG (Aliphatic) Aqueous GC (W)			02-May-2017	
EPH CWG (Aliphatic) GC (S)	27-Apr-2017	27-Apr-2017	28-Apr-2017	27-Apr-2017
EPH CWG (Aromatic) Aqueous GC (W)			02-May-2017	
EPH CWG (Aromatic) GC (S)	27-Apr-2017	27-Apr-2017	28-Apr-2017	27-Apr-2017
GRO by GC-FID (S)	02-May-2017	02-May-2017	28-Apr-2017	28-Apr-2017
GRO by GC-FID (W)			02-May-2017	
Hexavalent Chromium (s)	02-May-2017	27-Apr-2017	27-Apr-2017	02-May-2017
Hexavalent Chromium (w)			02-May-2017	
Low Level Cyanide (W)			02-May-2017	
Mercury Dissolved			02-May-2017	
Metals in solid samples by OES	27-Apr-2017	27-Apr-2017	28-Apr-2017	02-May-2017
Organotins in Aqueous Samples			03-May-2017	
Organotins on soils*		11-May-2017	11-May-2017	
PAH by GCMS	02-May-2017	02-May-2017	28-Apr-2017	28-Apr-2017
PAH in waters by GC-MS (diss.filt)			02-May-2017	
pH	27-Apr-2017	27-Apr-2017	27-Apr-2017	26-Apr-2017
pH Value			02-May-2017	
Sample description	26-Apr-2017	26-Apr-2017	26-Apr-2017	26-Apr-2017
Semi Volatile Organic Compounds		02-May-2017		28-Apr-2017
Total Organic Carbon				02-May-2017
TPH CWG (W)			02-May-2017	
TPH CWG GC (S)	02-May-2017	02-May-2017	28-Apr-2017	28-Apr-2017
VOC MS (S)	27-Apr-2017	27-Apr-2017	27-Apr-2017	02-May-2017
VOC MS (W)			29-Apr-2017	

CERTIFICATE OF ANALYSIS

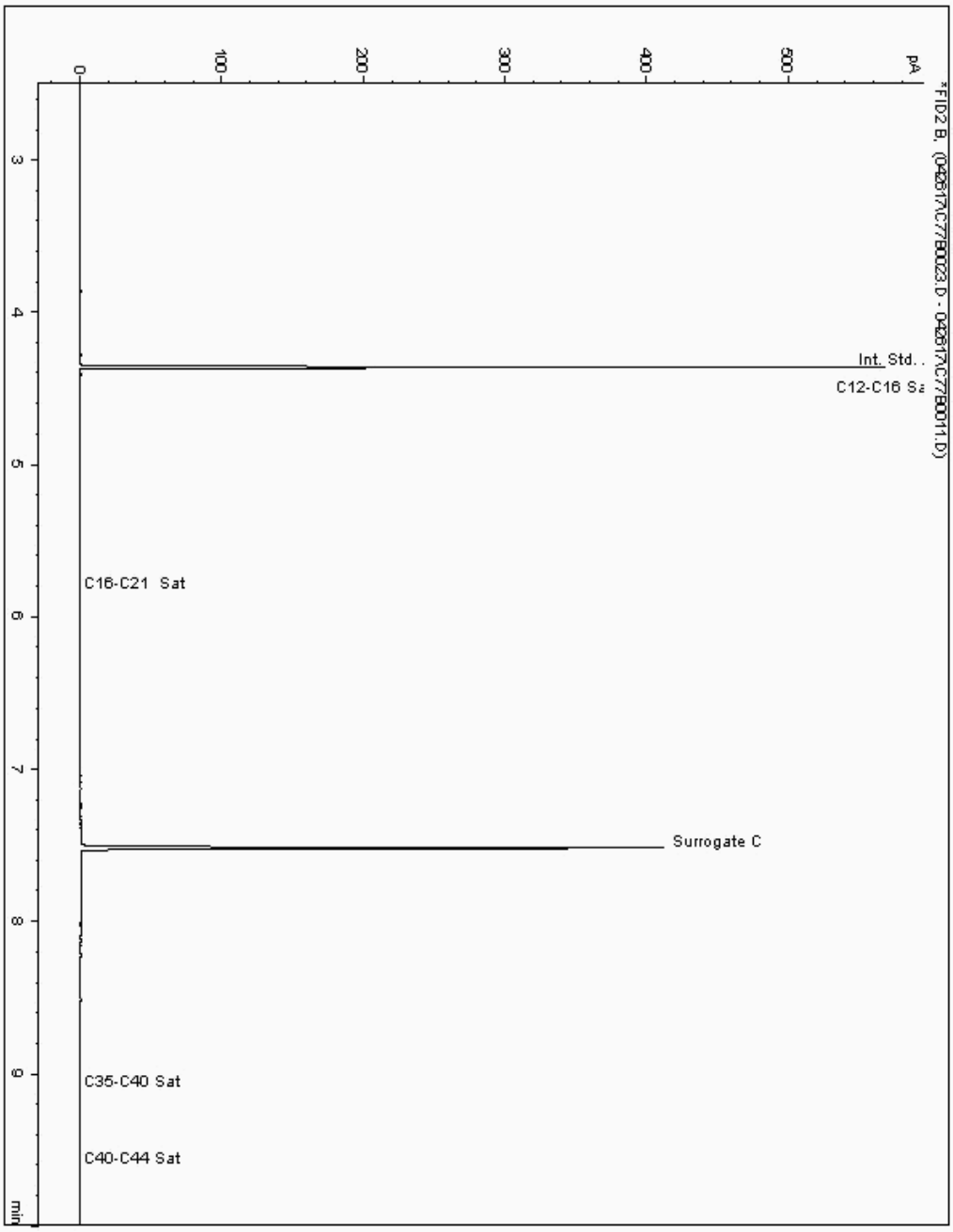
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15396422 **Sample ID :** W4BH306 **Depth :** 5.00 - 5.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419281-
Date Acquired : 4/26/2017 8:16:44 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.030



CERTIFICATE OF ANALYSIS

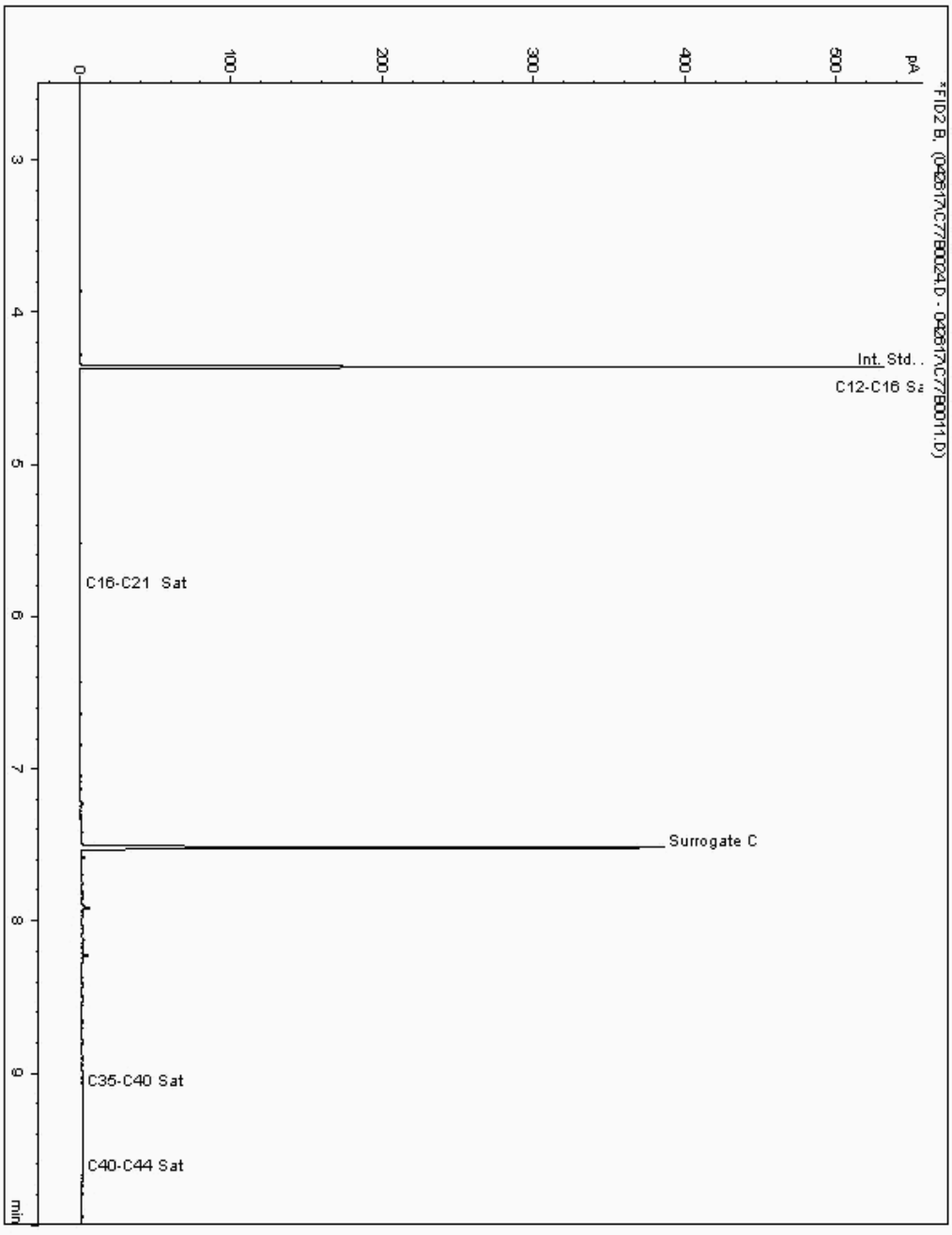
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15396659 **Depth :** 0.30
Sample ID : W7WS308

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419602-
Date Acquired : 4/26/2017 8:37:01 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



CERTIFICATE OF ANALYSIS

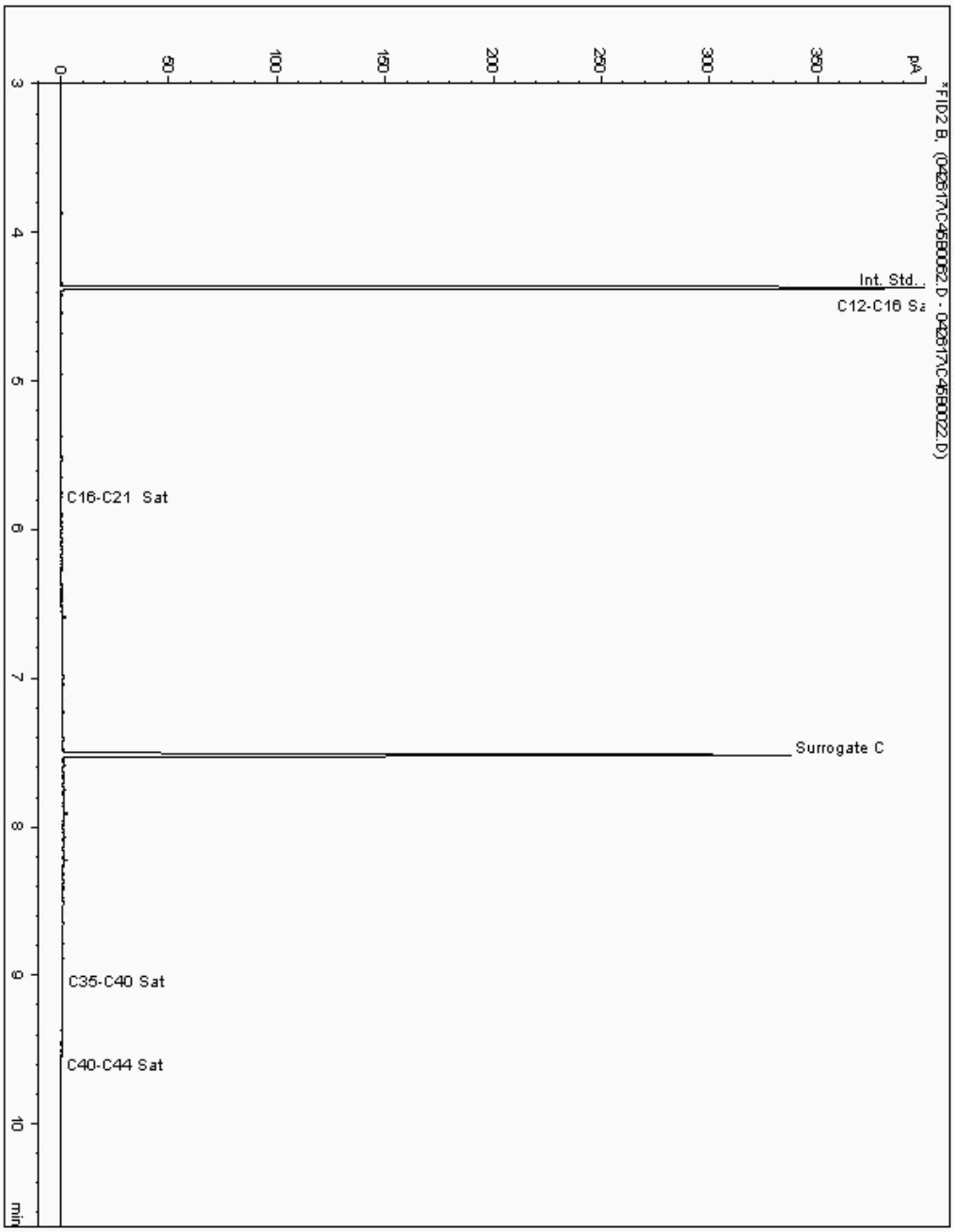
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15397195 **Sample ID :** W4TP310 **Depth :** 2.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418862-
Date Acquired : 27/04/2017 12:23:26 PM
Units : ppb
Dilution: W4TP310[2.90] ->



CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

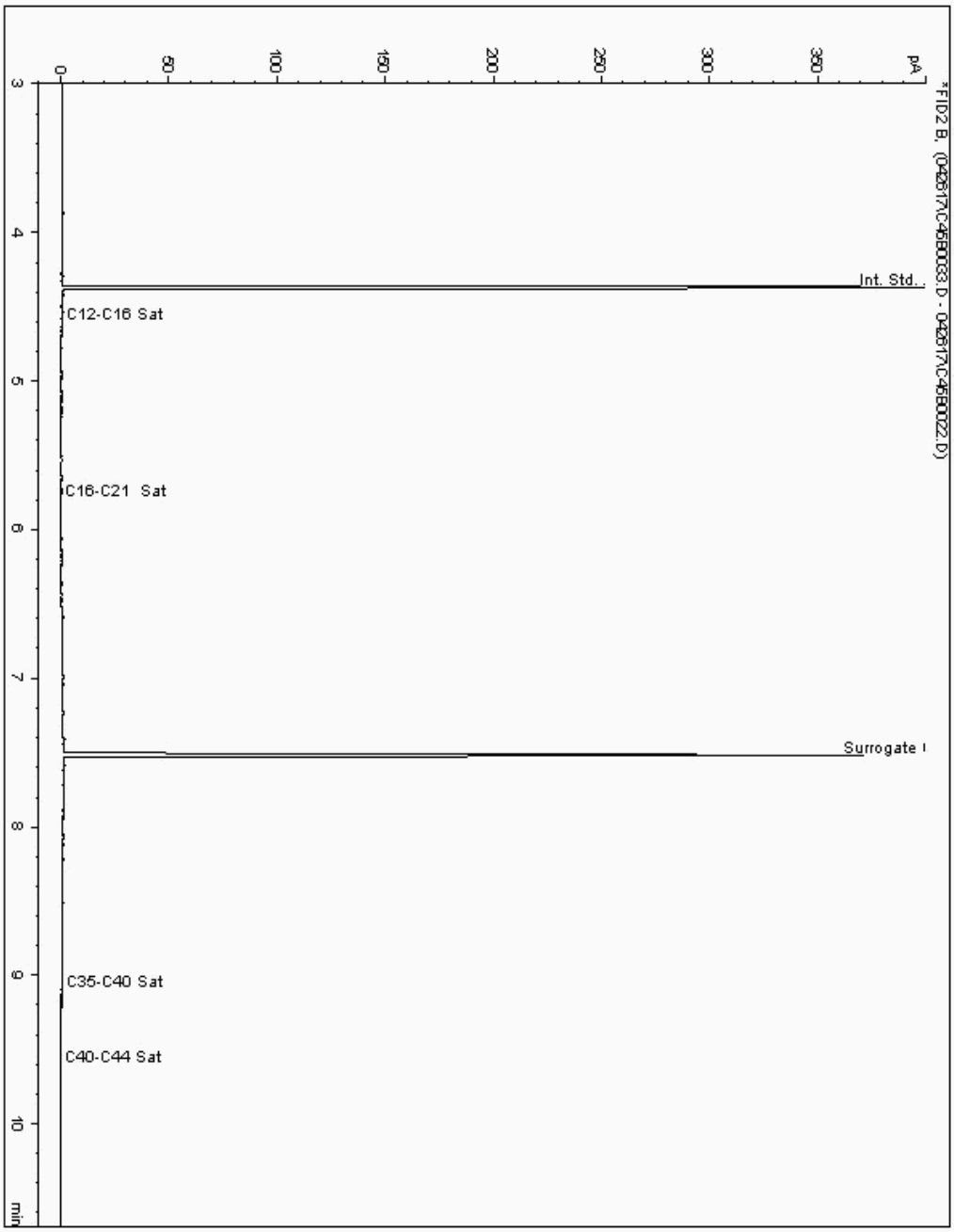
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 15397212
Sample ID : W4BH306

Depth : 3.50 - 3.80

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419264-
Date Acquired : 27/04/2017 02:03:47 PM
Units : ppb
Dilution: W4BH306[3.50 - 3.80] ->



CERTIFICATE OF ANALYSIS

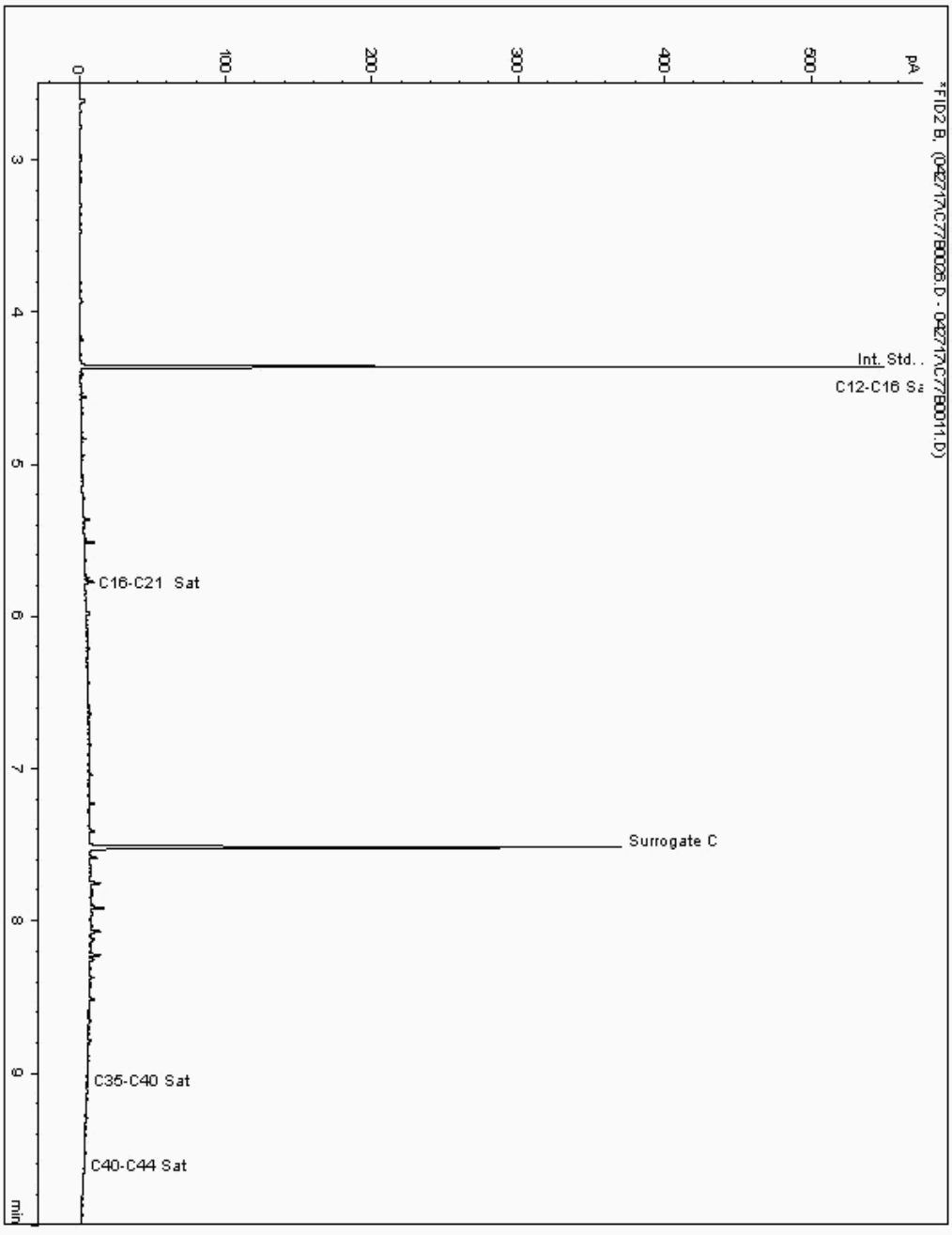
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15397254 **Sample ID :** W4TP313 **Depth :** 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419529-
Date Acquired : 4/27/2017 8:06:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

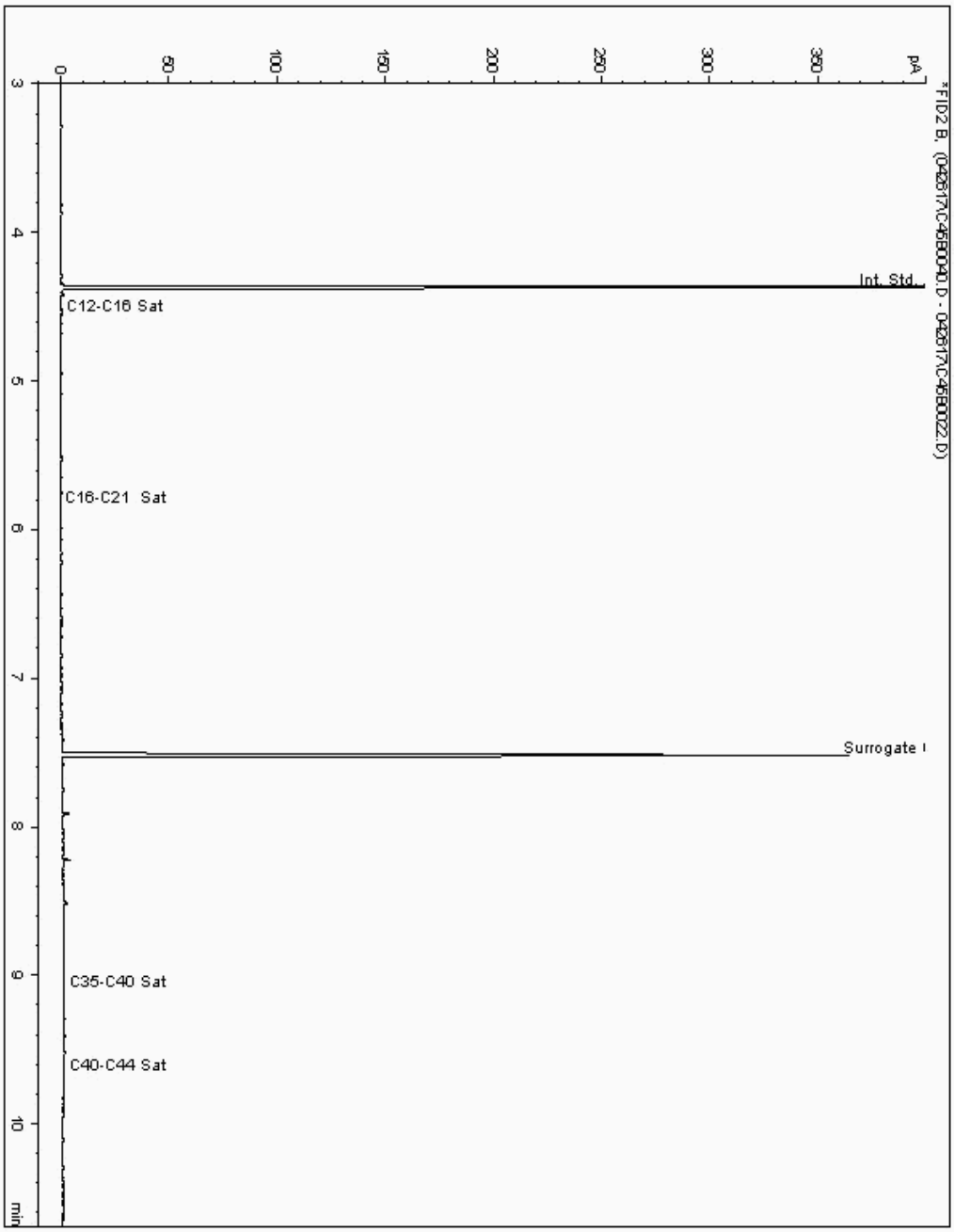
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15397384 **Sample ID :** W4TP310 **Depth :** 0.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418828-
Date Acquired : 27/04/2017 07:01:03 PM
Units : ppb
Dilution: W4TP310[0.40] ->



CERTIFICATE OF ANALYSIS

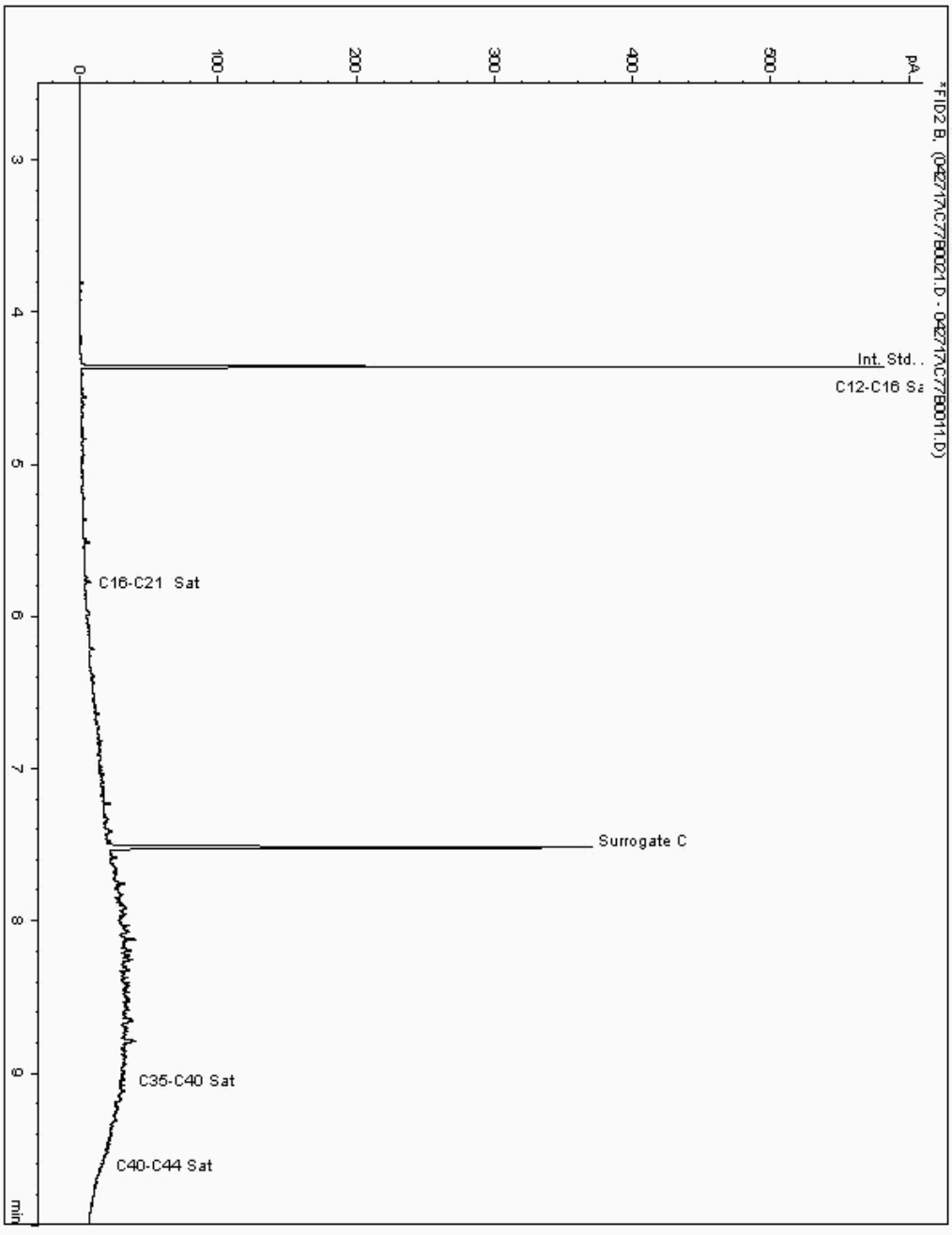
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15397716 **Sample ID :** W4TP310 **Depth :** 1.25

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418846-
Date Acquired : 4/27/2017 6:50:19 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



CERTIFICATE OF ANALYSIS

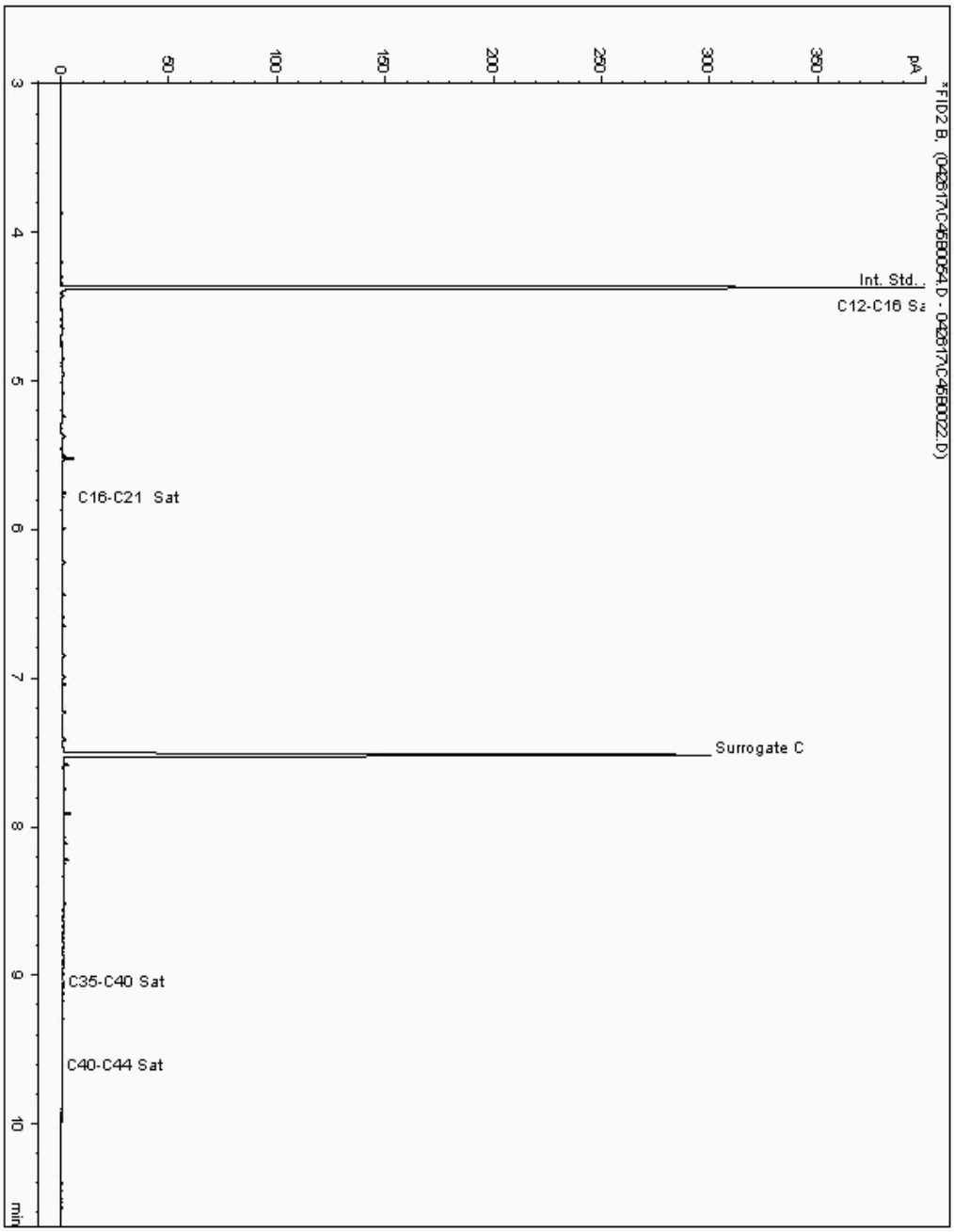
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15397741 **Sample ID :** W4TP308 **Depth :** 0.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418939-
Date Acquired : 27/04/2017 10:21:46 PM
Units : ppb
Dilution: W4TP308[0.40] ->



CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

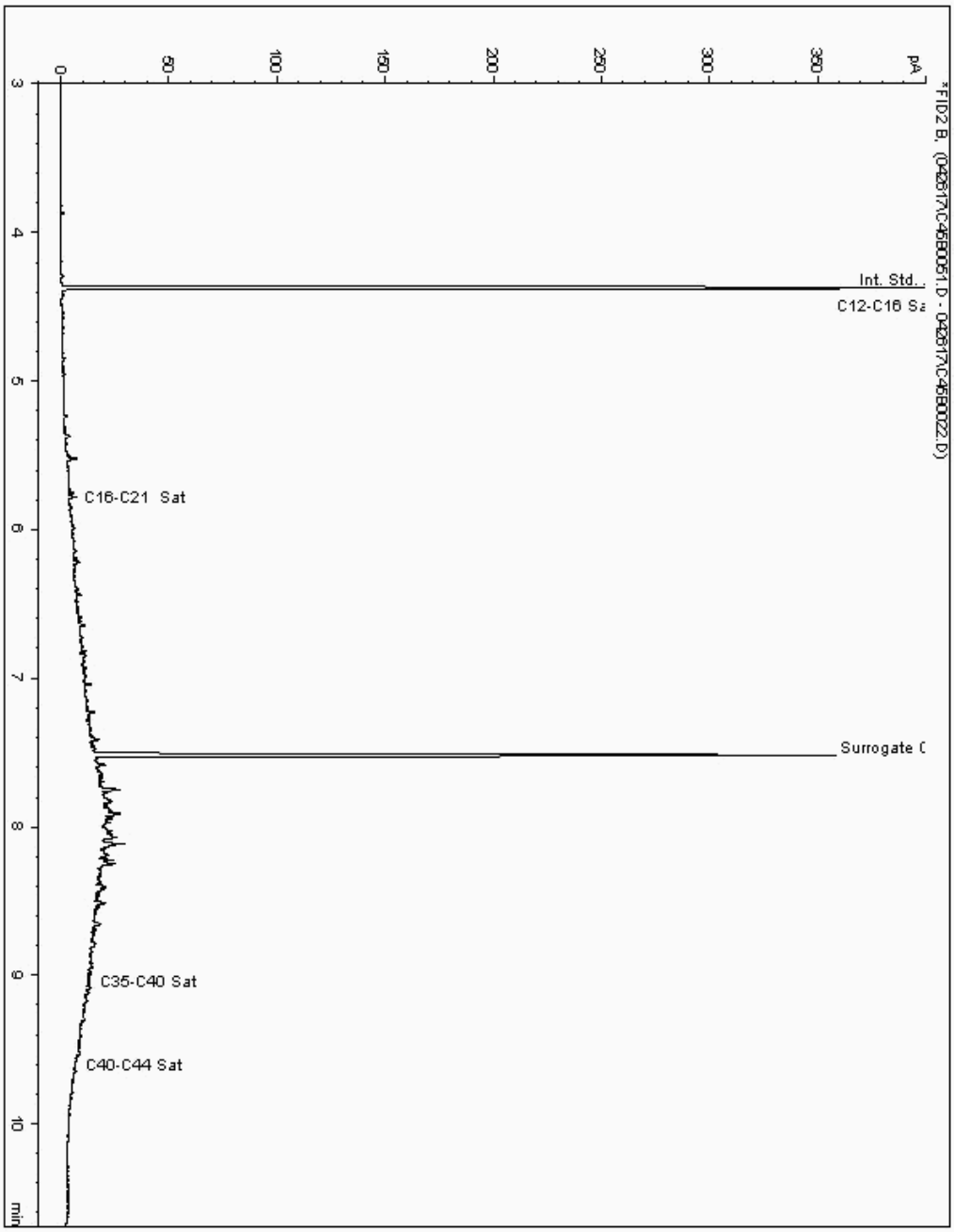
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 15397830
Sample ID : W4TP309

Depth : 2.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418922-
Date Acquired : 27/04/2017 09:37:16 PM
Units : ppb
Dilution: W4TP309[2.50] ->



CERTIFICATE OF ANALYSIS

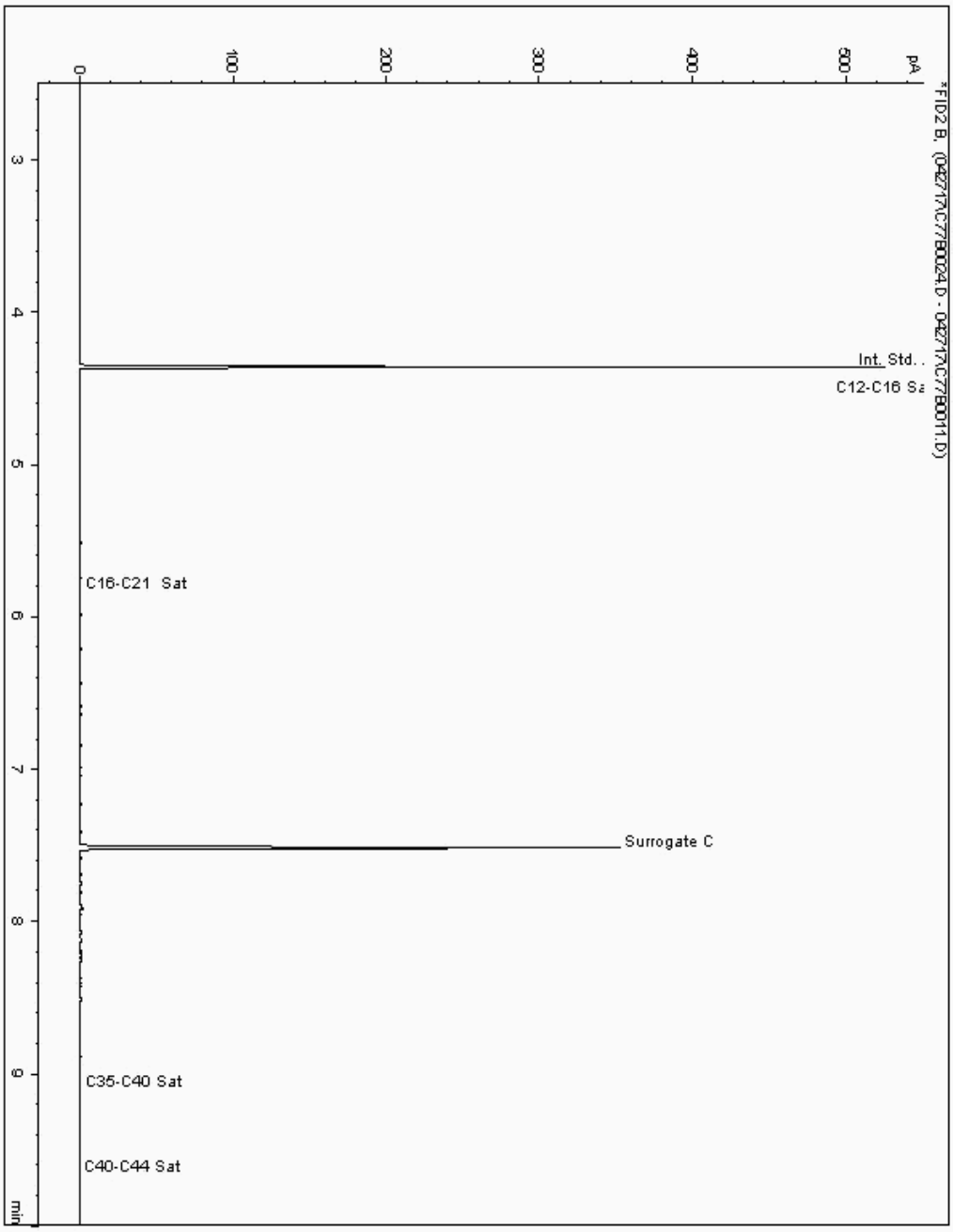
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15397879 **Depth :** 0.90
Sample ID : W7WS309

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419316-
Date Acquired : 4/27/2017 7:34:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

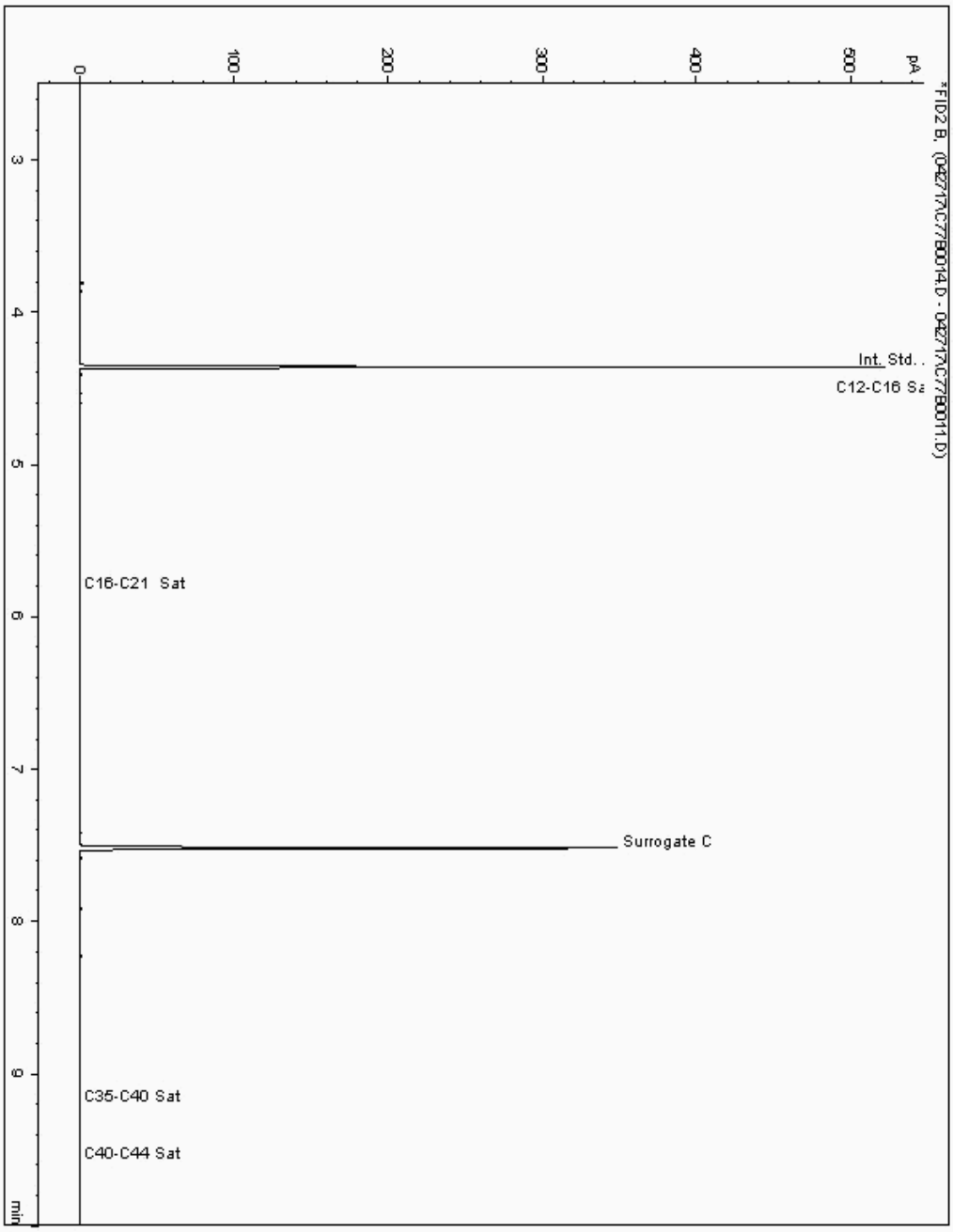
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15397986 **Sample ID :** W4TP309 **Depth :** 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418901-
Date Acquired : 4/27/2017 5:10:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

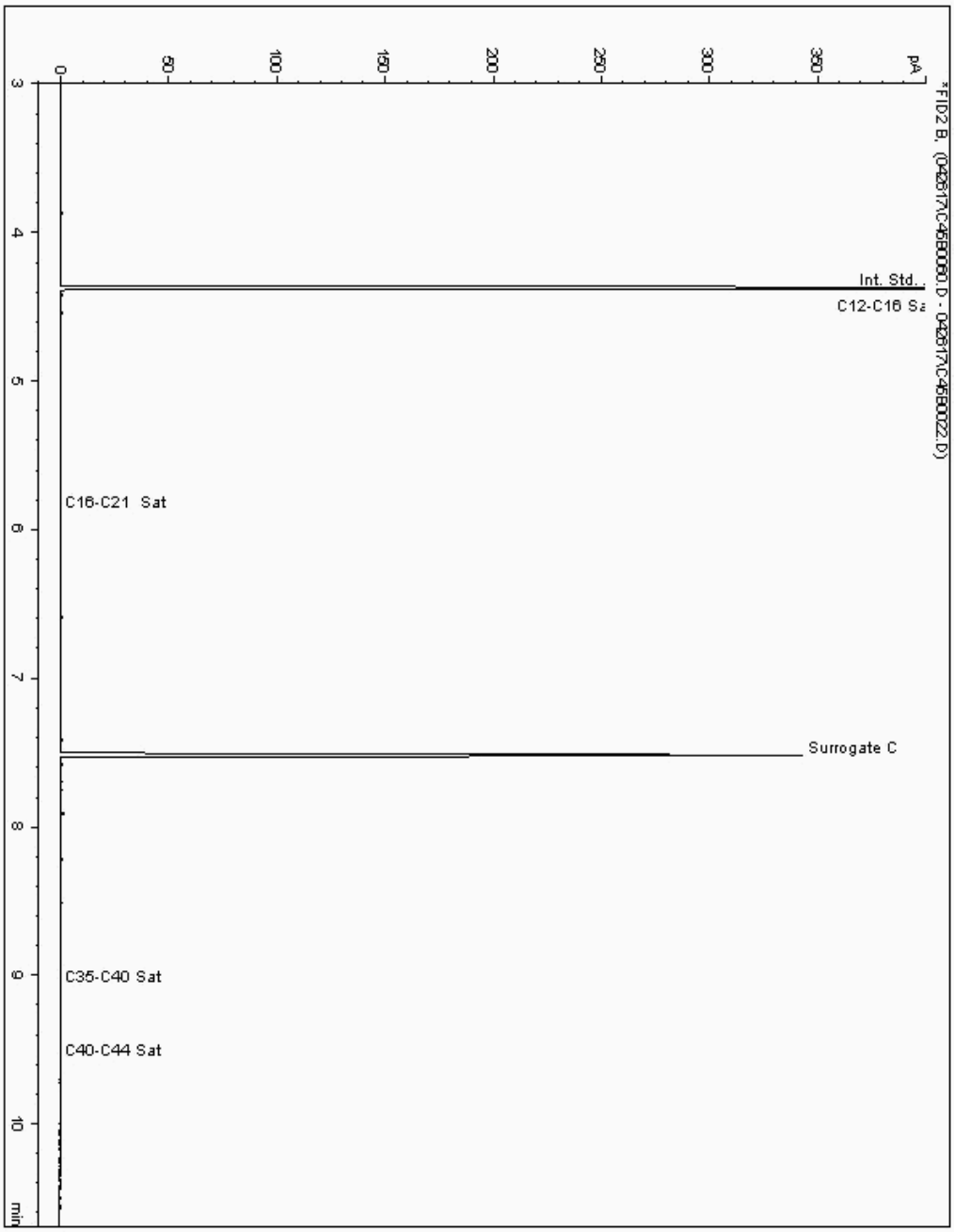
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398057 **Sample ID :** W7WS310 **Depth :** 0.00 - 0.20

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419414-
Date Acquired : 27/04/2017 11:50:53 PM
Units : ppb
Dilution: W7WS310[0.00 - 0.20] ->



CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

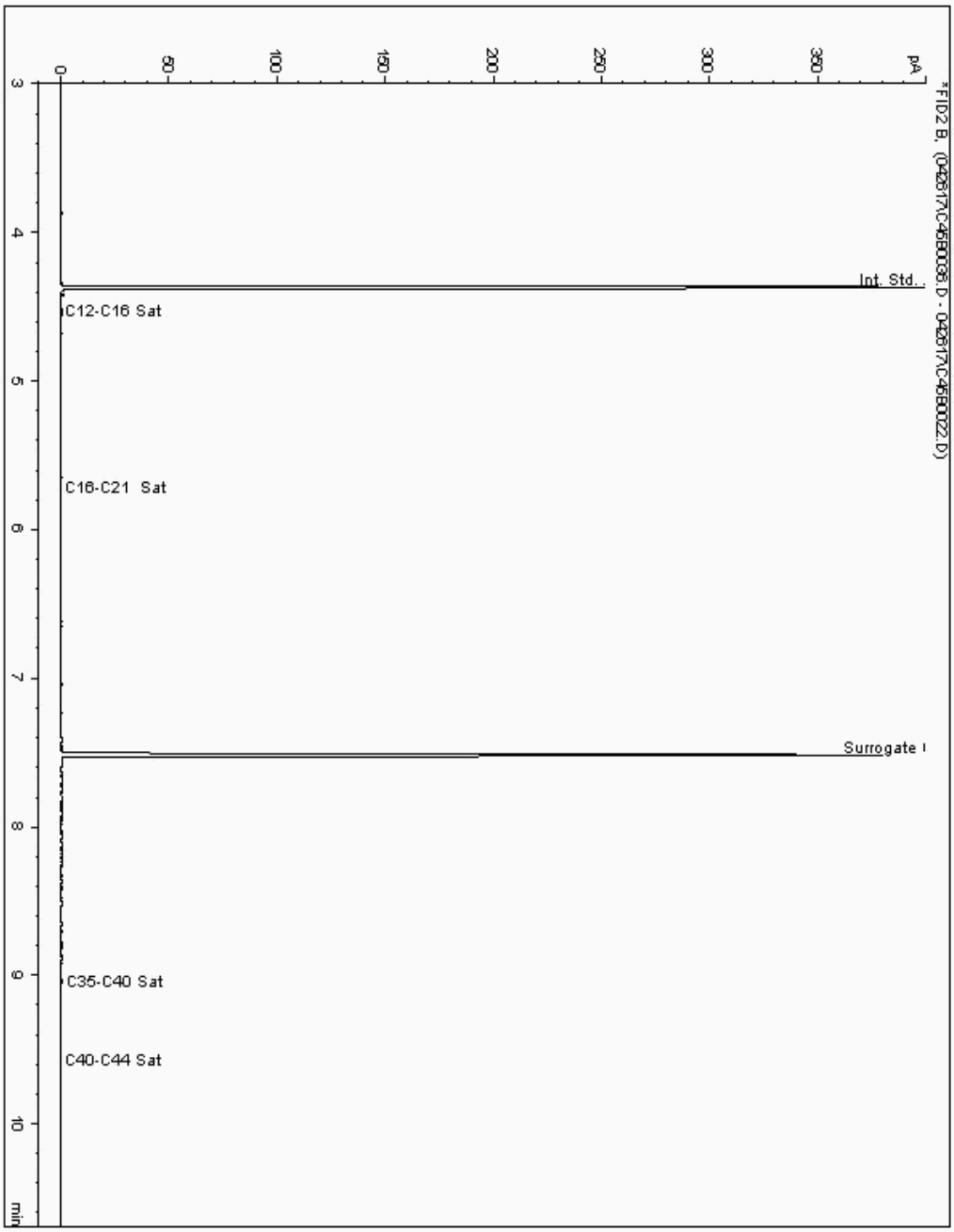
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 15398062
Sample ID : W7WS308

Depth : 2.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419298-
Date Acquired : 27/04/2017 02:56:08 PM
Units : ppb
Dilution: W7WS308[2.40] ->



CERTIFICATE OF ANALYSIS

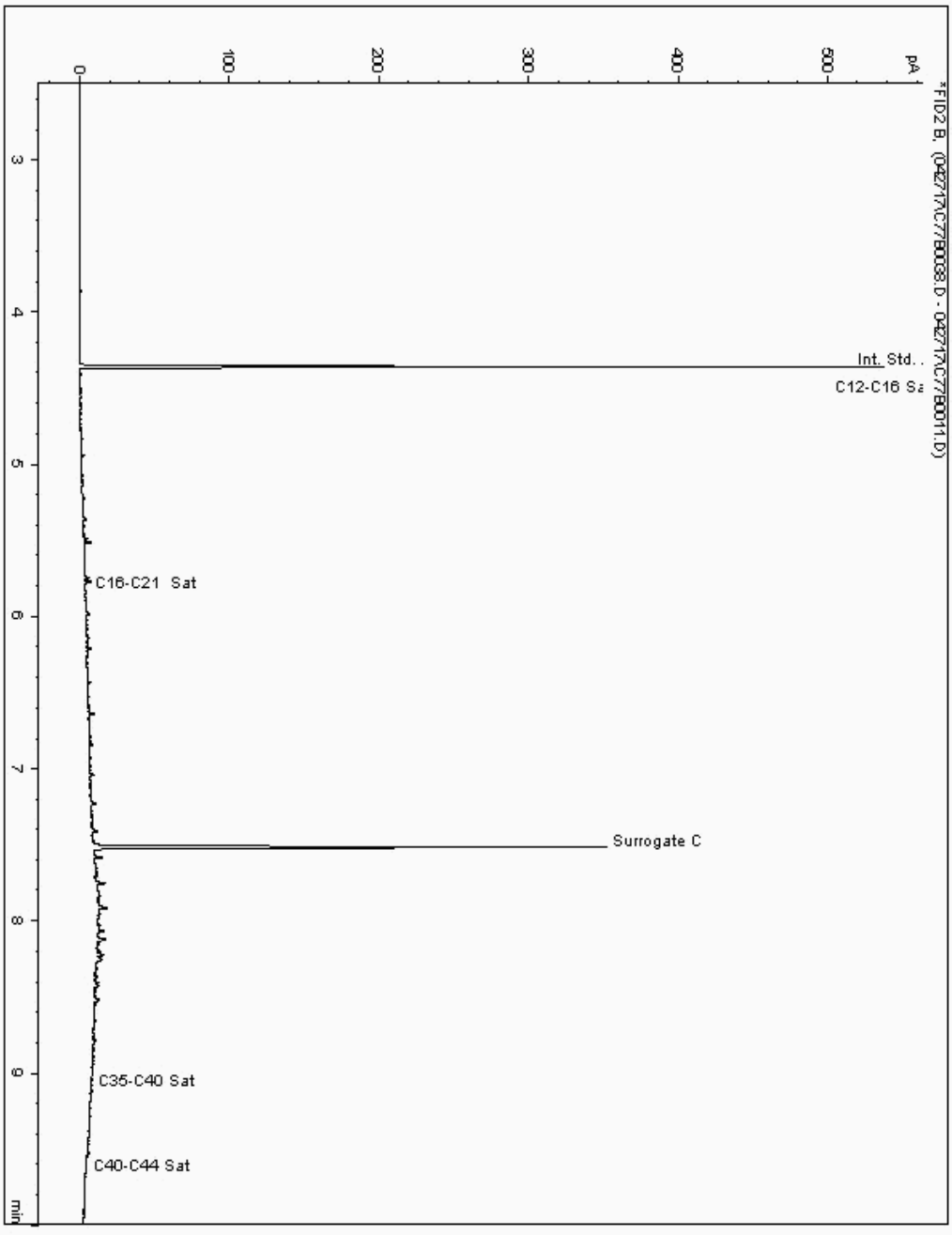
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398096 **Sample ID :** W4TP309 **Depth :** 0.10

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418881-
Date Acquired : 4/27/2017 11:03:18 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.020



CERTIFICATE OF ANALYSIS

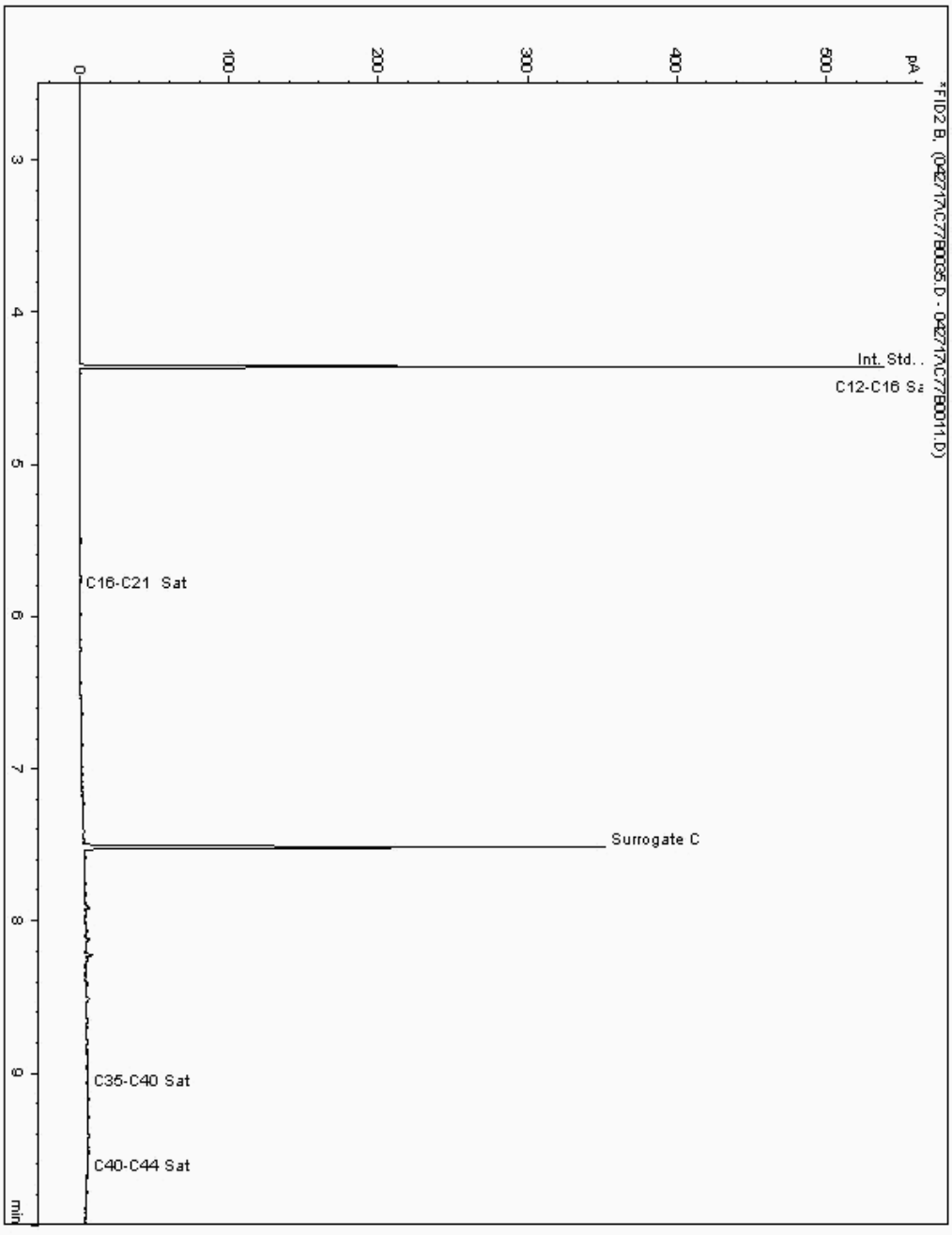
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398100 **Sample ID :** W4BH306 **Depth :** 0.10 - 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419243-
Date Acquired : 4/27/2017 10:19:10 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.960



CERTIFICATE OF ANALYSIS

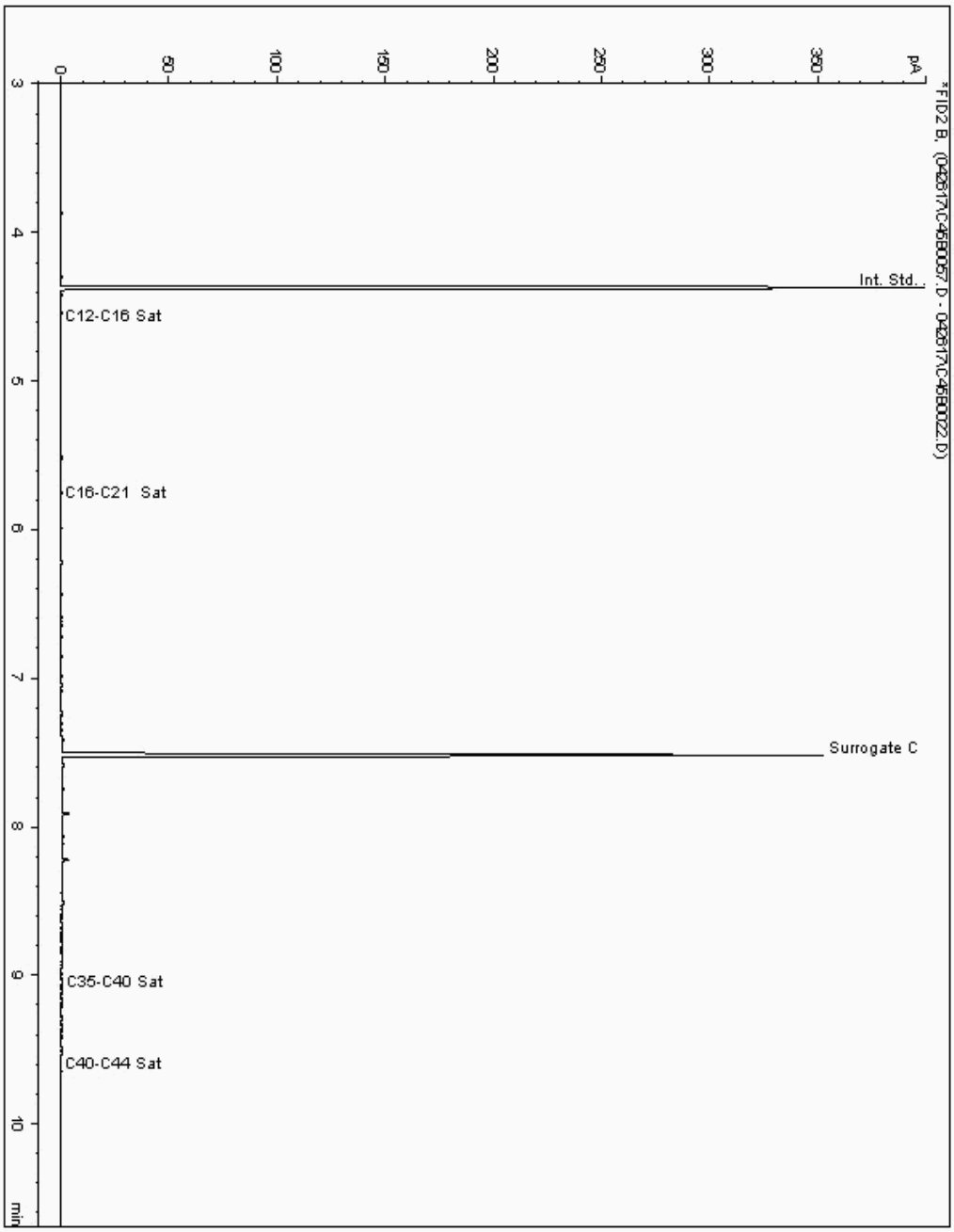
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398169 **Sample ID :** W7WS311 **Depth :** 0.10 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419376-
Date Acquired : 27/04/2017 11:06:17 PM
Units : ppb
Dilution: W7WS311[0.10 - 0.30] ->



CERTIFICATE OF ANALYSIS

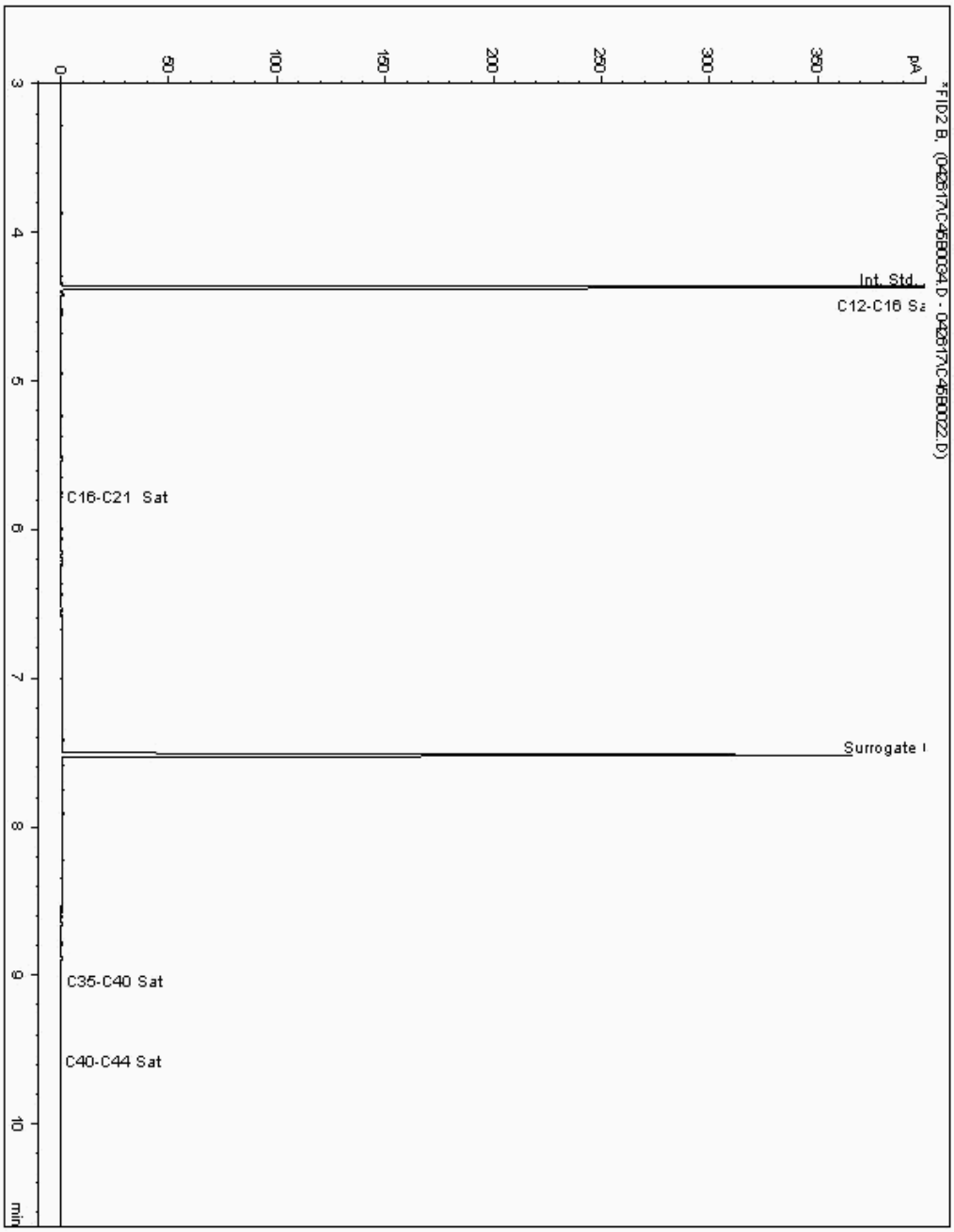
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398272 **Sample ID :** W4WS316 **Depth :** 2.30 - 2.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419470-
Date Acquired : 27/04/2017 02:23:51 PM
Units : ppb
Dilution: W4WS316[2.30 - 2.40] ->



CERTIFICATE OF ANALYSIS

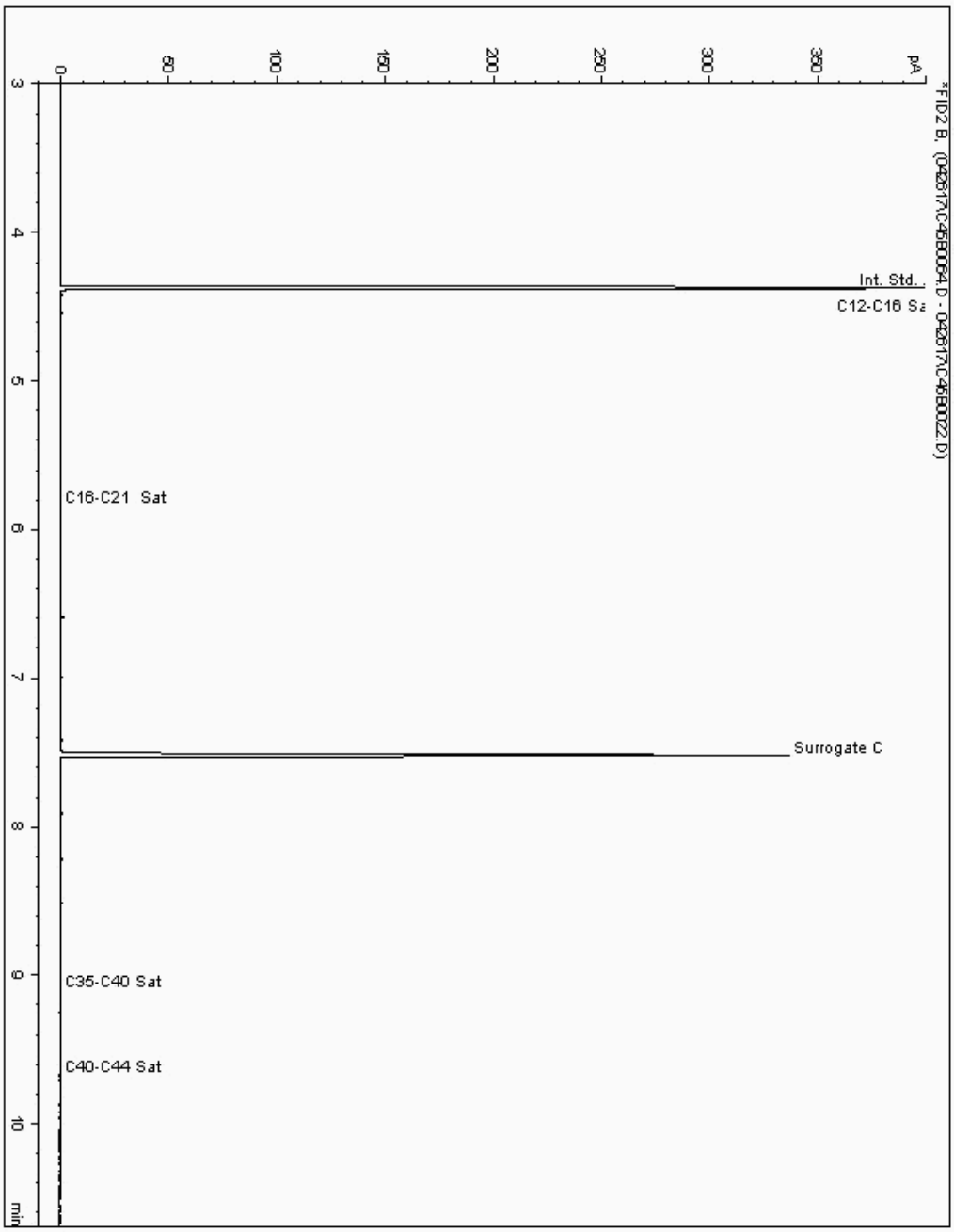
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398298 **Sample ID :** W7WS310 **Depth :** 2.80 - 2.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419450-
Date Acquired : 27/04/2017 12:54:19 PM
Units : ppb
Dilution: W7WS310[2.80 - 2.90] ->



CERTIFICATE OF ANALYSIS

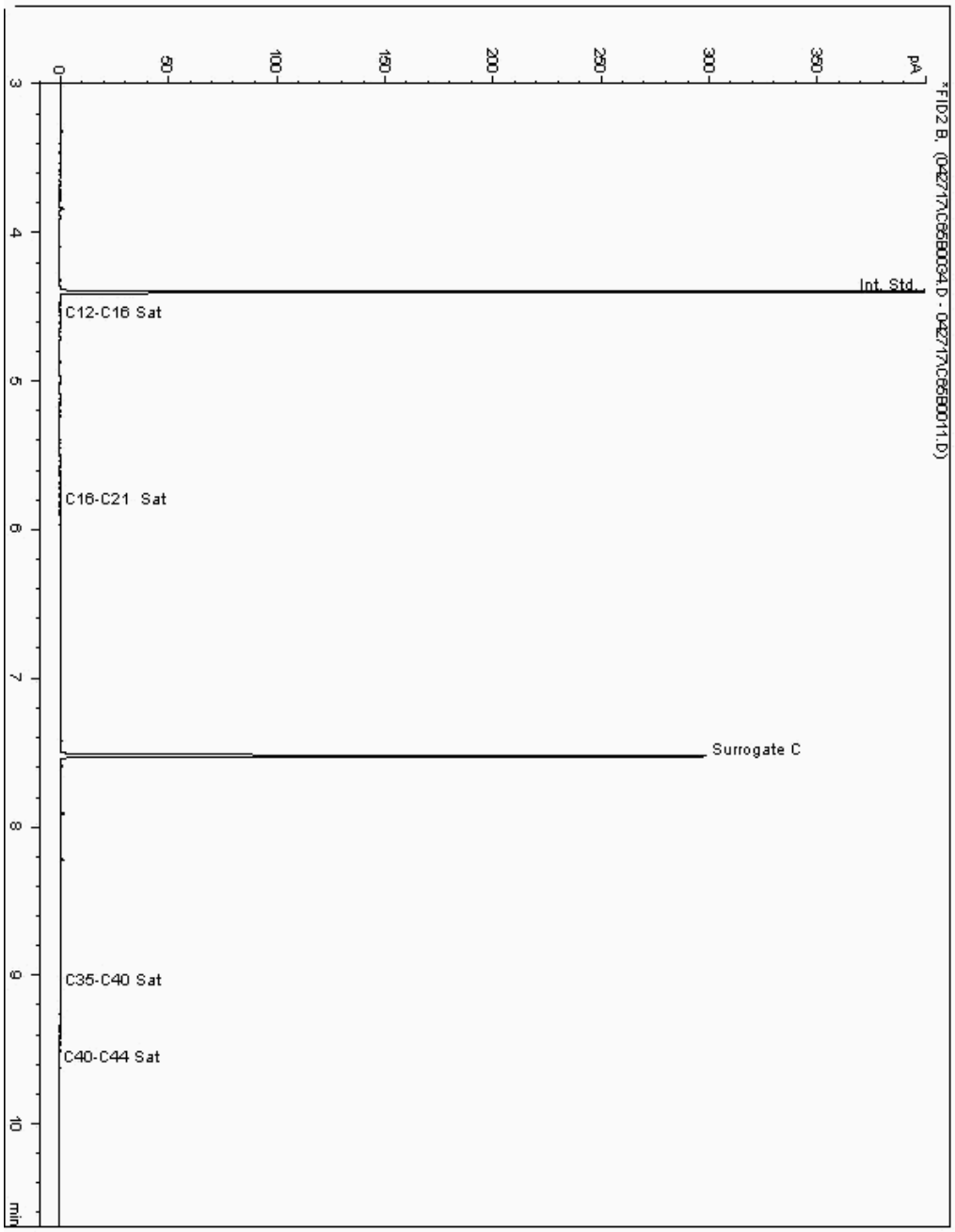
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398371 **Sample ID :** W4BH306 **Depth :** 0.90 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419553-
Date Acquired : 27/04/2017 21:43:36 PM
Units : ppb
Dilution: W4BH306[0.90 - 1.00] ->



CERTIFICATE OF ANALYSIS

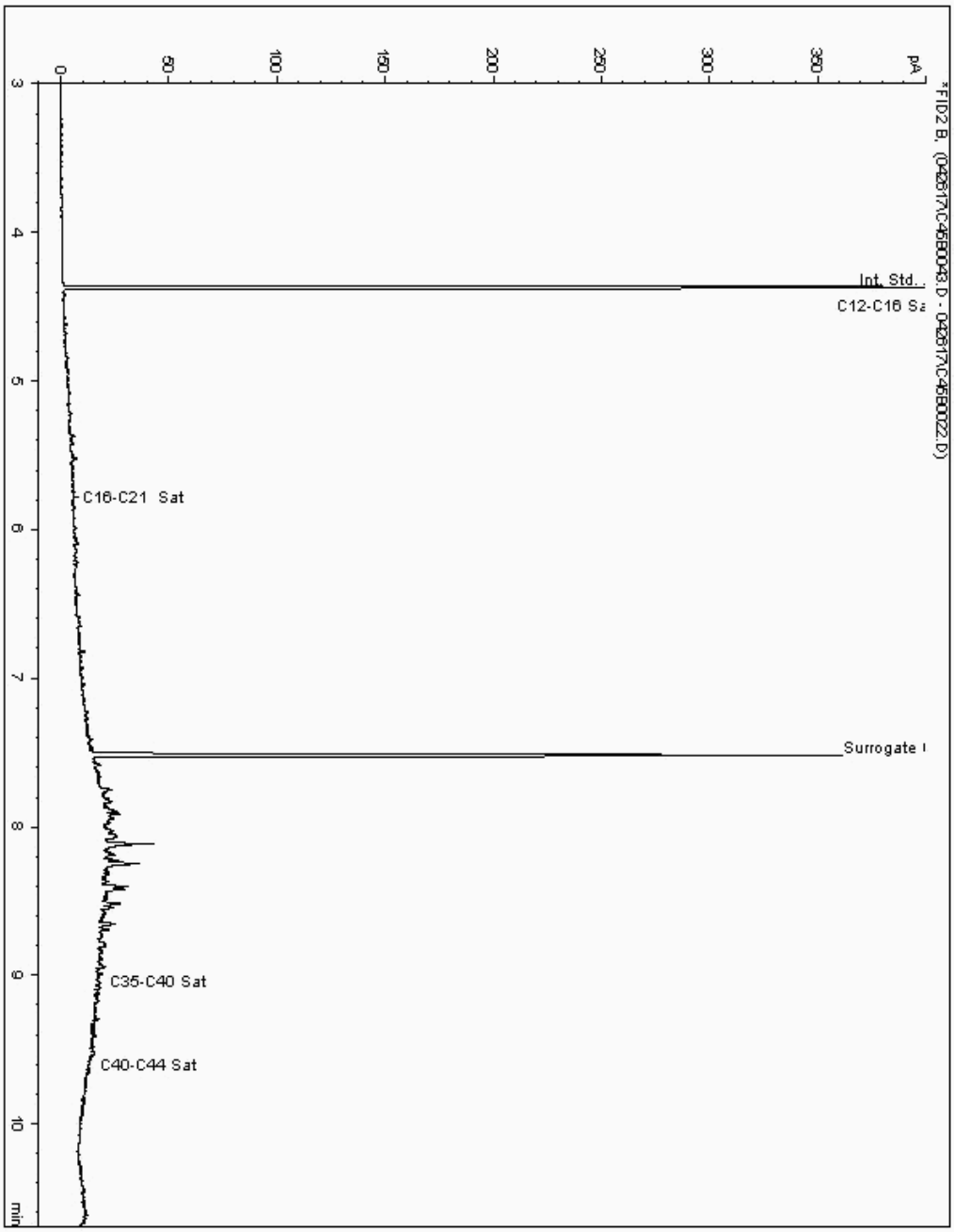
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398556 **Sample ID :** W4TP316 **Depth :** 2.20

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419154-
Date Acquired : 27/04/2017 07:45:12 PM
Units : ppb
Dilution: W4TP316[2.20] ->



CERTIFICATE OF ANALYSIS

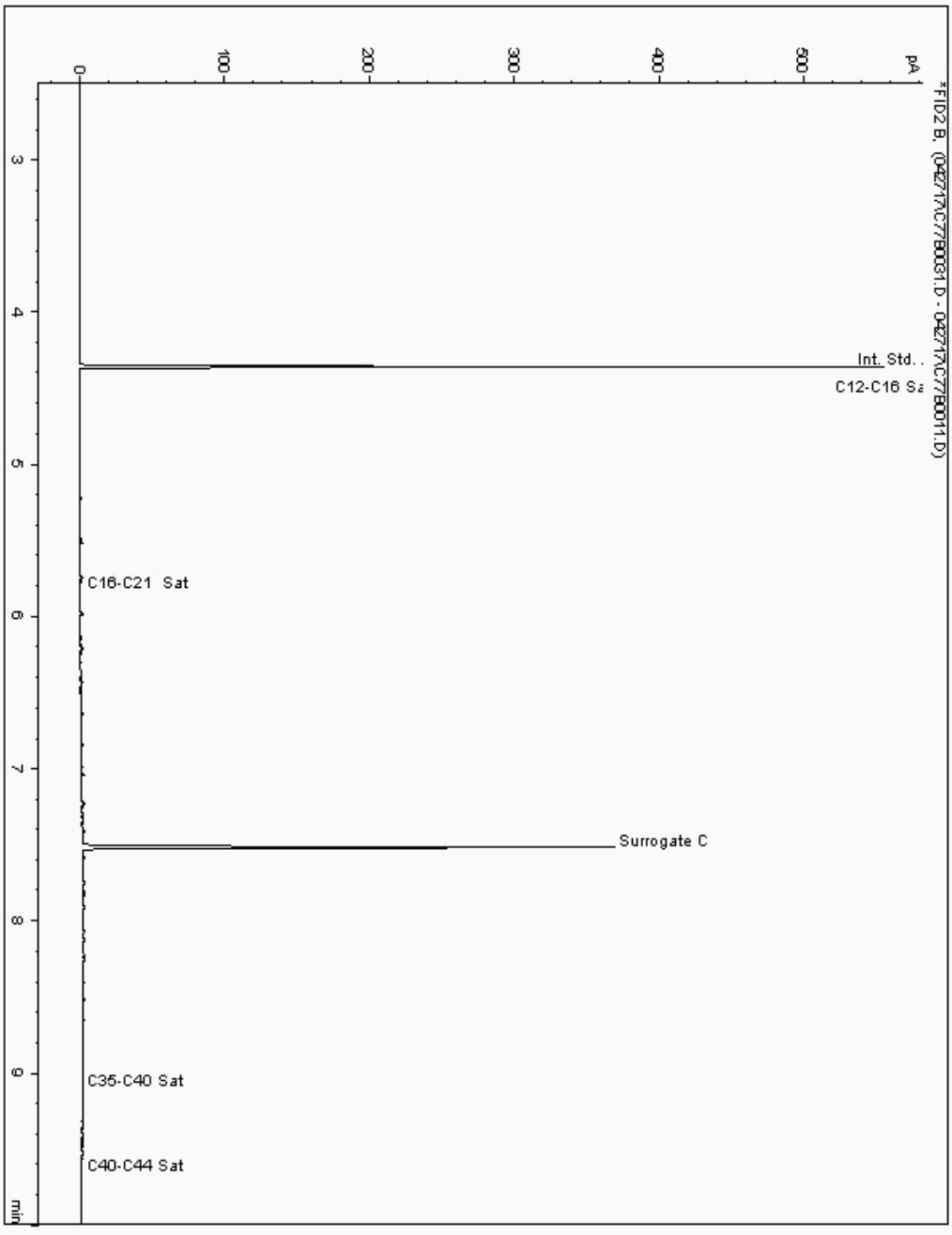
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398627 **Sample ID :** W4TP314 **Depth :** 0.90

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419355-
Date Acquired : 4/27/2017 9:23:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



CERTIFICATE OF ANALYSIS

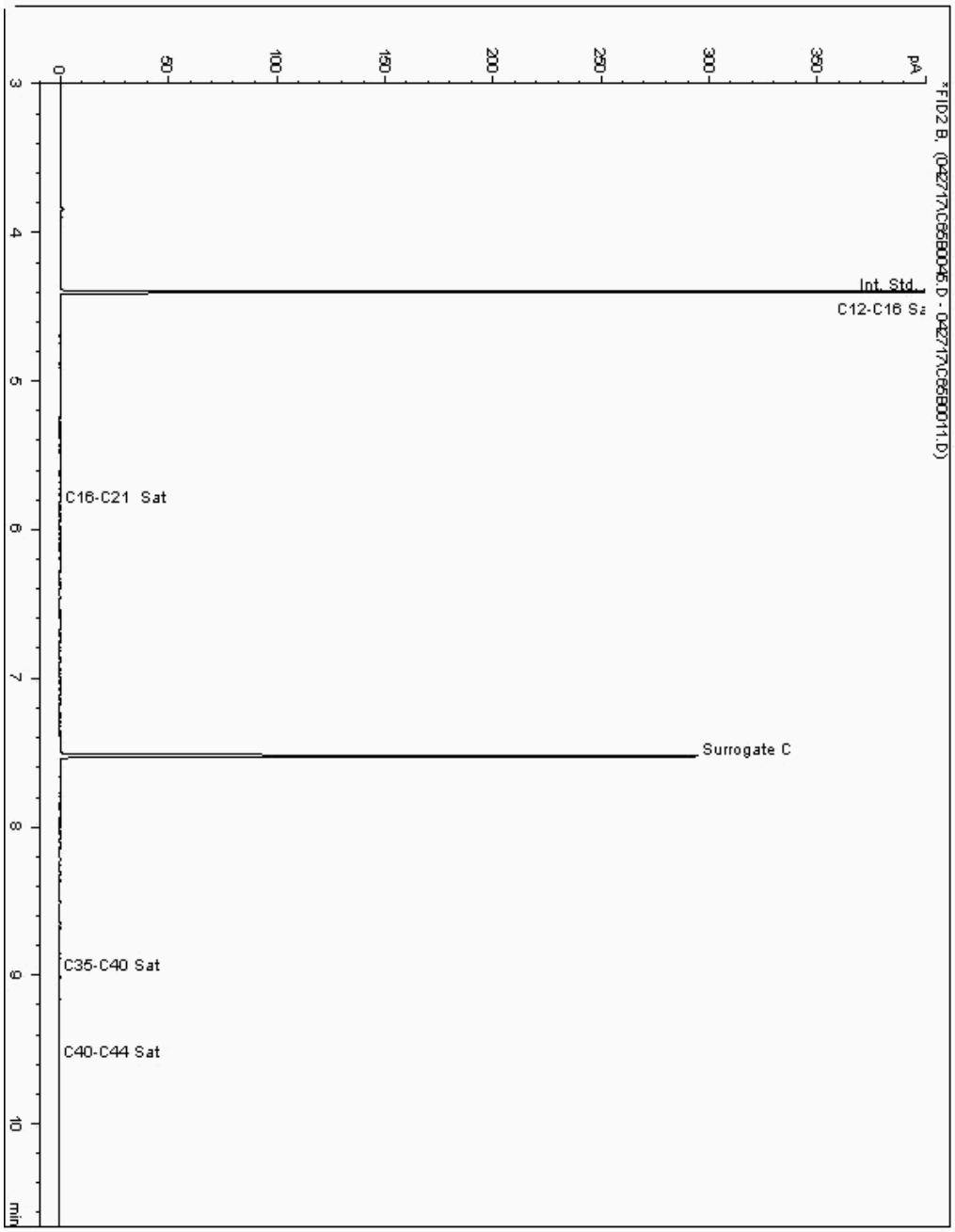
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398736 **Depth :** 1.70
Sample ID : W7WS309

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419335-
Date Acquired : 28/04/2017 00:29:53 PM
Units : ppb
Dilution: W7WS309[1.70] ->



CERTIFICATE OF ANALYSIS

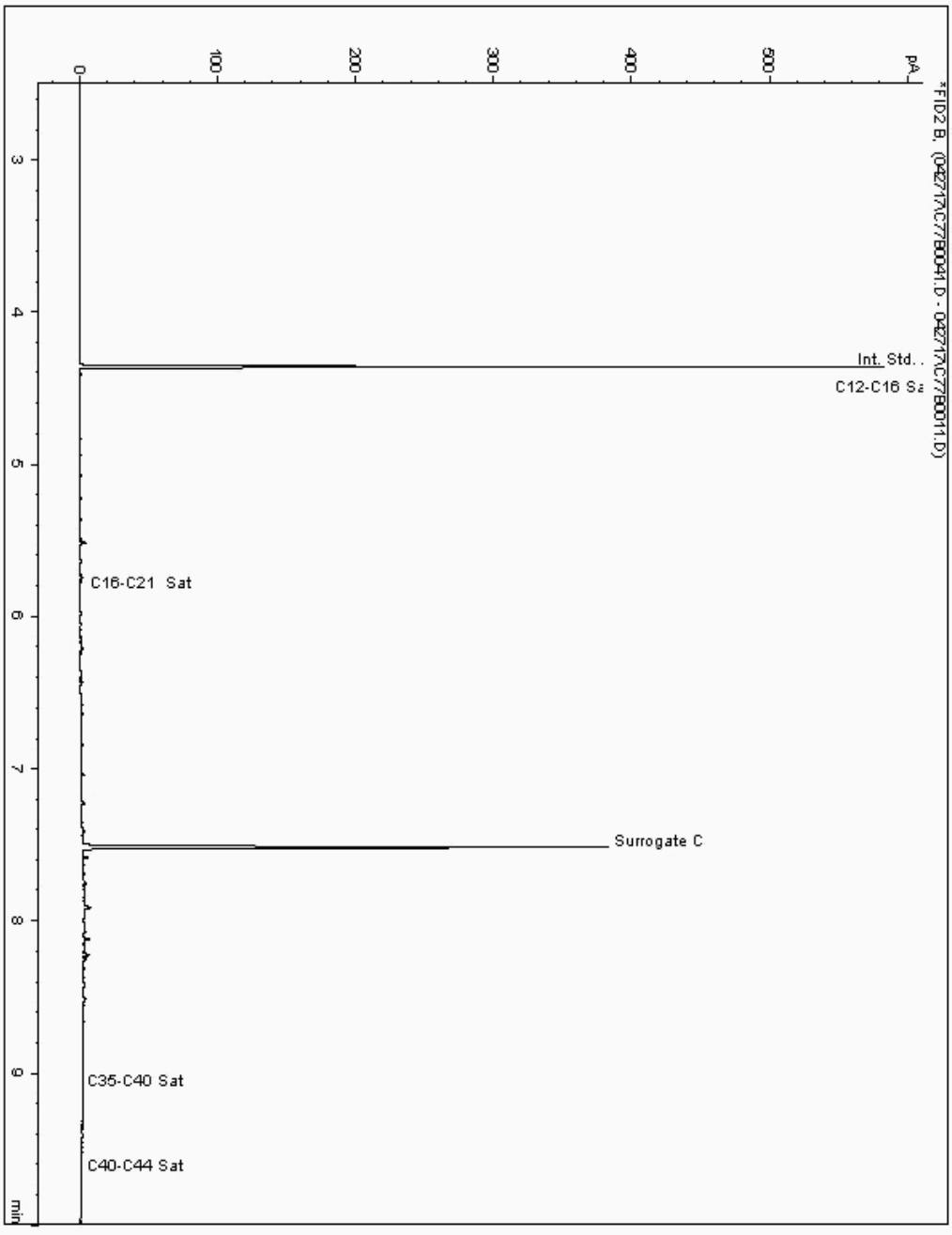
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398784 **Sample ID :** W4TP308 **Depth :** 1.70

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418957-
Date Acquired : 4/27/2017 11:47:12 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.970



CERTIFICATE OF ANALYSIS

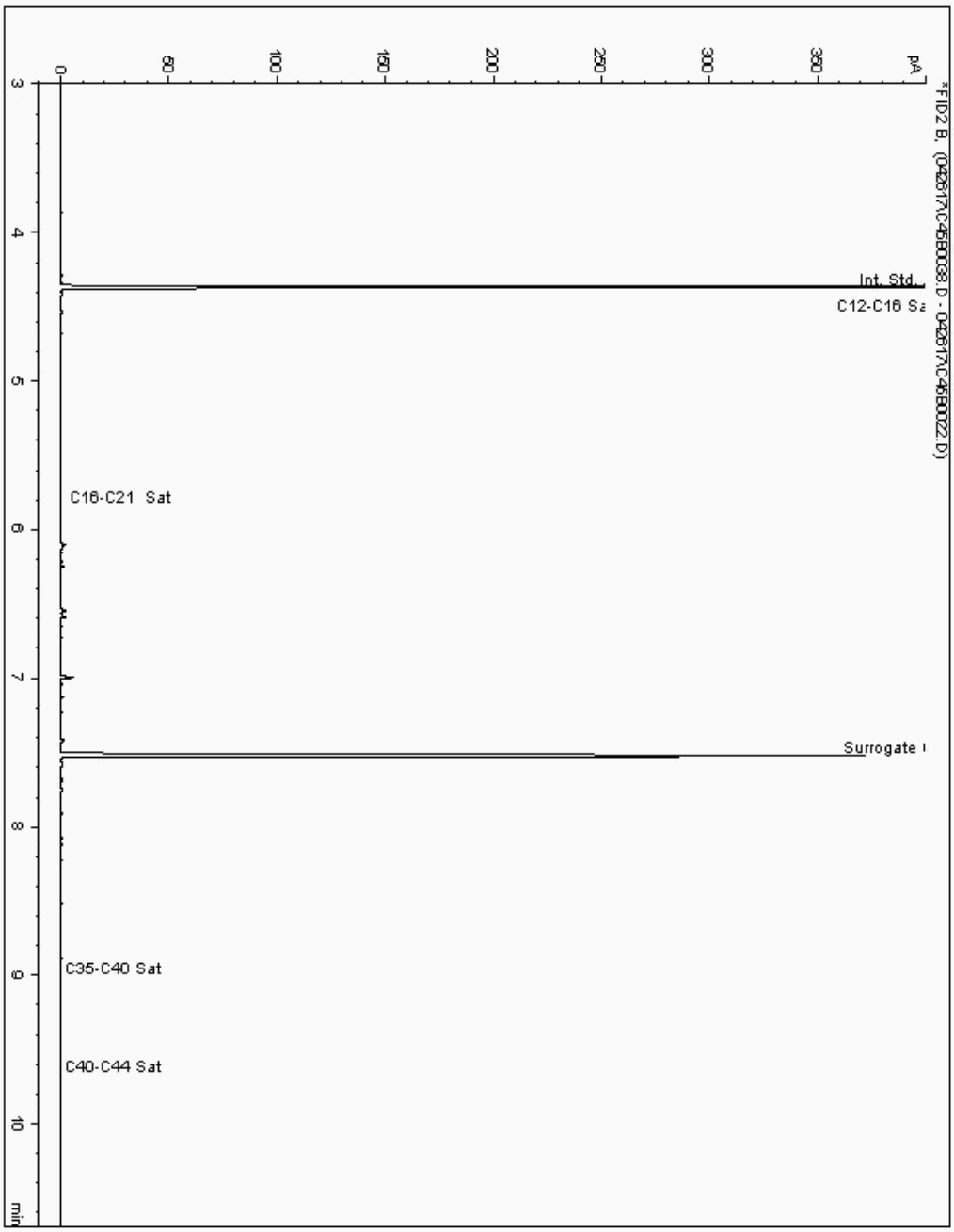
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398834 **Sample ID :** W7WS311 **Depth :** 2.80 - 2.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419395-
Date Acquired : 27/04/2017 06:21:03 PM
Units : ppb
Dilution: W7WS311[2.80 - 2.90] ->



CERTIFICATE OF ANALYSIS

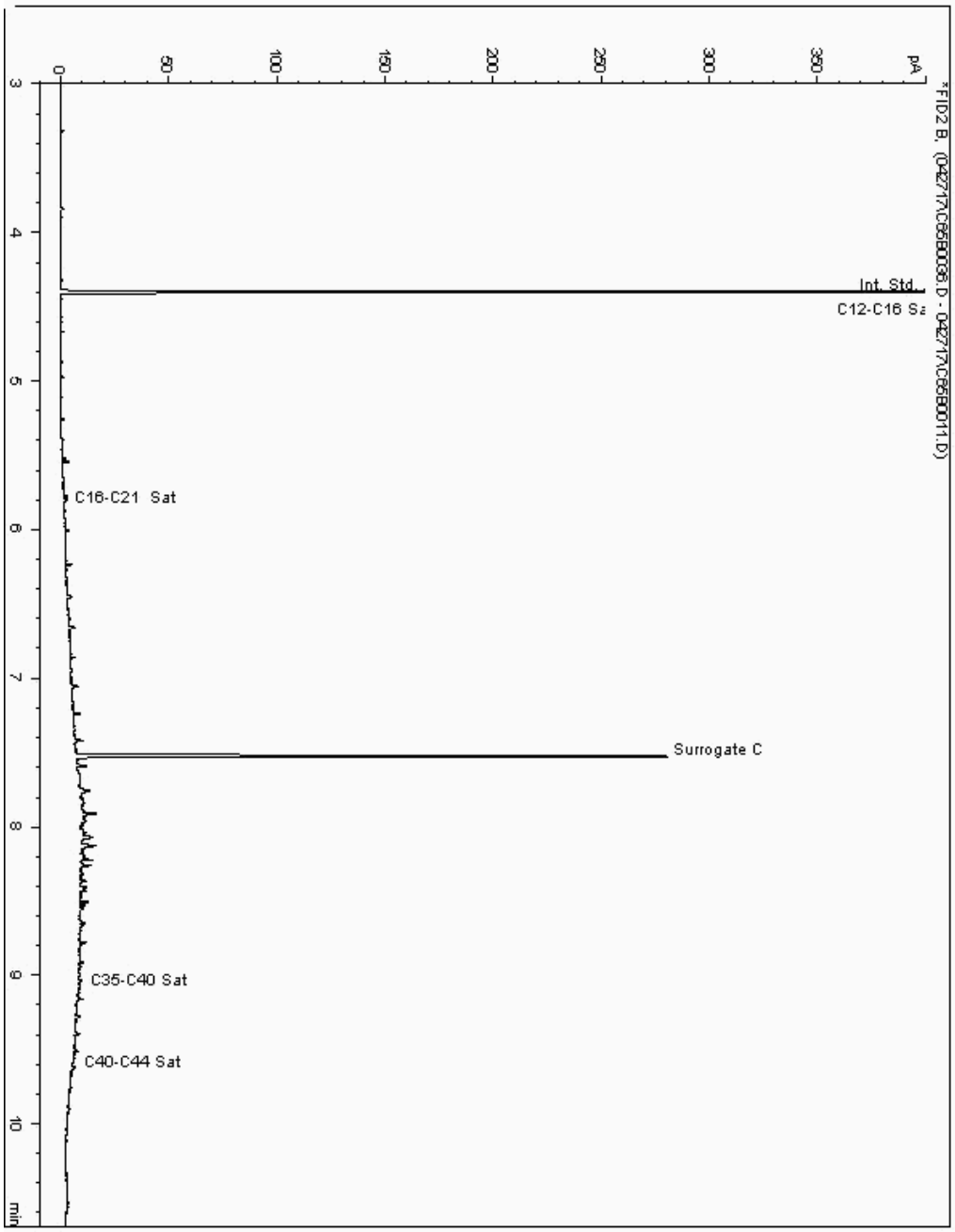
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15398971 **Sample ID :** W4TP312 **Depth :** 1.90

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419054-
Date Acquired : 27/04/2017 22:16:17 PM
Units : ppb
Dilution: W4TP312[1.90] ->



CERTIFICATE OF ANALYSIS

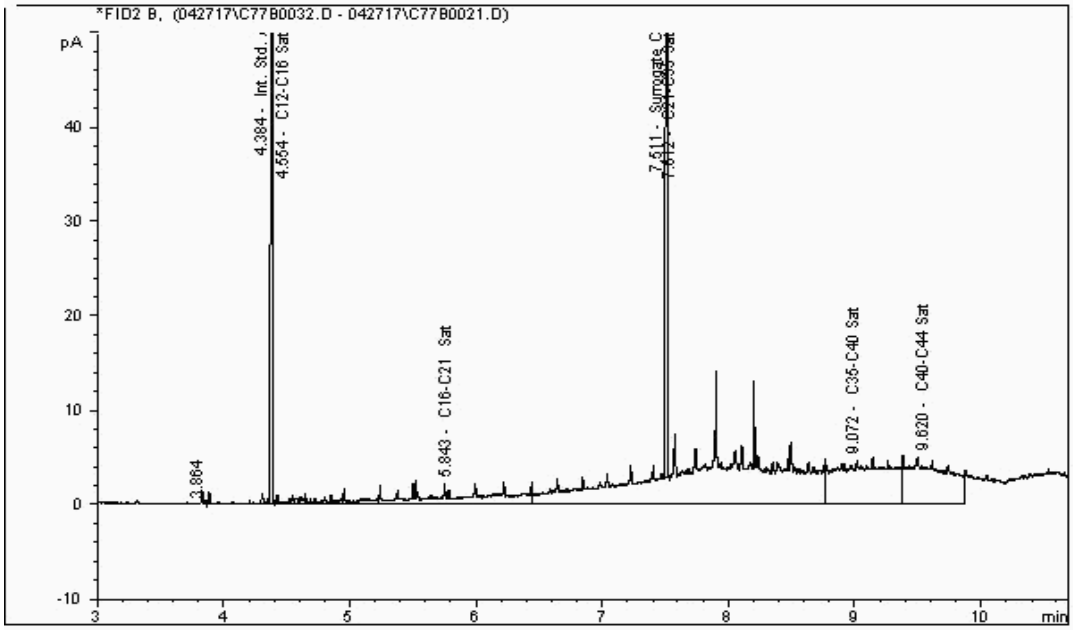
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15399061 **Sample ID :** W4TP315 **Depth :** 0.90

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419191-
Date Acquired : 27/04/2017 16:33:23 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

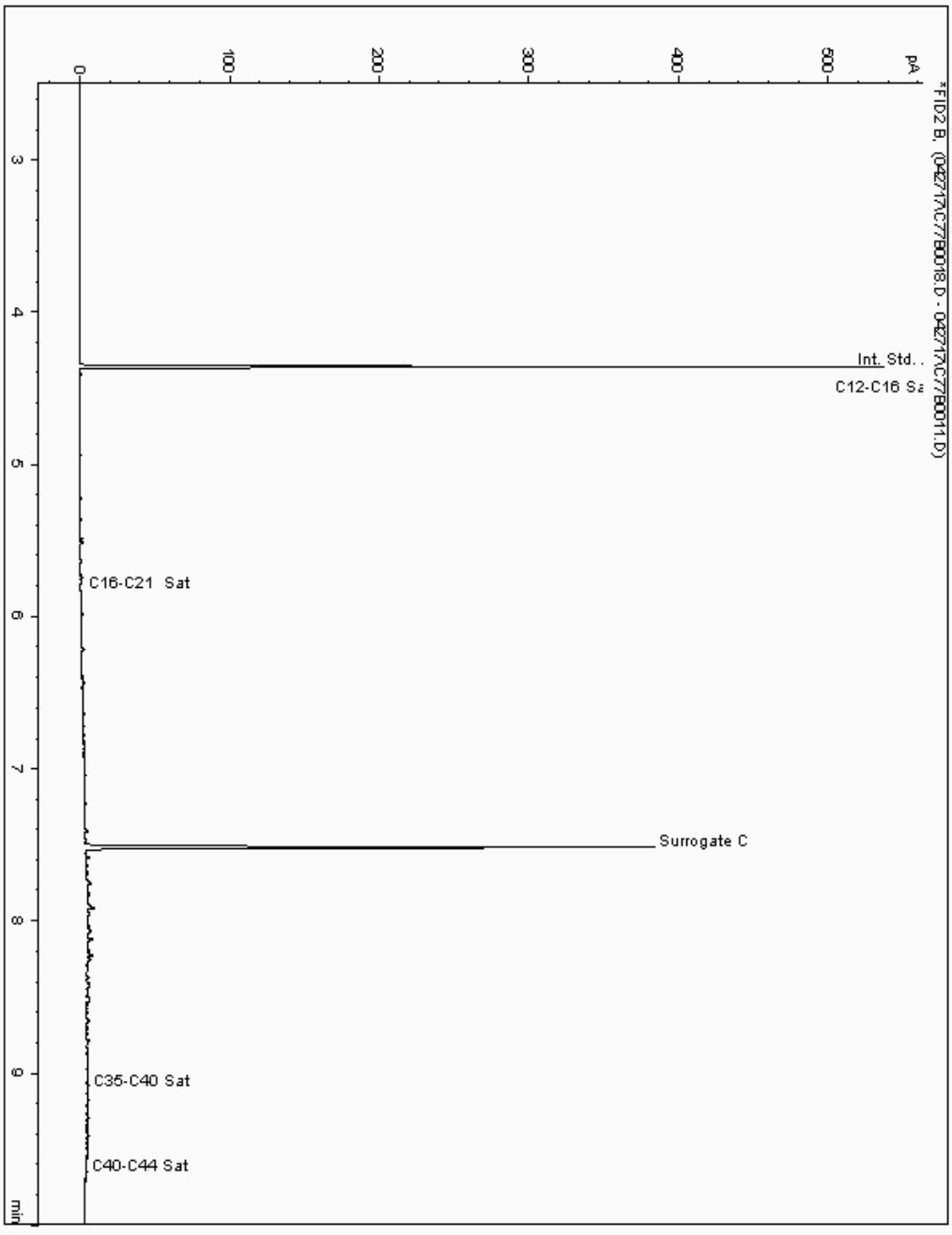
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15399274 **Sample ID :** W4TP307 **Depth :** 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419015-
Date Acquired : 4/27/2017 6:06:06 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.020



CERTIFICATE OF ANALYSIS

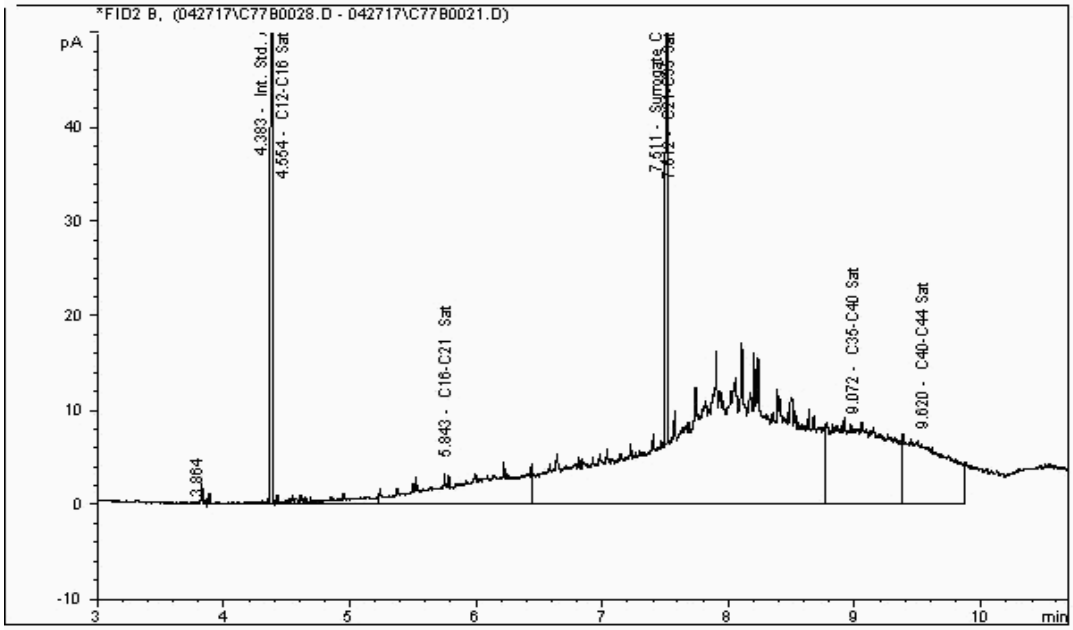
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15399367 **Depth :** 1.30
Sample ID : W4TP316

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419133-
Date Acquired : 27/04/2017 15:38:09 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

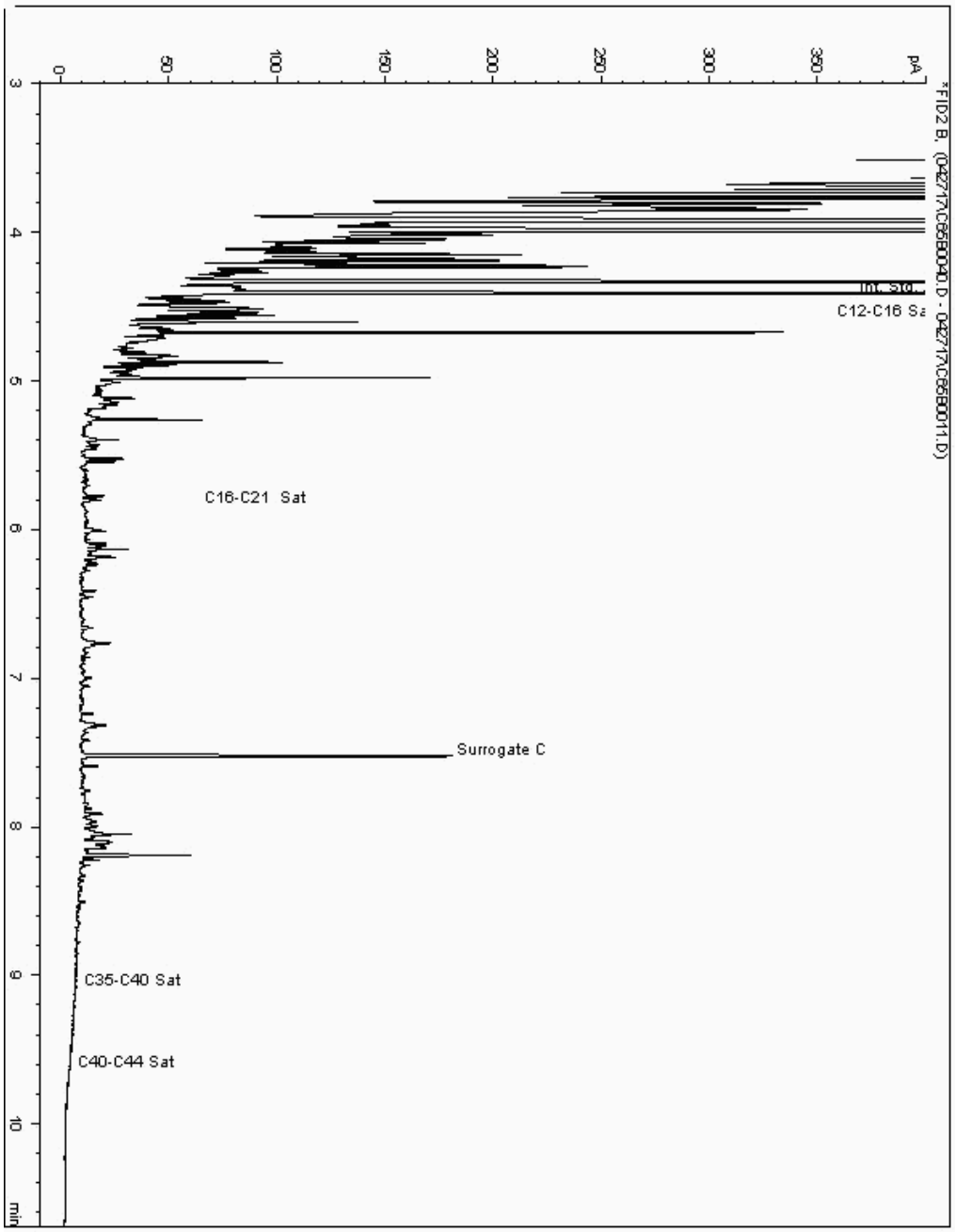
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15399371 **Sample ID :** W4TP307 **Depth :** 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418995-
Date Acquired : 27/04/2017 23:12:30 PM
Units : ppb
Dilution: W4TP307[1.00] ->



CERTIFICATE OF ANALYSIS

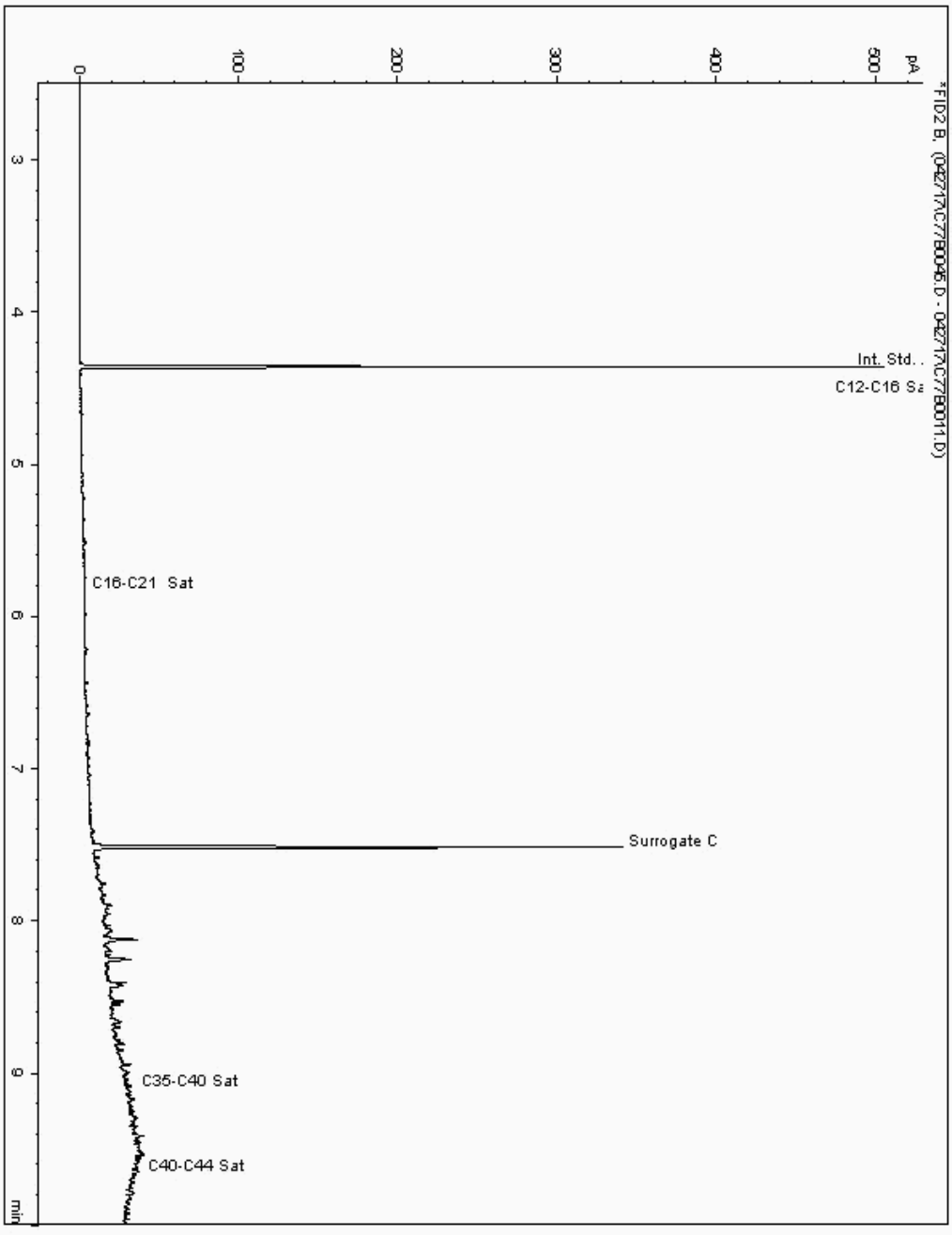
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15399592 **Sample ID :** W4TP312 **Depth :** 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419034-
Date Acquired : 4/28/2017 12:43:05 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

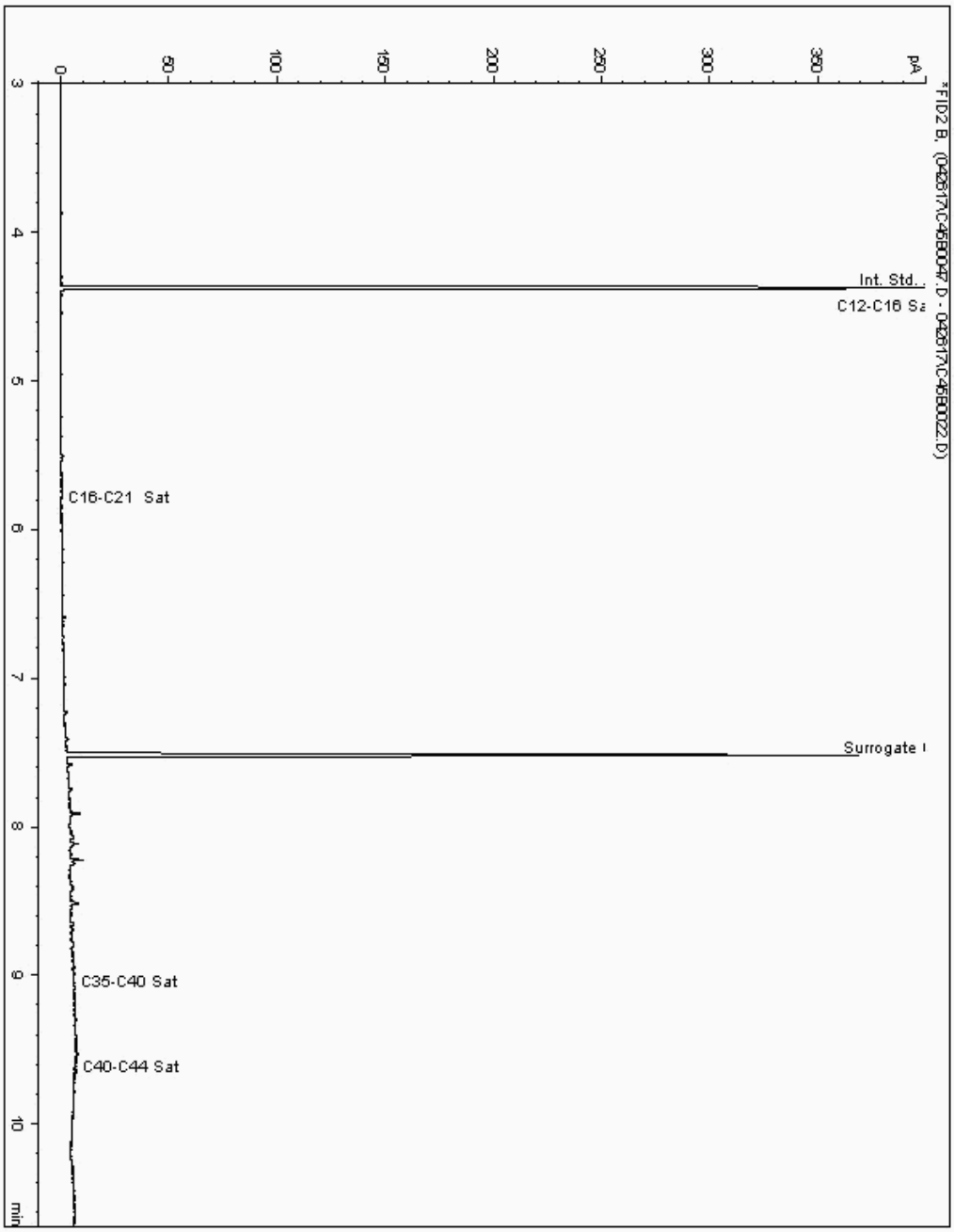
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 15399605
Sample ID : W4TP315

Depth : 0.10

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419173-
Date Acquired : 27/04/2017 08:41:15 PM
Units : ppb
Dilution: W4TP315[0.10] ->



CERTIFICATE OF ANALYSIS

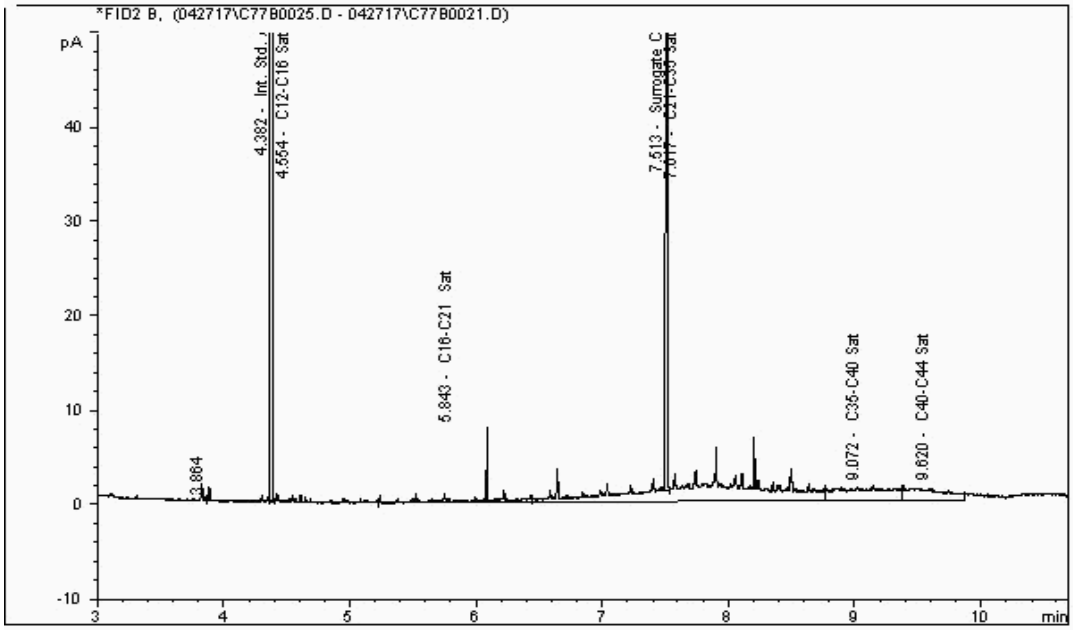
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15399756 **Sample ID :** W4TP316 **Depth :** 0.40

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419110-
Date Acquired : 27/04/2017 14:54:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

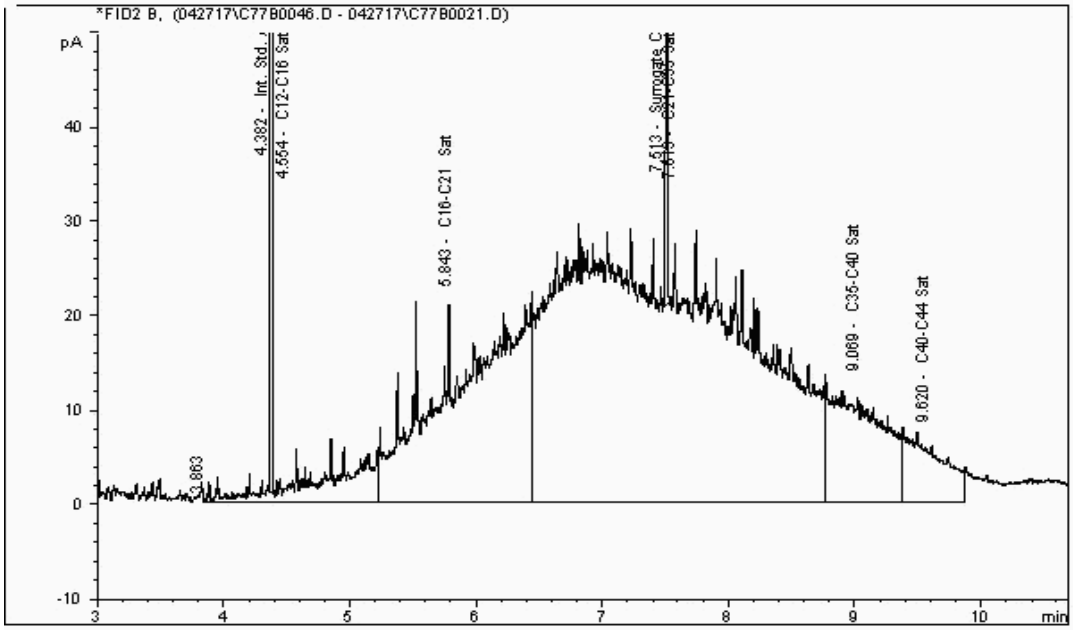
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 15399984
Sample ID : W4TP313

Depth : 2.20

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418809-
Date Acquired : 27/04/2017 20:10:06 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

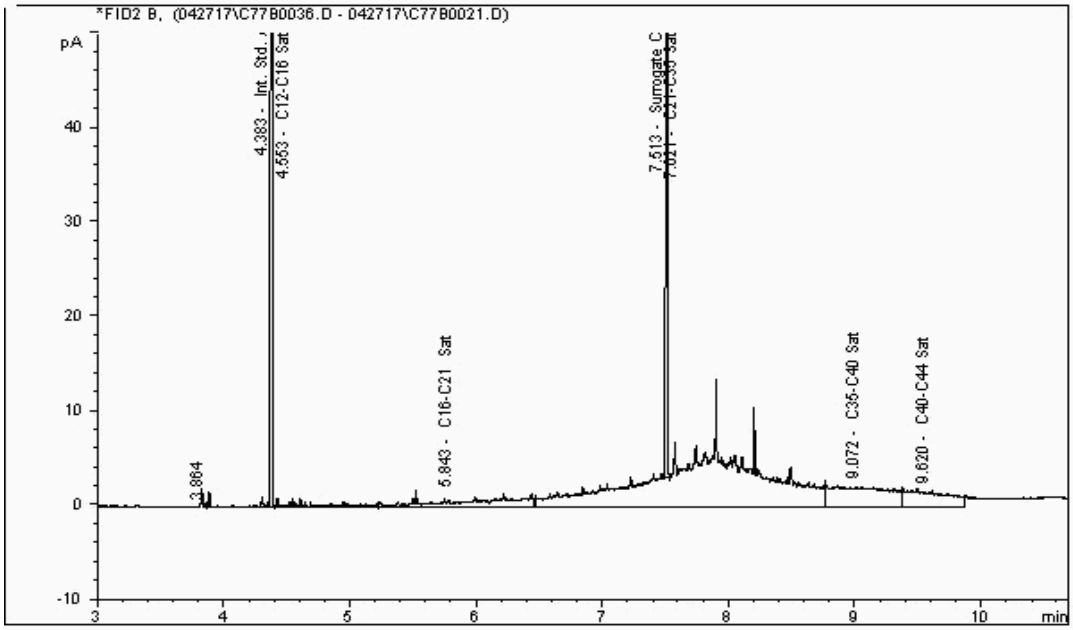
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15400046 **Depth :** 0.20
Sample ID : W5TP304

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419071-
Date Acquired : 27/04/2017 17:37:47 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

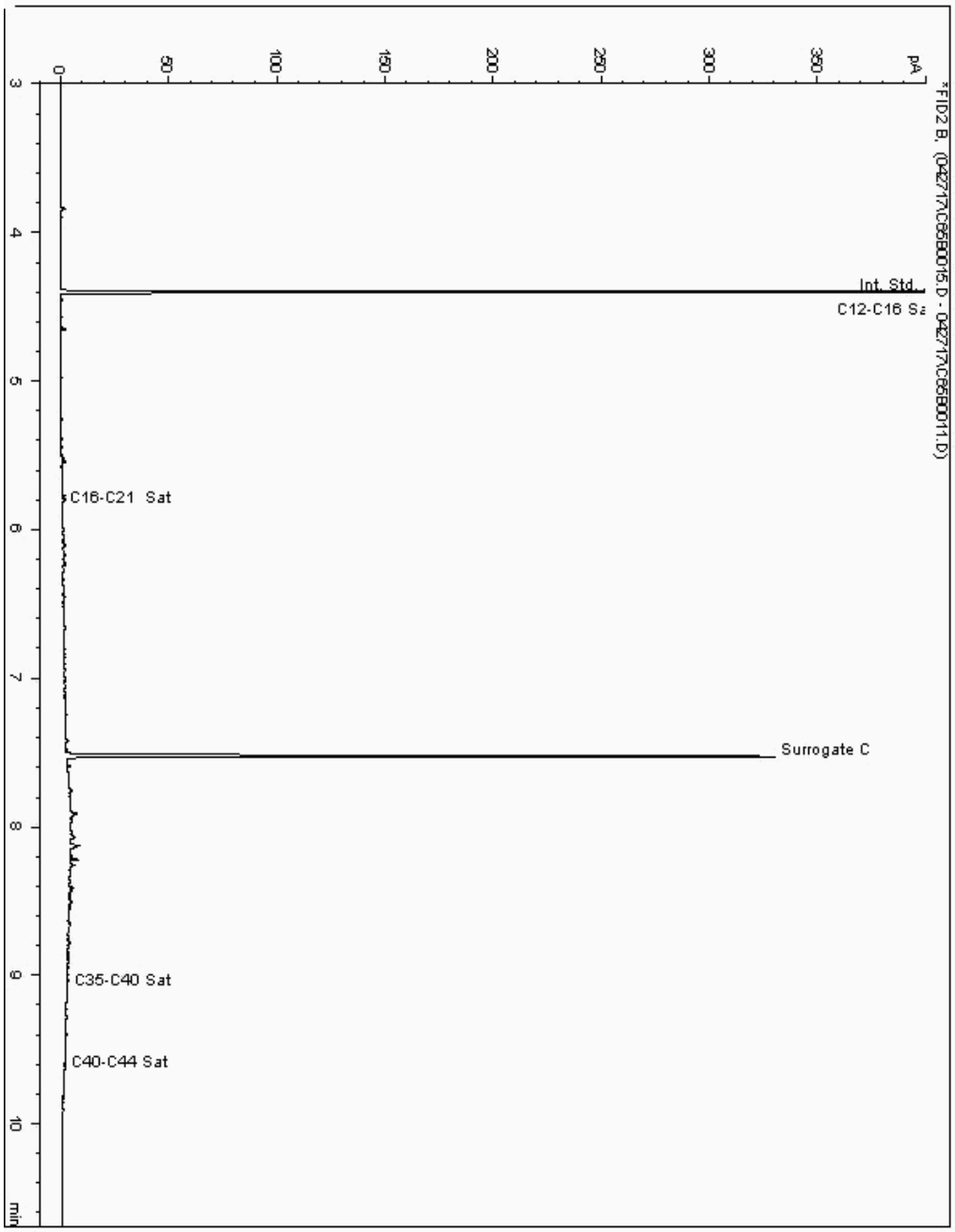
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15400067 **Sample ID :** W4TP314 **Depth :** 2.65

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419489-
Date Acquired : 27/04/2017 16:03:29 PM
Units : ppb
Dilution: W4TP314[2.65] ->



CERTIFICATE OF ANALYSIS

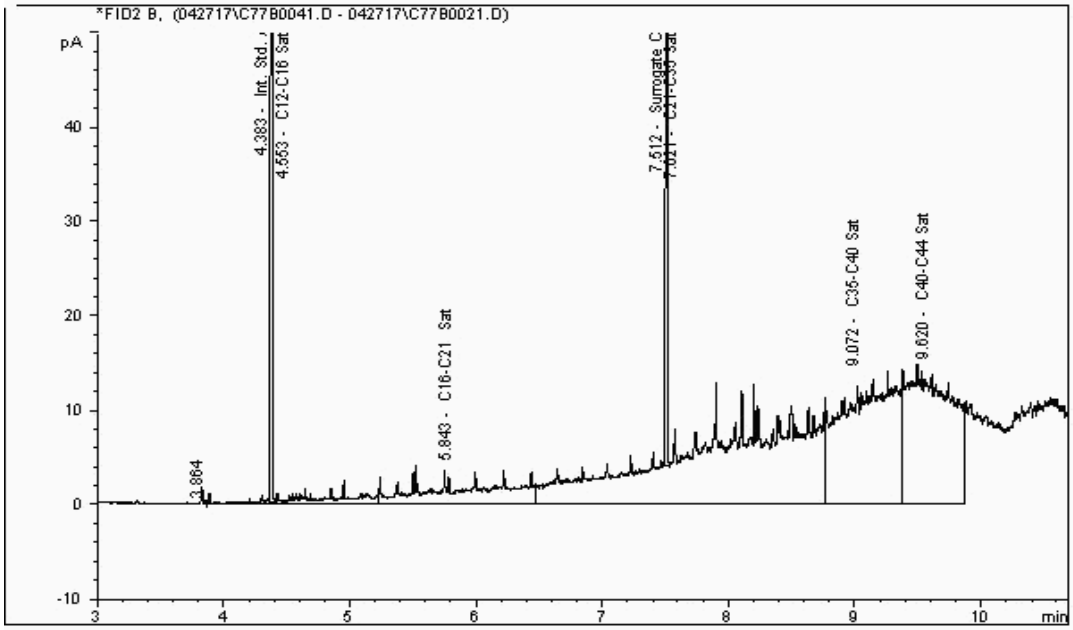
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15400294 **Sample ID :** W4TP311 **Depth :** 0.60

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419227-
Date Acquired : 27/04/2017 18:54:13 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

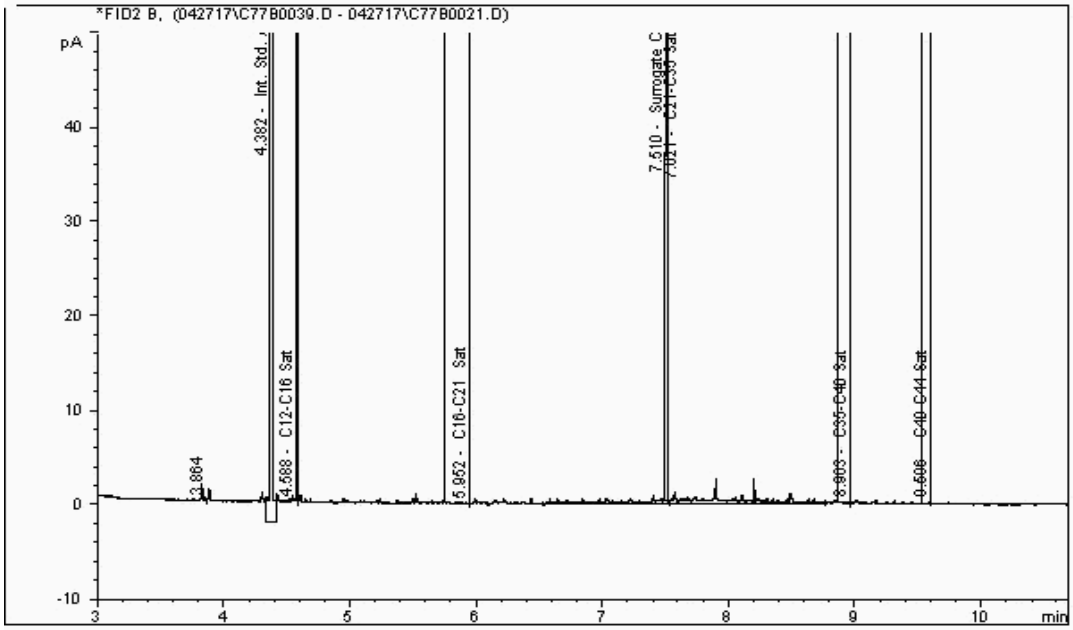
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15400505 **Sample ID :** W5TP304 **Depth :** 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419091-
Date Acquired : 27/04/2017 18:21:54 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

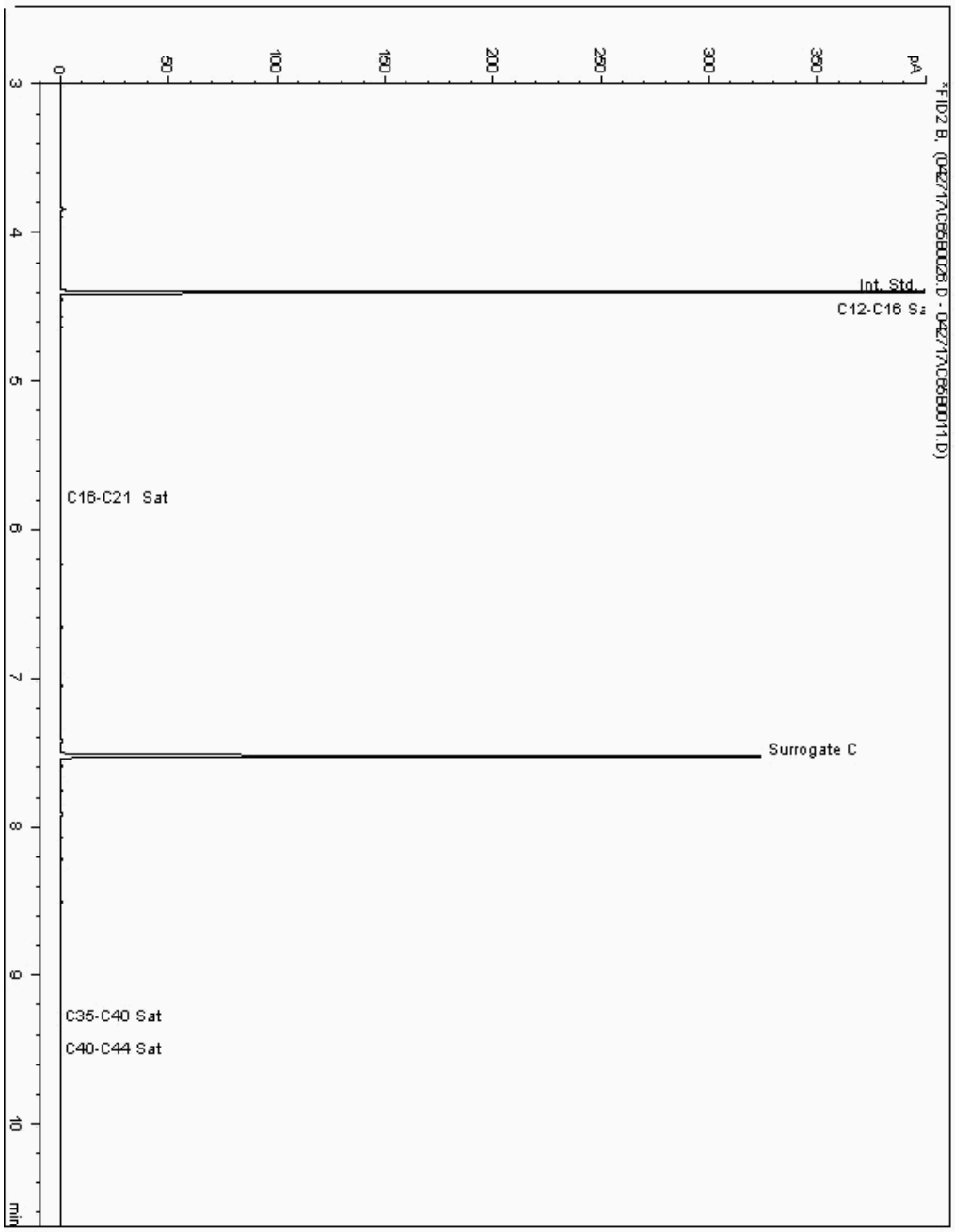
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15400885 **Sample ID :** W4TP313 **Depth :** 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419509-
Date Acquired : 27/04/2017 18:59:07 PM
Units : ppb
Dilution: W4TP313[0.30] ->



CERTIFICATE OF ANALYSIS

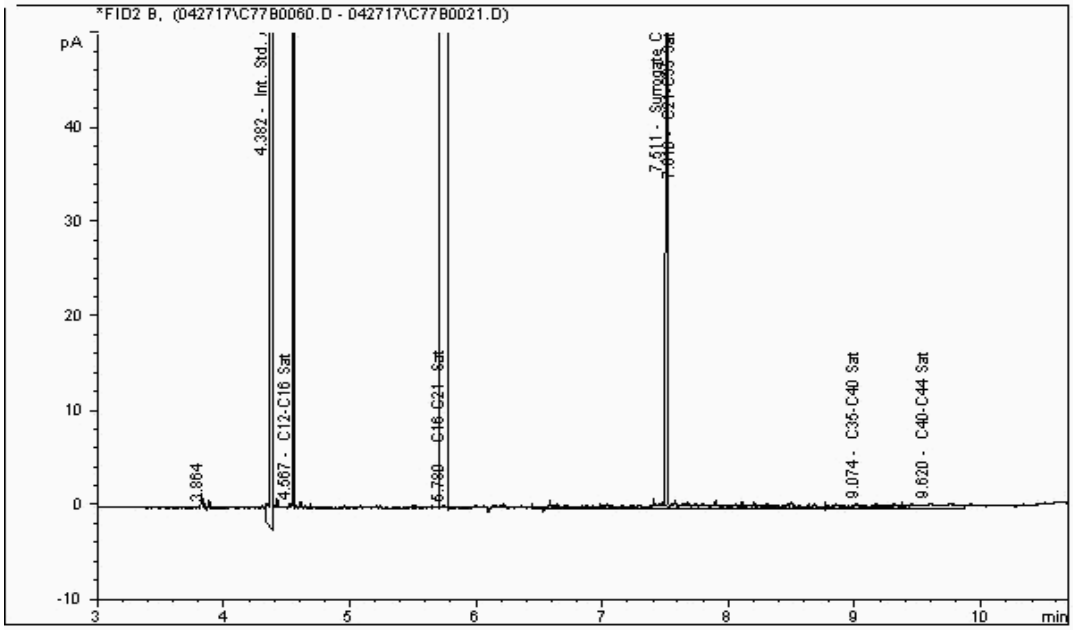
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15401158 **Sample ID :** W7WS310 **Depth :** 1.00 - 1.10

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419432-
Date Acquired : 27/04/2017 23:47:06 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

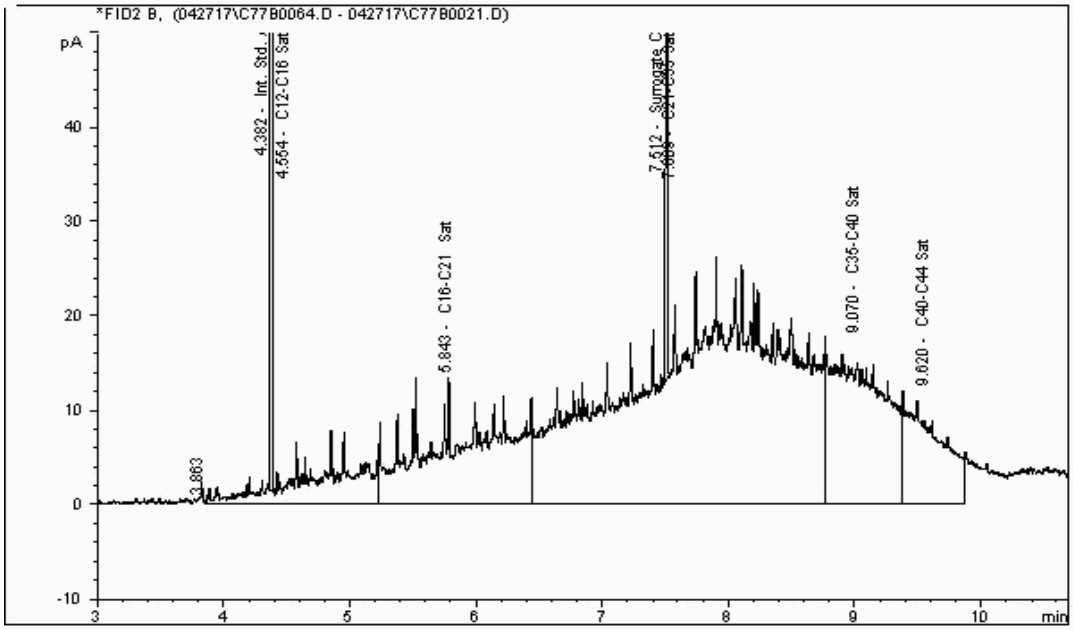
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15401376 **Sample ID :** W4BH306 **Depth :** 2.20 - 2.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419580-
Date Acquired : 28/04/2017 00:51:42 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

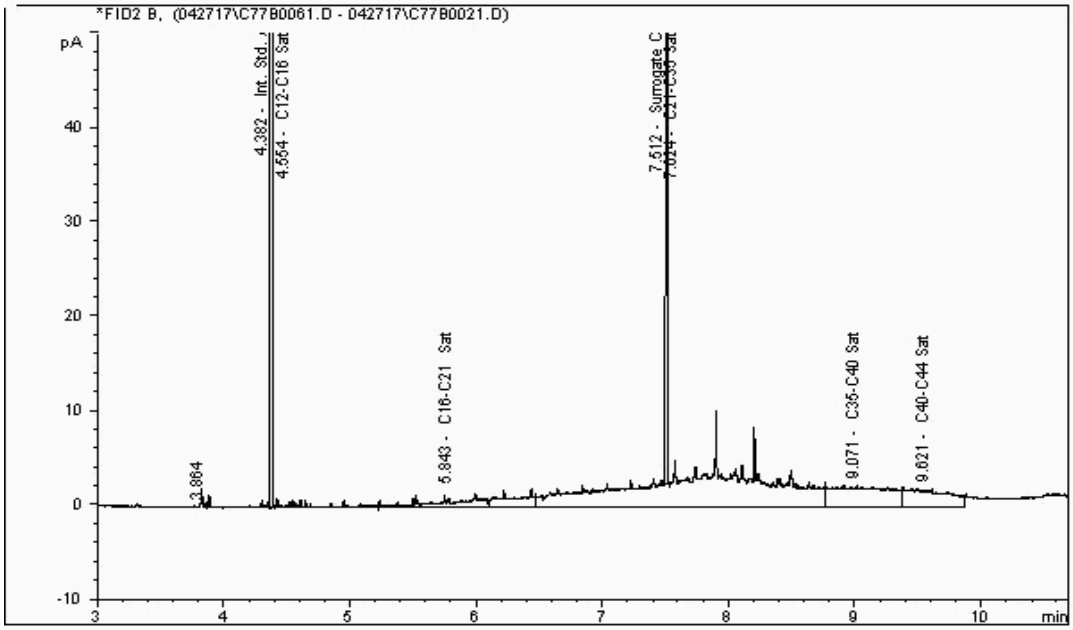
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15401501 **Sample ID :** W5TP301 **Depth :** 0.15

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418787-
Date Acquired : 28/04/2017 00:07:23 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

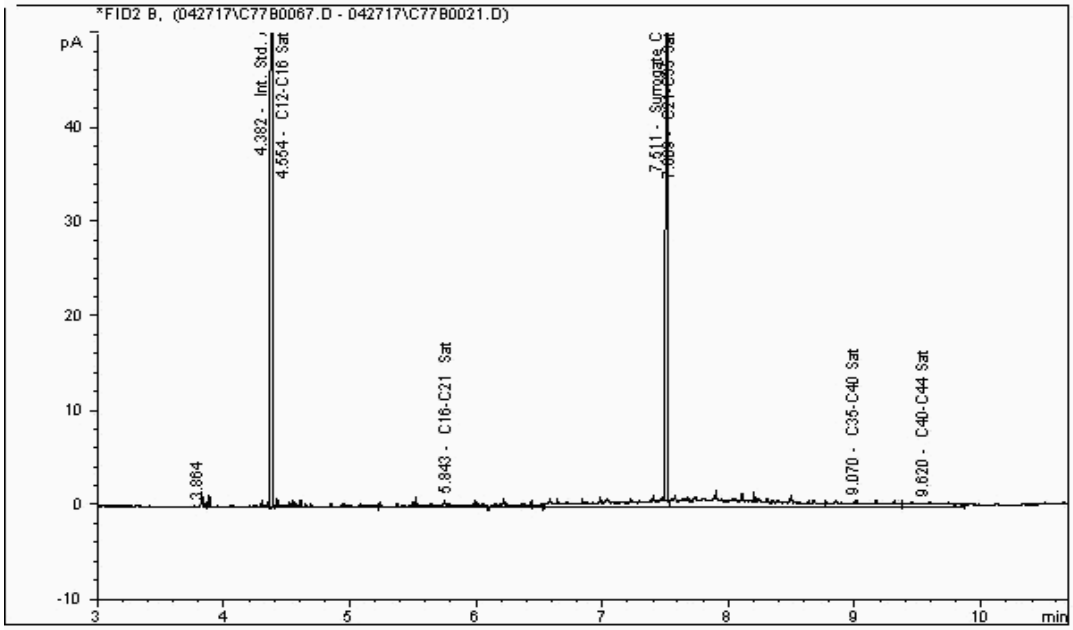
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15401521 **Sample ID :** W7WS311 **Depth :** 0.80 - 0.90

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419621-
Date Acquired : 28/04/2017 01:35:40 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

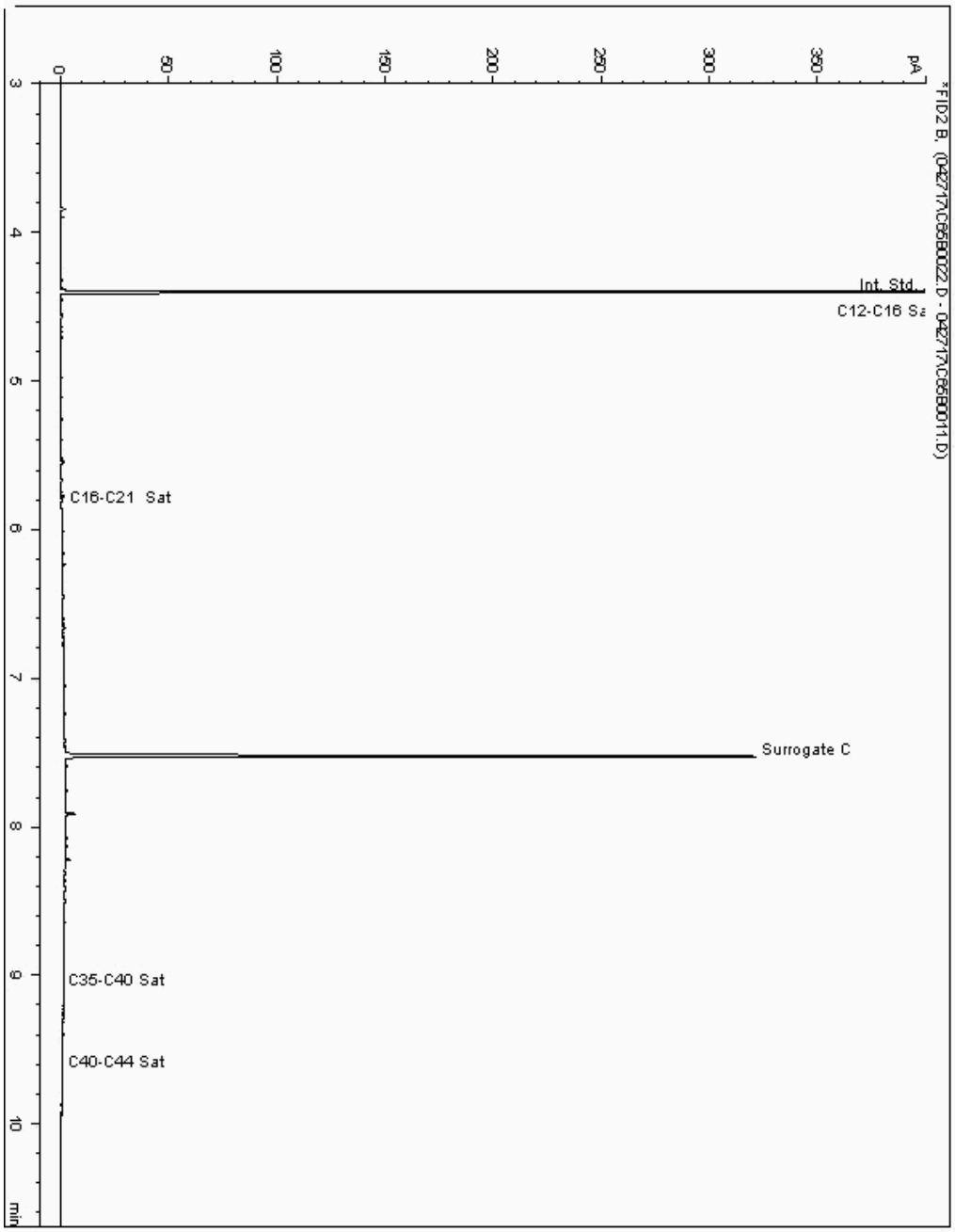
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15401605 **Sample ID :** W5TP301 **Depth :** 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418974-
Date Acquired : 27/04/2017 17:53:33 PM
Units : ppb
Dilution: W5TP301[0.50] ->



CERTIFICATE OF ANALYSIS

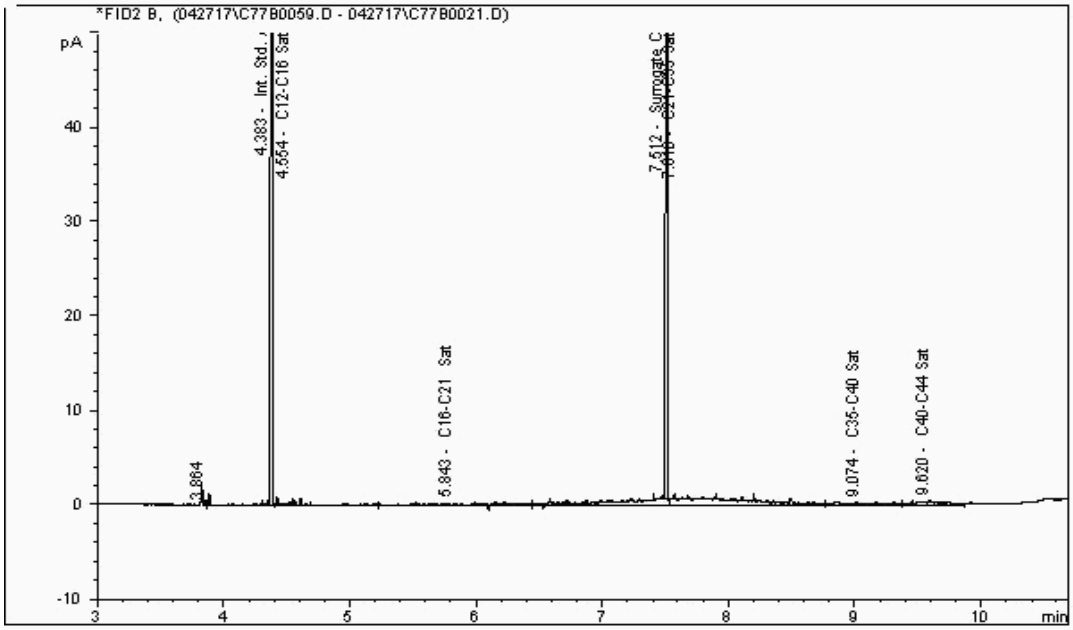
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15401718 **Depth :** 1.70
Sample ID : W4TP311

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419210-
Date Acquired : 27/04/2017 23:26:43 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

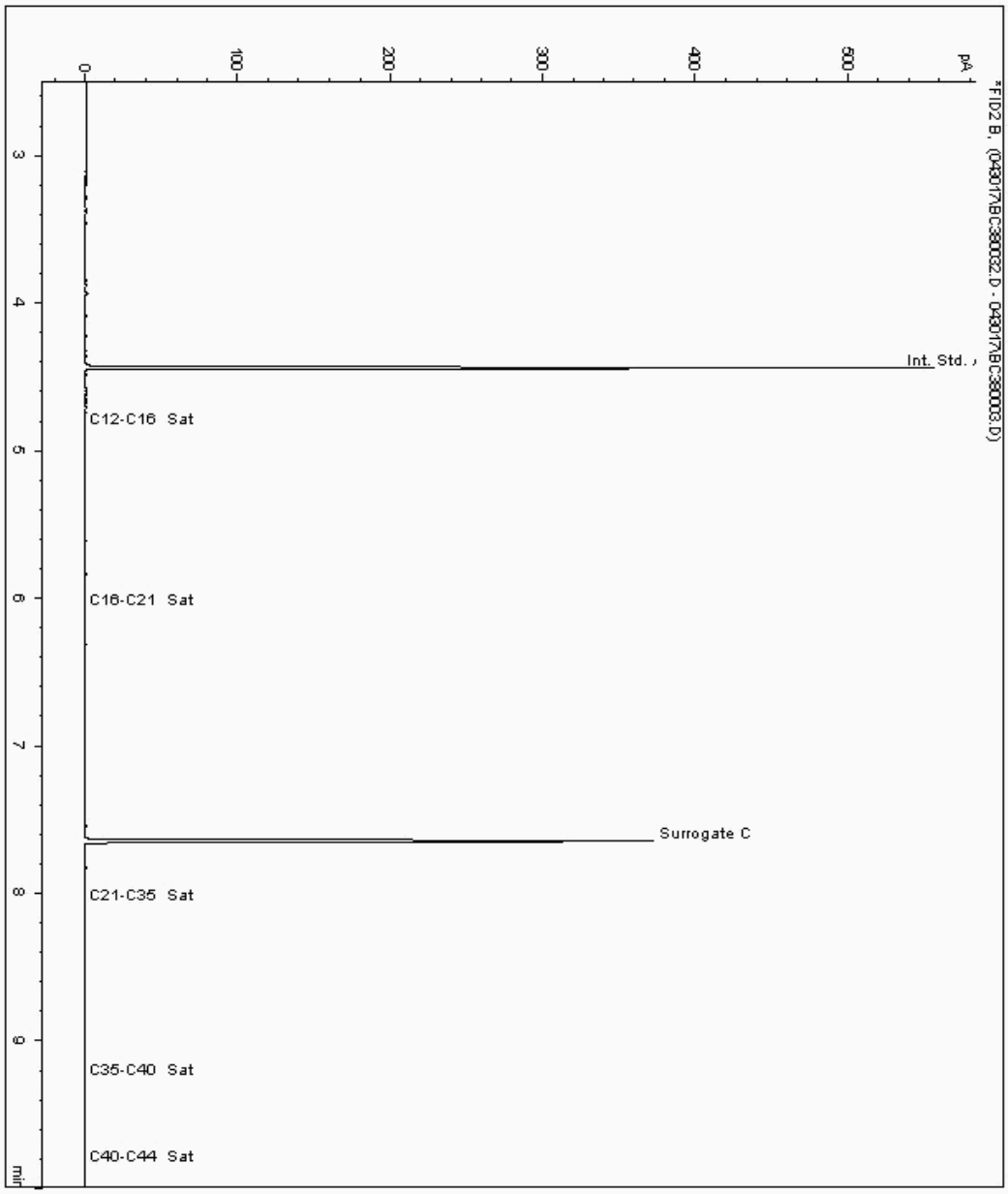
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15415789 **Sample ID :** W7WS311 **Depth :** 0.80 - 0.90

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419702-
Date Acquired : 30/04/17 22:29:16 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

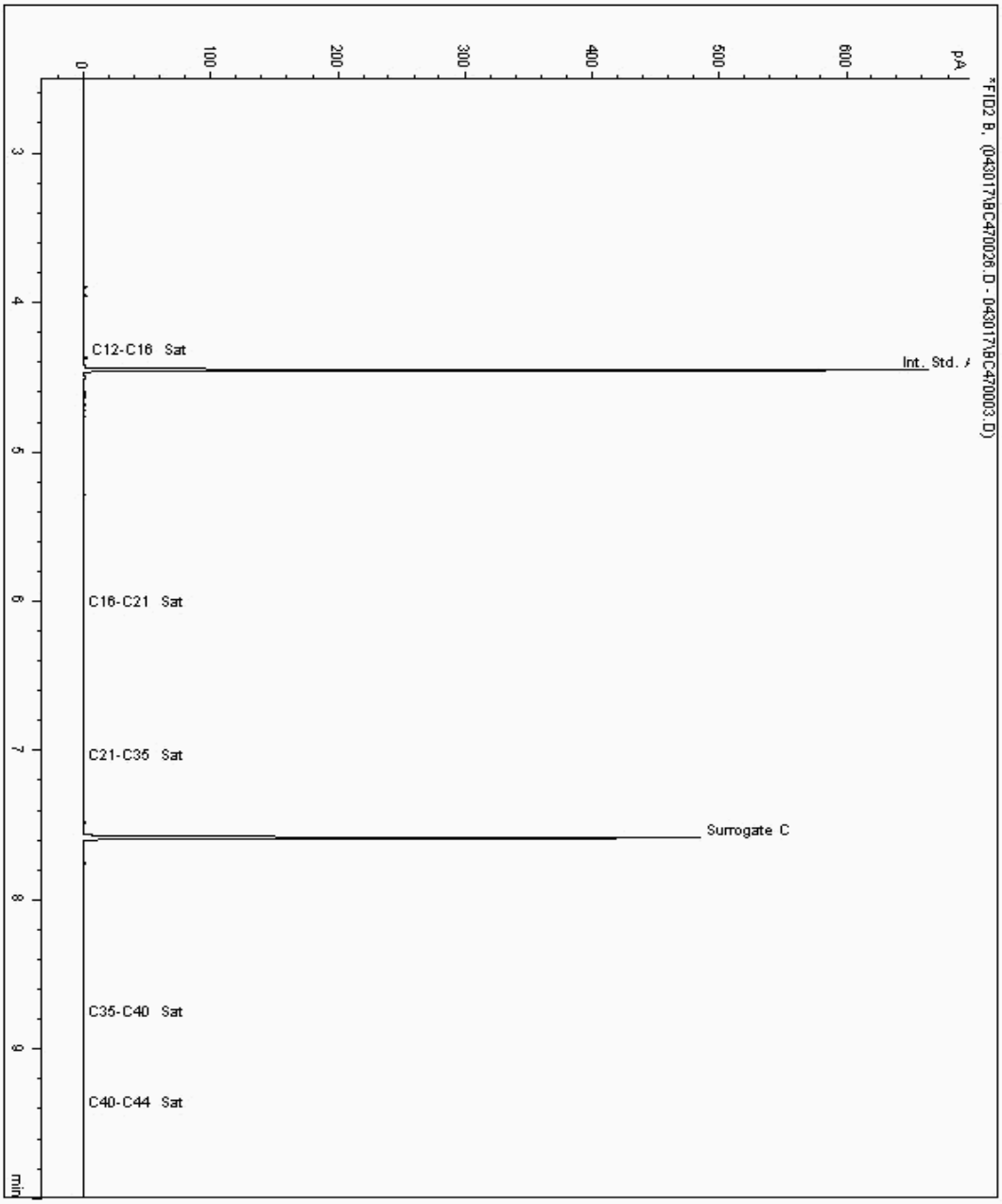
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15415826 **Sample ID :** W4BH306 **Depth :** 2.20 - 2.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419666-
Date Acquired : 30/04/17 21:56:48 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

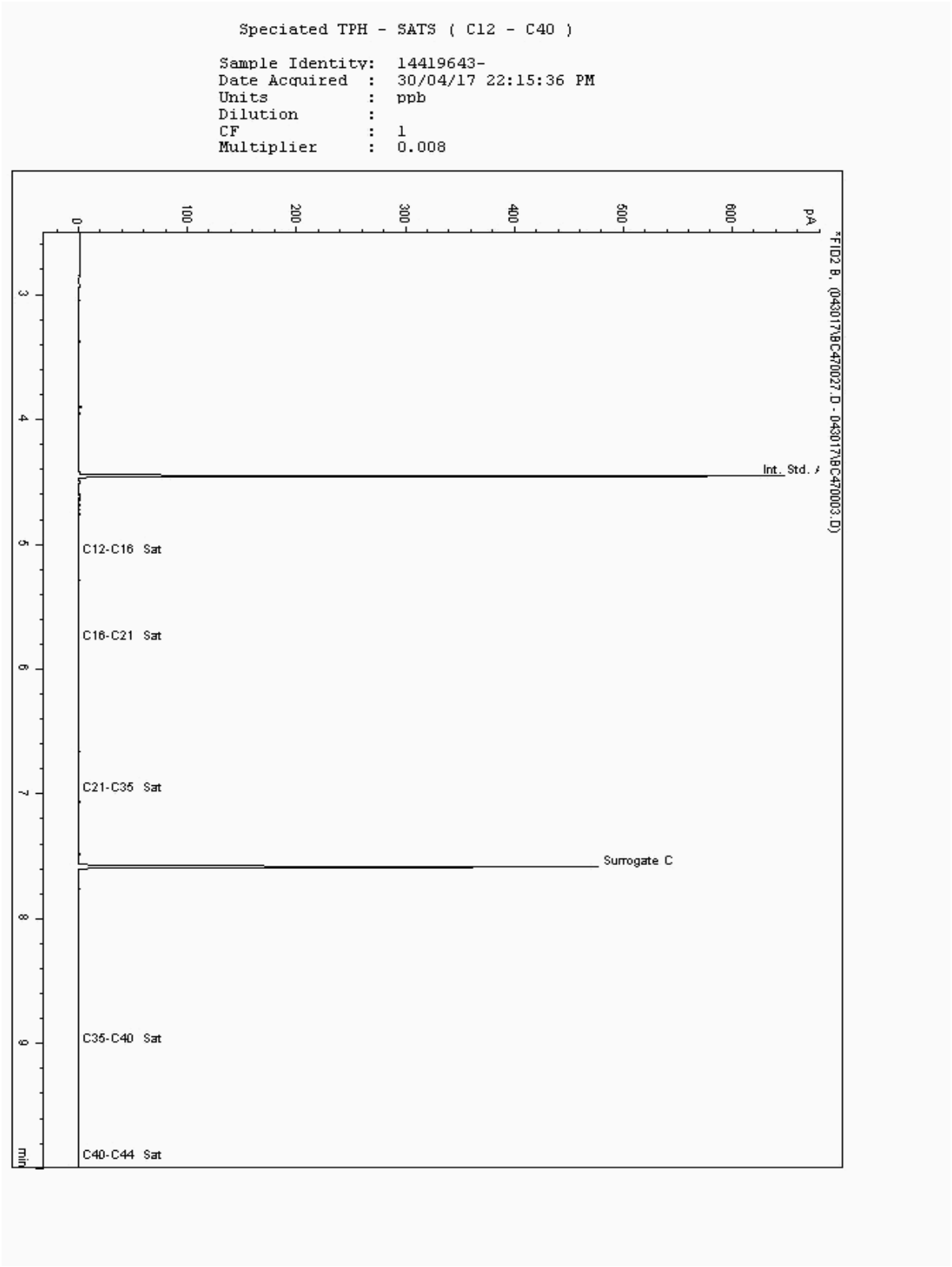


CERTIFICATE OF ANALYSIS

SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15416209 **Sample ID :** W4BH306 **Depth :** 0.90 - 1.00



CERTIFICATE OF ANALYSIS

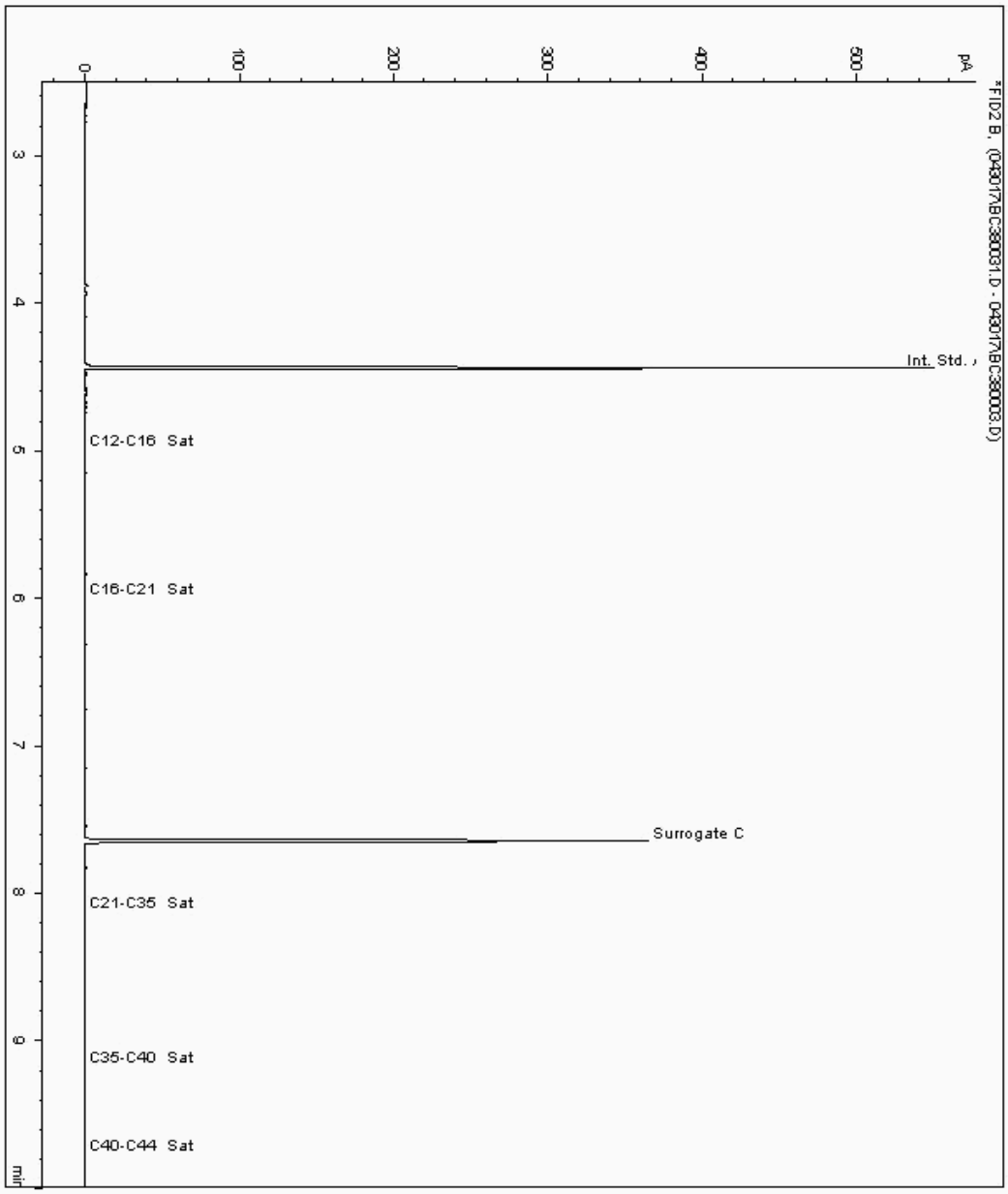
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15416248 **Sample ID :** W7WS308 **Depth :** 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419683-
Date Acquired : 30/04/17 22:10:49 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.012



CERTIFICATE OF ANALYSIS

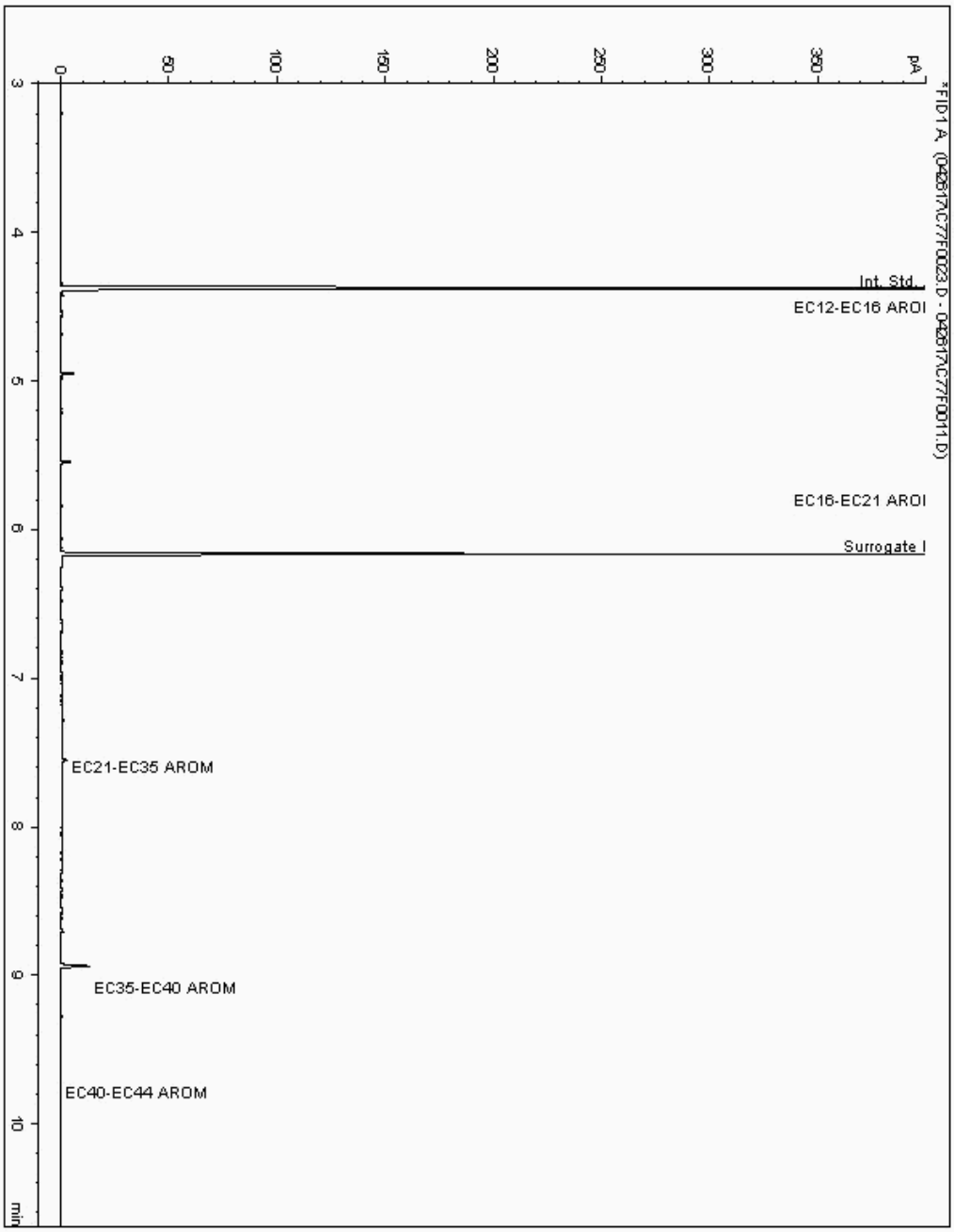
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15396422 **Sample ID :** W4BH306 **Depth :** 5.00 - 5.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419282-
Date Acquired : 4/26/2017 8:16:44 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

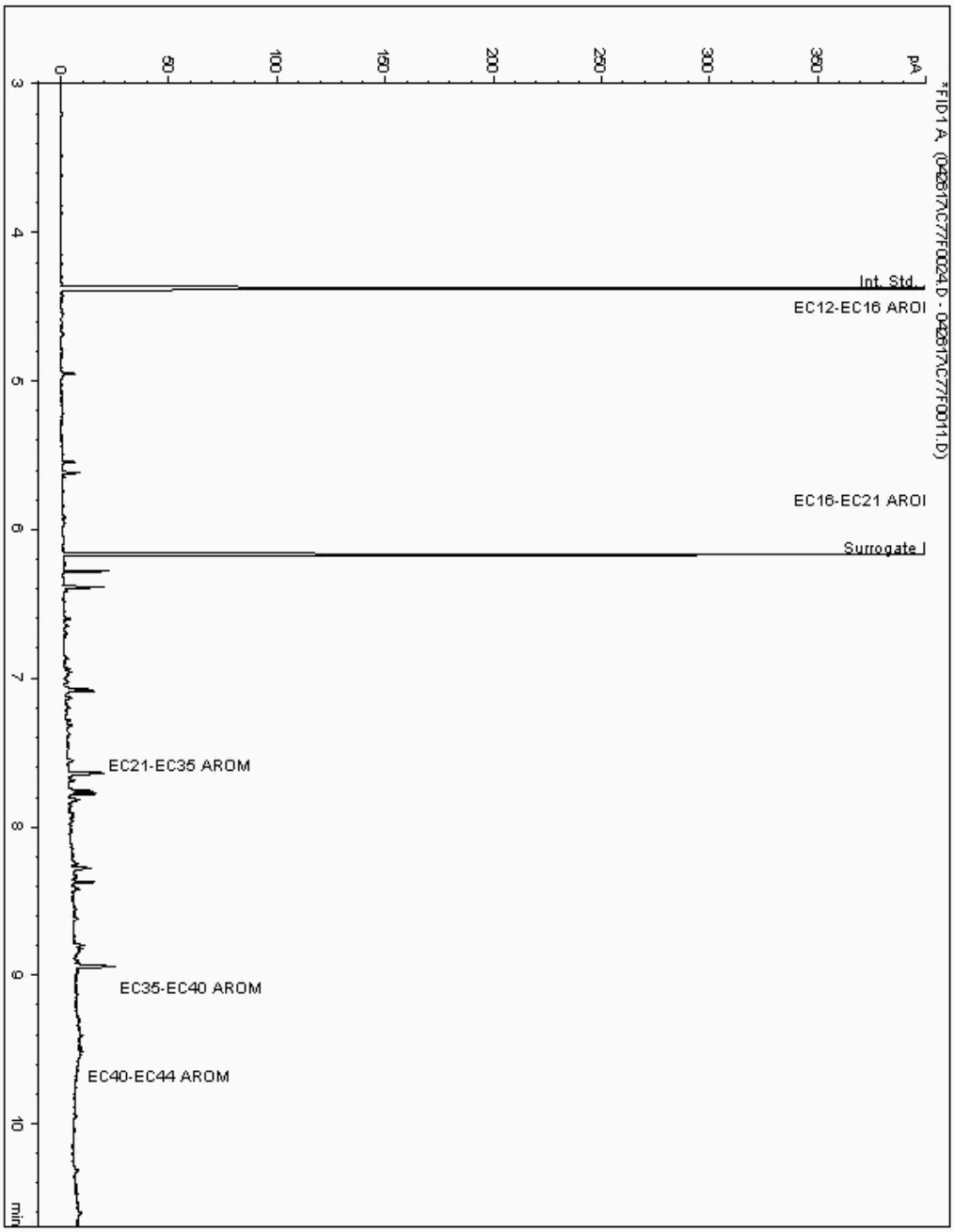
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15396659 **Sample ID :** W7WS308 **Depth :** 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419603-
Date Acquired : 4/26/2017 8:37:01 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

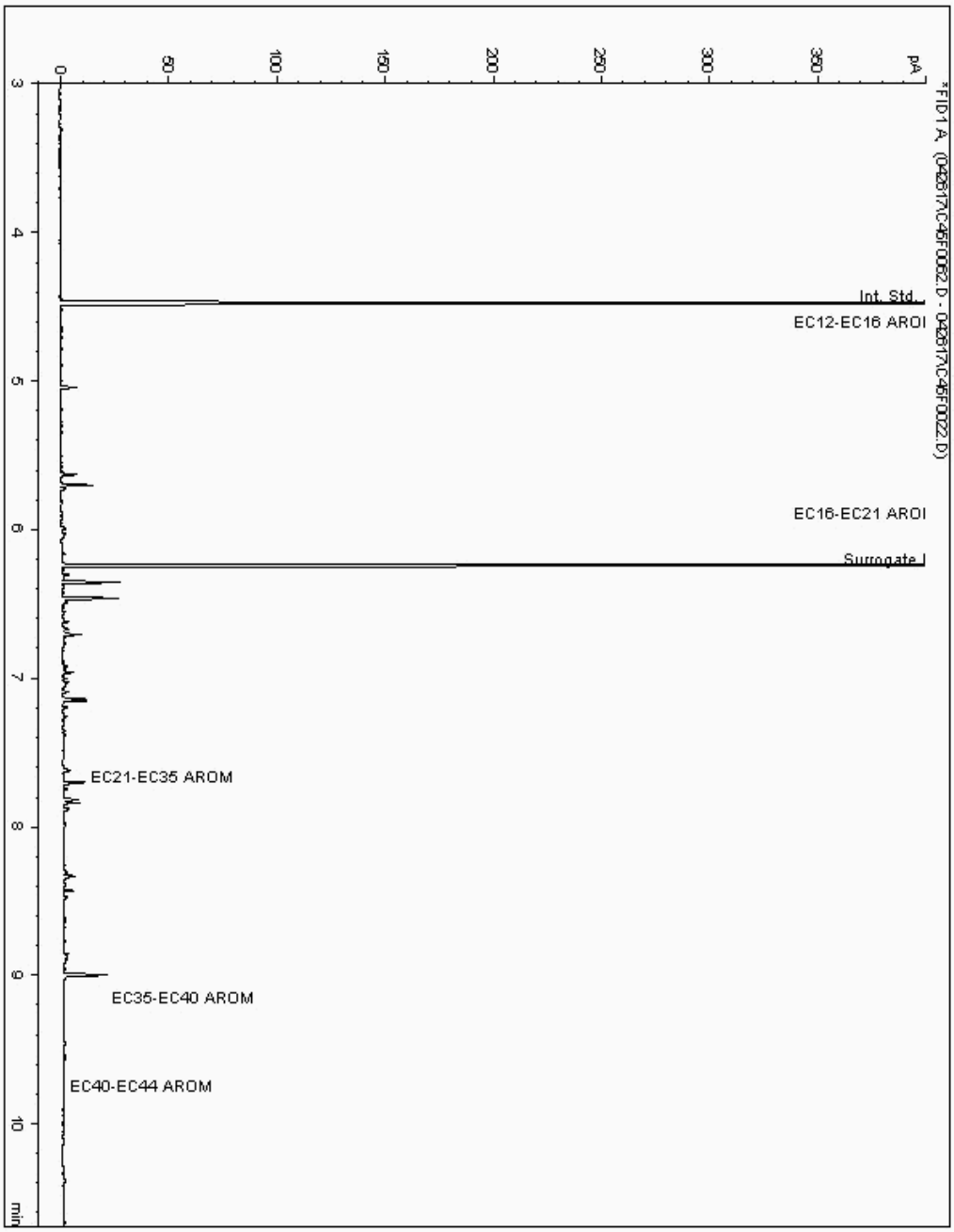
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397195 **Sample ID :** W4TP310 **Depth :** 2.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418863-
Date Acquired : 27/04/2017 12:23:26 PM
Units : ppb
Dilution: W4TP310[2.90] ->



CERTIFICATE OF ANALYSIS

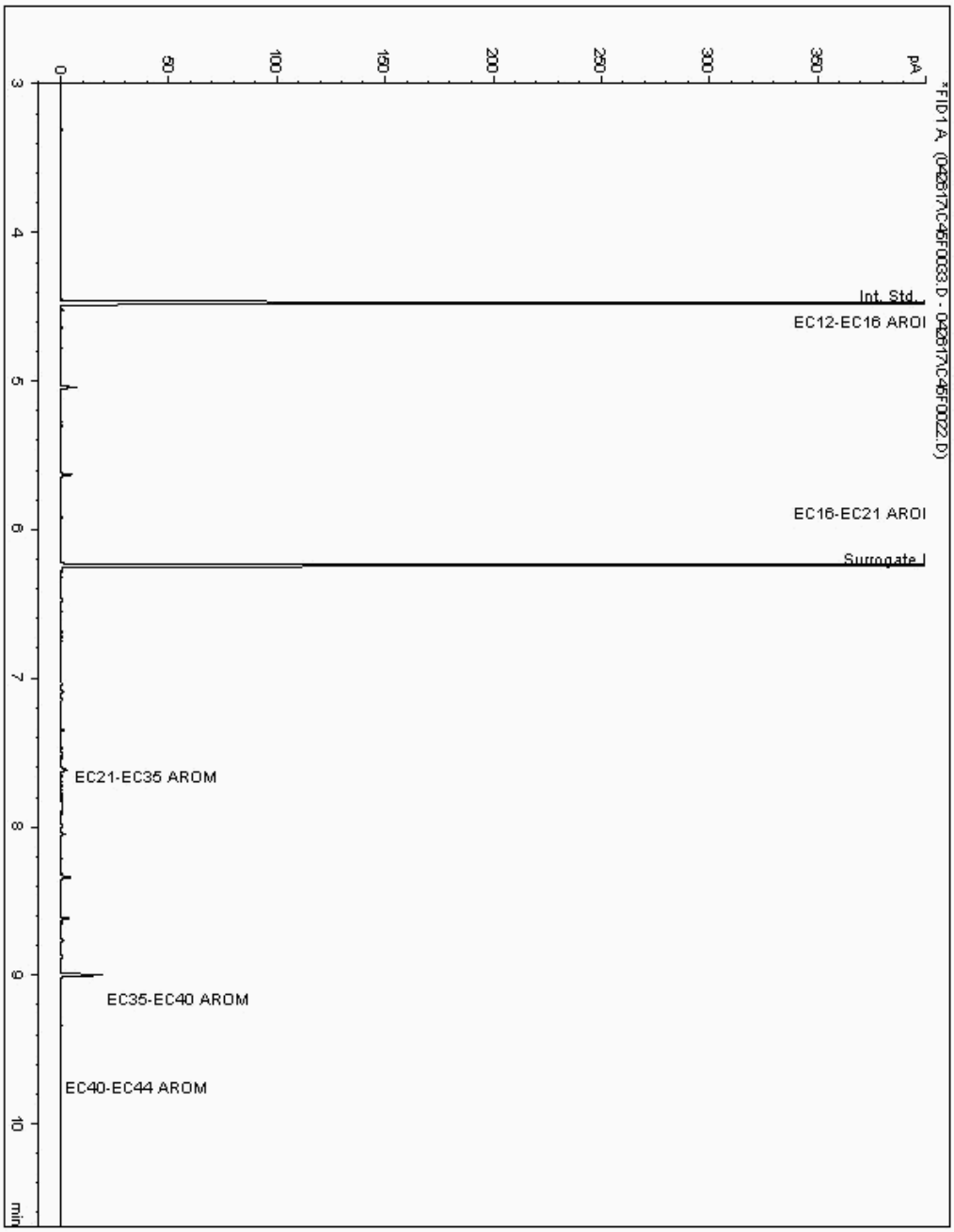
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397212 **Sample ID :** W4BH306 **Depth :** 3.50 - 3.80

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419265-
Date Acquired : 27/04/2017 02:03:47 PM
Units : ppb
Dilution: W4BH306[3.50 - 3.80] ->



CERTIFICATE OF ANALYSIS

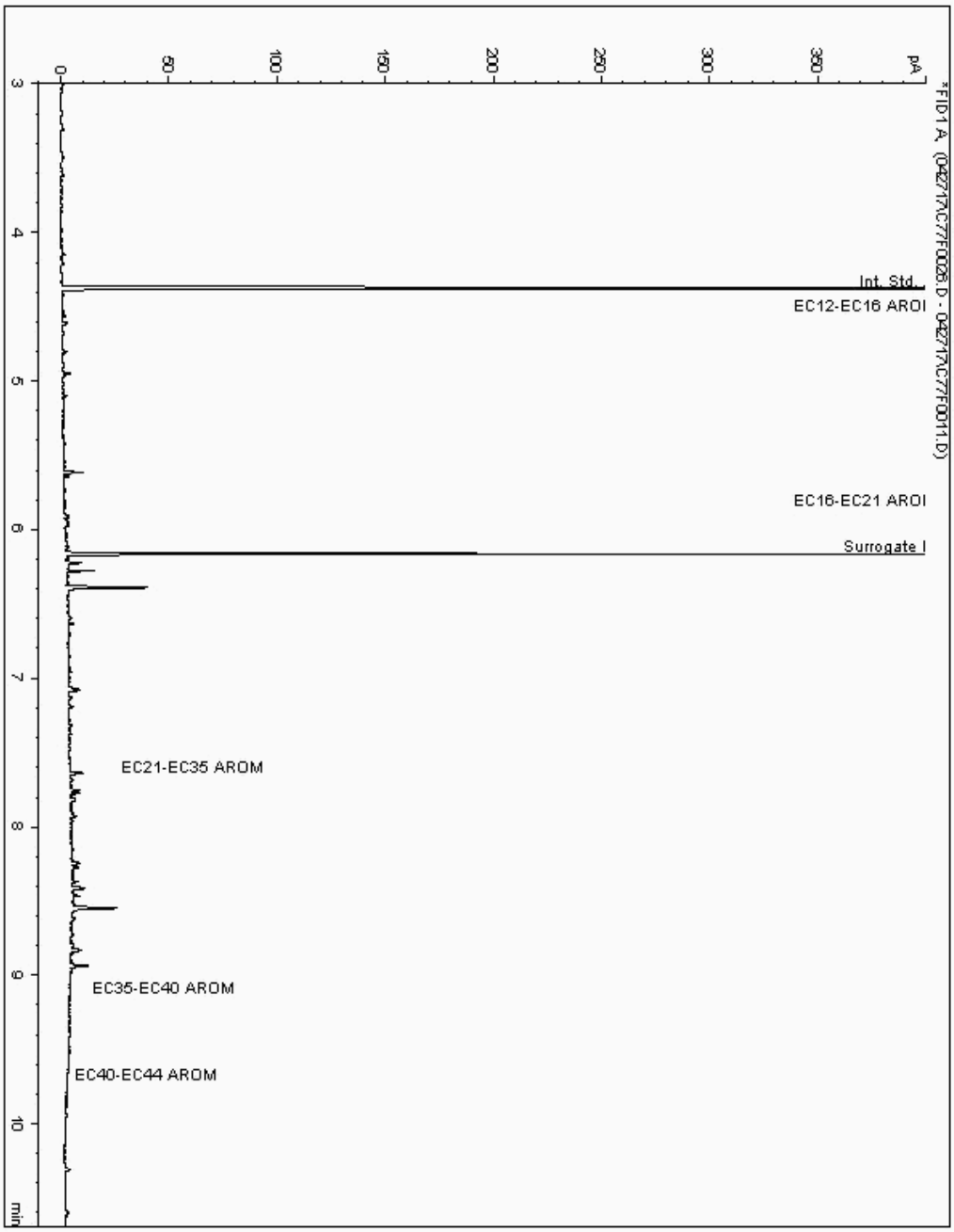
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397254 **Sample ID :** W4TP313 **Depth :** 0.70

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419530-
Date Acquired : 4/27/2017 8:06:56 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

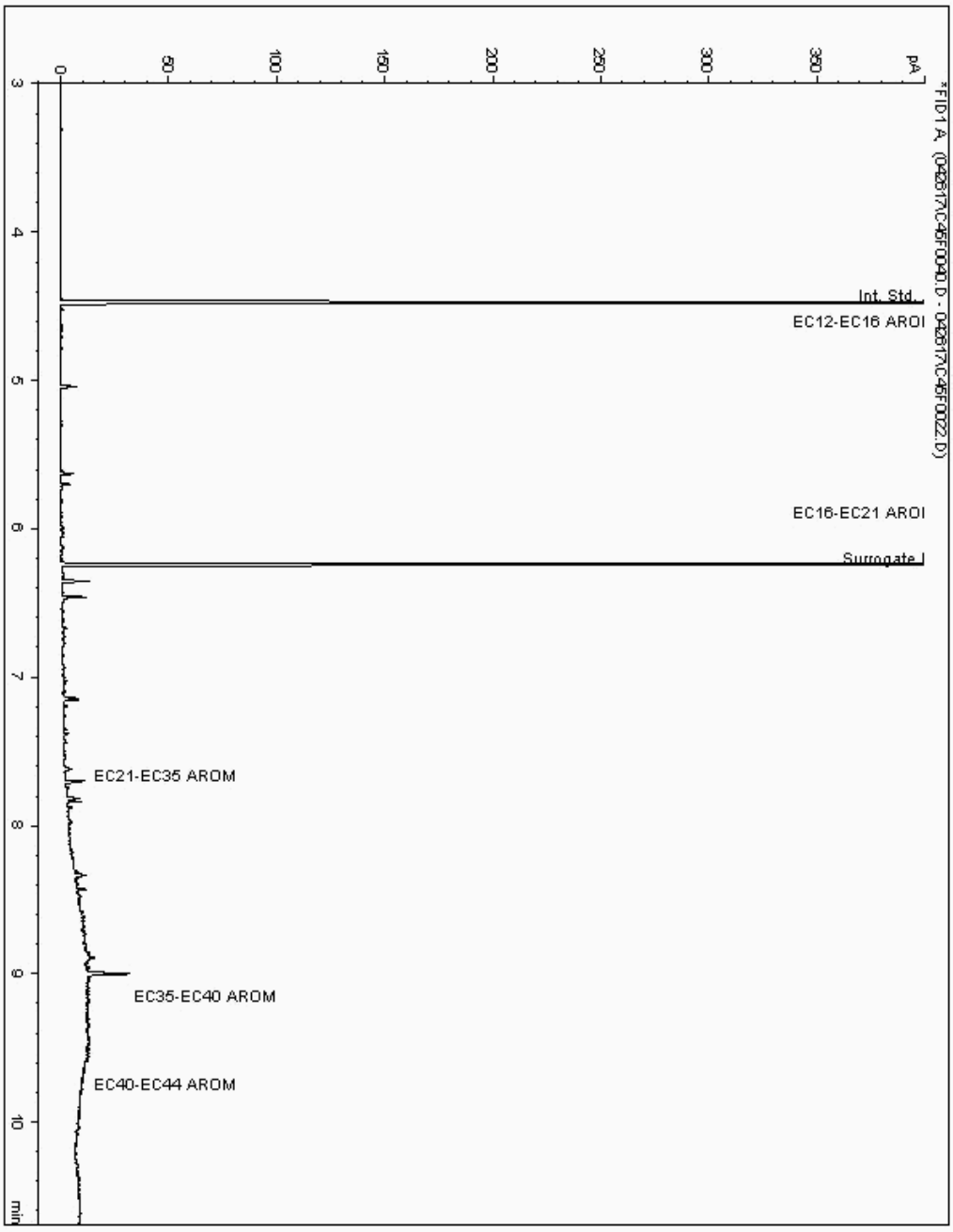
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397384 **Sample ID :** W4TP310 **Depth :** 0.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418829-
Date Acquired : 27/04/2017 07:01:03 PM
Units : ppb
Dilution: W4TP310[0.40] ->



CERTIFICATE OF ANALYSIS

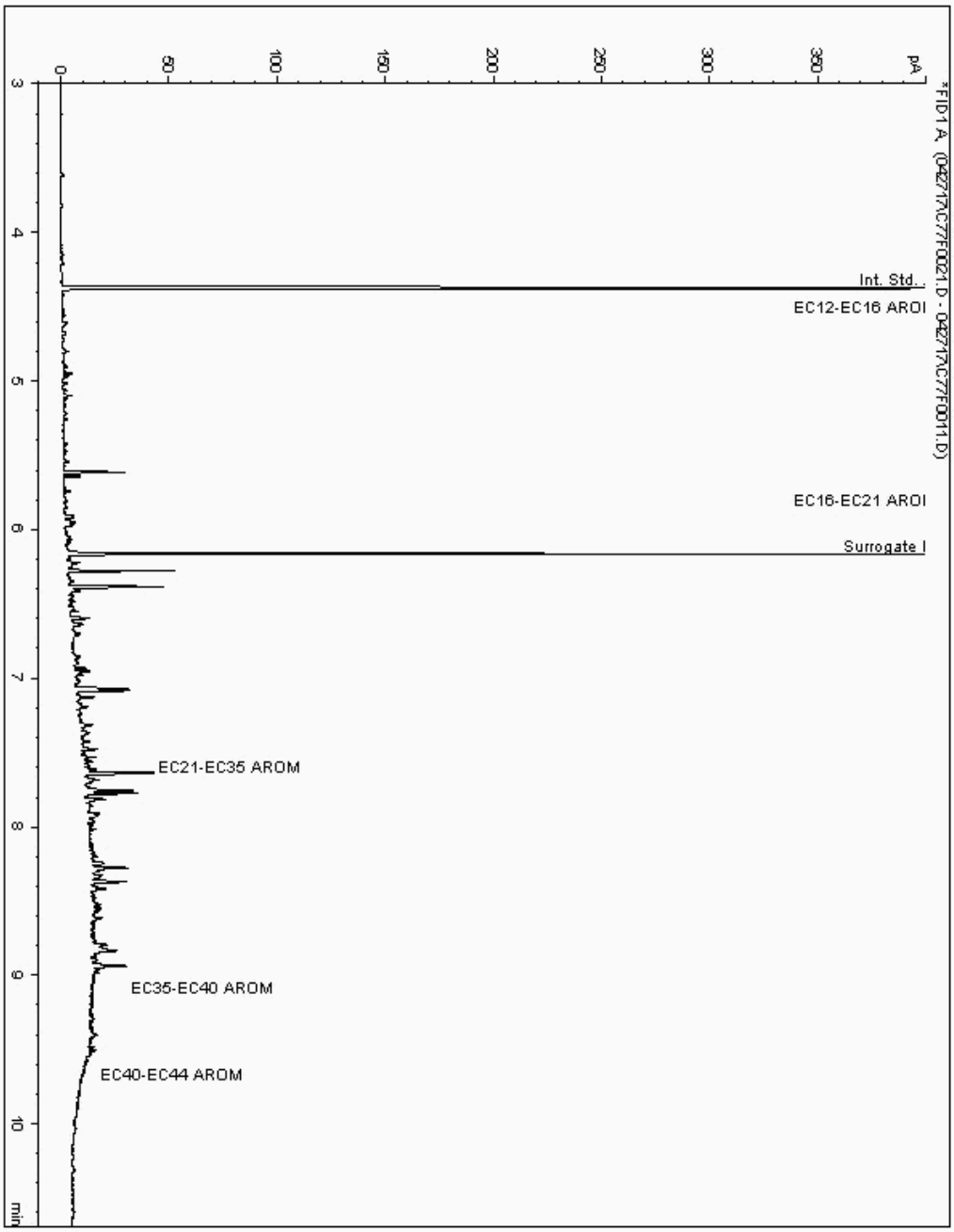
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397716 **Sample ID :** W4TP310 **Depth :** 1.25

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418847-
Date Acquired : 4/27/2017 6:50:19 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

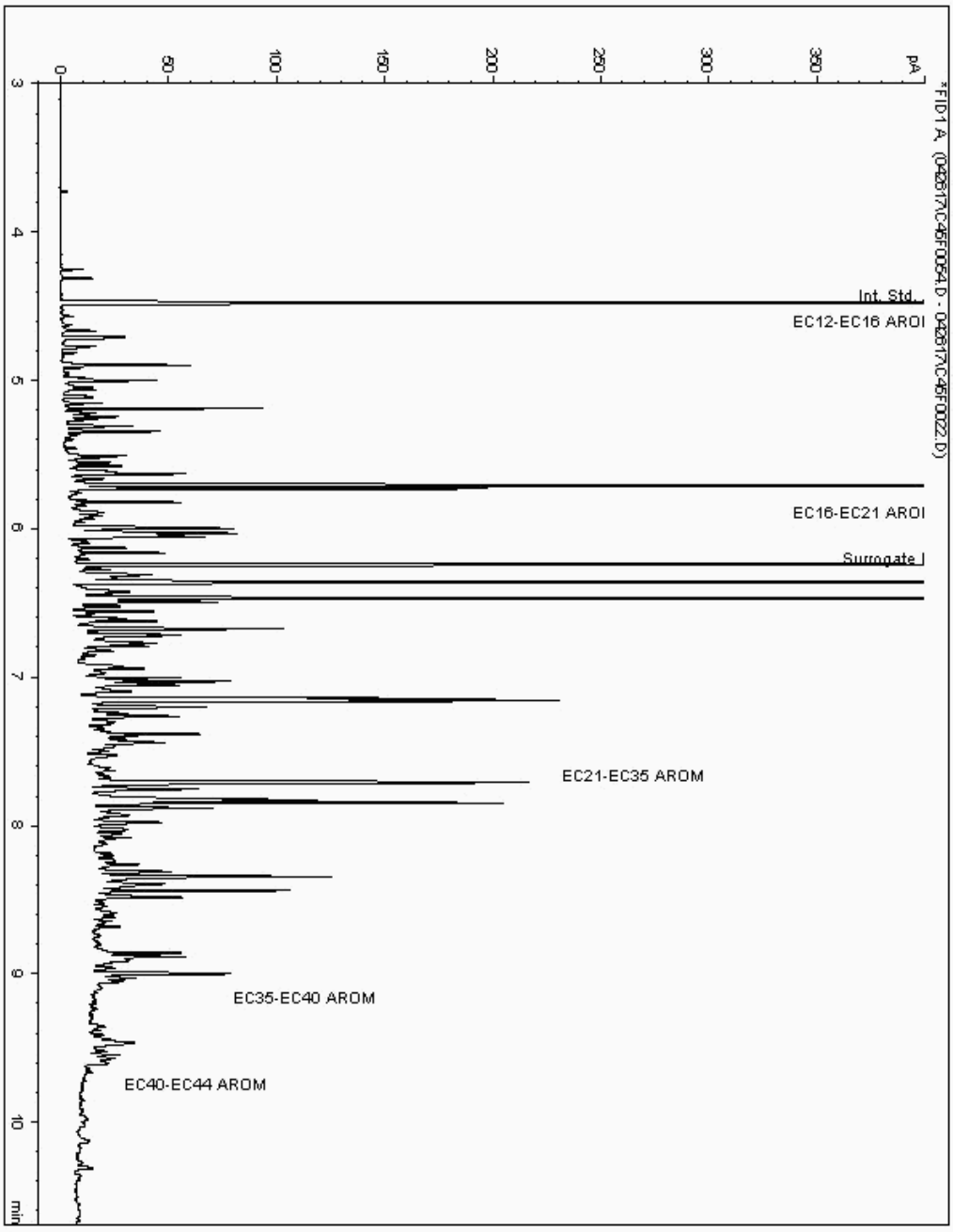
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397741 **Sample ID :** W4TP308 **Depth :** 0.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418940-
Date Acquired : 27/04/2017 10:21:45 PM
Units : ppb
Dilution: W4TP308[0.40] ->



CERTIFICATE OF ANALYSIS

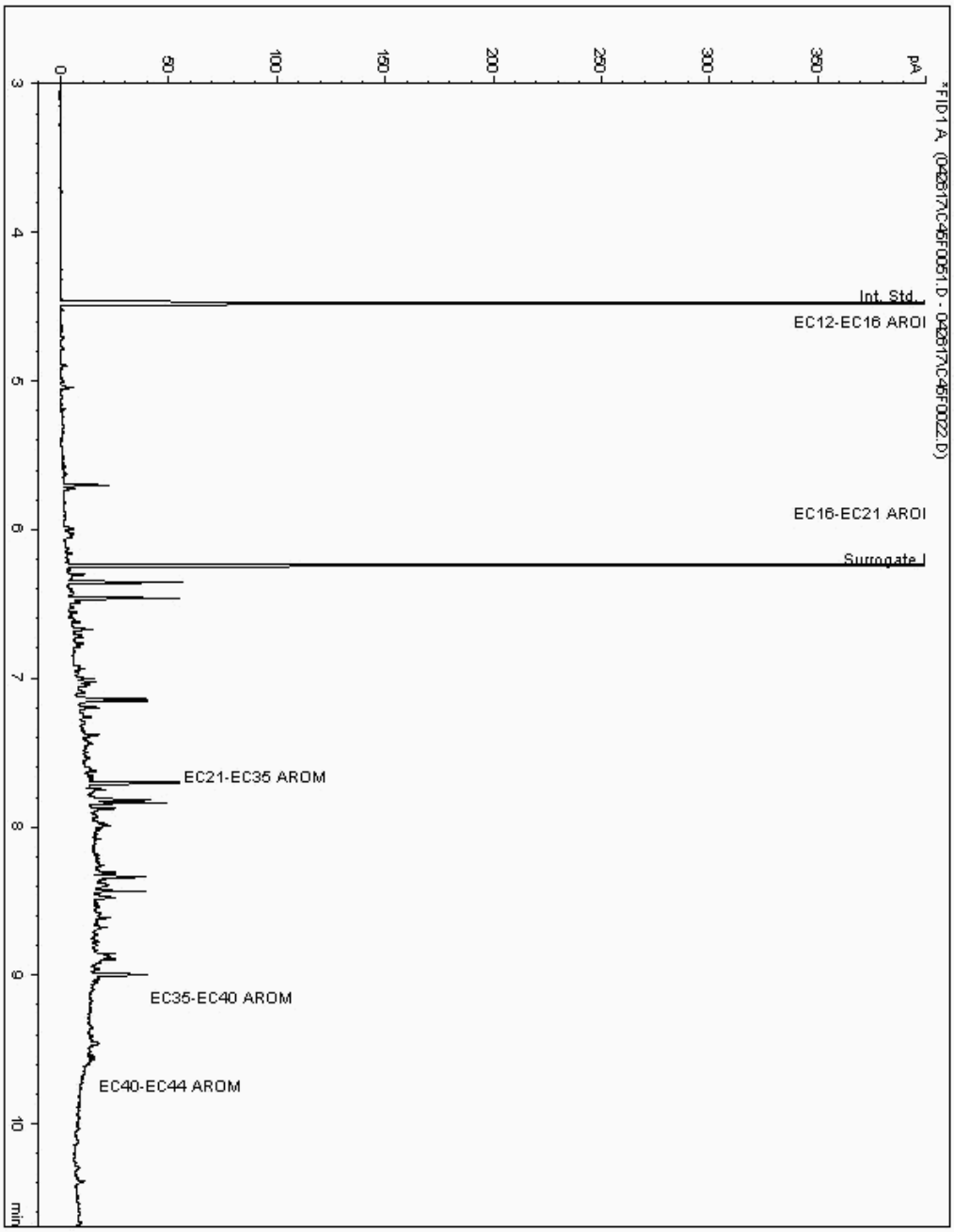
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397830 **Sample ID :** W4TP309 **Depth :** 2.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418923-
Date Acquired : 27/04/2017 09:37:15 PM
Units : ppb
Dilution: W4TP309[2.50] ->



CERTIFICATE OF ANALYSIS

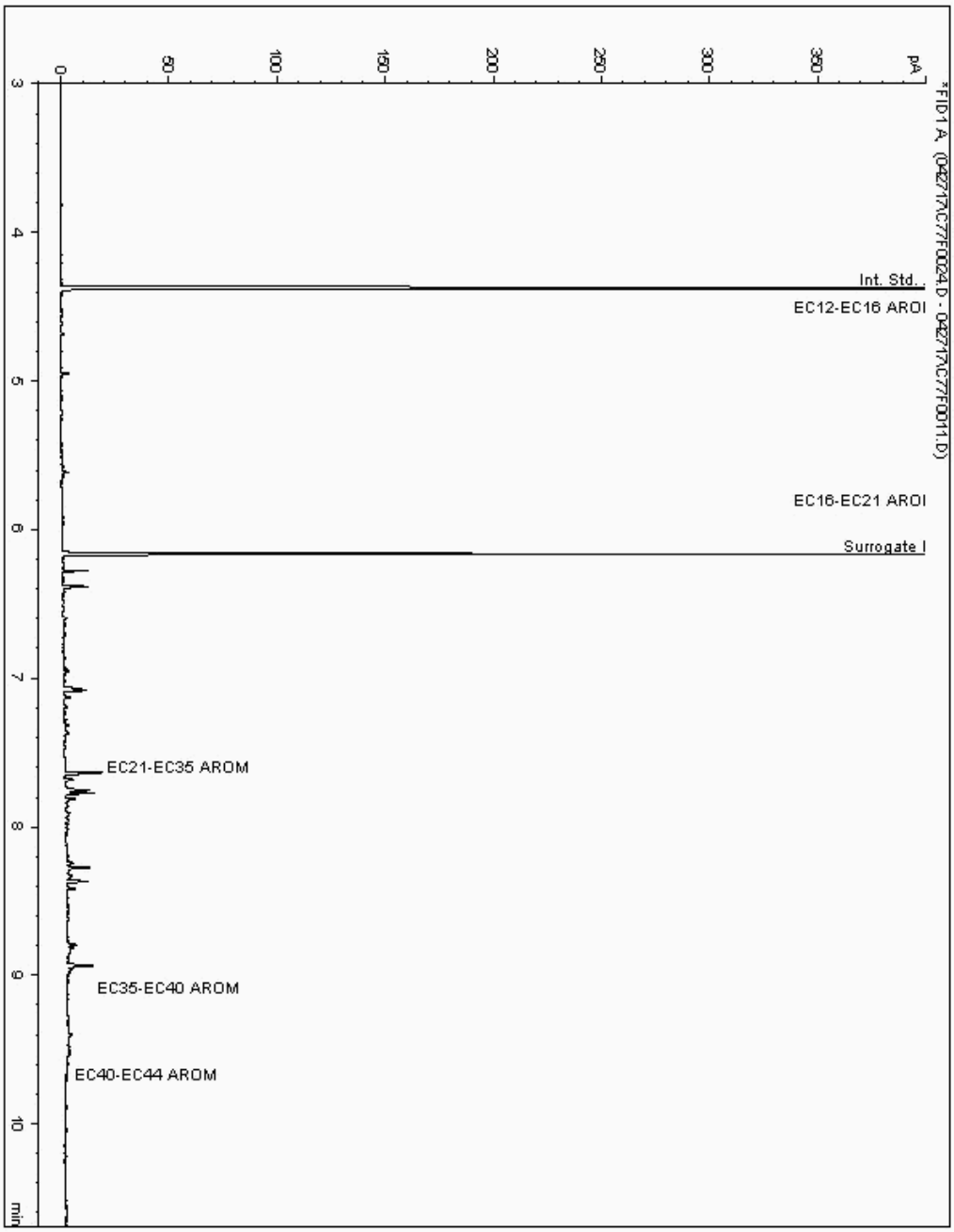
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397879 **Depth :** 0.90
Sample ID : W7WS309

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419317-
Date Acquired : 4/27/2017 7:34:31 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

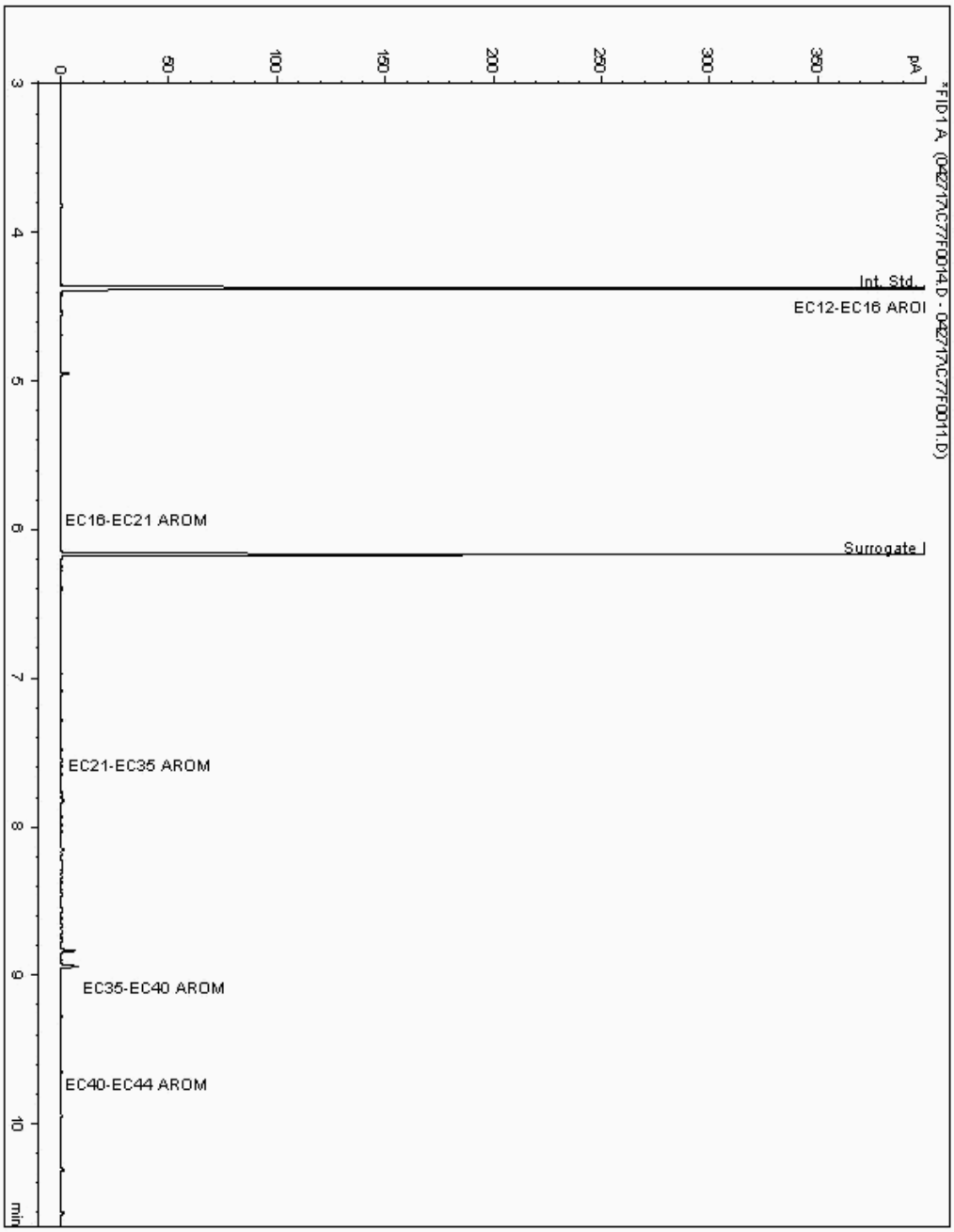
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15397986 **Sample ID :** W4TP309 **Depth :** 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418902-
Date Acquired : 4/27/2017 5:10:23 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

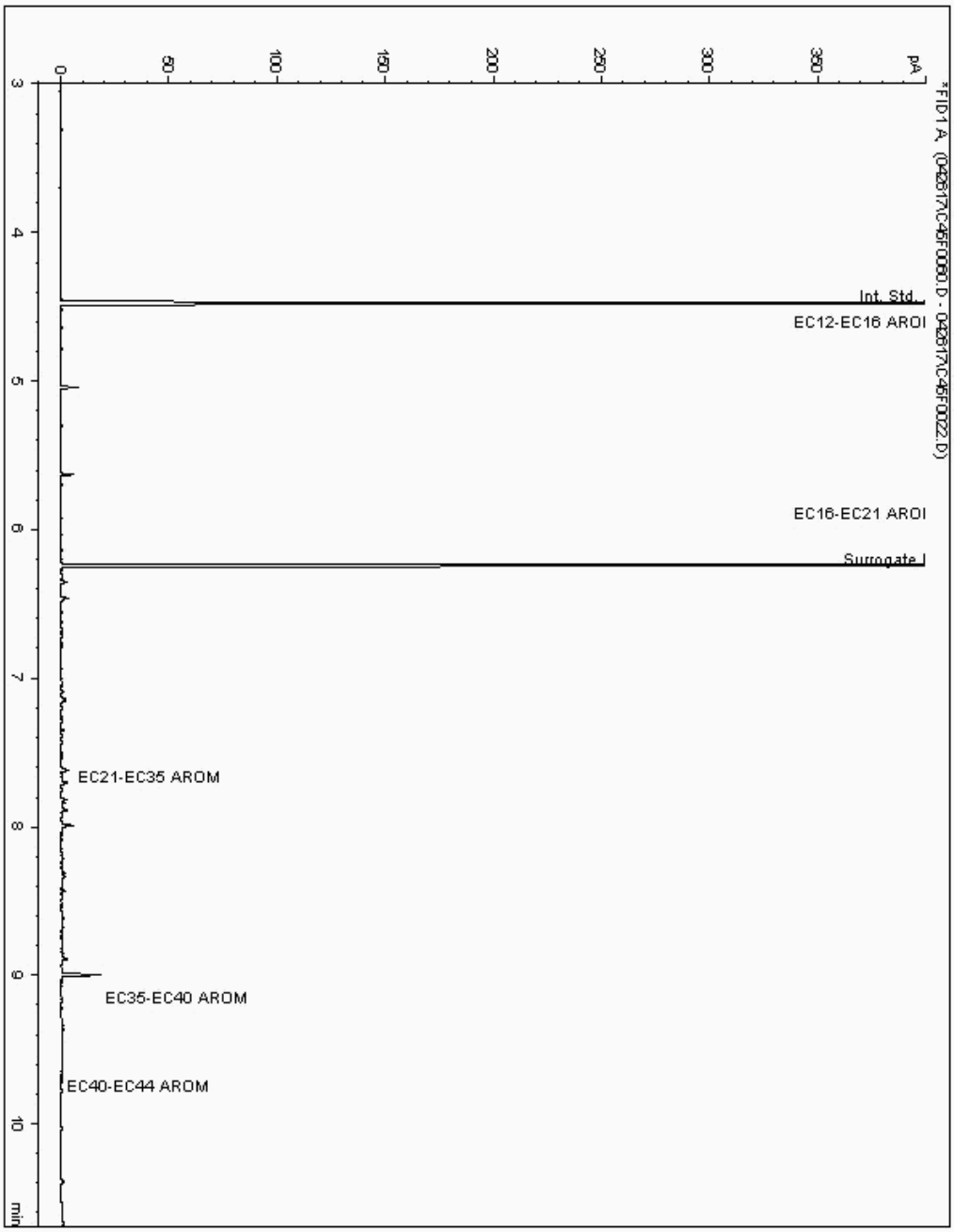
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398057 **Sample ID :** W7WS310 **Depth :** 0.00 - 0.20

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419415-
Date Acquired : 27/04/2017 11:50:53 PM
Units : ppb
Dilution: W7WS310[0.00 - 0.20] ->



CERTIFICATE OF ANALYSIS

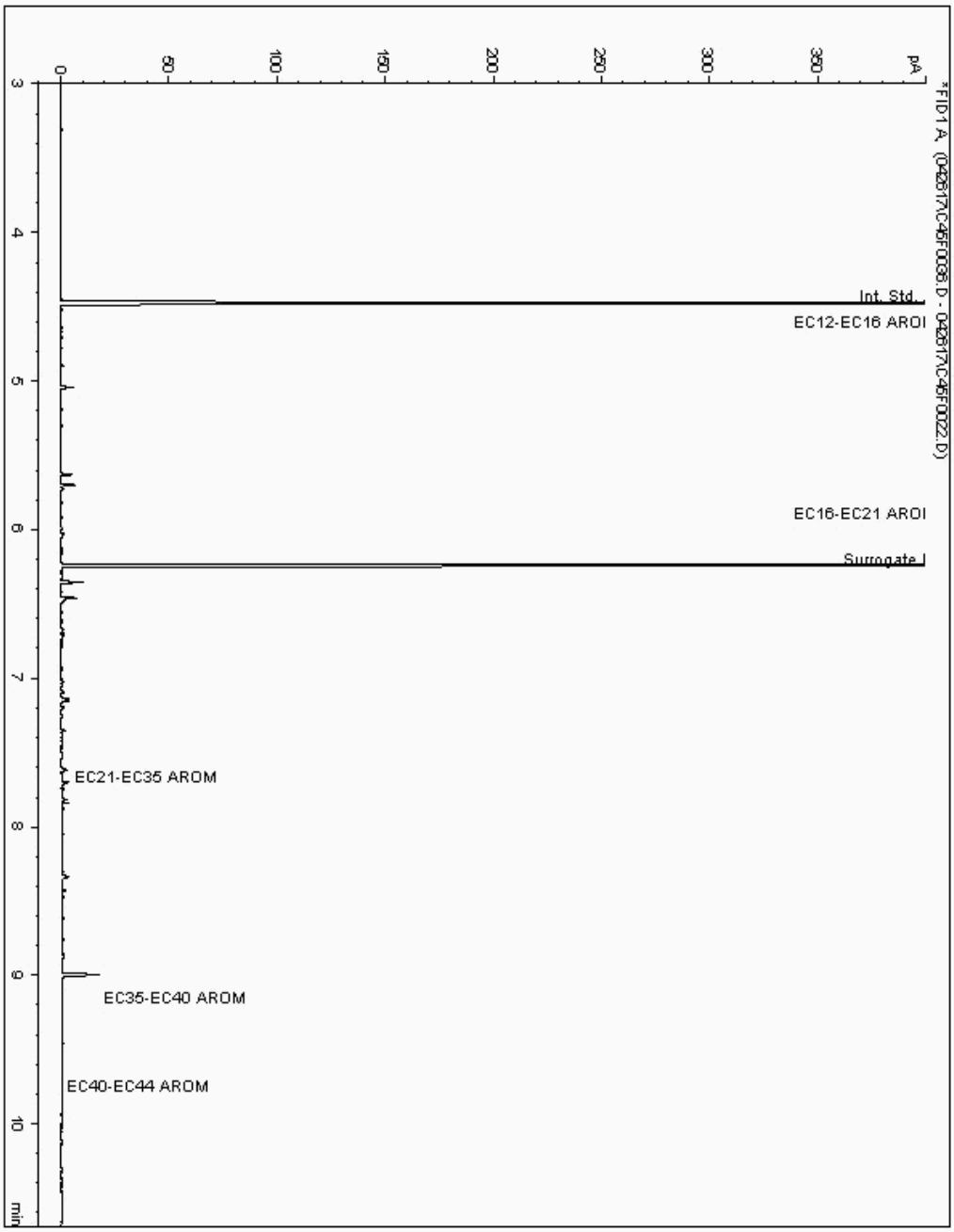
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398062 **Sample ID :** W7WS308 **Depth :** 2.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419299-
Date Acquired : 27/04/2017 02:56:08 PM
Units : ppb
Dilution: W7WS308[2.40] ->



CERTIFICATE OF ANALYSIS

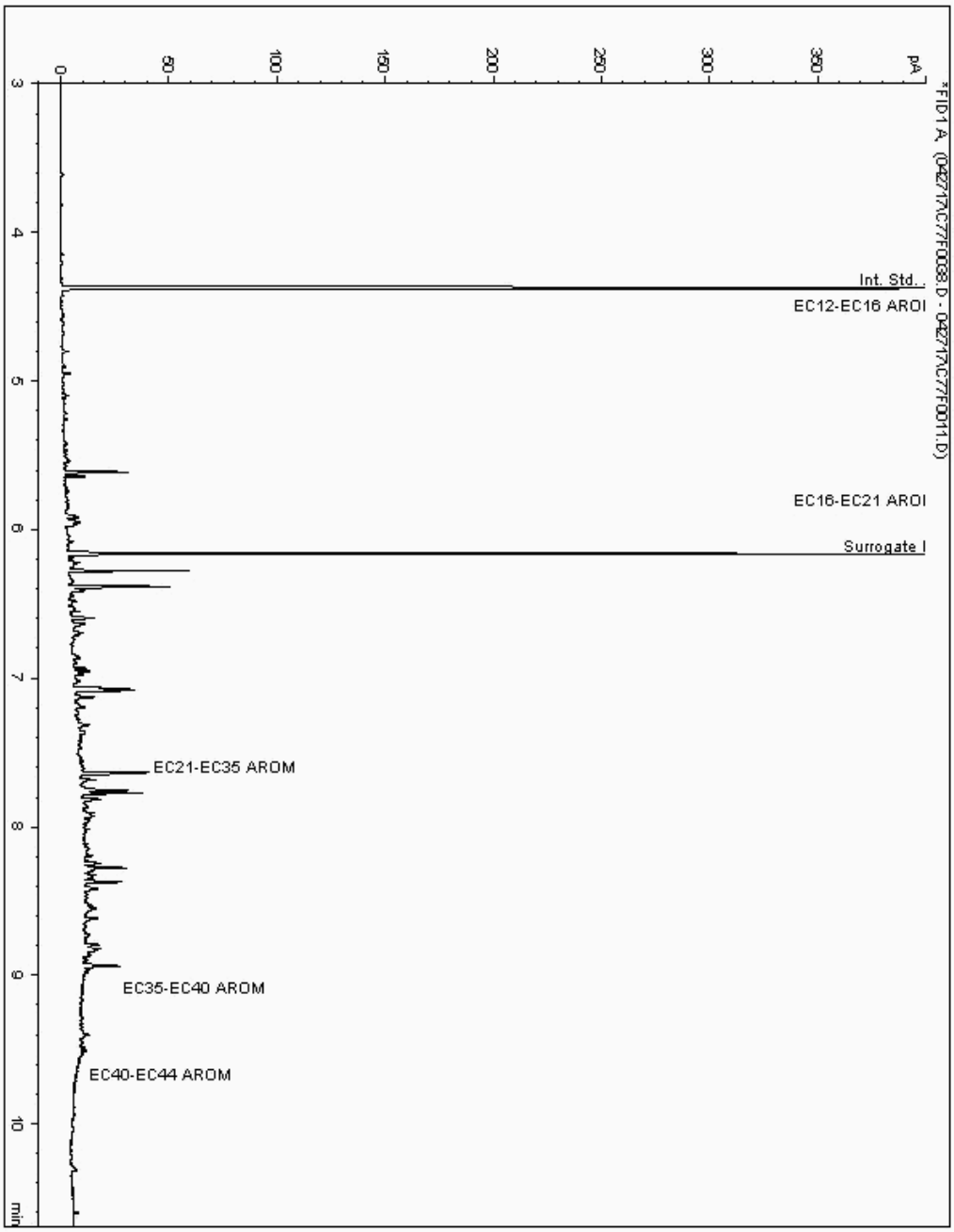
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398096 **Sample ID :** W4TP309 **Depth :** 0.10

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418882-
Date Acquired : 4/27/2017 11:03:18 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

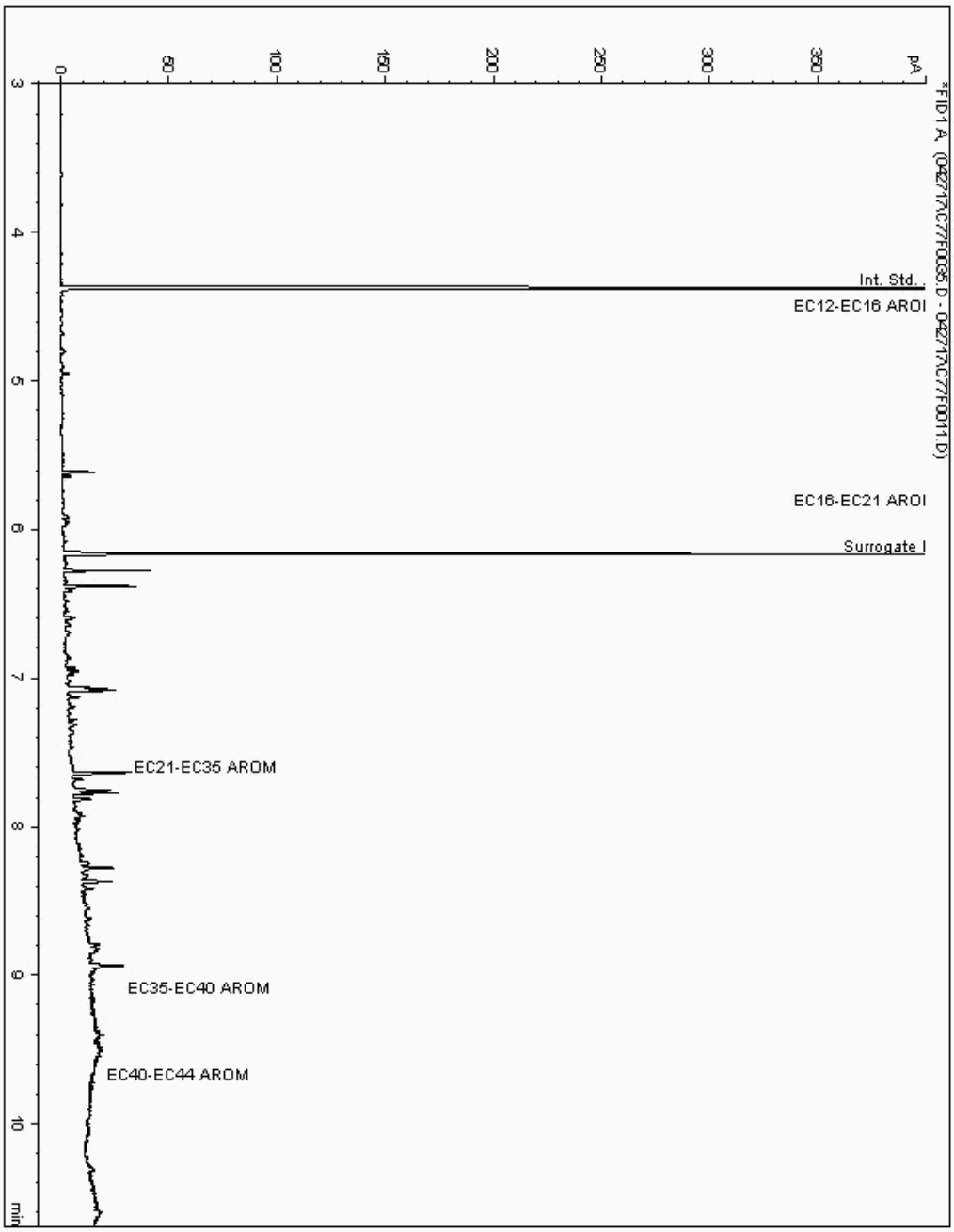
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398100 **Sample ID :** W4BH306 **Depth :** 0.10 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419244-
Date Acquired : 4/27/2017 10:19:10 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

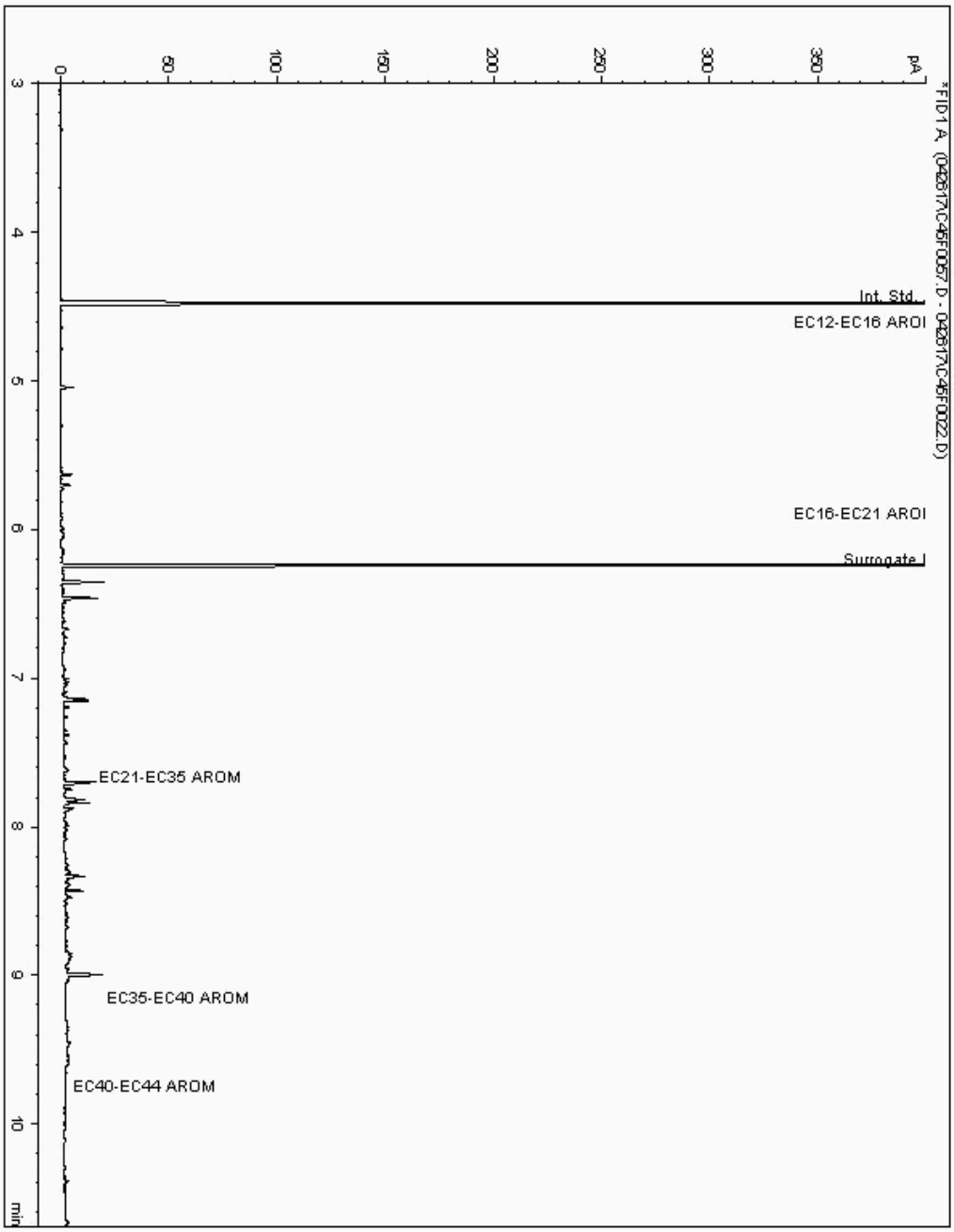
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398169 **Sample ID :** W7WS311 **Depth :** 0.10 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419377-
Date Acquired : 27/04/2017 11:06:17 PM
Units : ppb
Dilution: W7WS311[0.10 - 0.30] ->



CERTIFICATE OF ANALYSIS

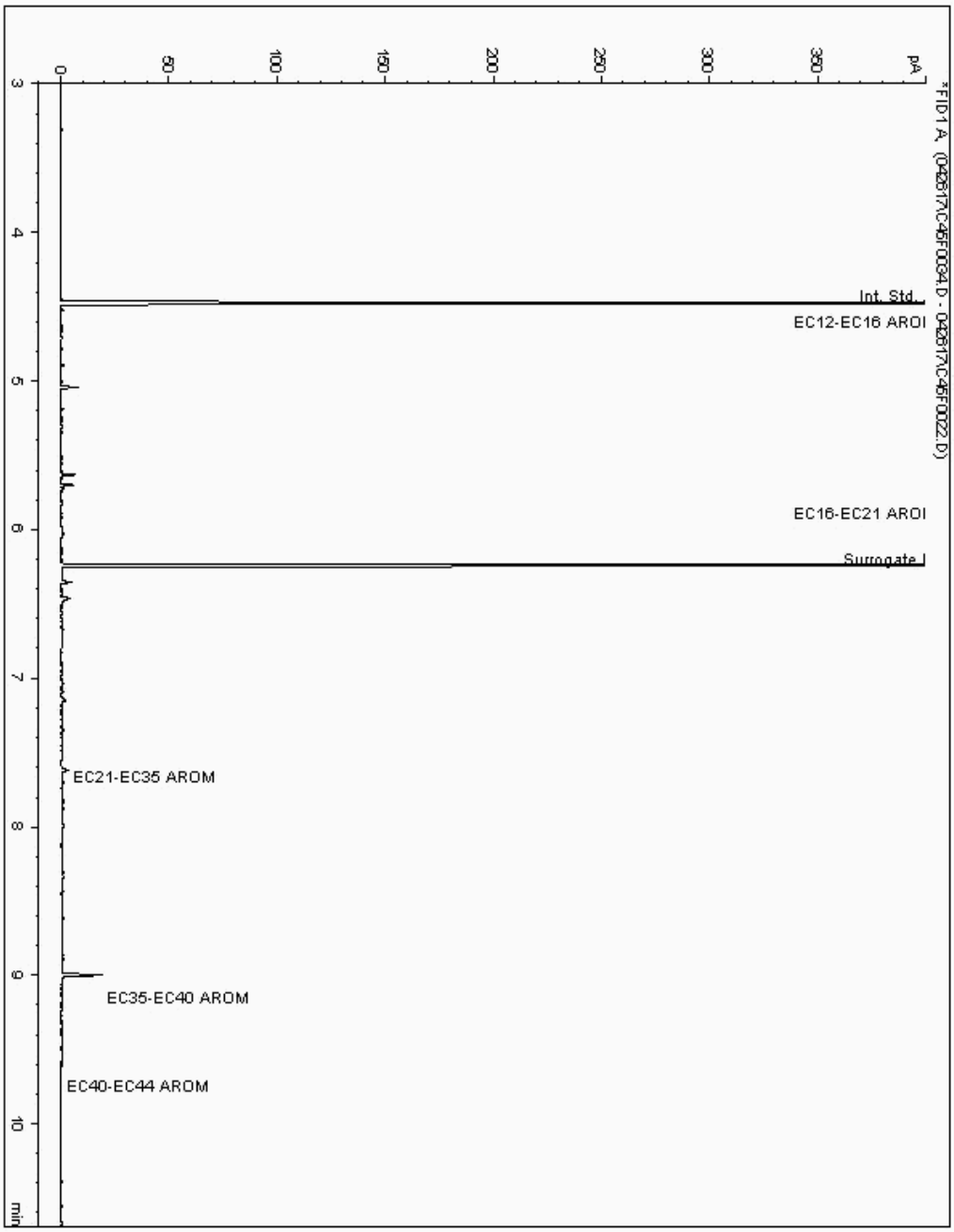
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398272 **Sample ID :** W4WS316 **Depth :** 2.30 - 2.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419471-
Date Acquired : 27/04/2017 02:23:51 PM
Units : ppb
Dilution: W4WS316[2.30 - 2.40] ->



CERTIFICATE OF ANALYSIS

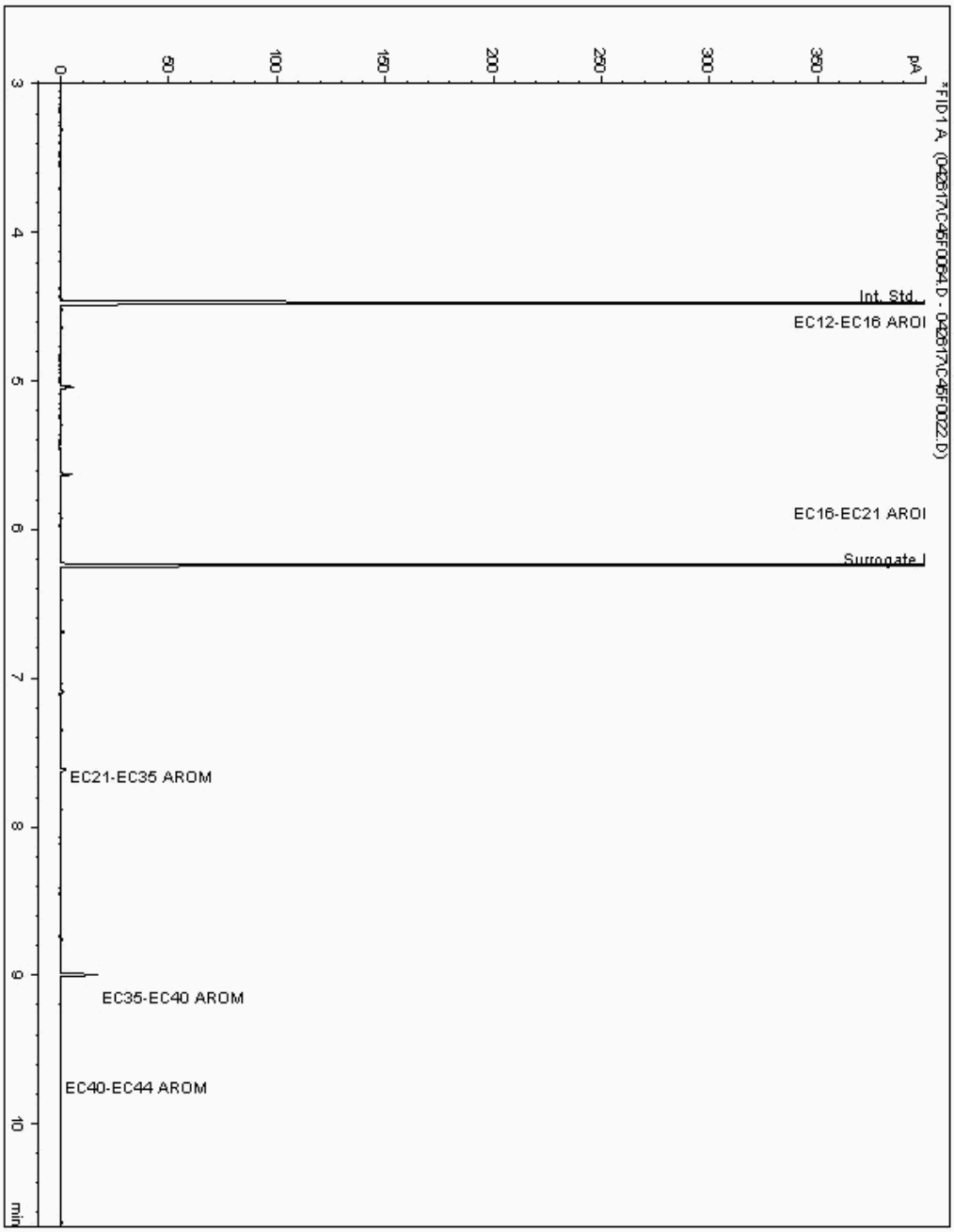
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398298 **Sample ID :** W7WS310 **Depth :** 2.80 - 2.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419451-
Date Acquired : 27/04/2017 12:54:20 PM
Units : ppb
Dilution: W7WS310[2.80 - 2.90] ->



CERTIFICATE OF ANALYSIS

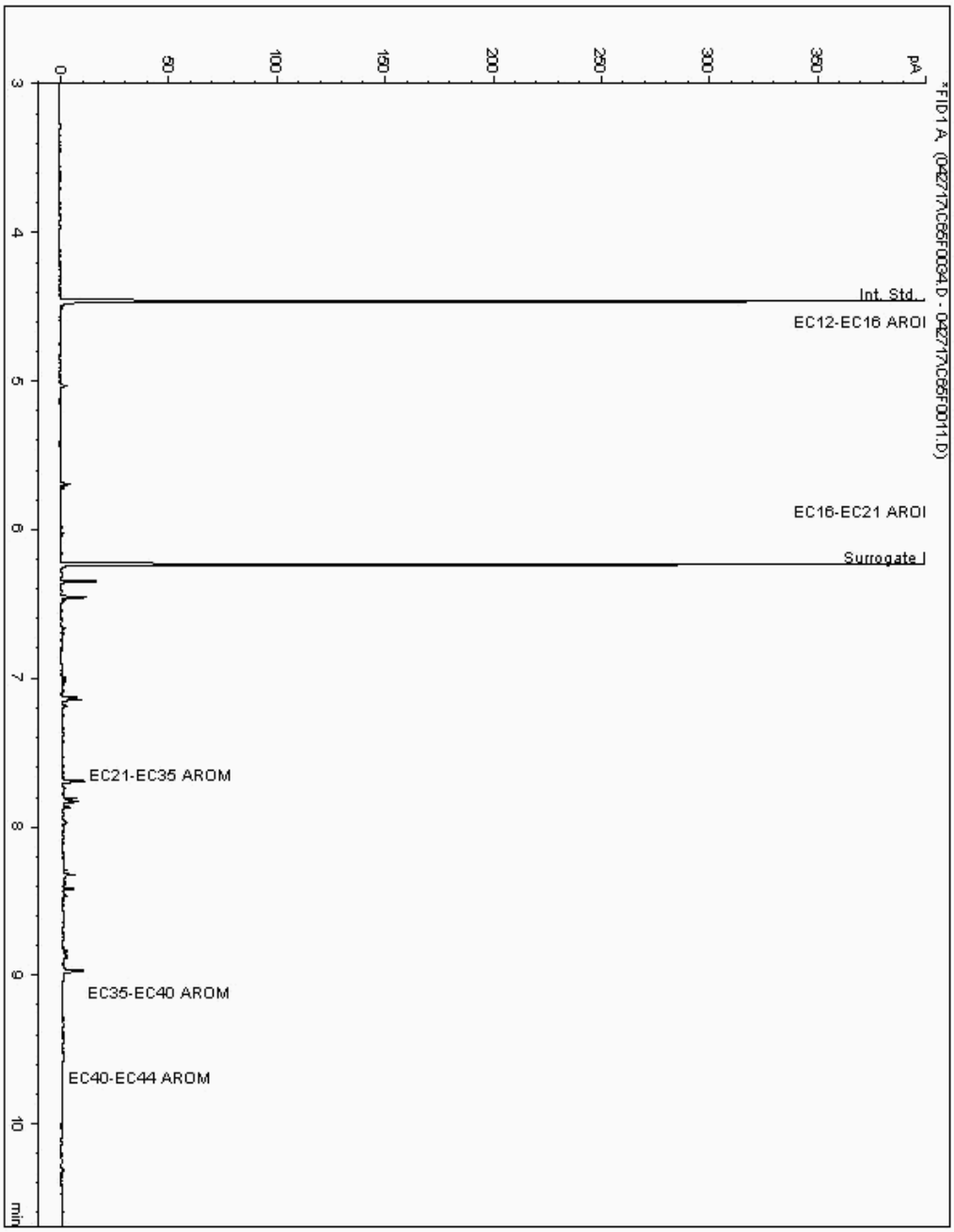
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398371 **Sample ID :** W4BH306 **Depth :** 0.90 - 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419554-
Date Acquired : 27/04/2017 21:43:35 PM
Units : ppb
Dilution: W4BH306[0.90 - 1.00] ->



CERTIFICATE OF ANALYSIS

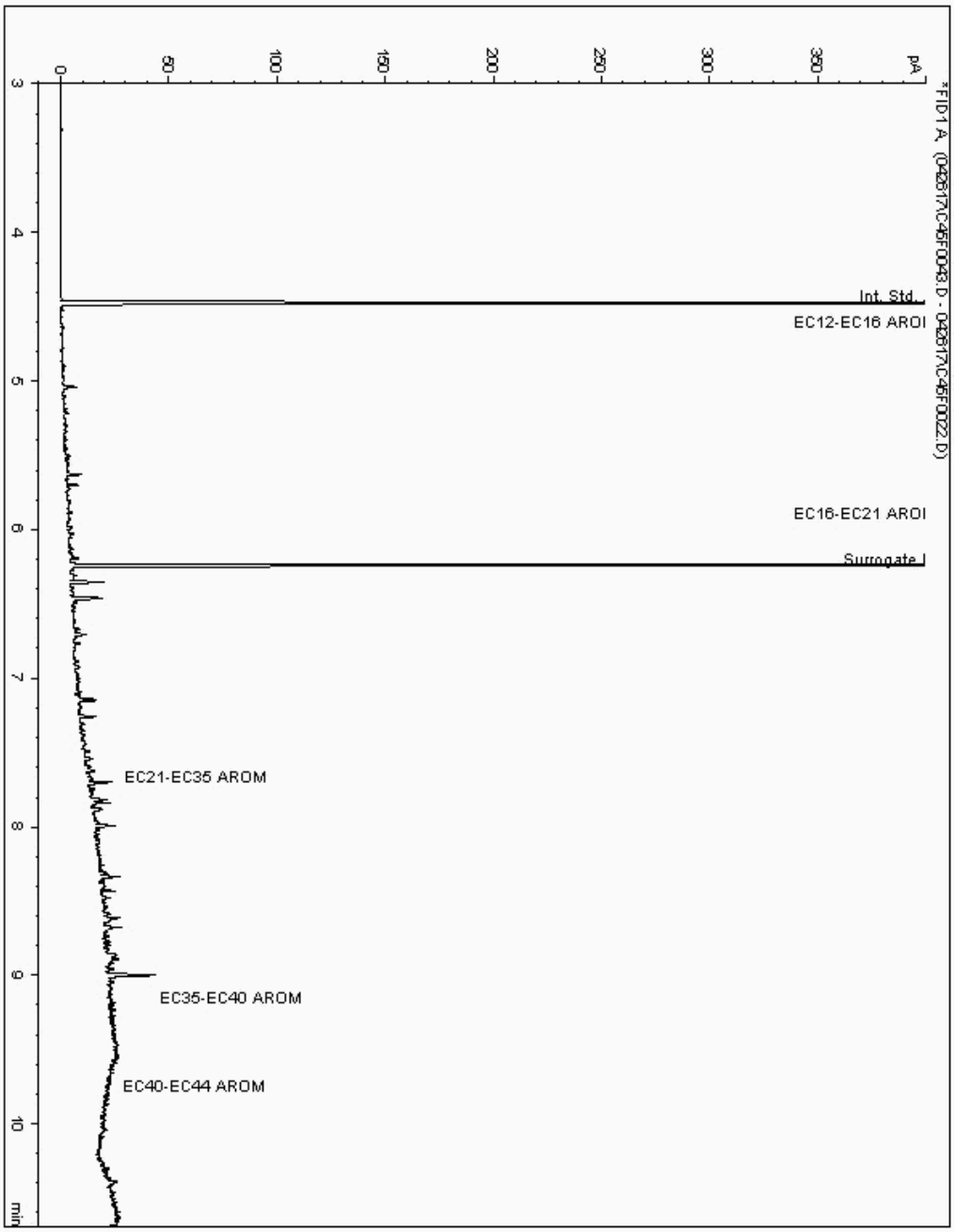
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398556 **Sample ID :** W4TP316 **Depth :** 2.20

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419155-
Date Acquired : 27/04/2017 07:45:12 PM
Units : ppb
Dilution: W4TP316[2.20] ->



CERTIFICATE OF ANALYSIS

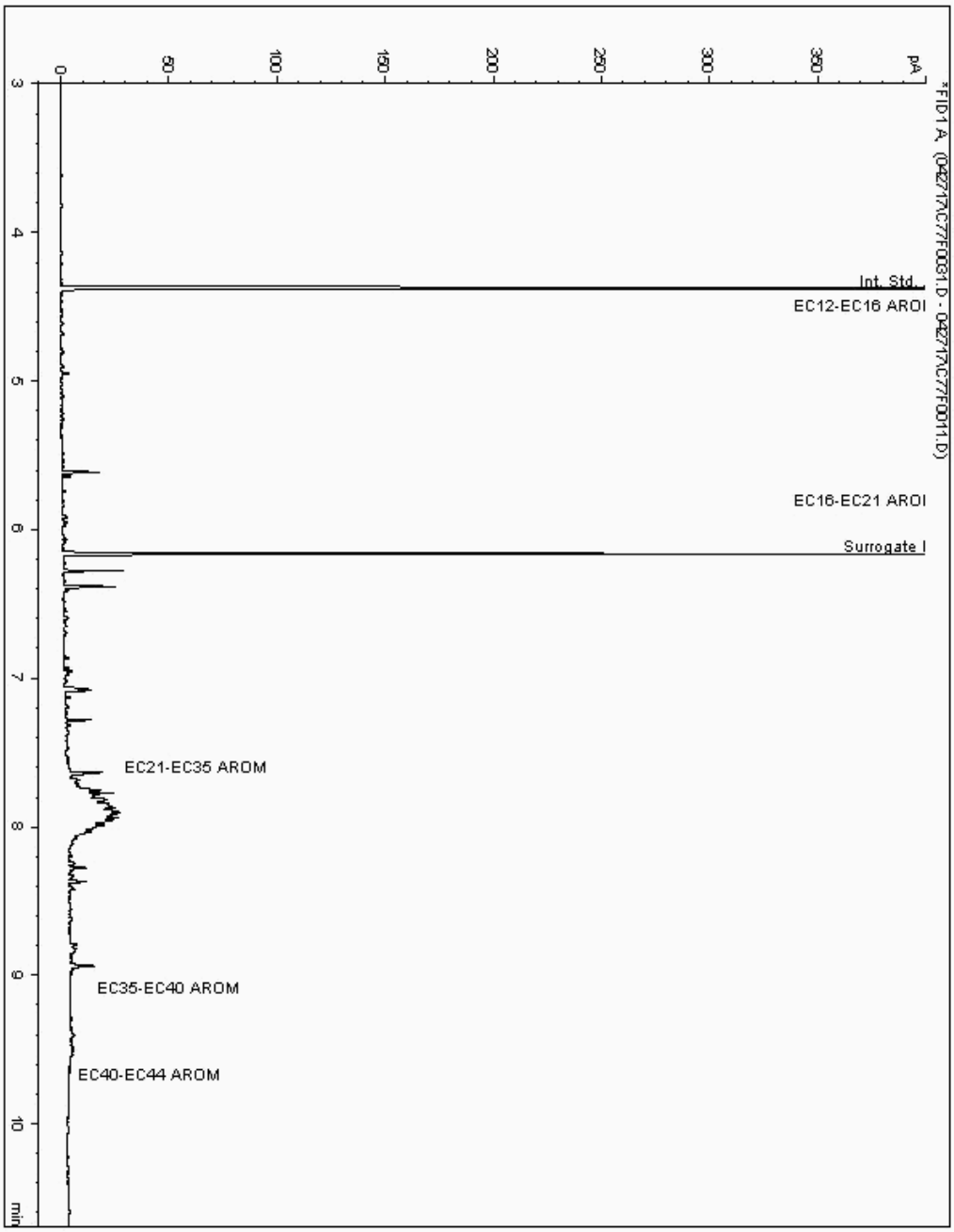
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398627 **Sample ID :** W4TP314 **Depth :** 0.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419356-
Date Acquired : 4/27/2017 9:23:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

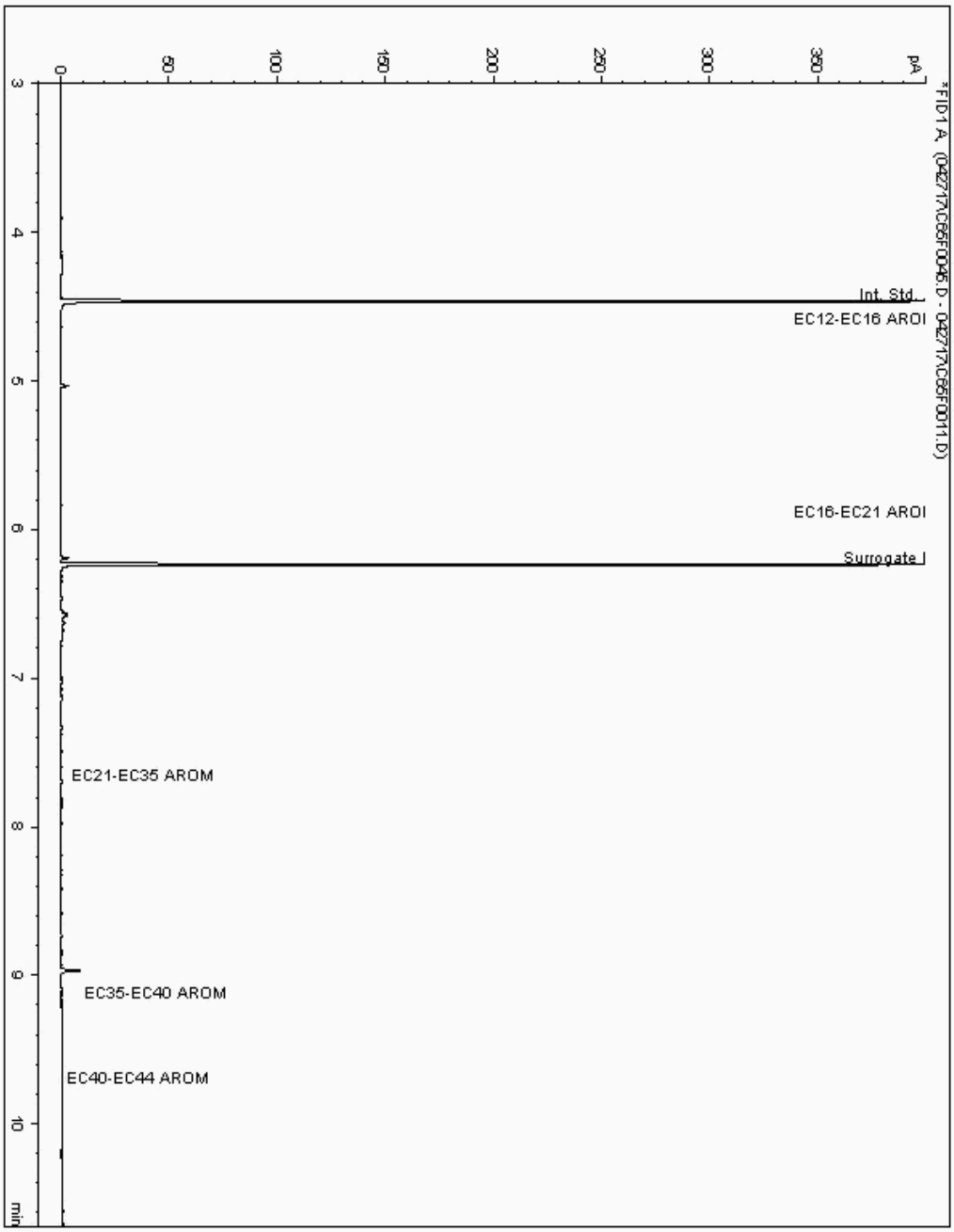
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398736 **Sample ID :** W7WS309 **Depth :** 1.70

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419336-
Date Acquired : 28/04/2017 00:29:53 PM
Units : ppb
Dilution: W7WS309[1.70] ->



CERTIFICATE OF ANALYSIS

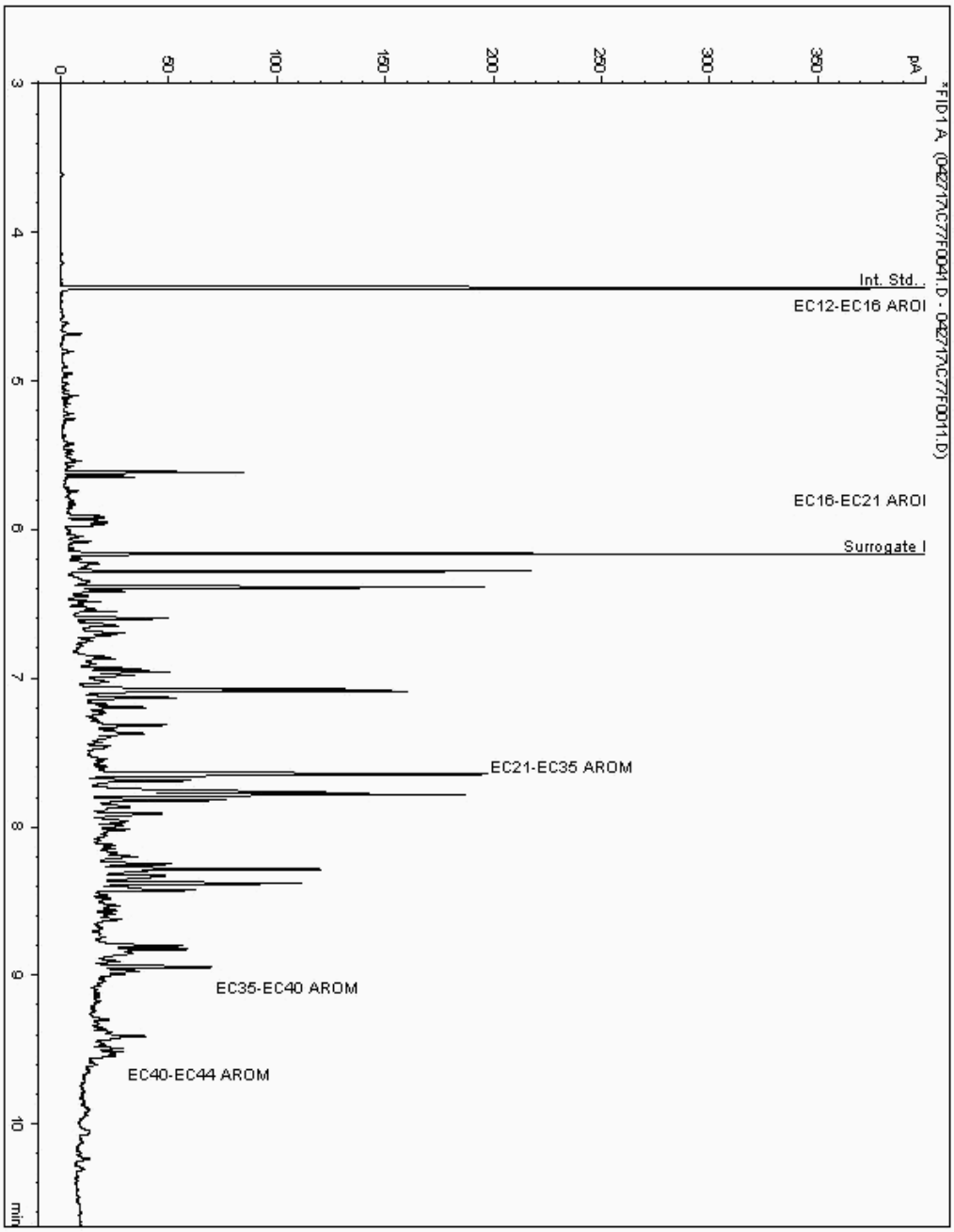
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398784 **Sample ID :** W4TP308 **Depth :** 1.70

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418958-
Date Acquired : 4/27/2017 11:47:12 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

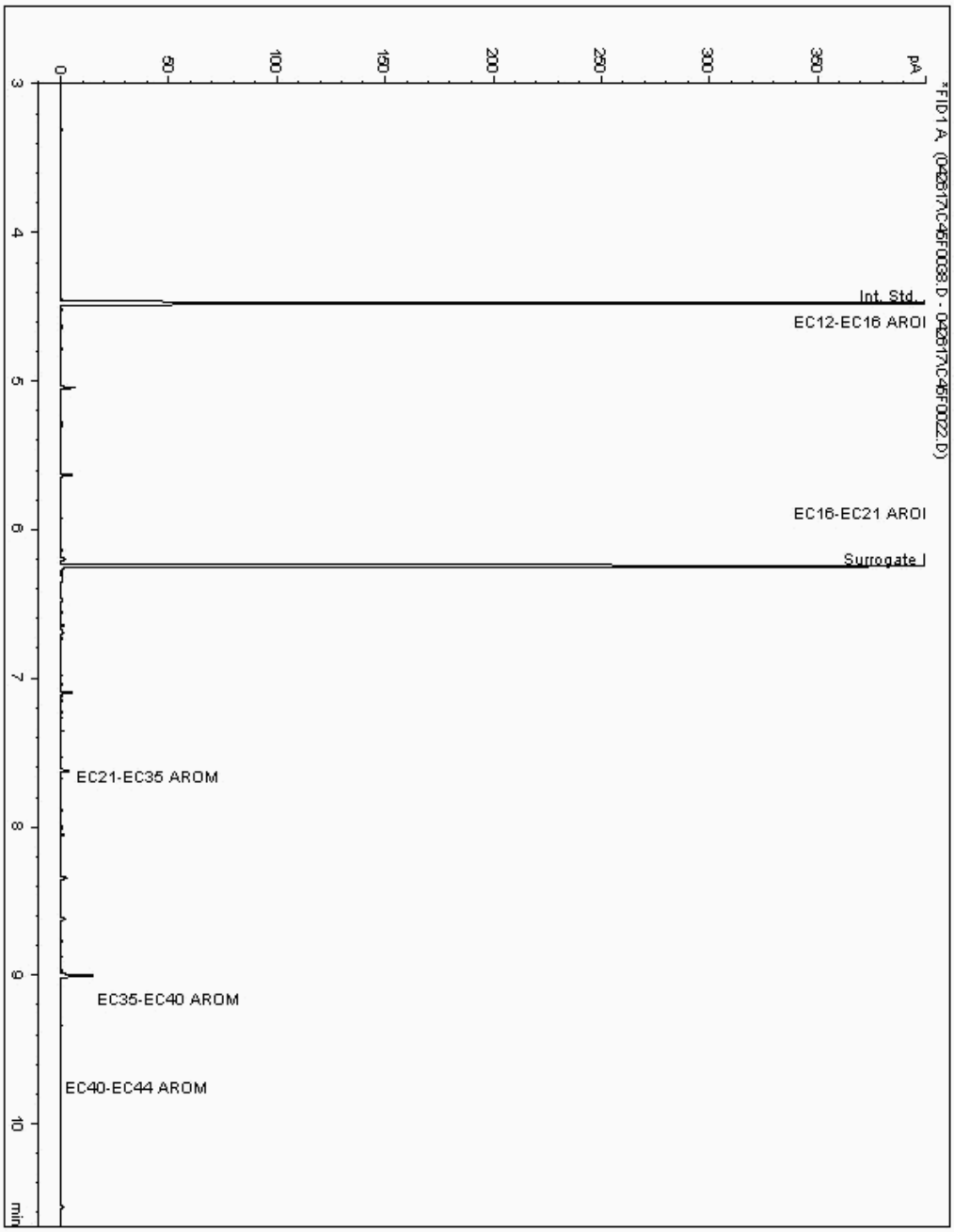
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398834 **Sample ID :** W7WS311 **Depth :** 2.80 - 2.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419396-
Date Acquired : 27/04/2017 06:21:03 PM
Units : ppb
Dilution: W7WS311[2.80 - 2.90] ->



CERTIFICATE OF ANALYSIS

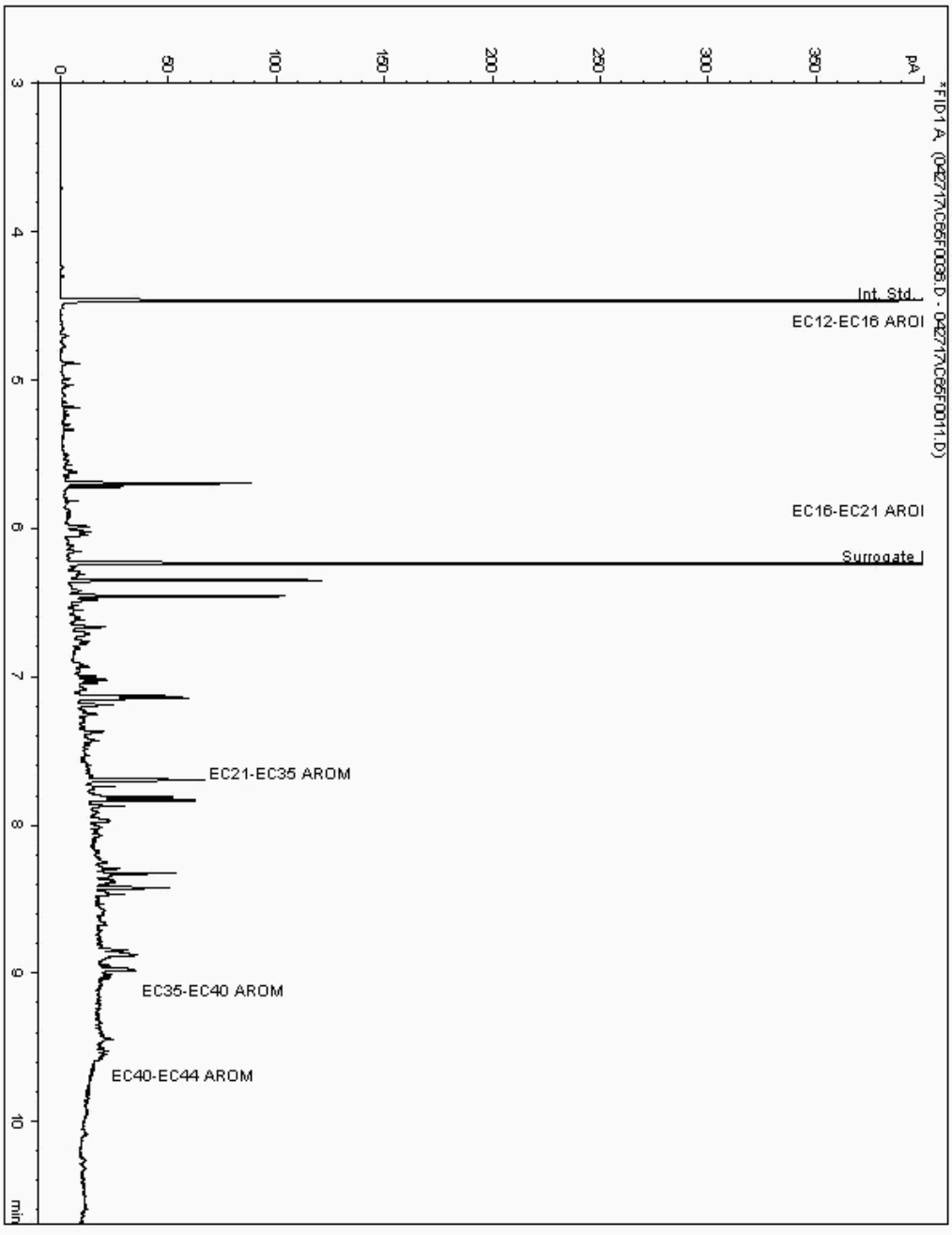
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15398971 **Sample ID :** W4TP312 **Depth :** 1.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419055-
Date Acquired : 27/04/2017 22:16:17 PM
Units : ppb
Dilution: W4TP312[1.90] ->



CERTIFICATE OF ANALYSIS

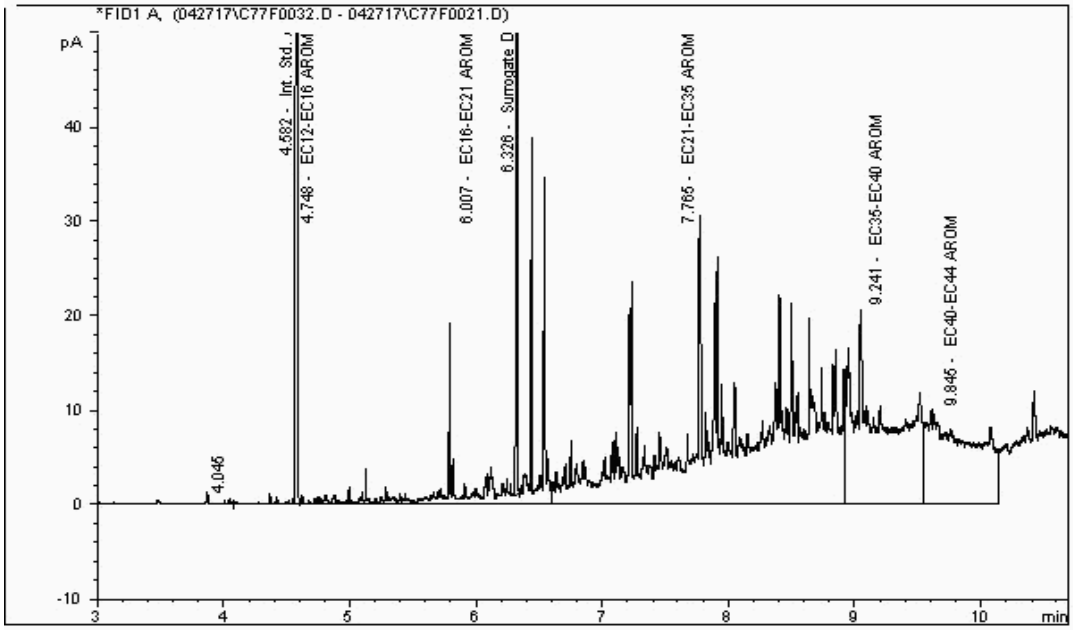
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15399061 **Sample ID :** W4TP315 **Depth :** 0.90

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419192-
Date Acquired : 27/04/2017 16:33:23 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

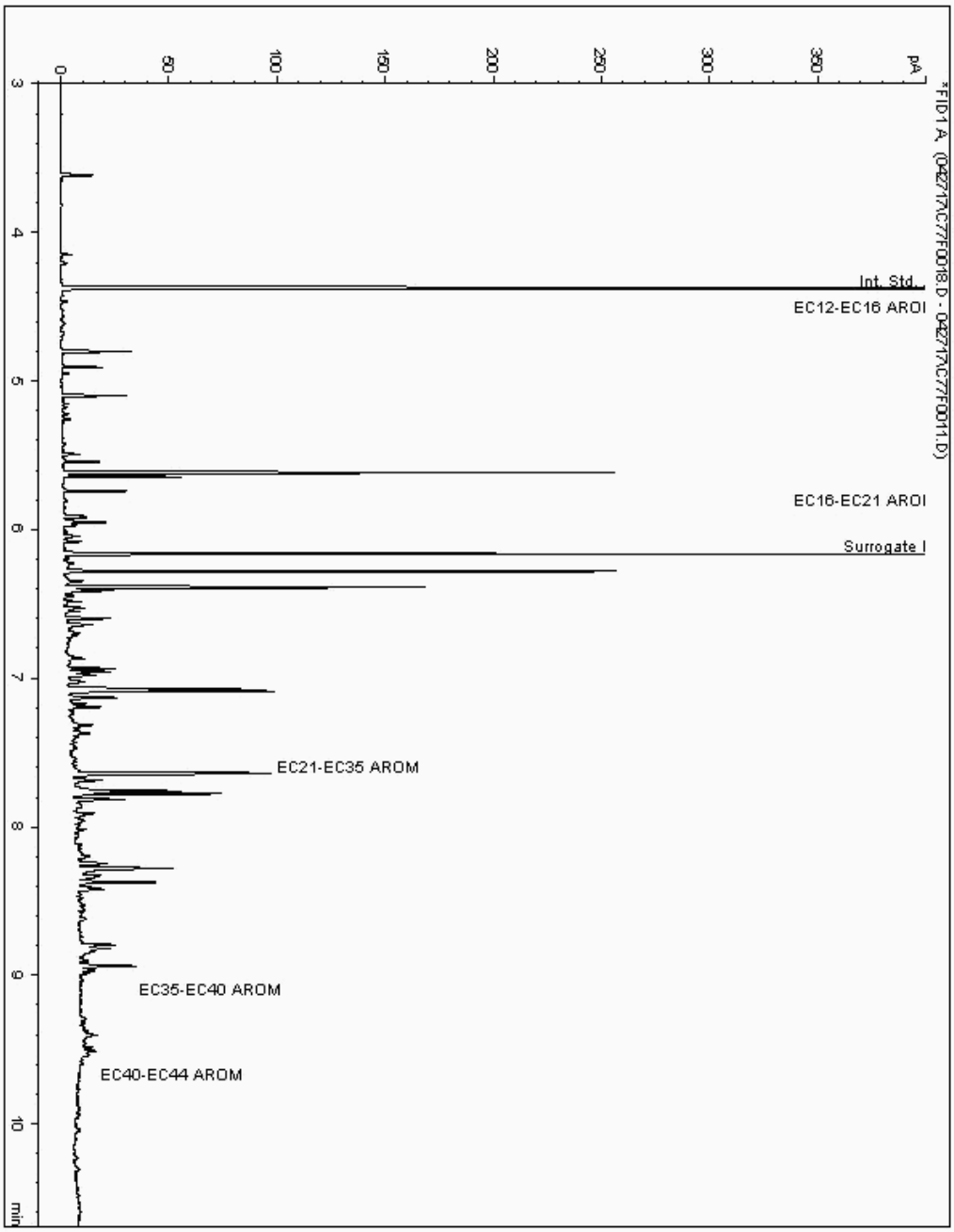
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15399274 **Sample ID :** W4TP307 **Depth :** 3.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419016-
Date Acquired : 4/27/2017 6:06:06 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

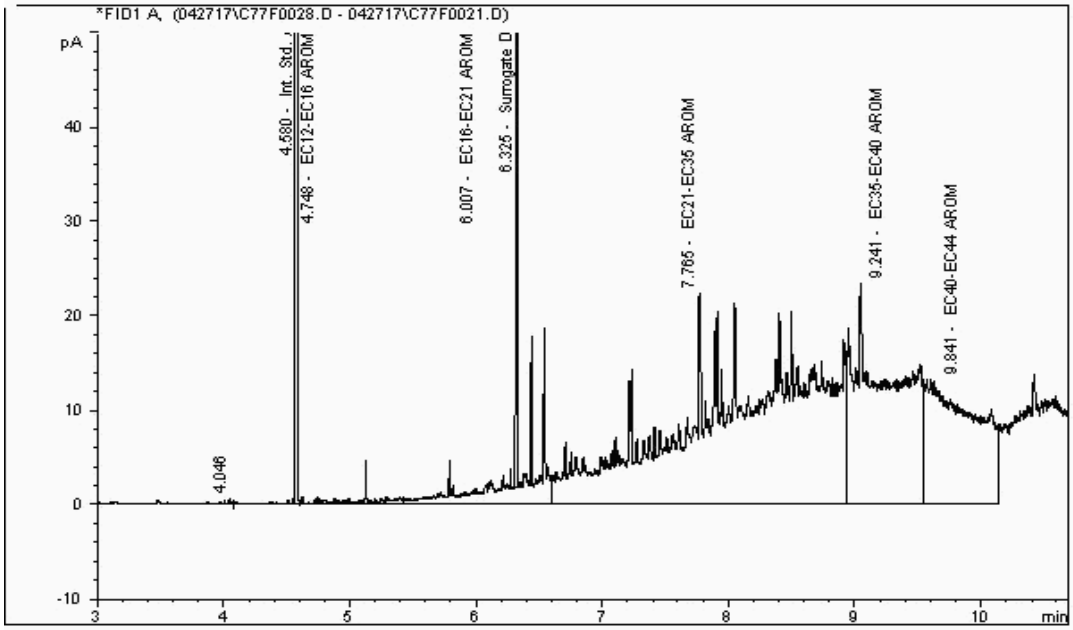
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15399367 **Sample ID :** W4TP316 **Depth :** 1.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419134-
Date Acquired : 27/04/2017 15:38:08 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

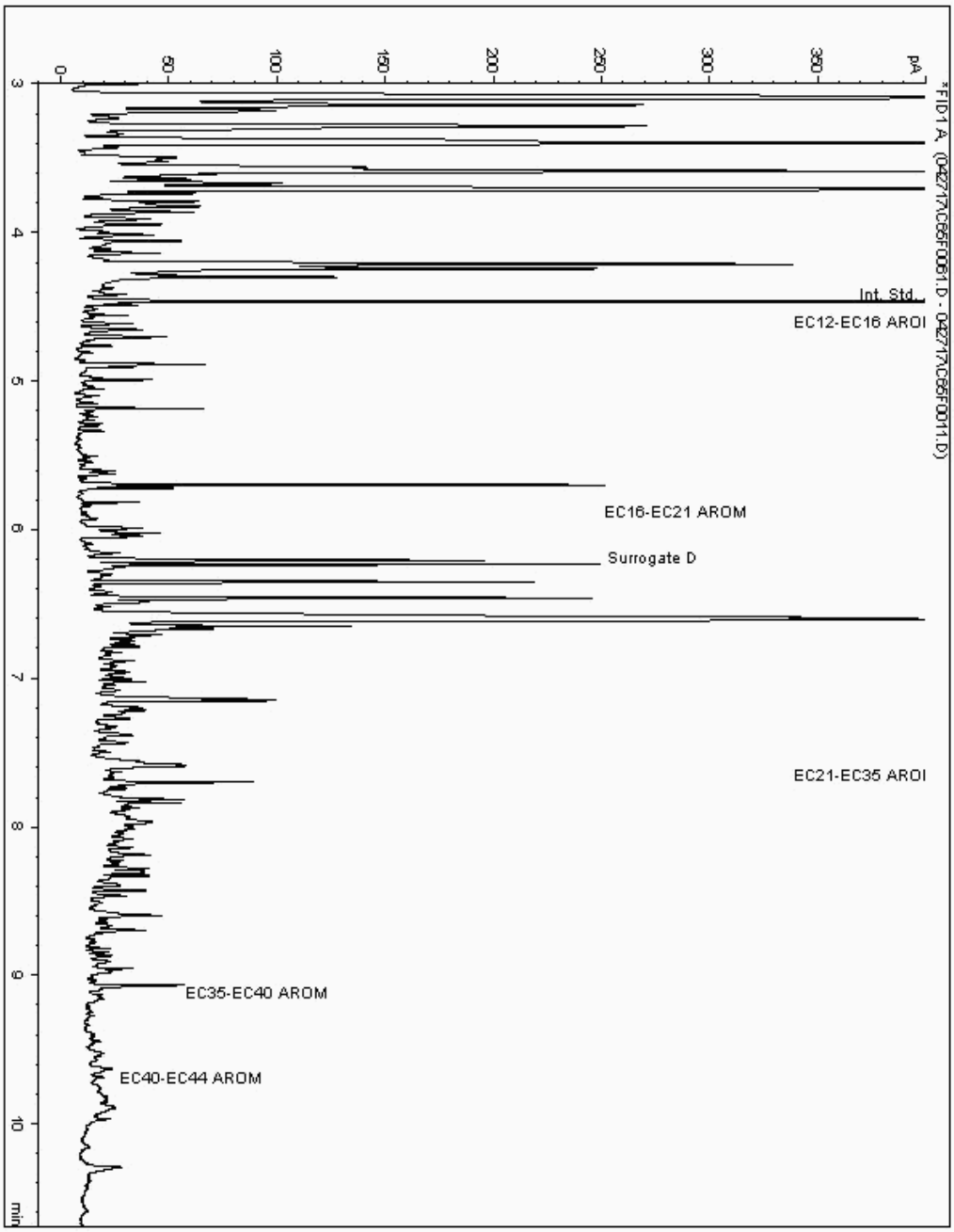
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15399371 **Sample ID :** W4TP307 **Depth :** 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418996-
Date Accuired : 01/05/2017 09:32:42 PM
Units : ppb
Dilution: W4TP307[1.00] ->



CERTIFICATE OF ANALYSIS

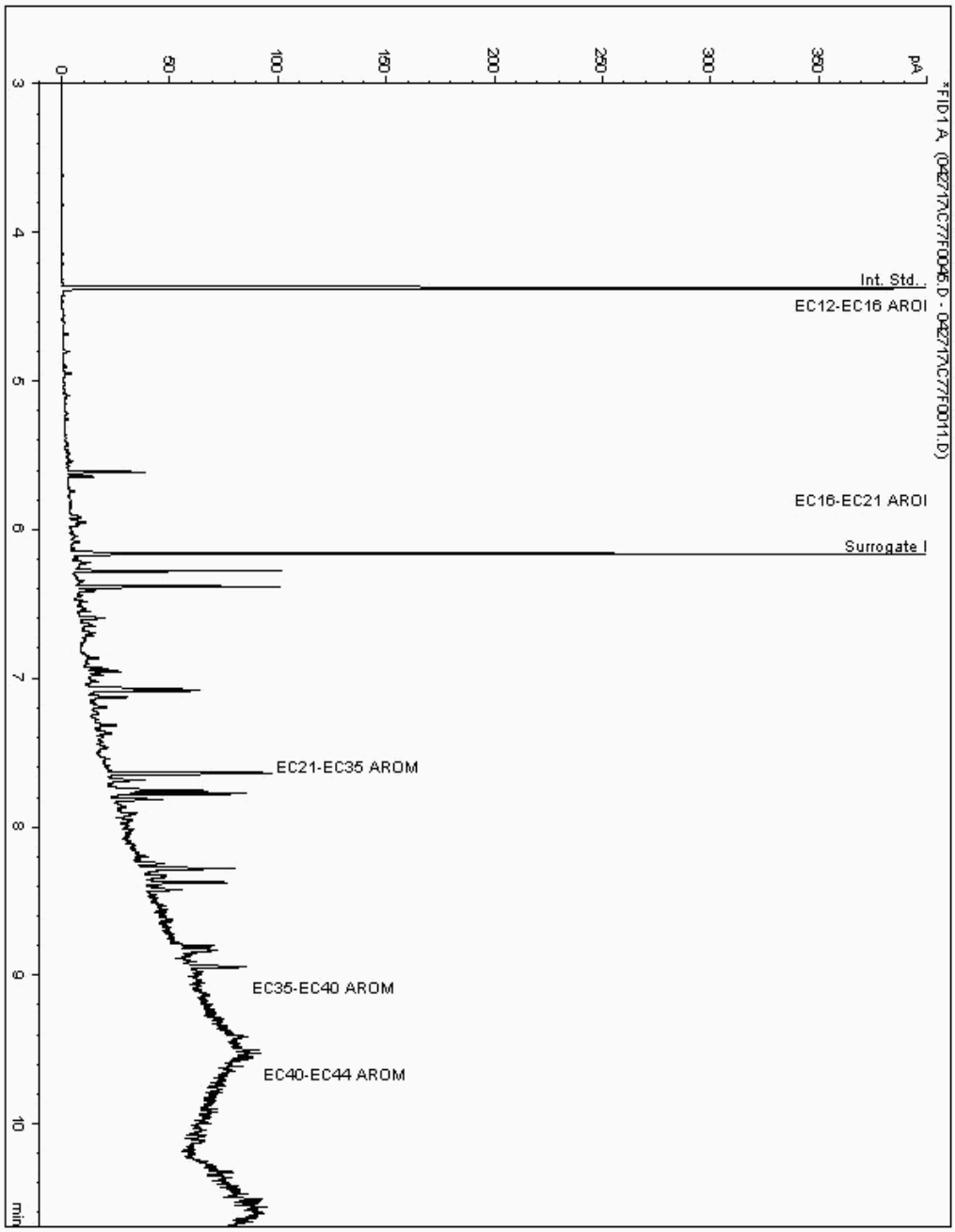
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15399592 **Sample ID :** W4TP312 **Depth :** 0.40

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419035-
Date Acquired : 4/28/2017 12:43:05 AM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

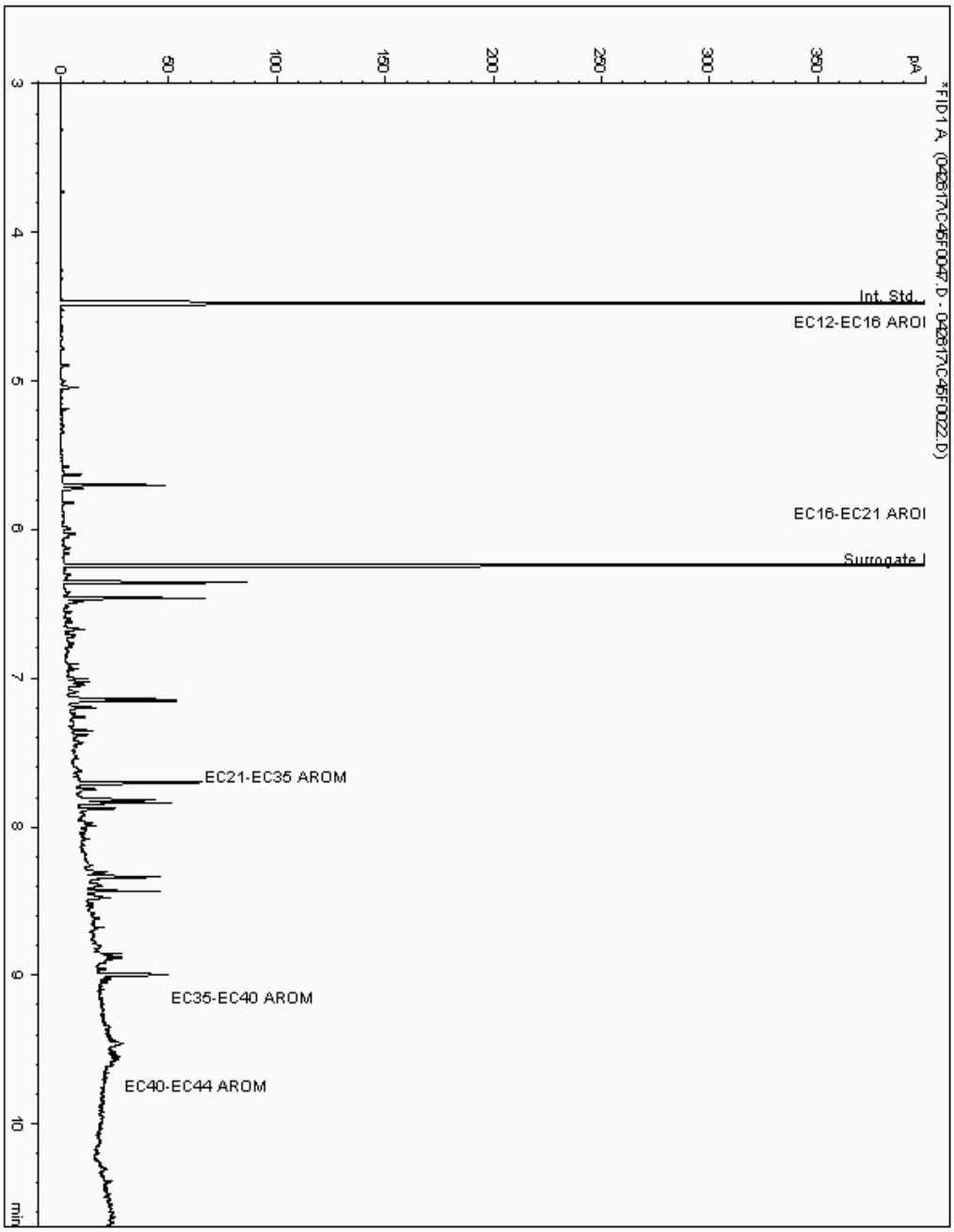
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15399605 **Sample ID :** W4TP315 **Depth :** 0.10

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419174-
Date Acquired : 27/04/2017 08:41:16 PM
Units : ppb
Dilution: W4TP315[0.10] ->



CERTIFICATE OF ANALYSIS

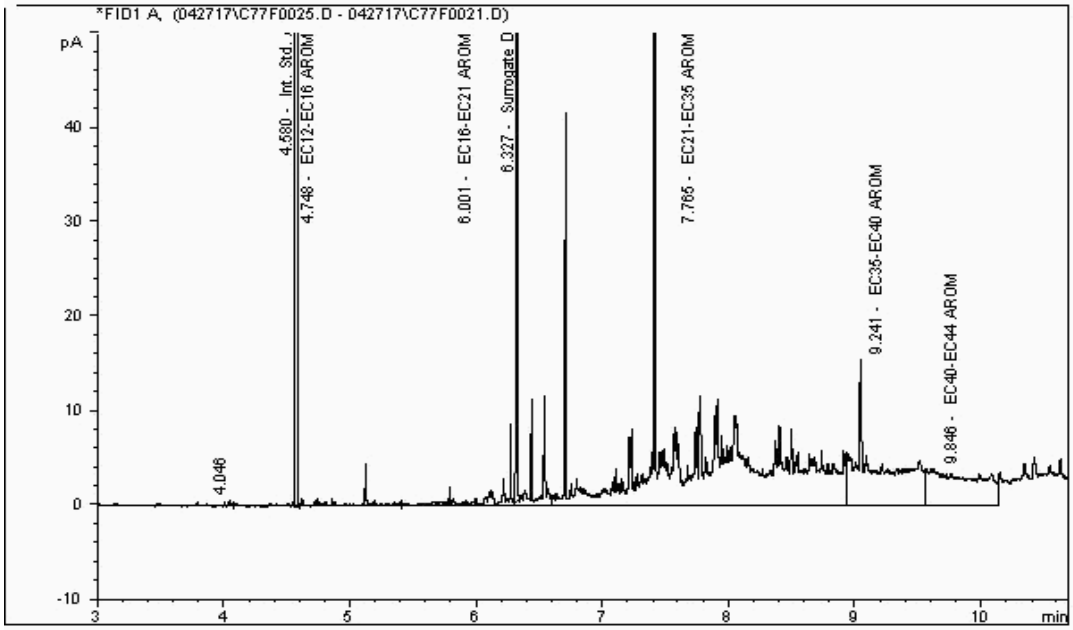
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15399756 **Sample ID :** W4TP316 **Depth :** 0.40

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419111-
Date Acquired : 27/04/2017 14:54:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

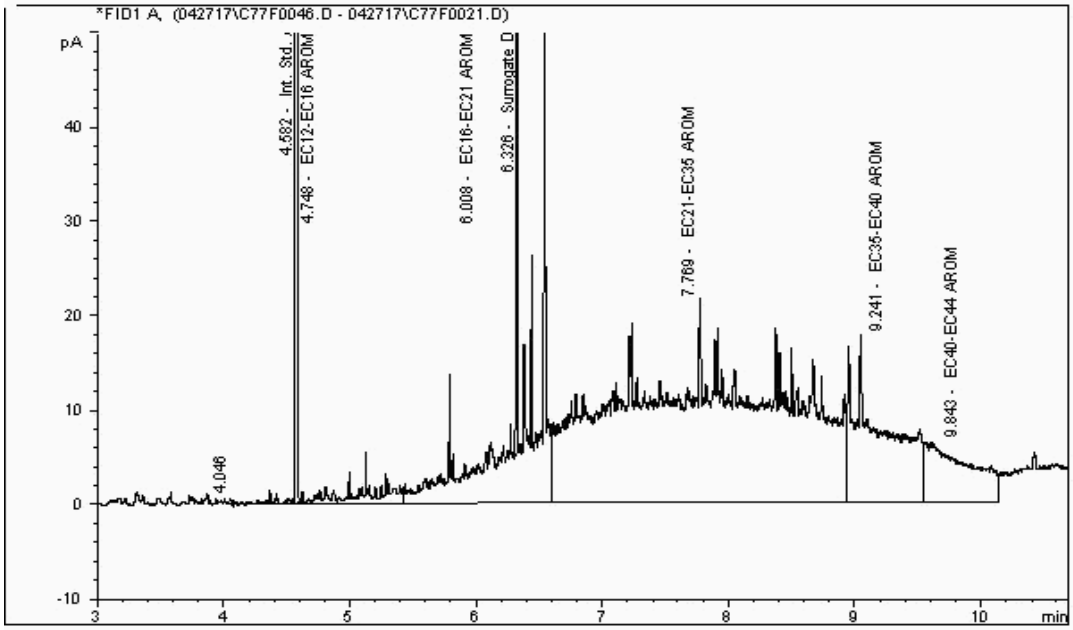
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15399984 **Sample ID :** W4TP313 **Depth :** 2.20

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418810-
Date Acquired : 27/04/2017 20:10:06 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

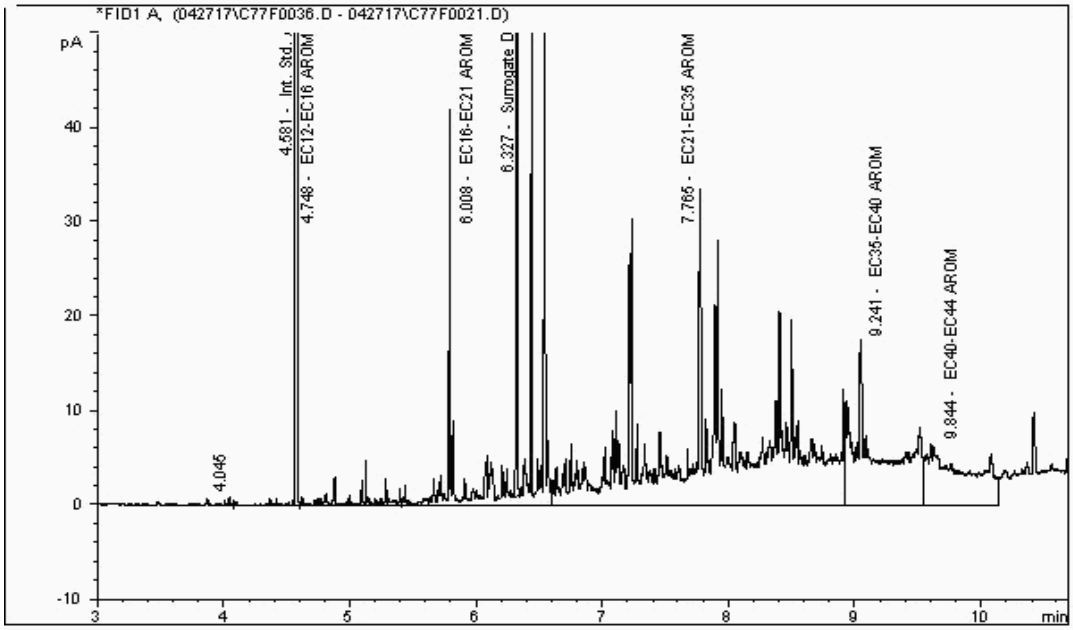
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15400046 **Sample ID :** W5TP304 **Depth :** 0.20

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419072-
Date Acquired : 27/04/2017 17:37:47 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

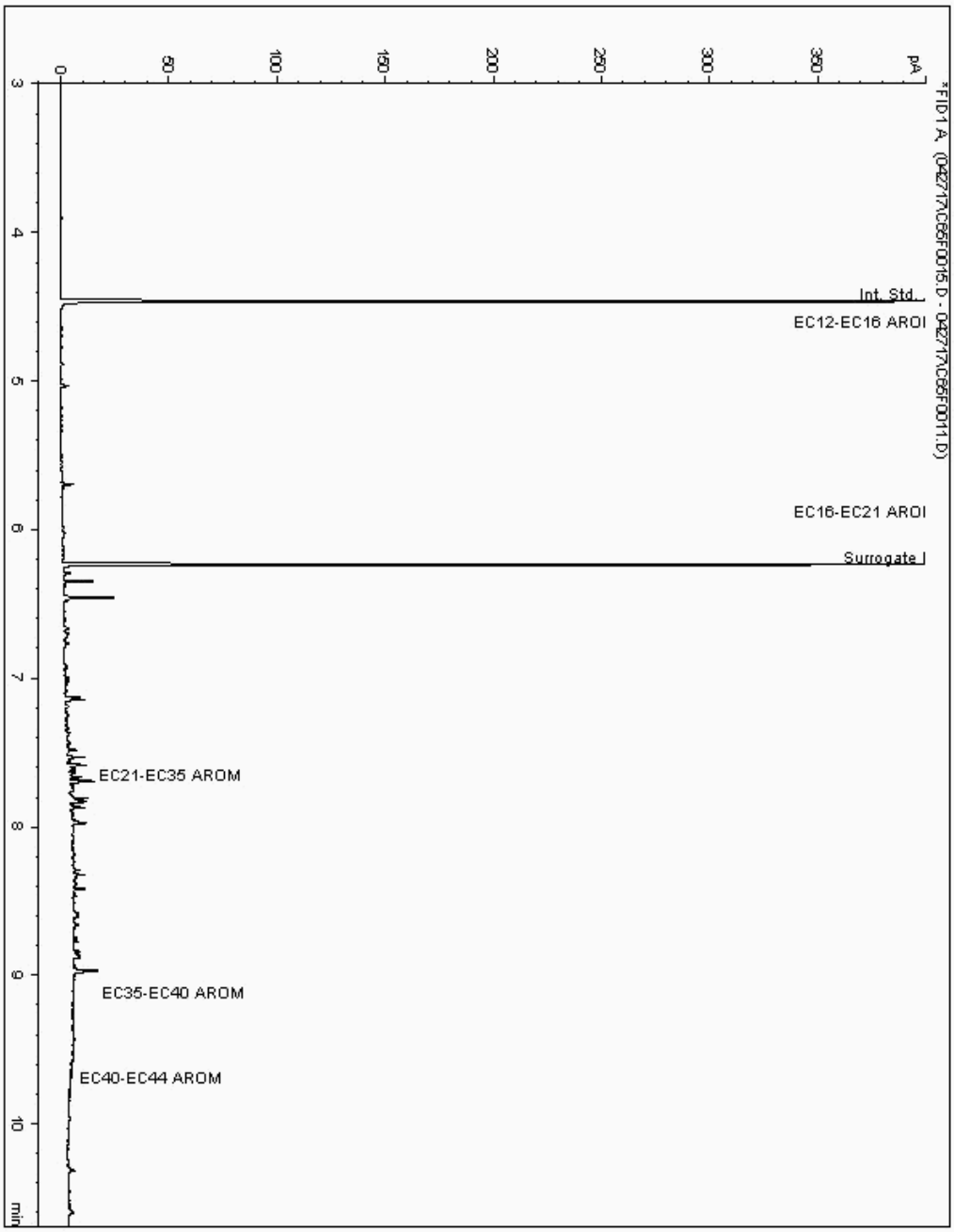
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15400067 **Sample ID :** W4TP314 **Depth :** 2.65

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419490-
Date Acquired : 27/04/2017 16:03:29 PM
Units : ppb
Dilution: W4TP314[2.65] ->



CERTIFICATE OF ANALYSIS

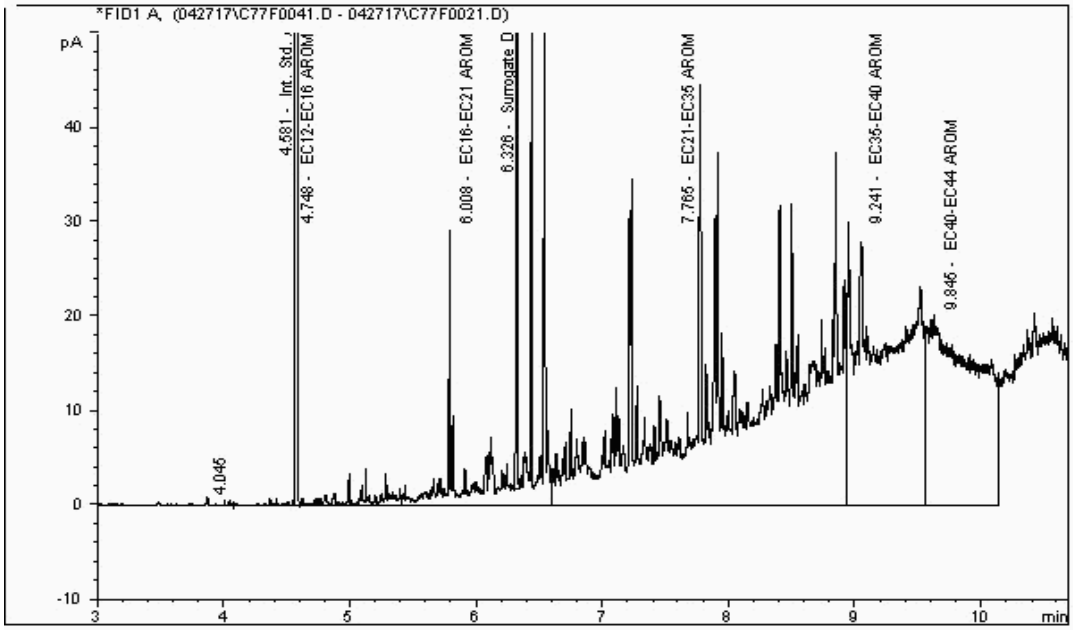
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15400294 **Sample ID :** W4TP311 **Depth :** 0.60

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419228-
Date Acquired : 27/04/2017 18:54:13 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

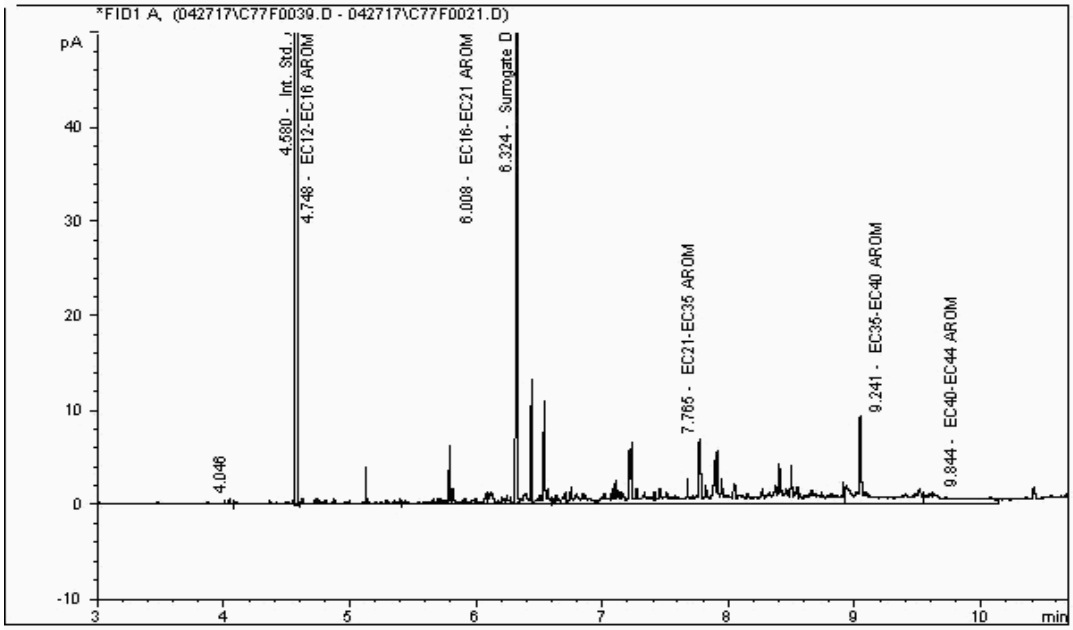
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15400505 **Sample ID :** W5TP304 **Depth :** 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419092-
Date Acquired : 27/04/2017 18:21:54 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

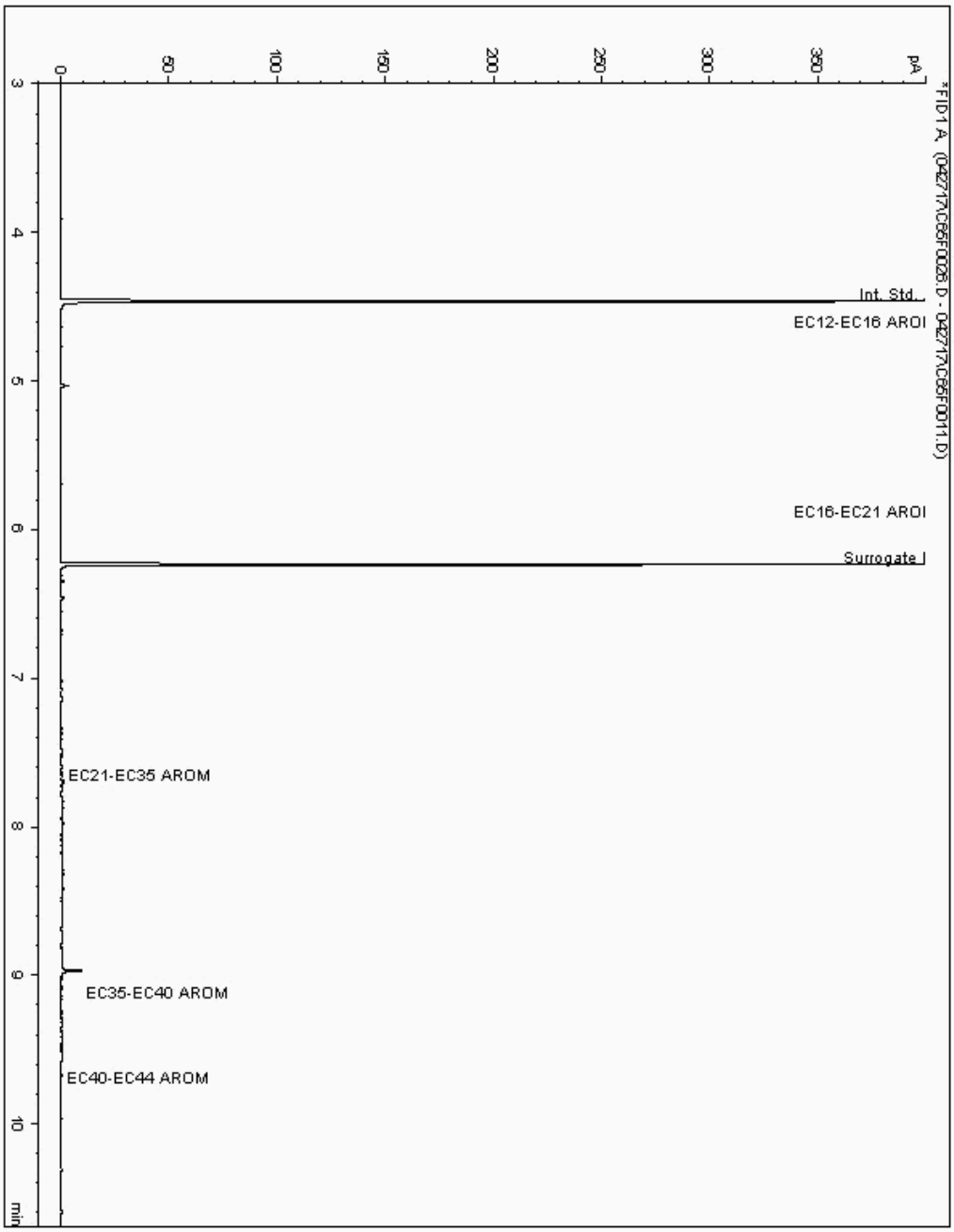
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15400885 **Sample ID :** W4TP313 **Depth :** 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419510-
Date Acquired : 27/04/2017 18:59:07 PM
Units : ppb
Dilution: W4TP313[0.30] ->



CERTIFICATE OF ANALYSIS

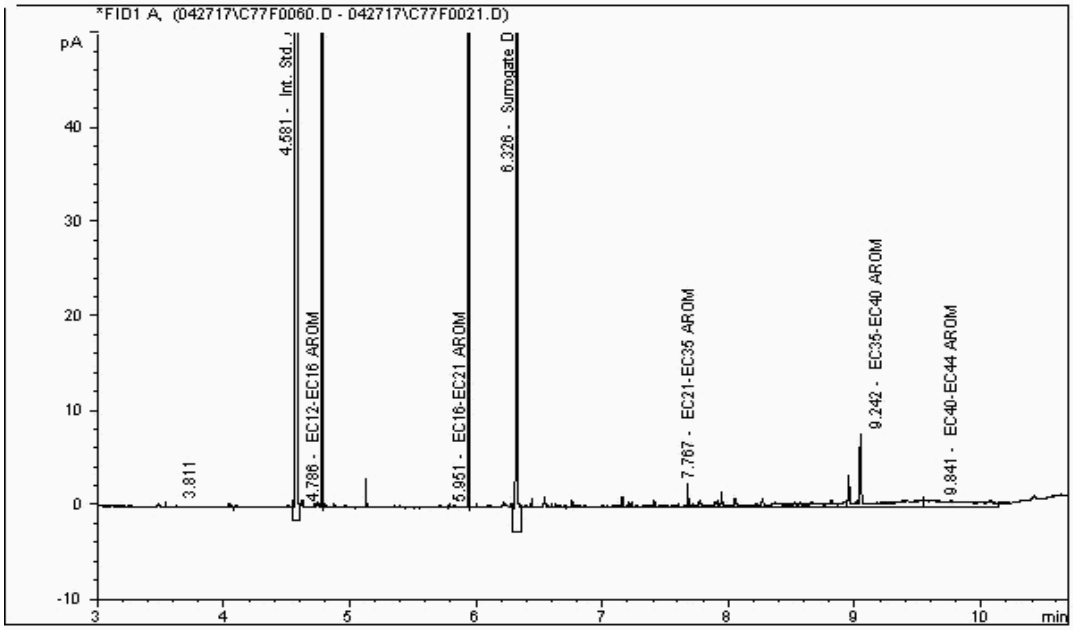
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15401158 **Sample ID :** W7WS310 **Depth :** 1.00 - 1.10

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419433-
Date Acquired : 27/04/2017 23:47:06 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

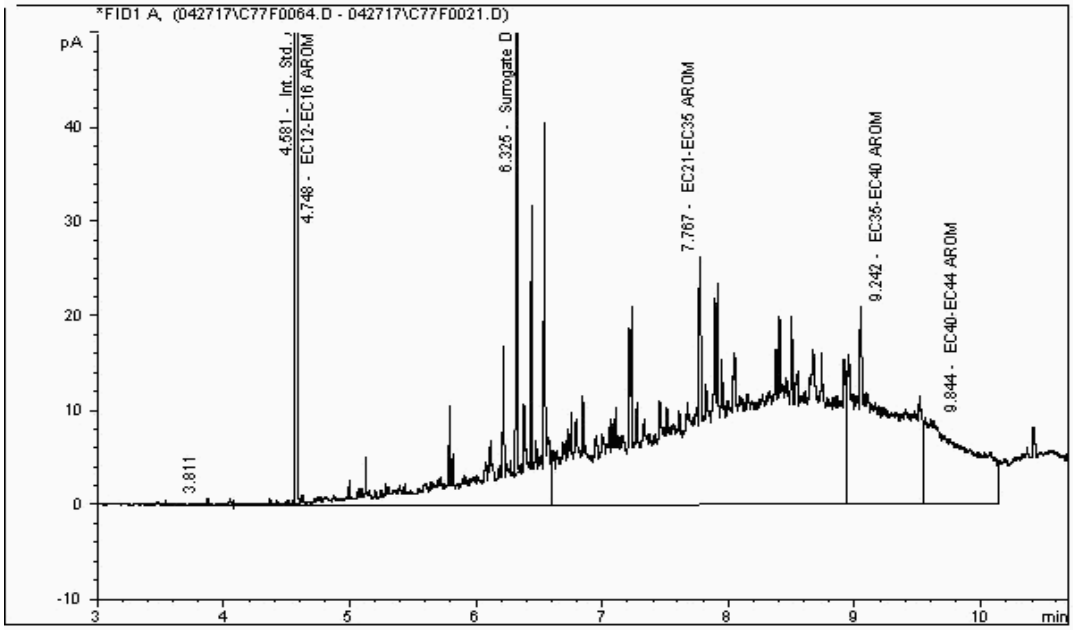
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15401376 **Sample ID :** W4BH306 **Depth :** 2.20 - 2.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419581-
Date Acquired : 28/04/2017 00:51:41 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

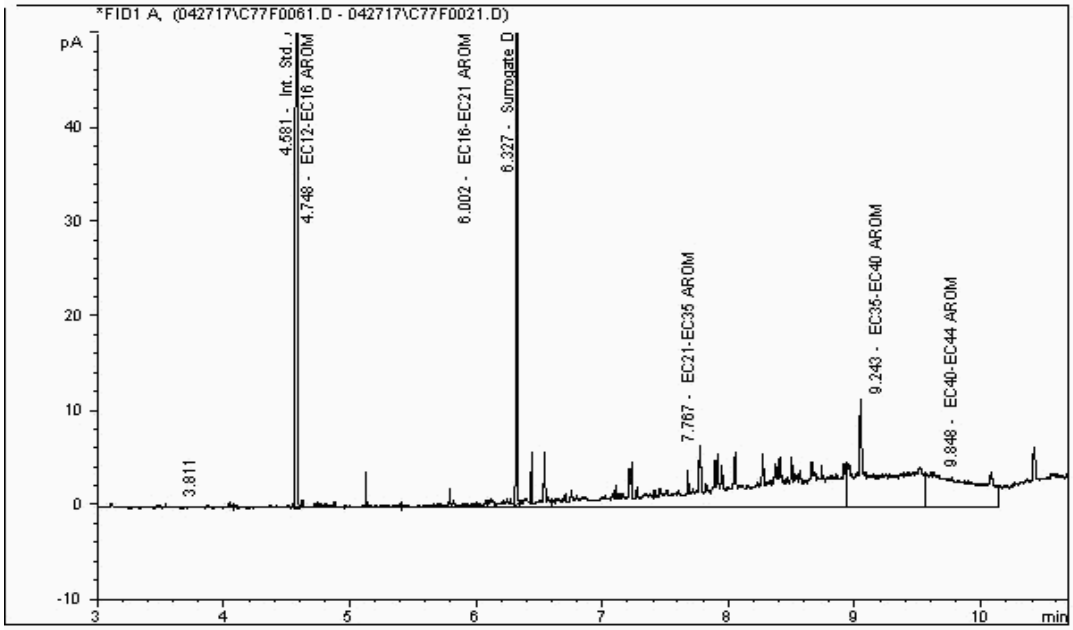
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15401501 **Sample ID :** W5TP301 **Depth :** 0.15

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14418788-
Date Acquired : 28/04/2017 00:07:23 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

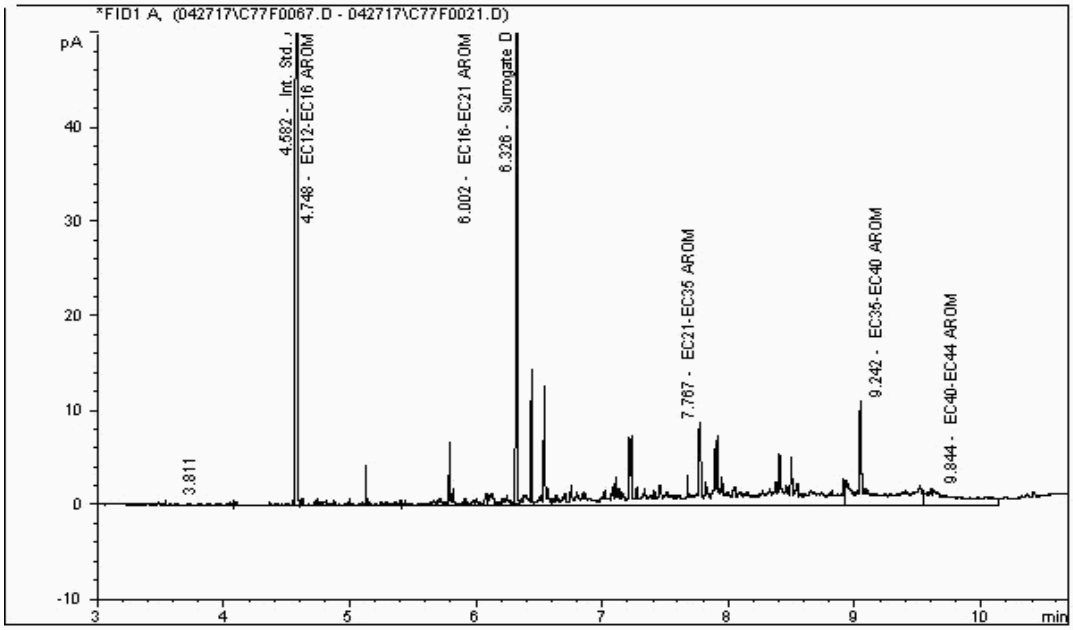
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15401521 **Depth :** 0.80 - 0.90
Sample ID : W7WS311

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419622-
Date Acquired : 28/04/2017 01:35:40 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

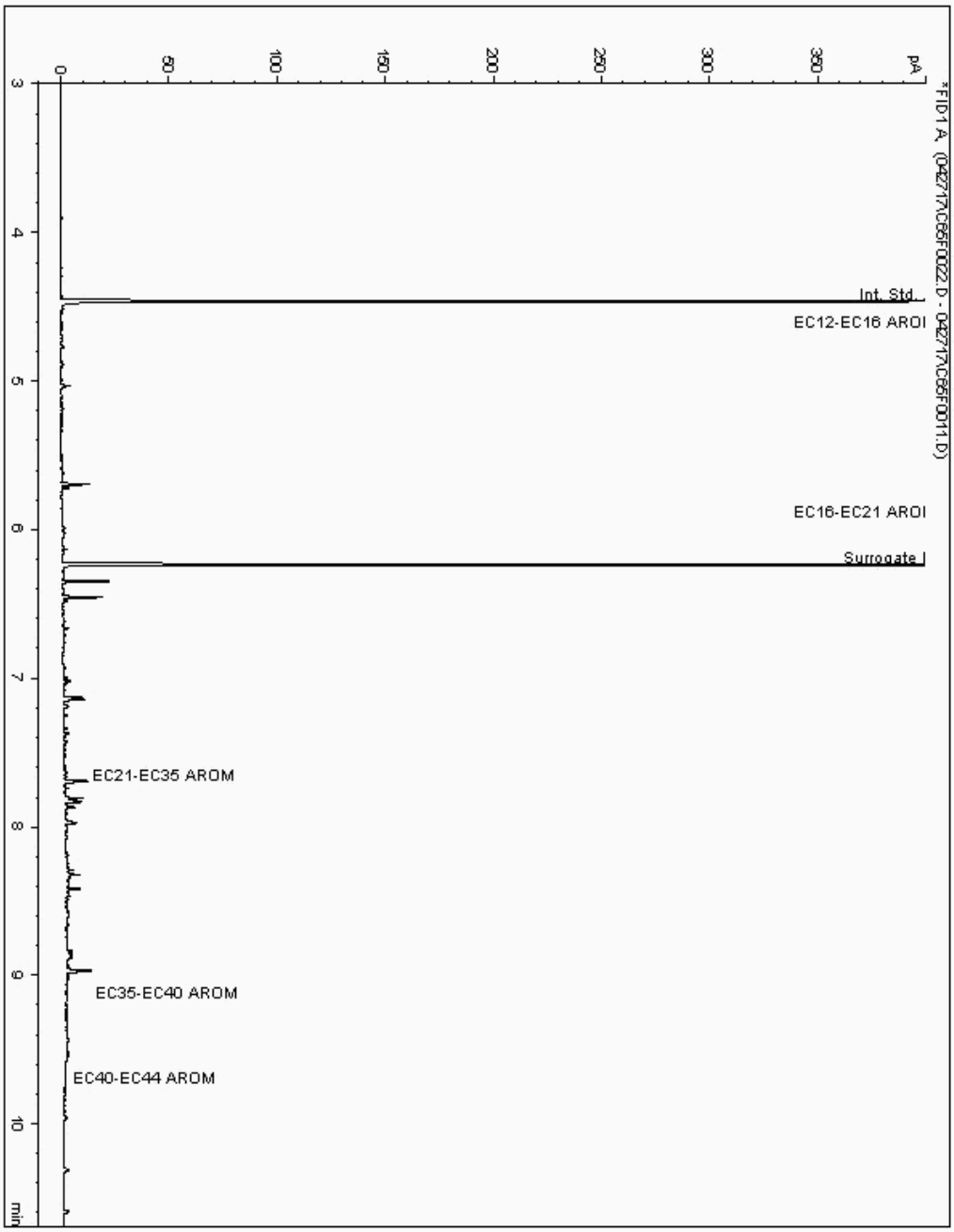
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15401605 **Sample ID :** W5TP301 **Depth :** 0.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14418975-
Date Acquired : 27/04/2017 17:53:33 PM
Units : ppb
Dilution: W5TP301[0.50] ->



CERTIFICATE OF ANALYSIS

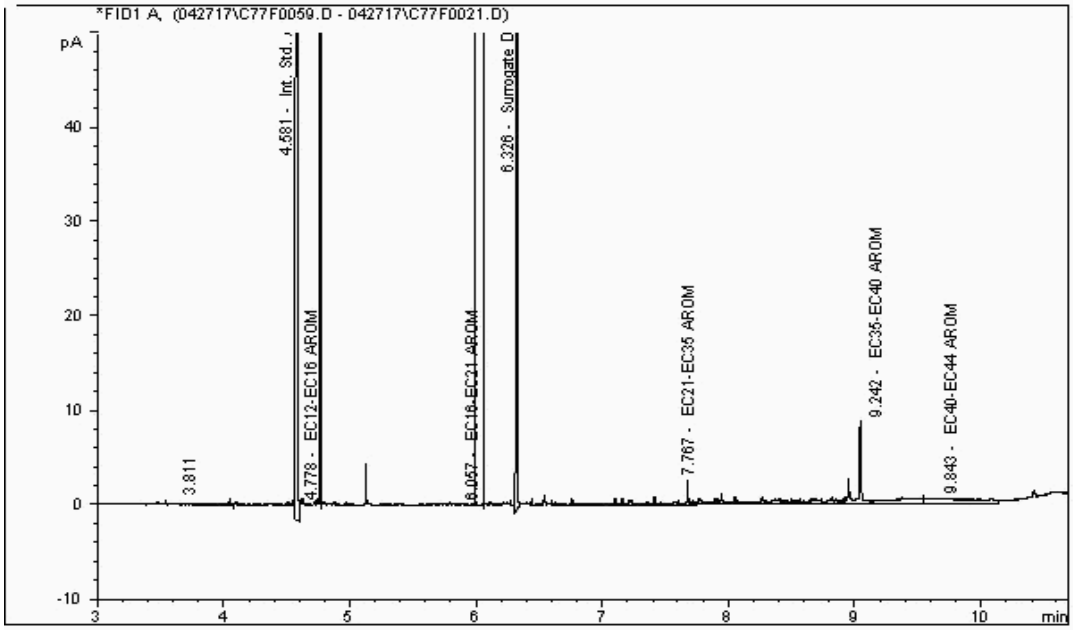
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15401718 **Depth :** 1.70
Sample ID : W4TP311

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14419211-
Date Acquired : 27/04/2017 23:26:43 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

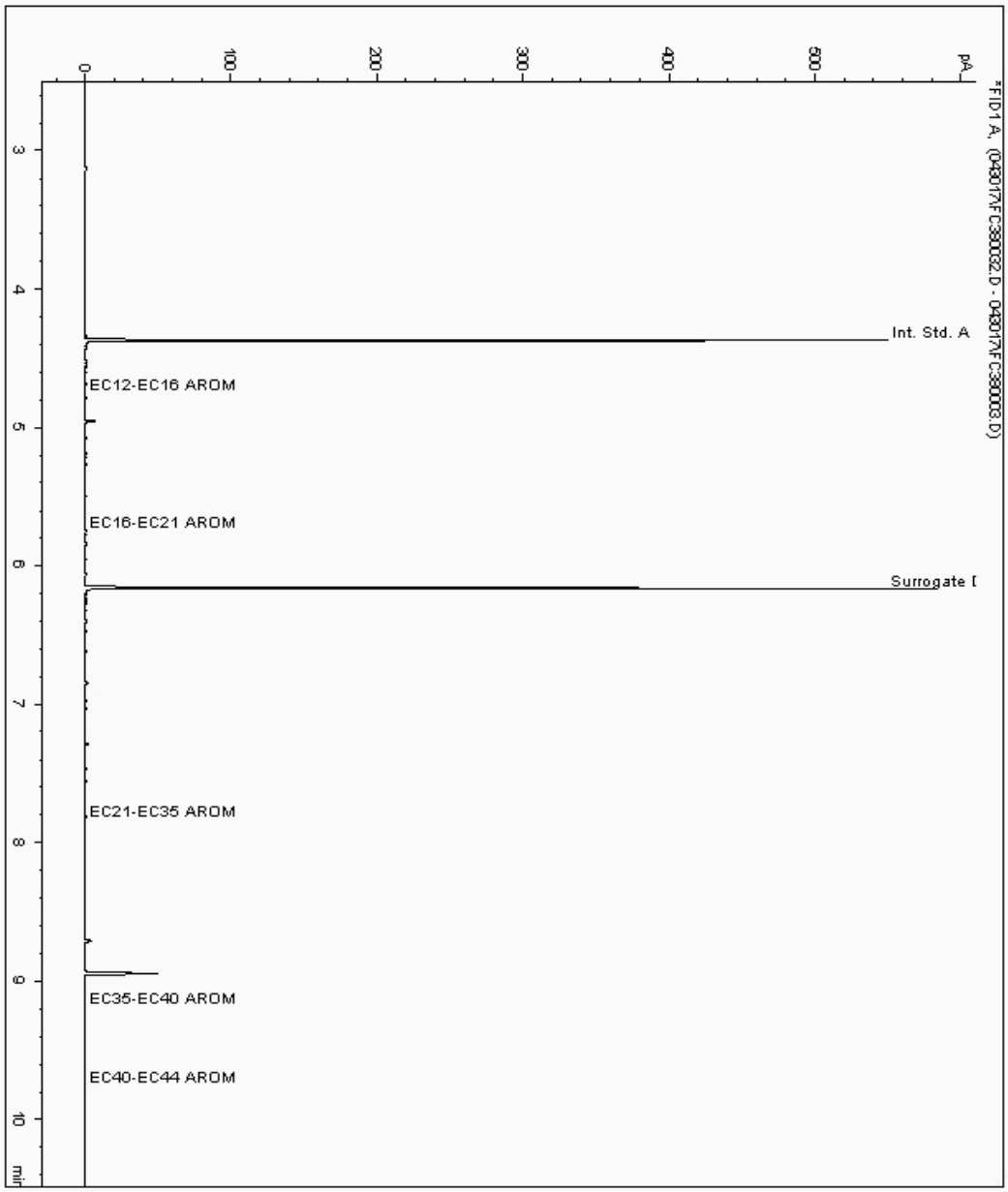
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15415789 **Sample ID :** W7WS311 **Depth :** 0.80 - 0.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419703-
Date Acquired : 30/04/17 22:29:16 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

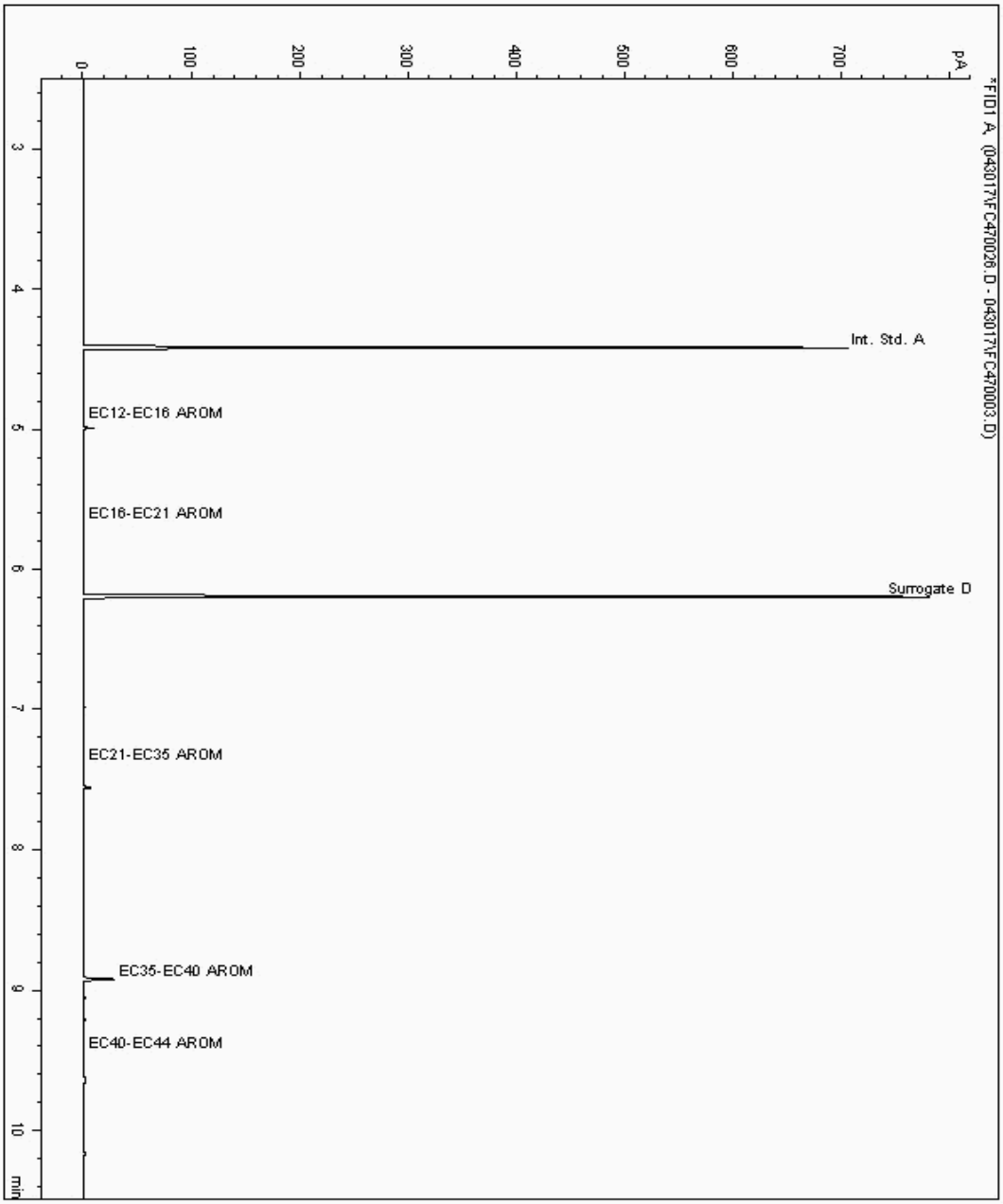
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15415826 **Sample ID :** W4BH306 **Depth :** 2.20 - 2.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419667-
Date Acquired : 30/04/17 21:56:49 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

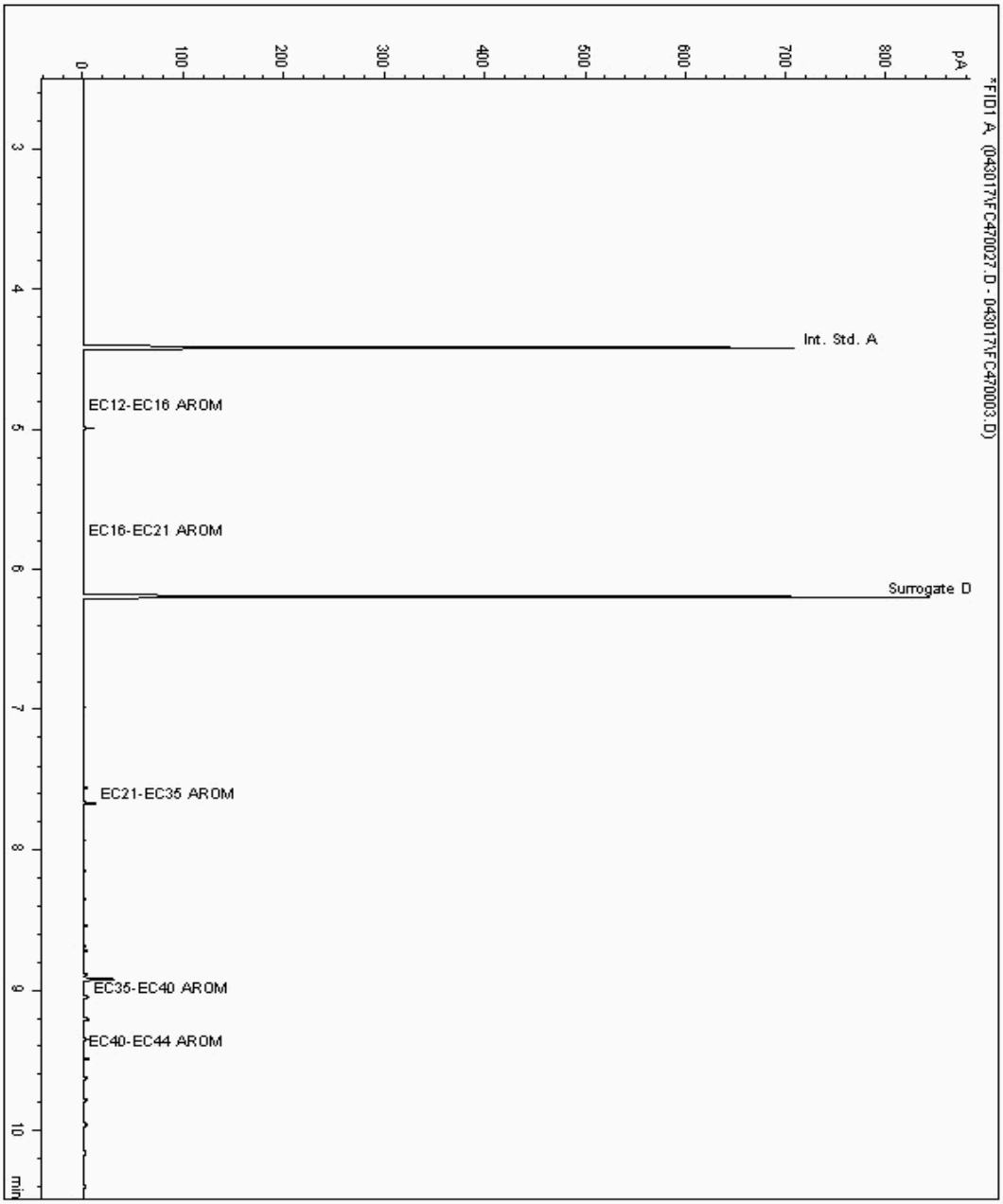
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15416209 **Sample ID :** W4BH306 **Depth :** 0.90 - 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419644-
Date Acquired : 30/04/17 22:15:36 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

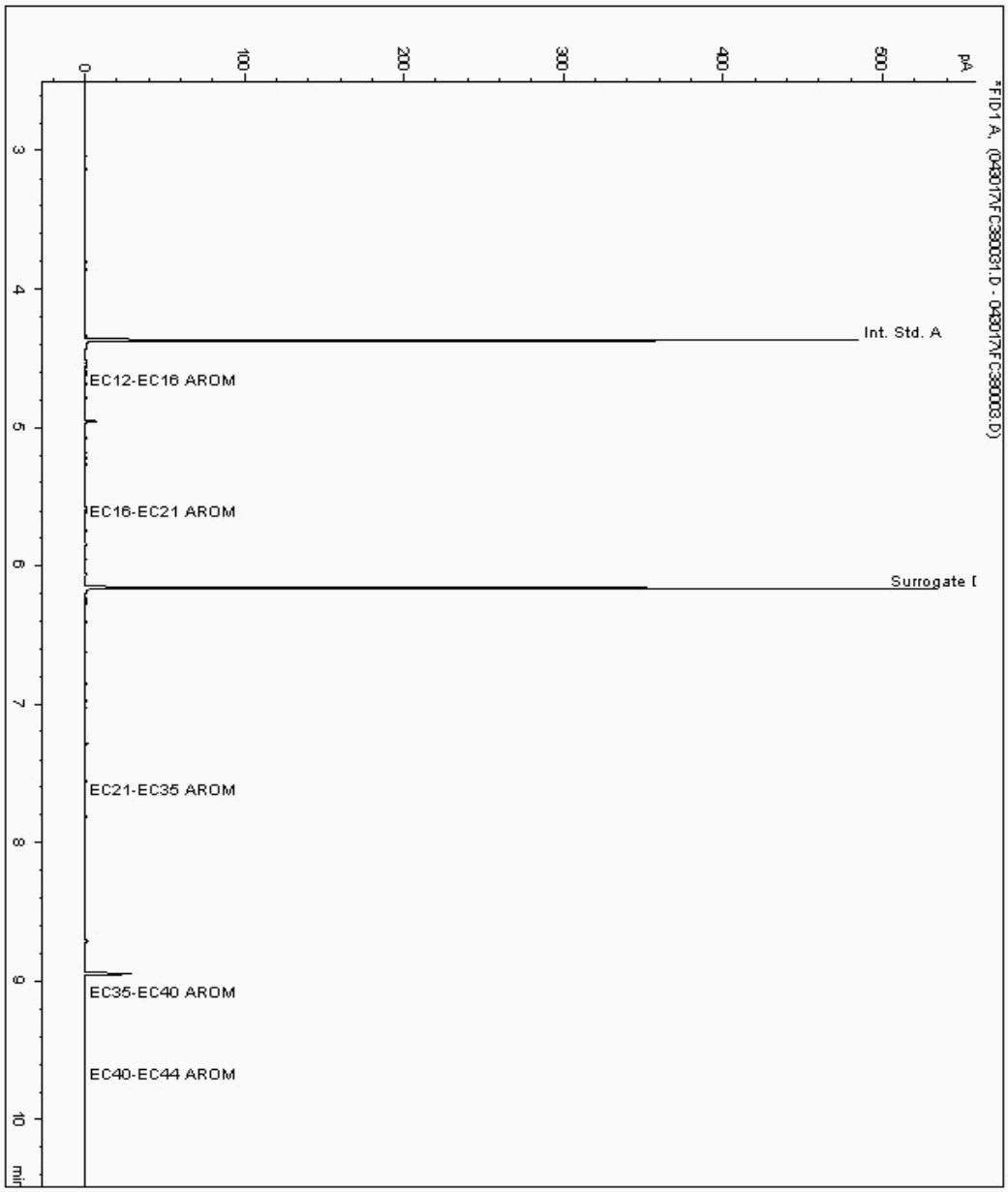
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15416248 **Sample ID :** W7WS308 **Depth :** 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14419684-
Date Acquired : 30/04/17 22:10:49 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.012



CERTIFICATE OF ANALYSIS

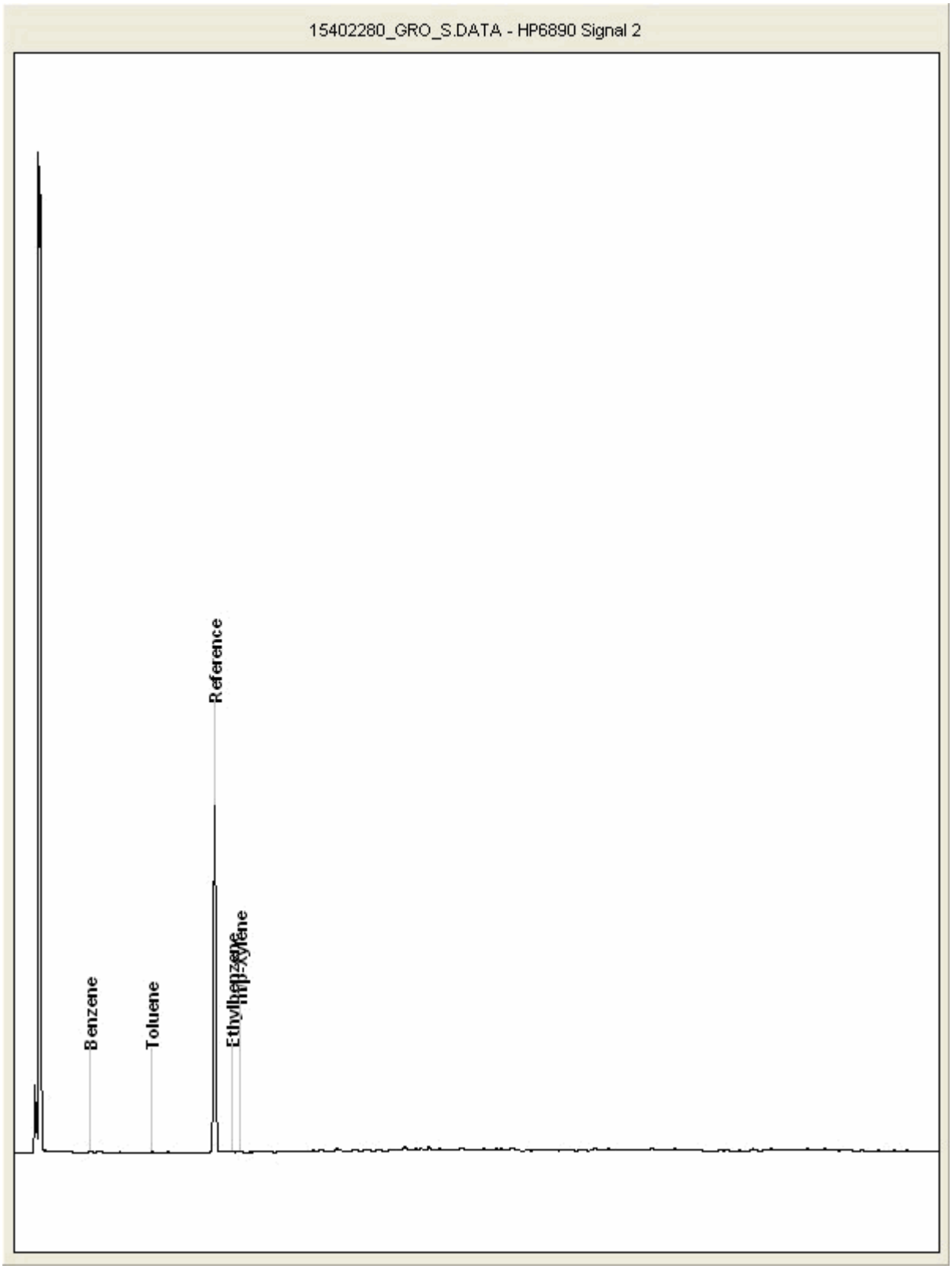
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15402280
Sample ID : W4BH306

Depth : 2.20 - 2.50



CERTIFICATE OF ANALYSIS

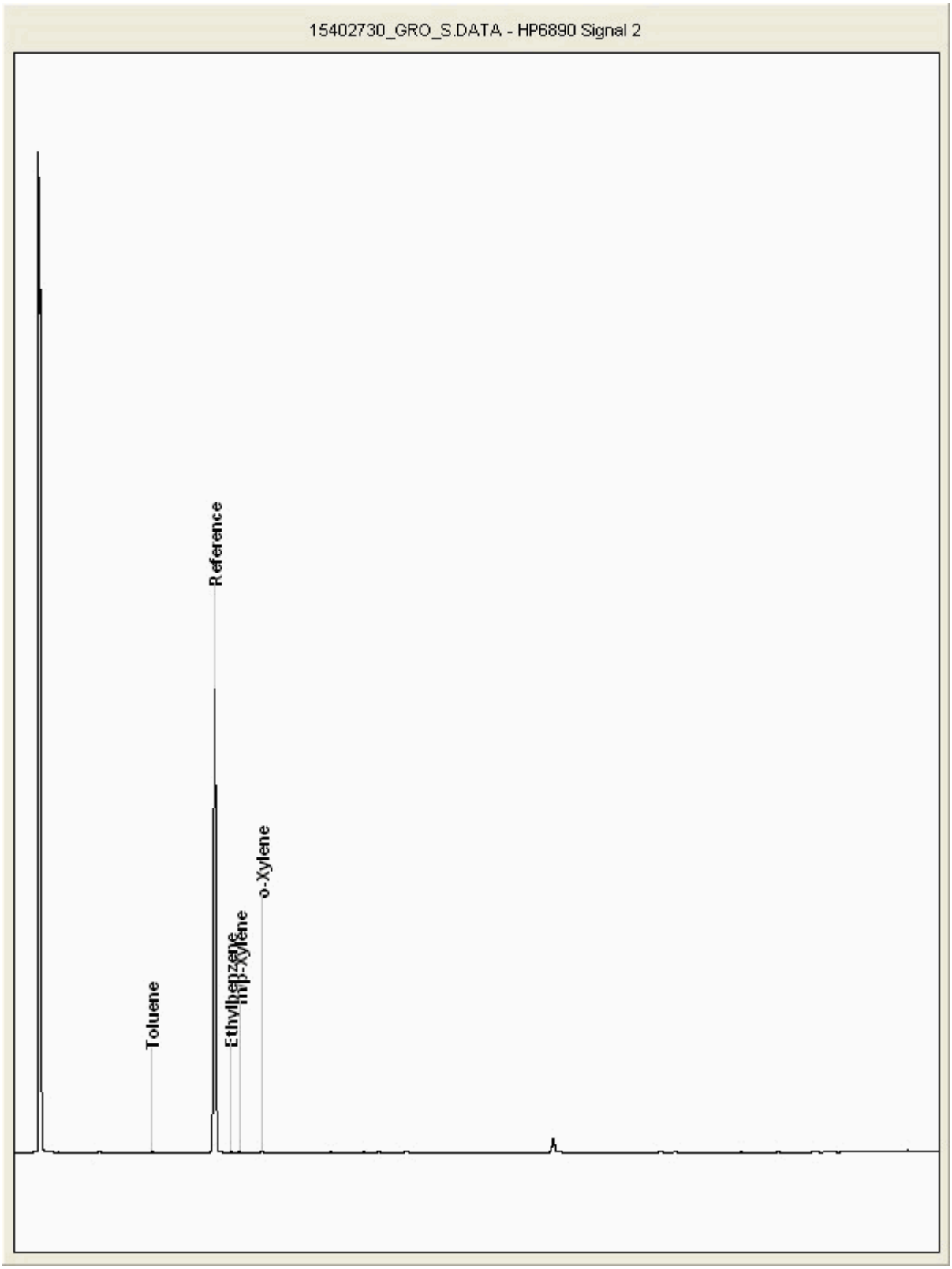
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15402730
Sample ID : W7WS311

Depth : 0.80 - 0.90



CERTIFICATE OF ANALYSIS

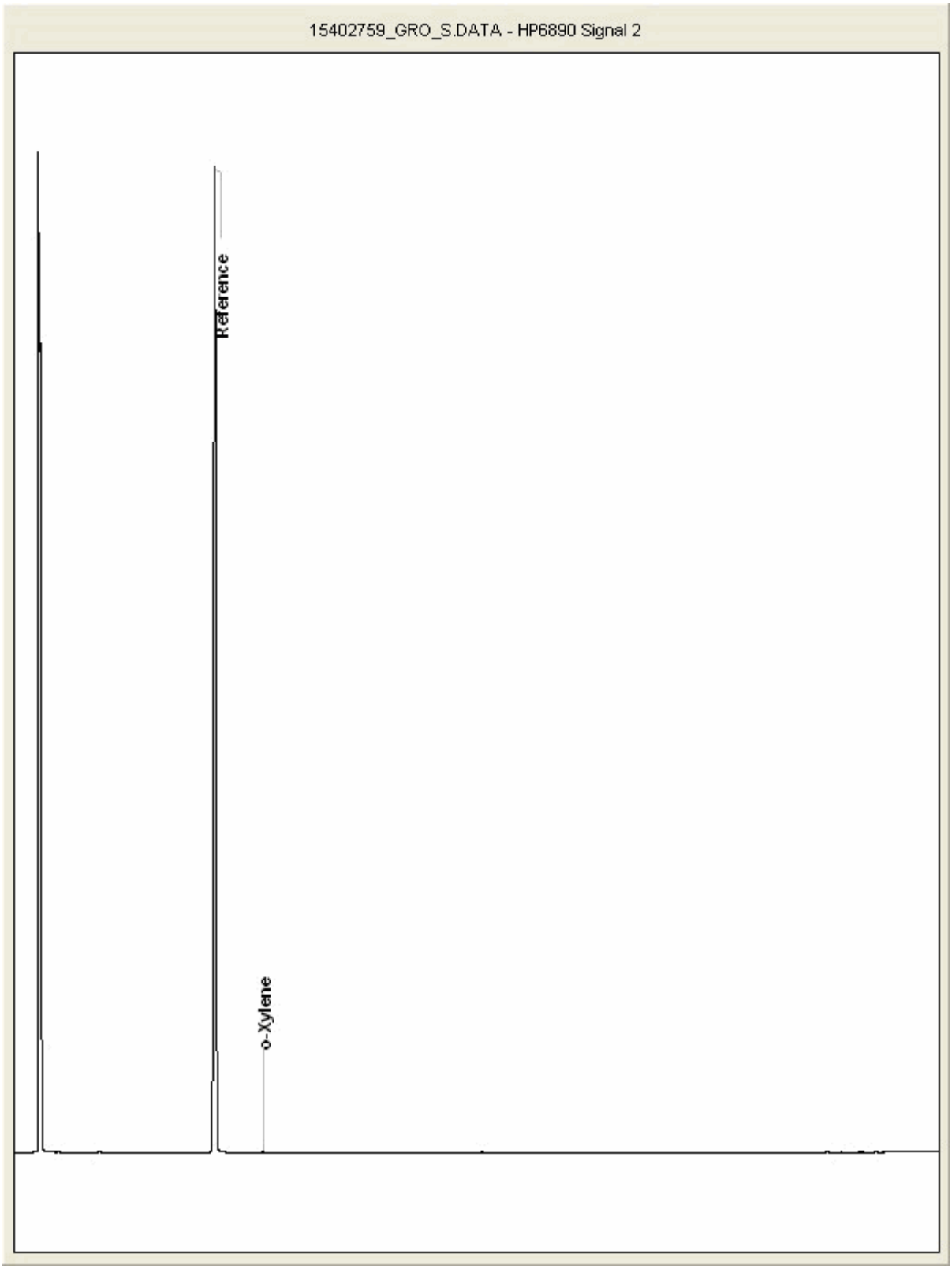
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15402759
Sample ID : W7WS311

Depth : 2.80 - 2.90



CERTIFICATE OF ANALYSIS

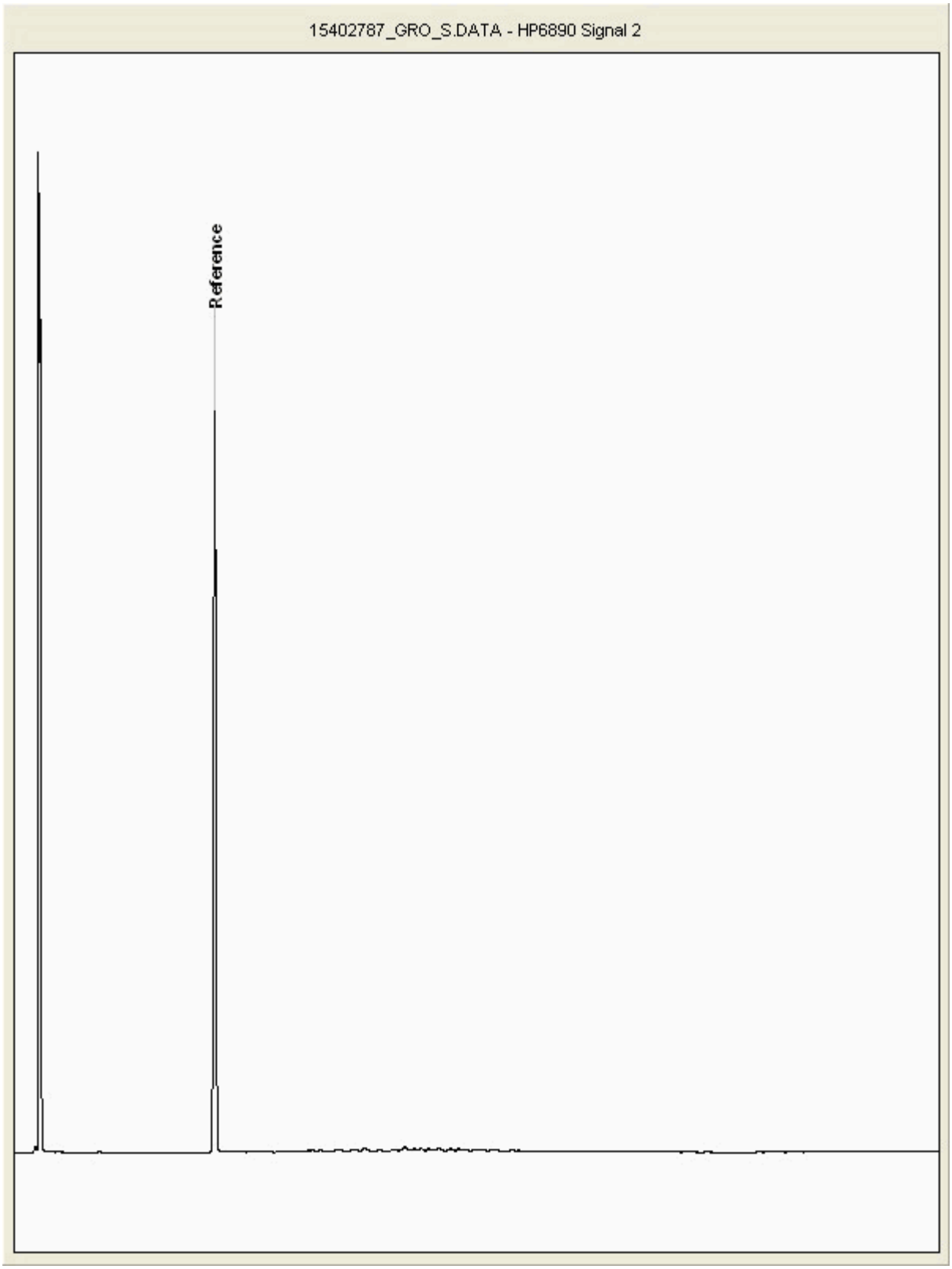
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15402787
Sample ID : W4WS316

Depth : 2.30 - 2.40



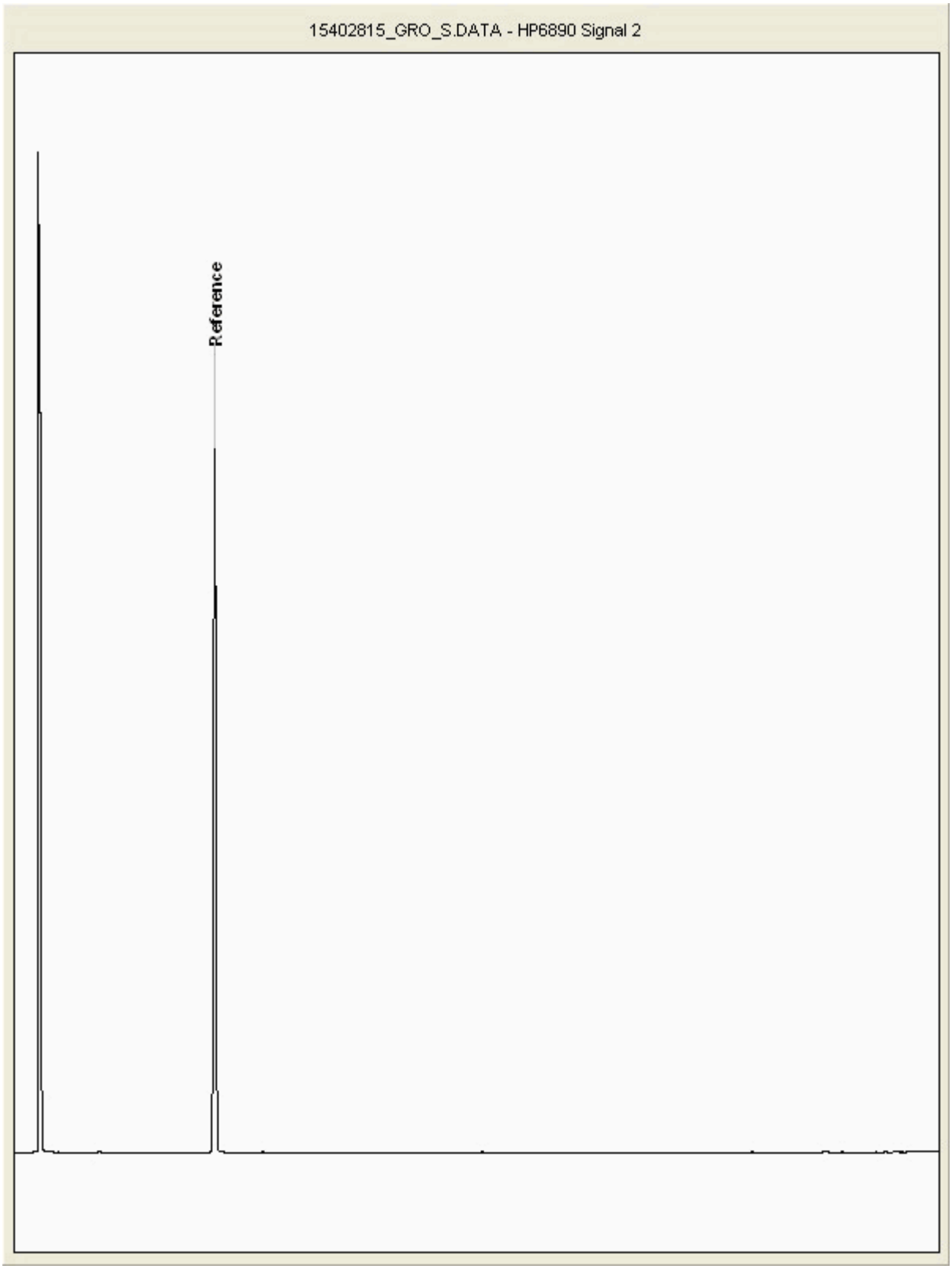
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15402815
Sample ID : W7WS310

Depth : 1.00 - 1.10



CERTIFICATE OF ANALYSIS

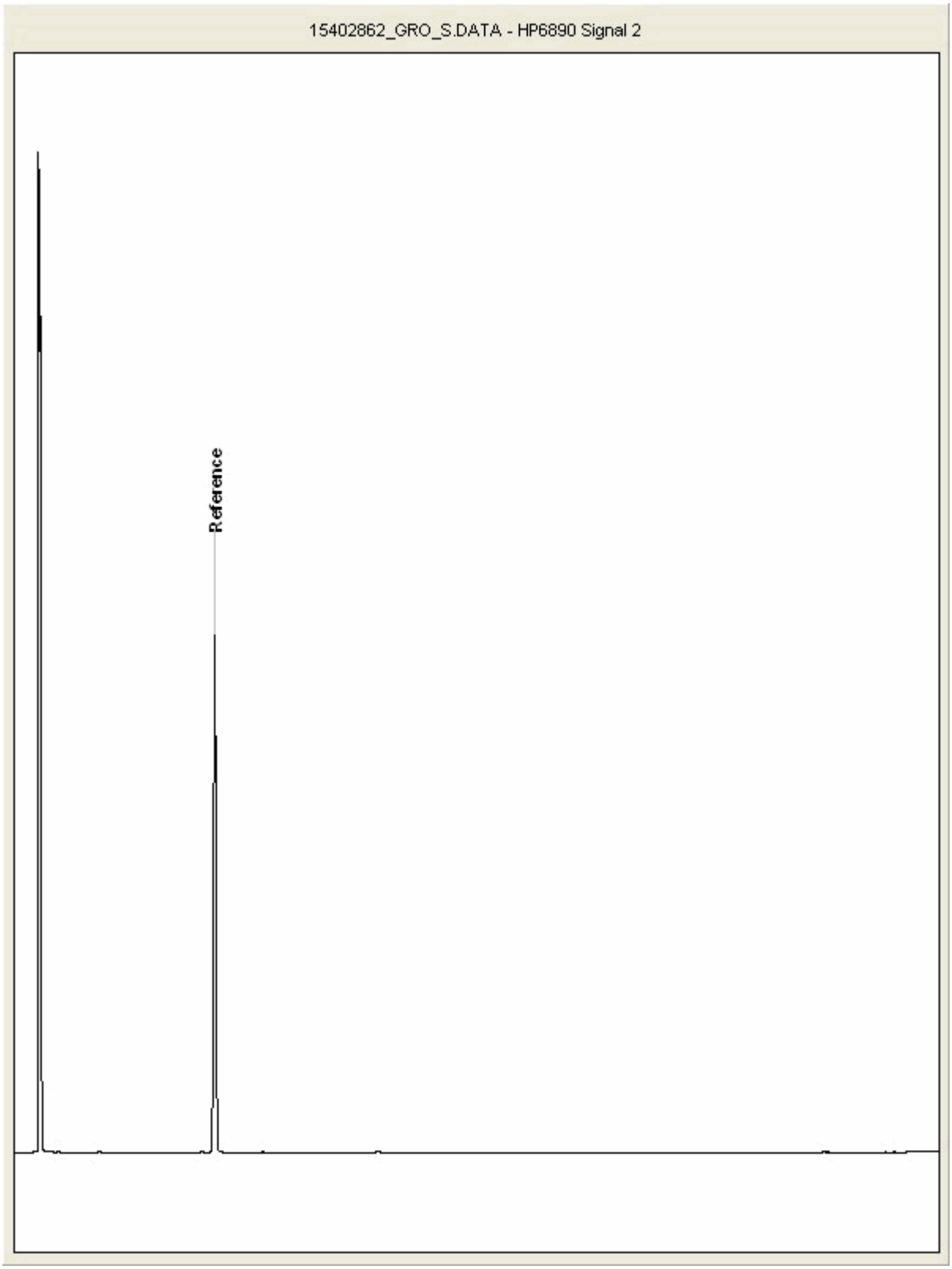
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15402862
Sample ID : W4BH306

Depth : 3.50 - 3.80



CERTIFICATE OF ANALYSIS

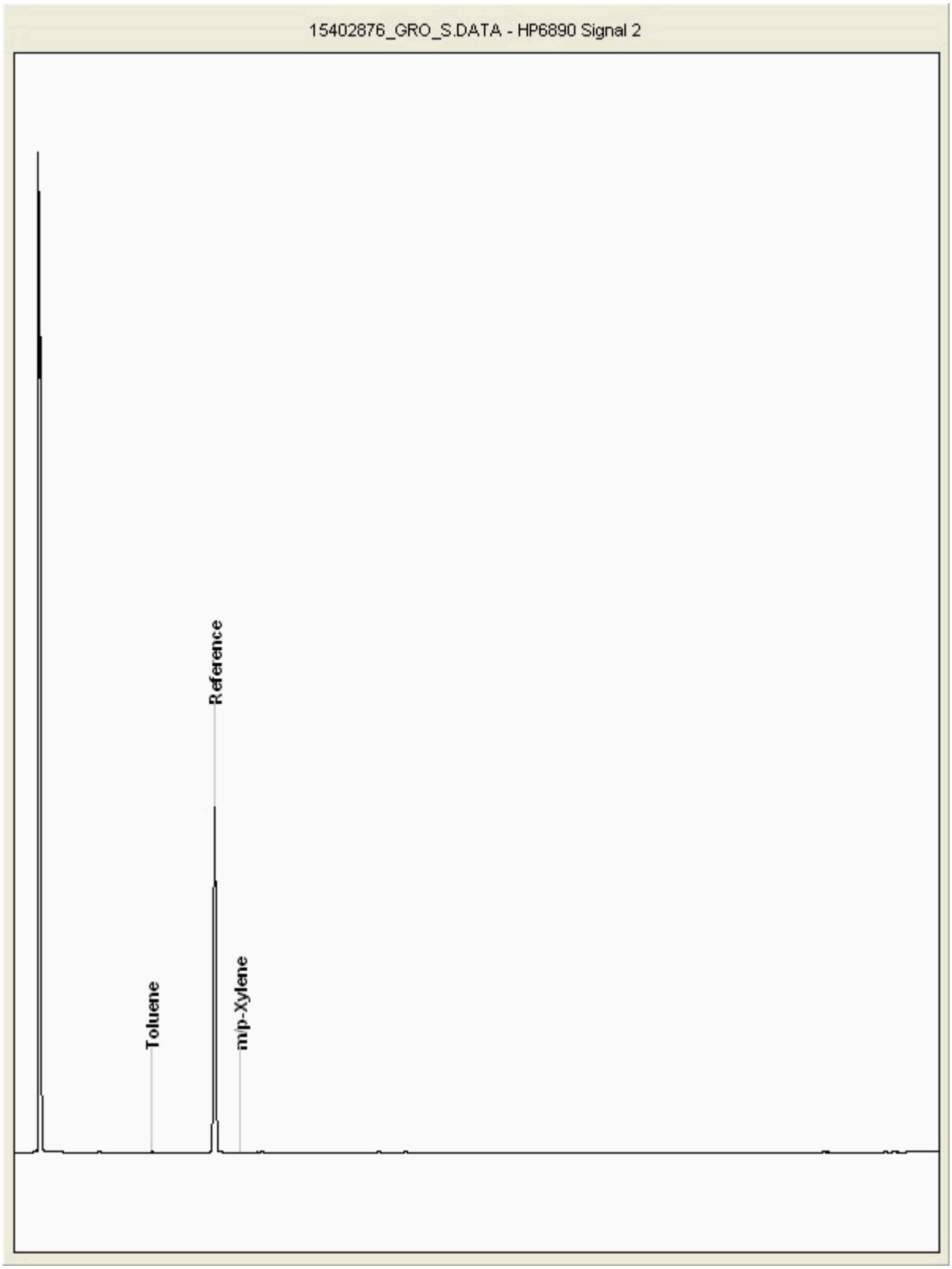
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15402876
Sample ID : W4BH306

Depth : 0.10 - 0.30



CERTIFICATE OF ANALYSIS

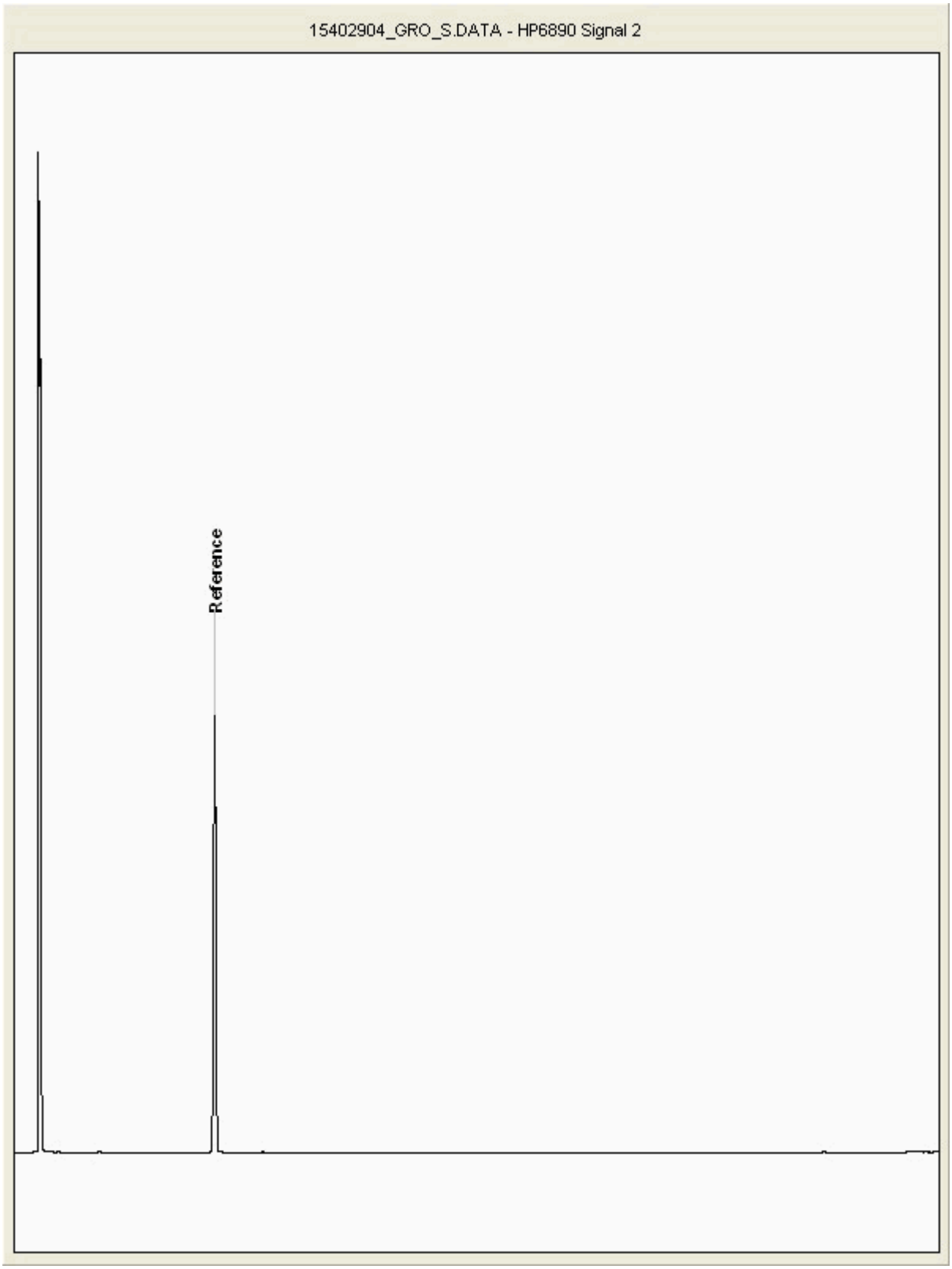
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15402904
Sample ID : W4BH306

Depth : 5.00 - 5.30



CERTIFICATE OF ANALYSIS

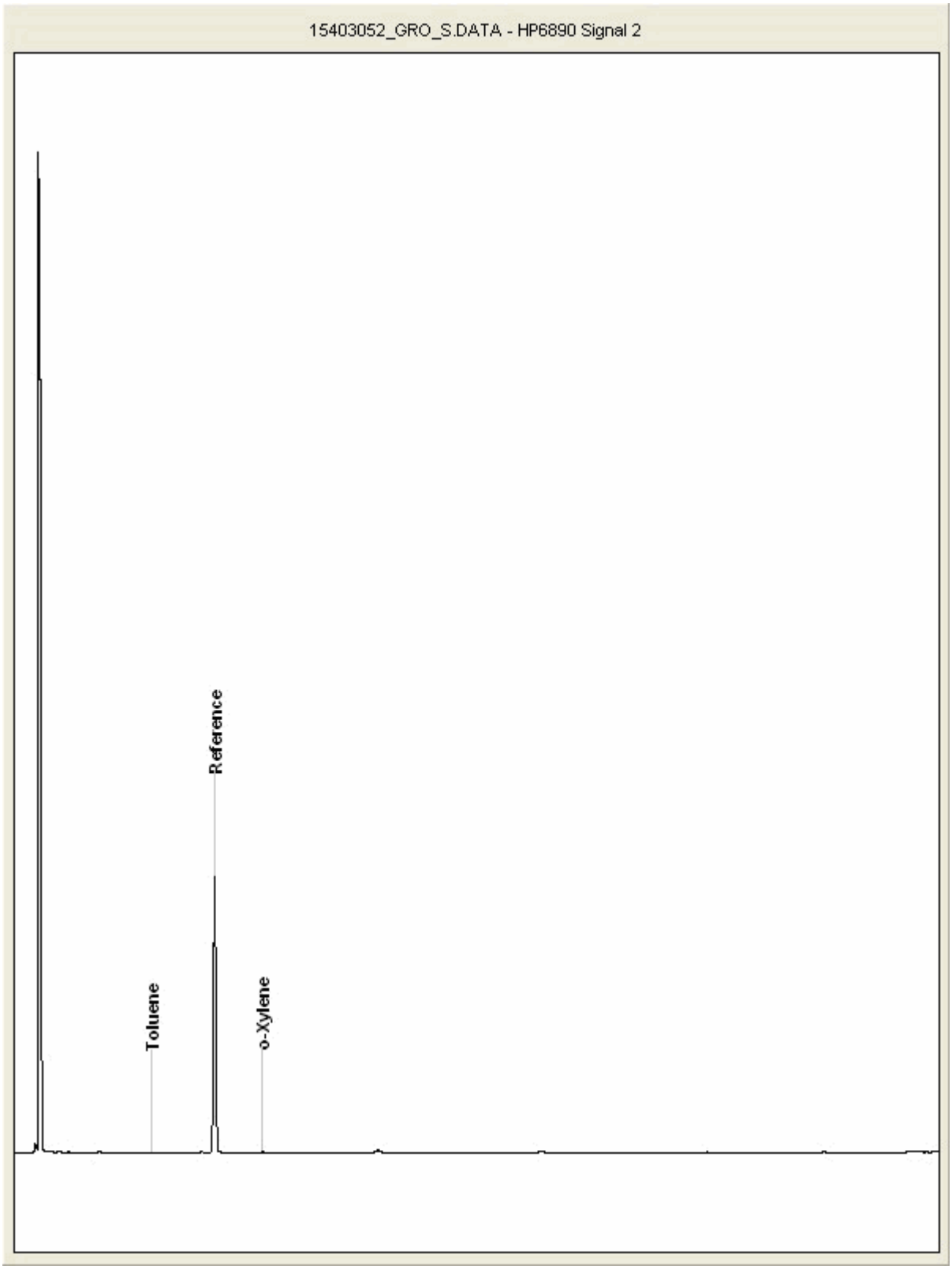
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403052
Sample ID : W4BH306

Depth : 0.90 - 1.00



CERTIFICATE OF ANALYSIS

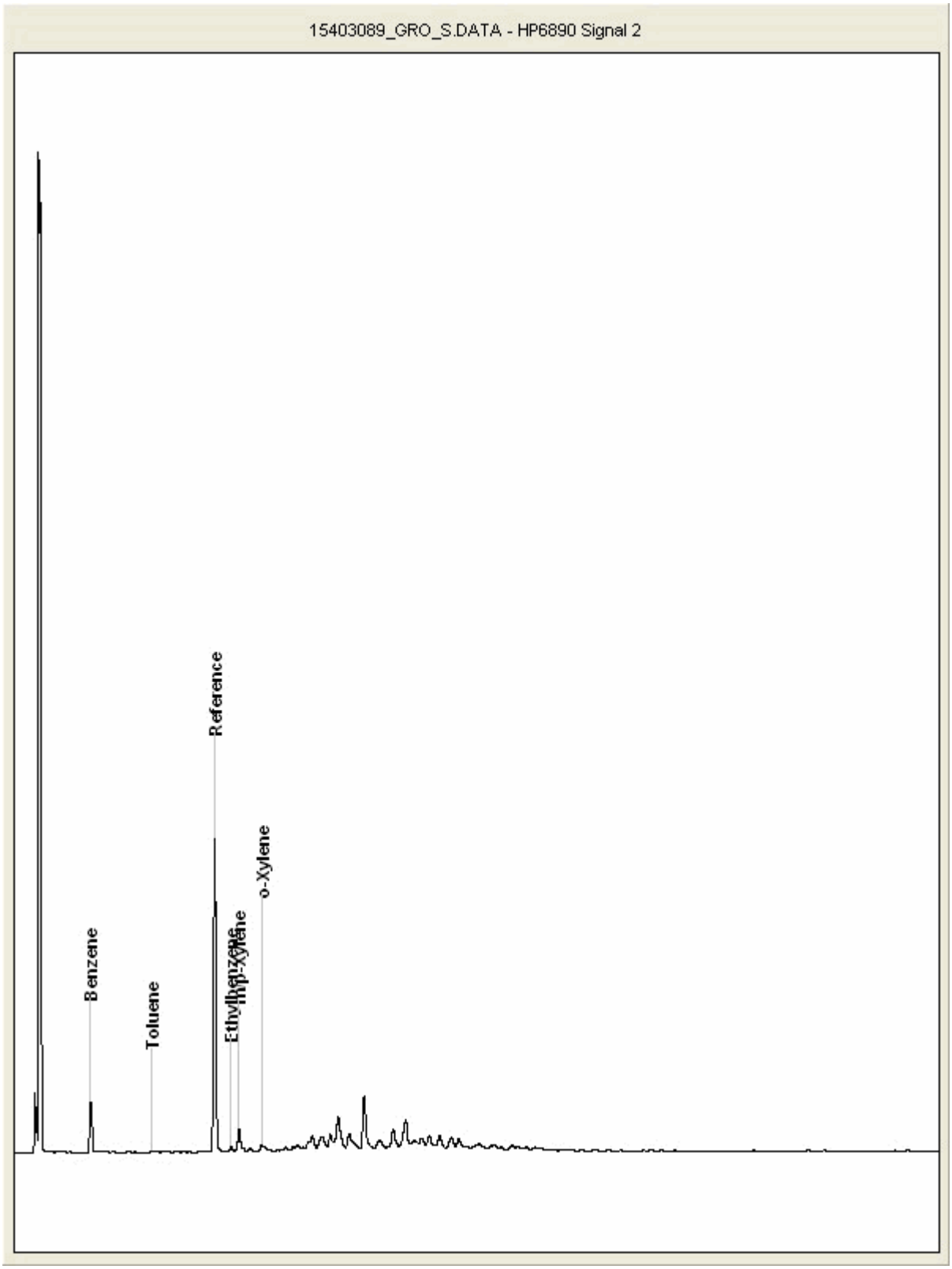
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403089
Sample ID : W4TP313

Depth : 0.70



CERTIFICATE OF ANALYSIS

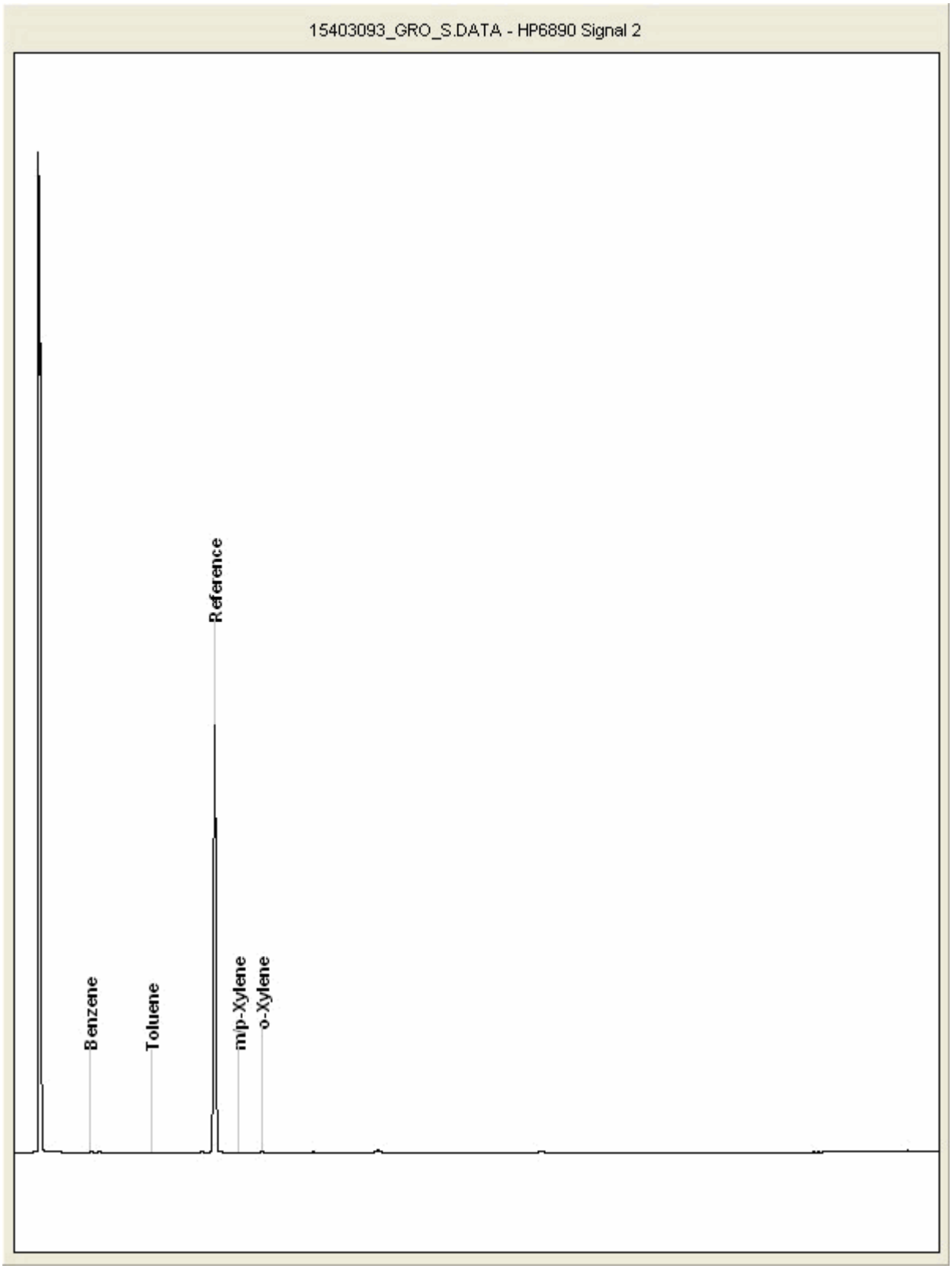
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403093
Sample ID : W4TP308

Depth : 0.40



CERTIFICATE OF ANALYSIS

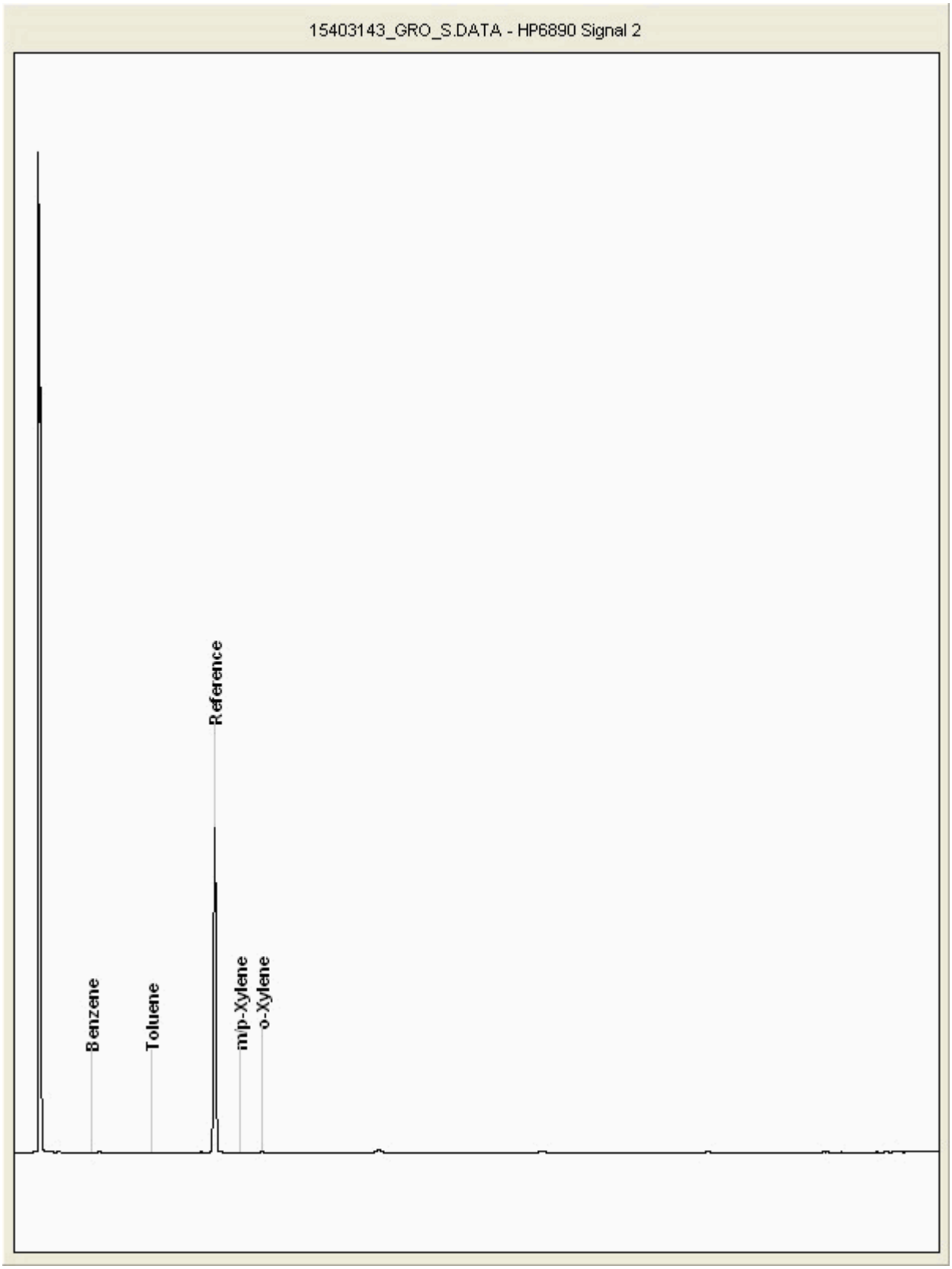
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403143
Sample ID : W7WS310

Depth : 0.00 - 0.20



CERTIFICATE OF ANALYSIS

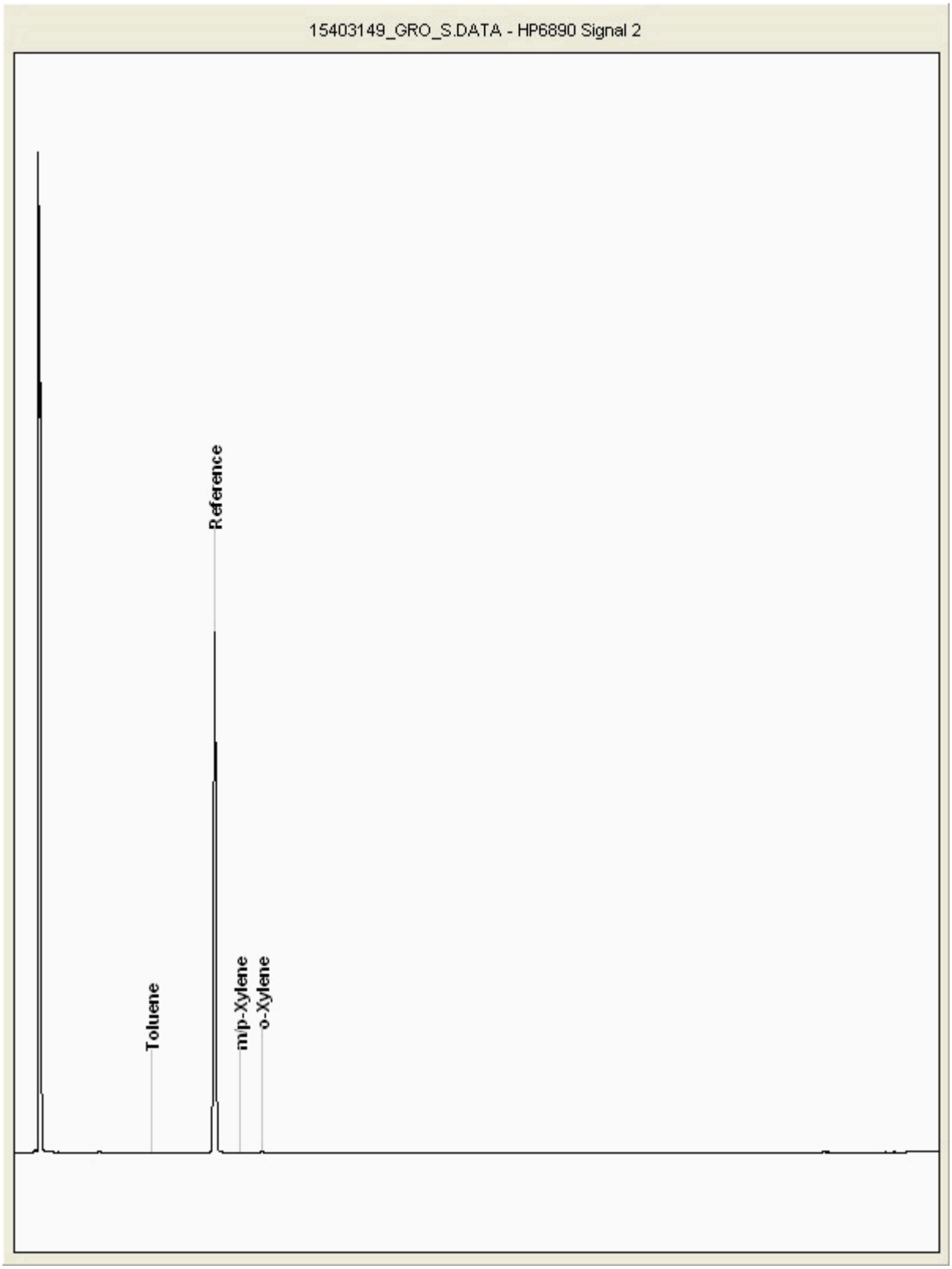
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403149
Sample ID : W7WS311

Depth : 0.10 - 0.30



CERTIFICATE OF ANALYSIS

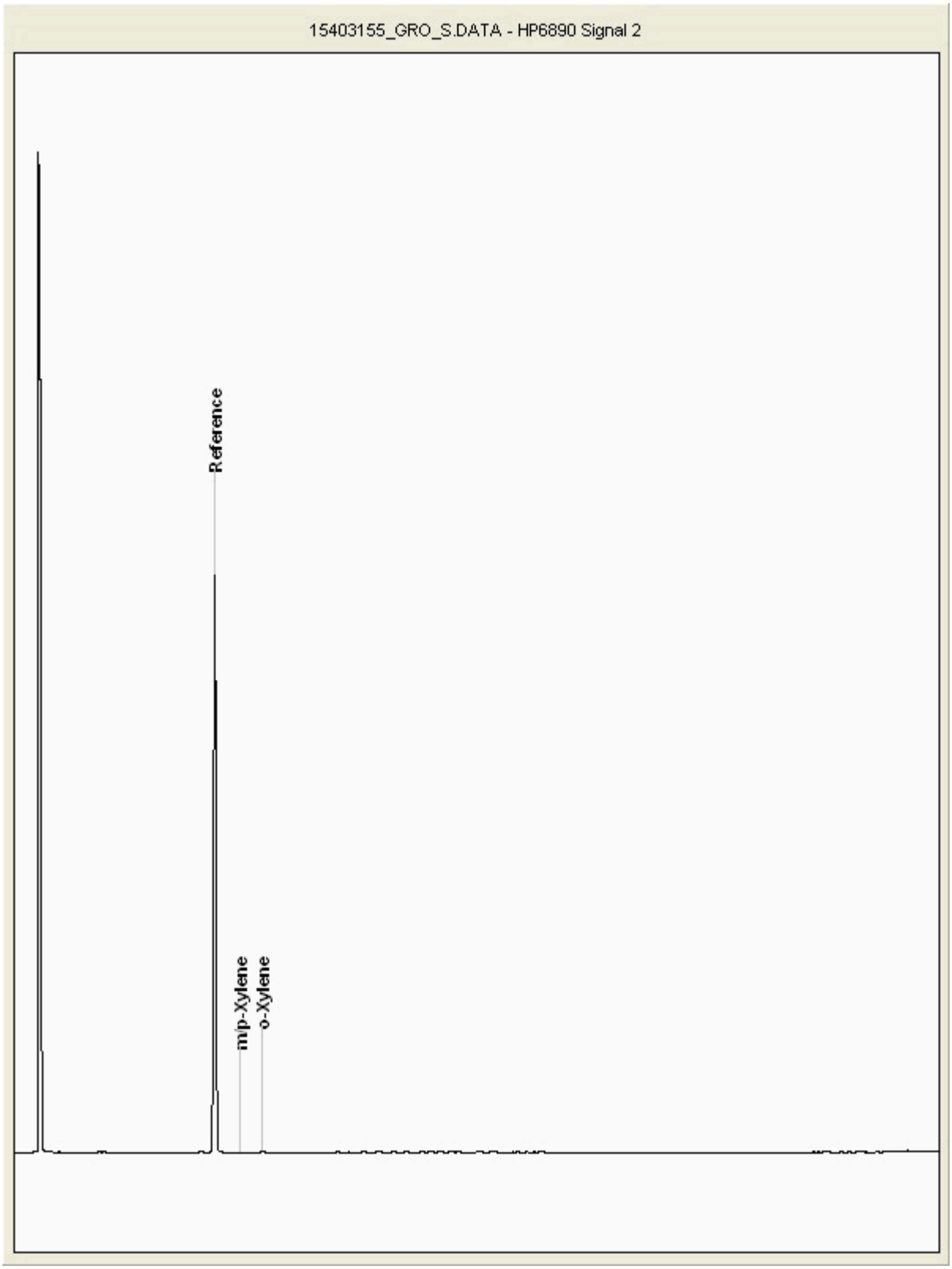
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403155
Sample ID : W4TP310

Depth : 2.90



CERTIFICATE OF ANALYSIS

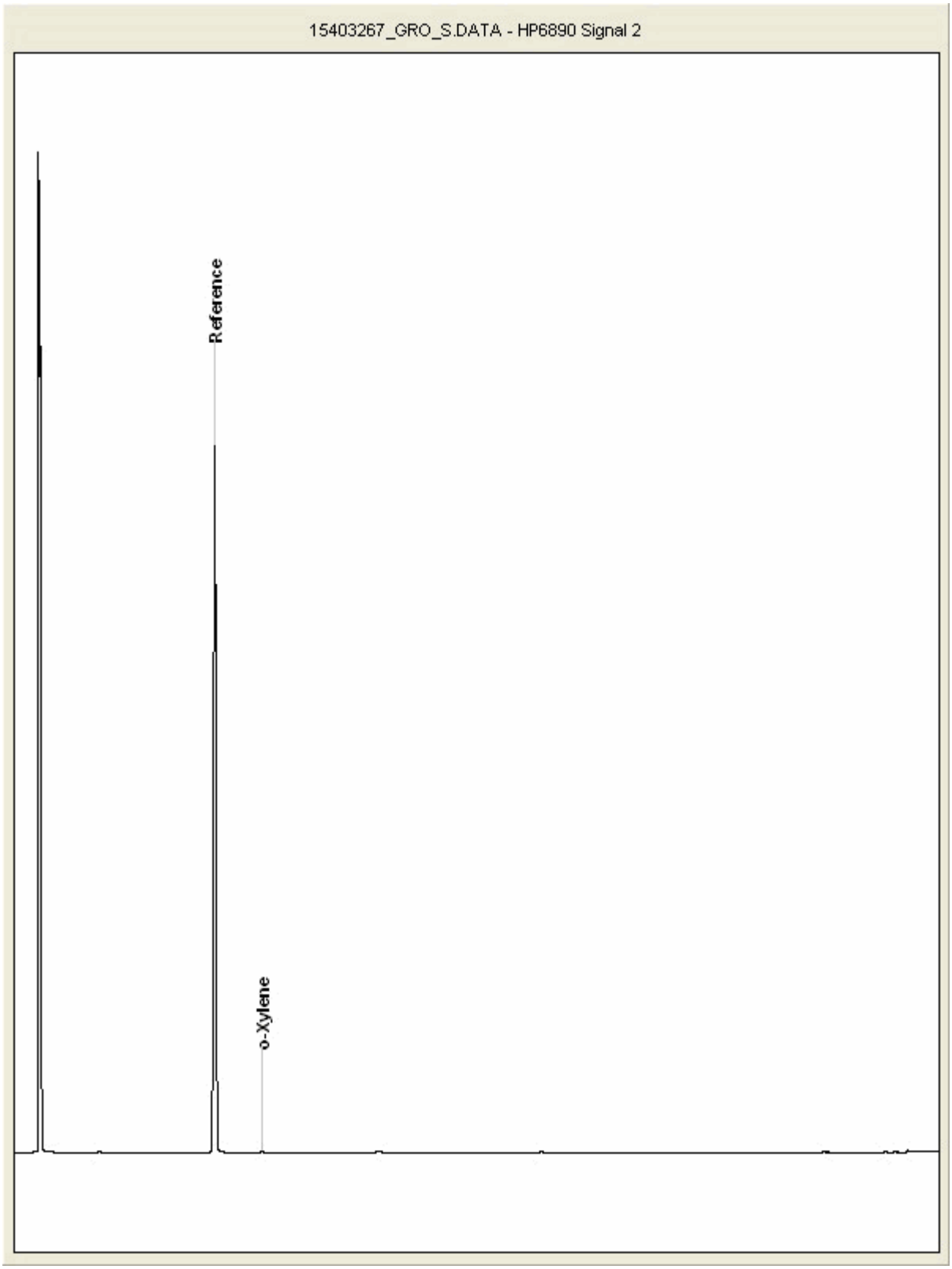
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403267
Sample ID : W7WS310

Depth : 2.80 - 2.90



CERTIFICATE OF ANALYSIS

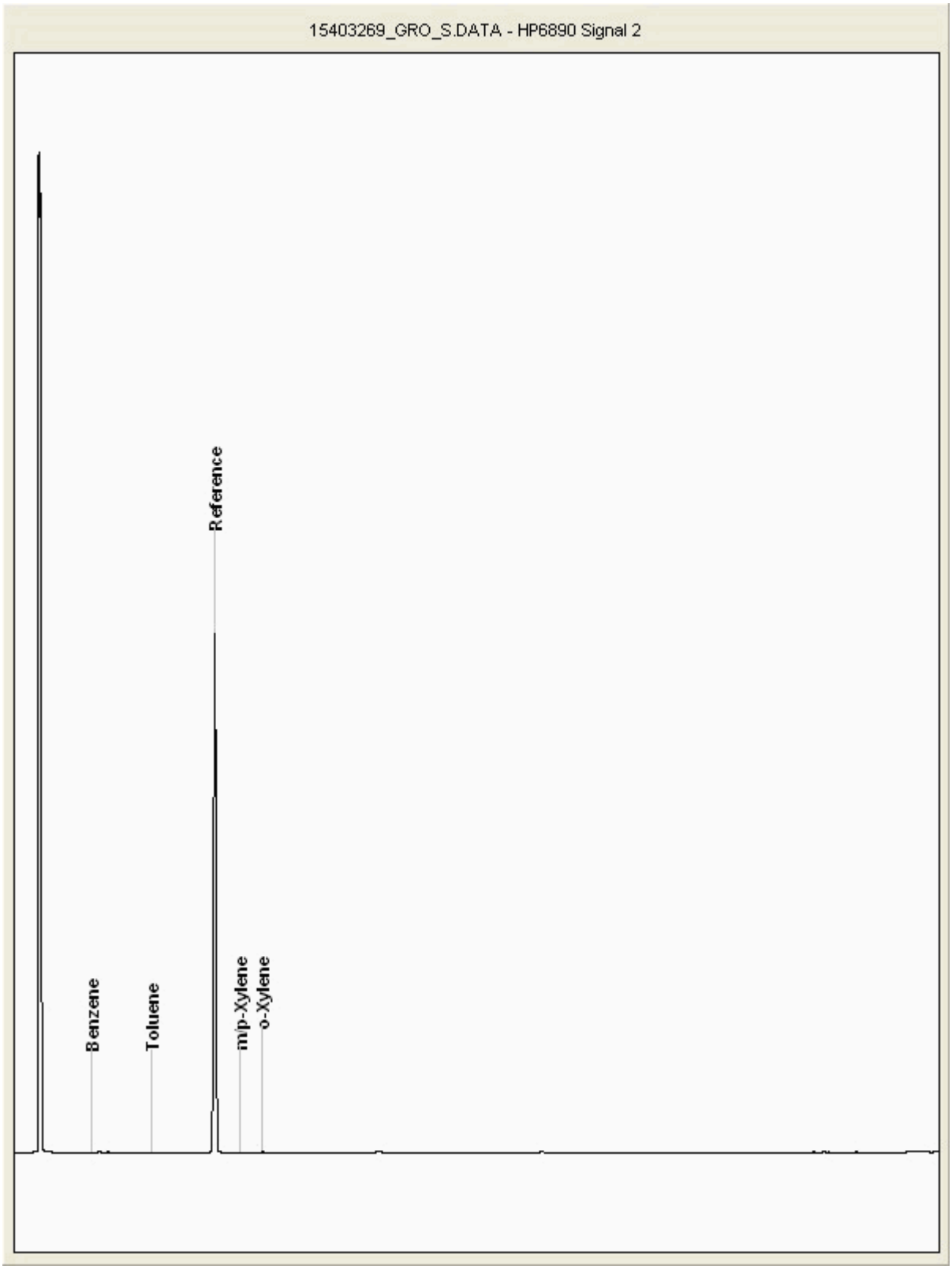
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403269
Sample ID : W4TP310

Depth : 0.40



CERTIFICATE OF ANALYSIS

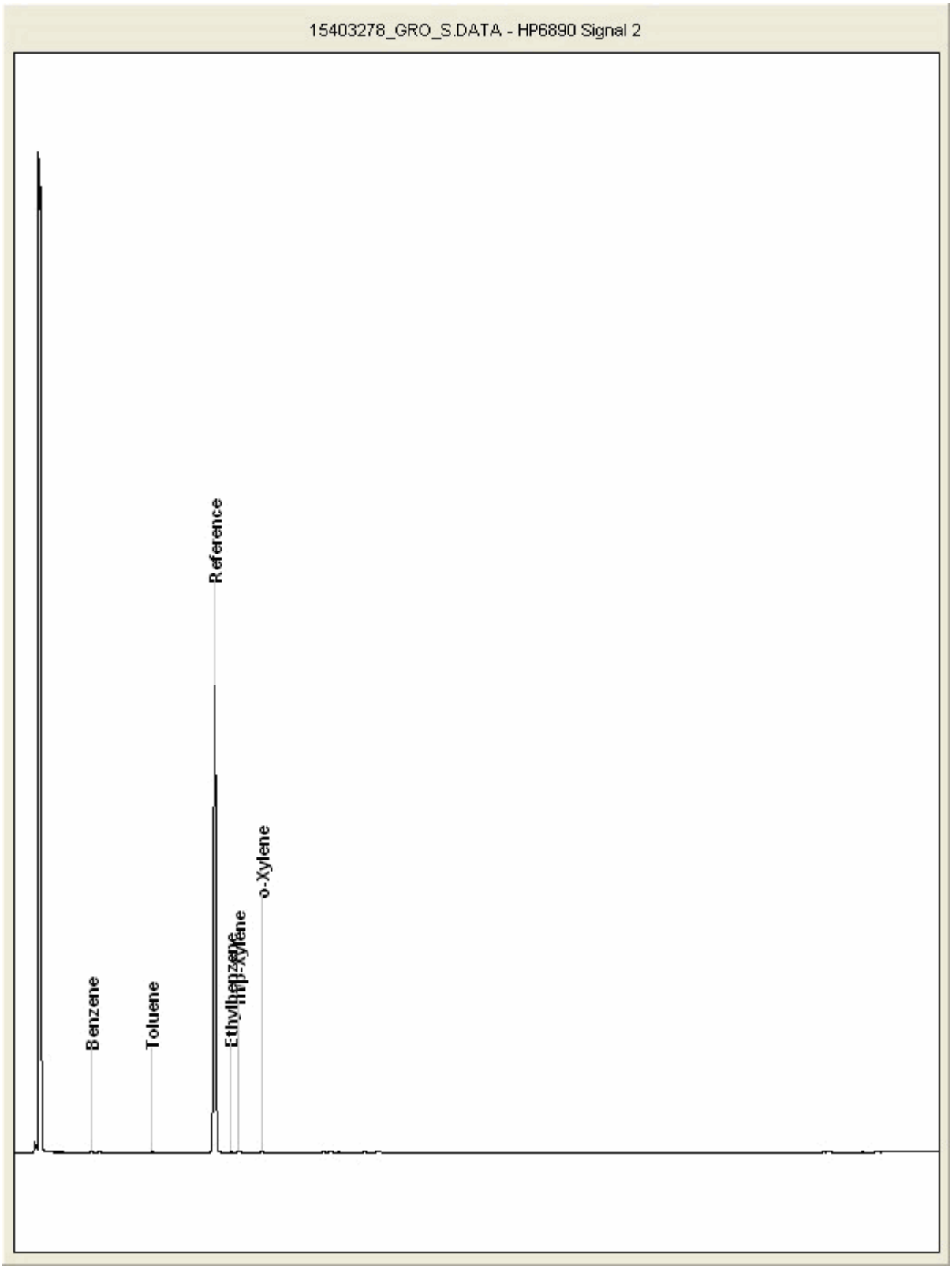
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403278
Sample ID : W4TP314

Depth : 0.90



CERTIFICATE OF ANALYSIS

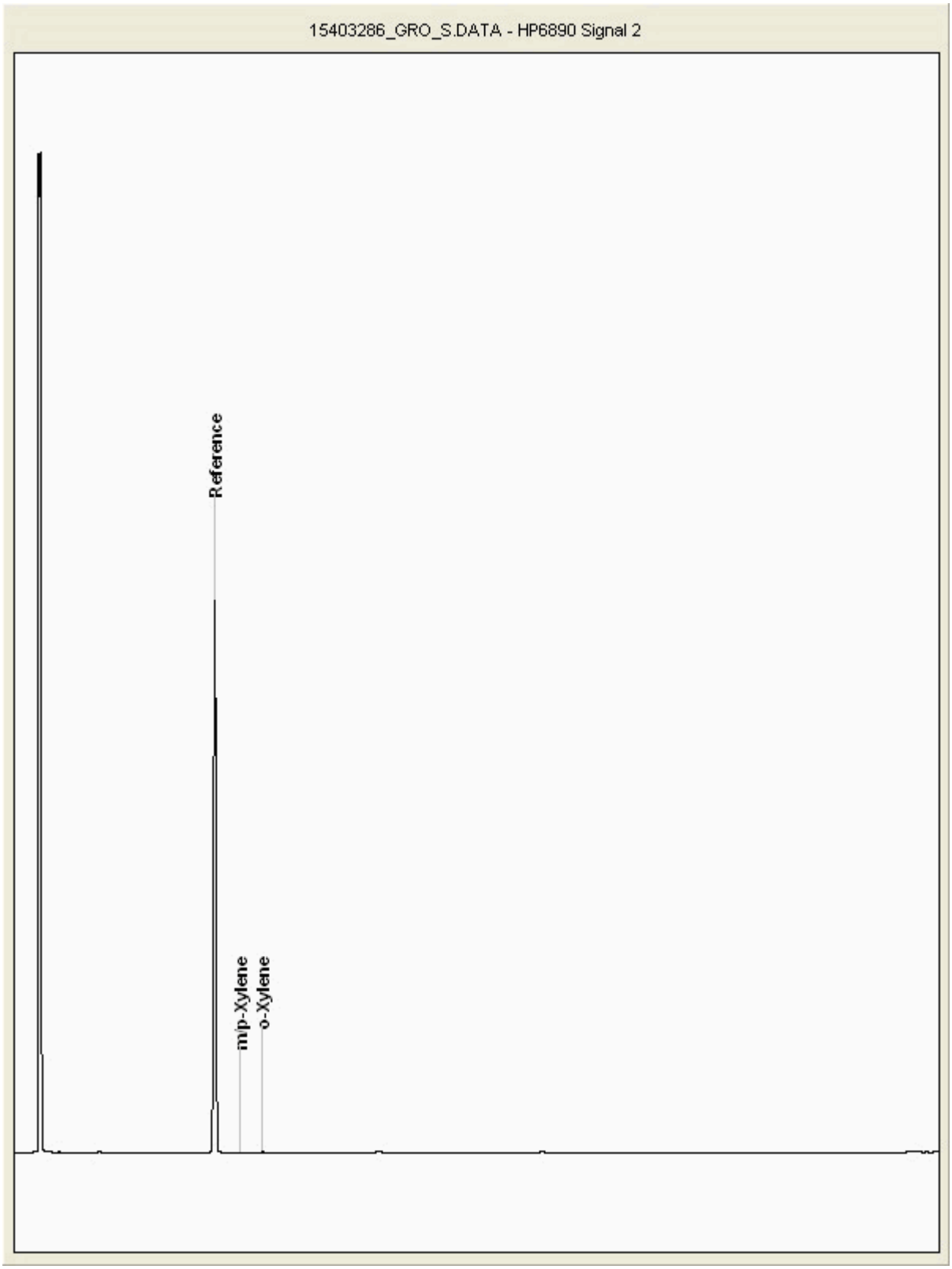
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403286
Sample ID : W4TP309

Depth : 1.00



CERTIFICATE OF ANALYSIS

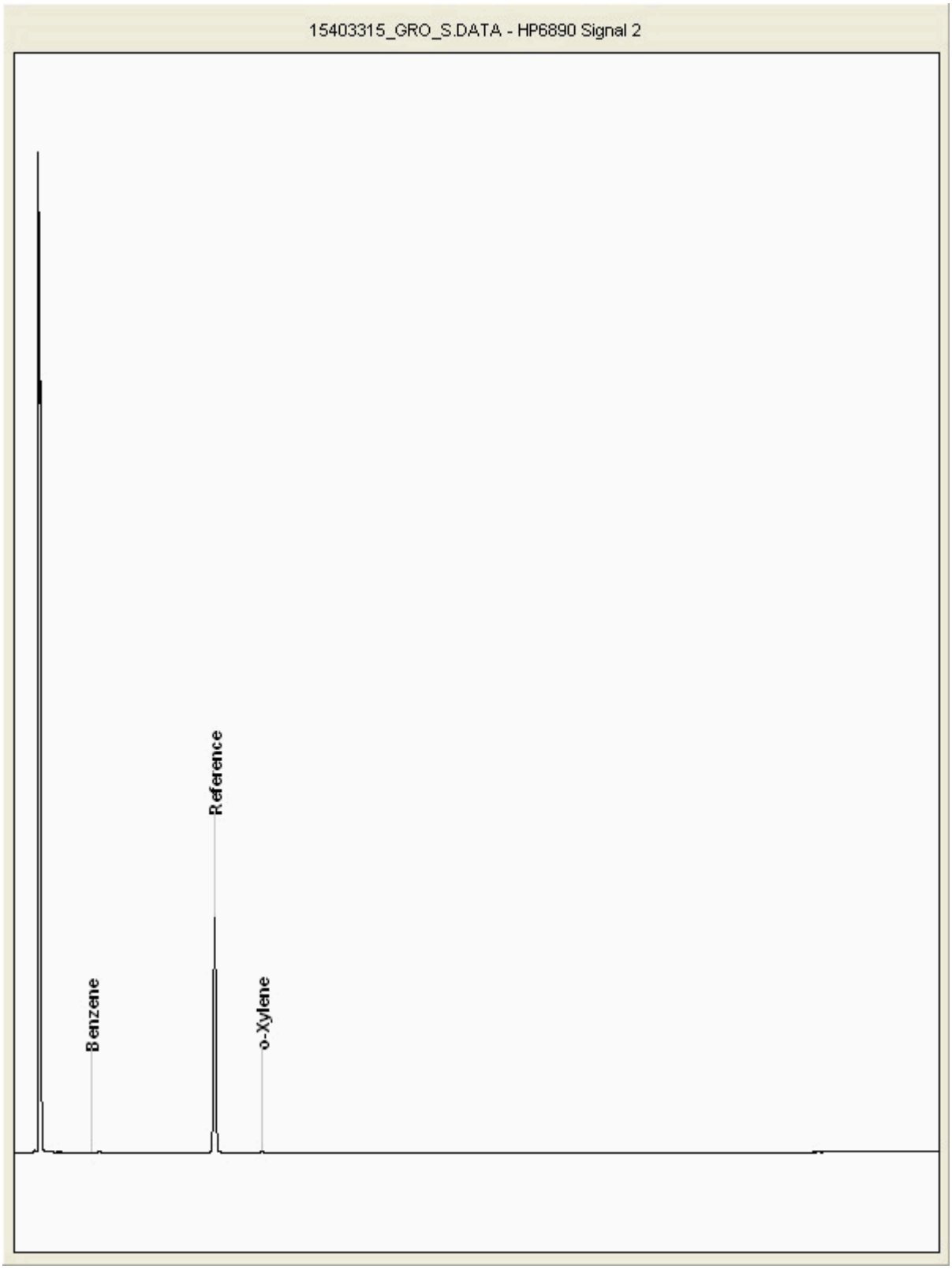
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403315
Sample ID : W4TP312

Depth : 0.40



CERTIFICATE OF ANALYSIS

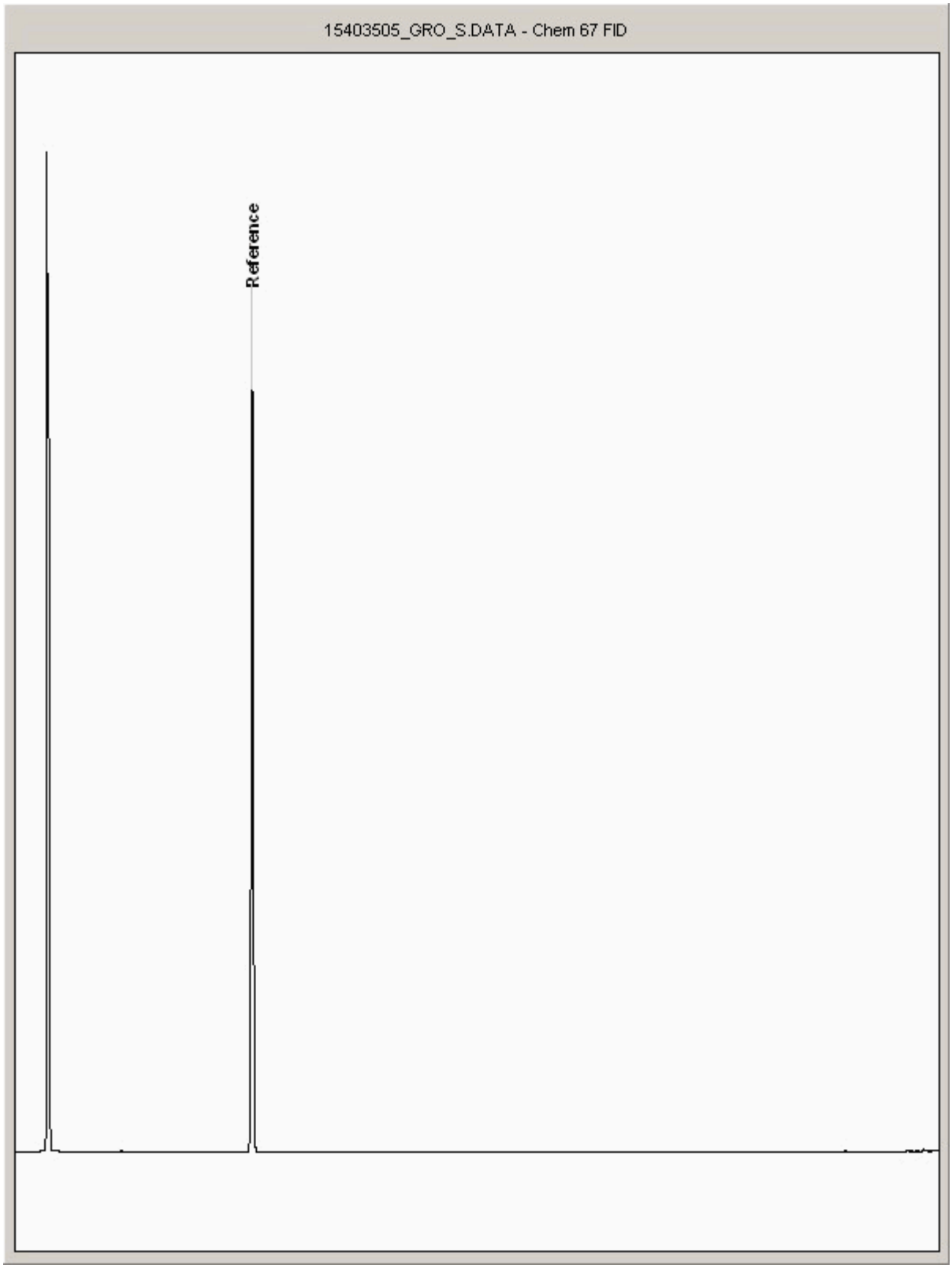
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403505
Sample ID : W5TP304

Depth : 0.50



CERTIFICATE OF ANALYSIS

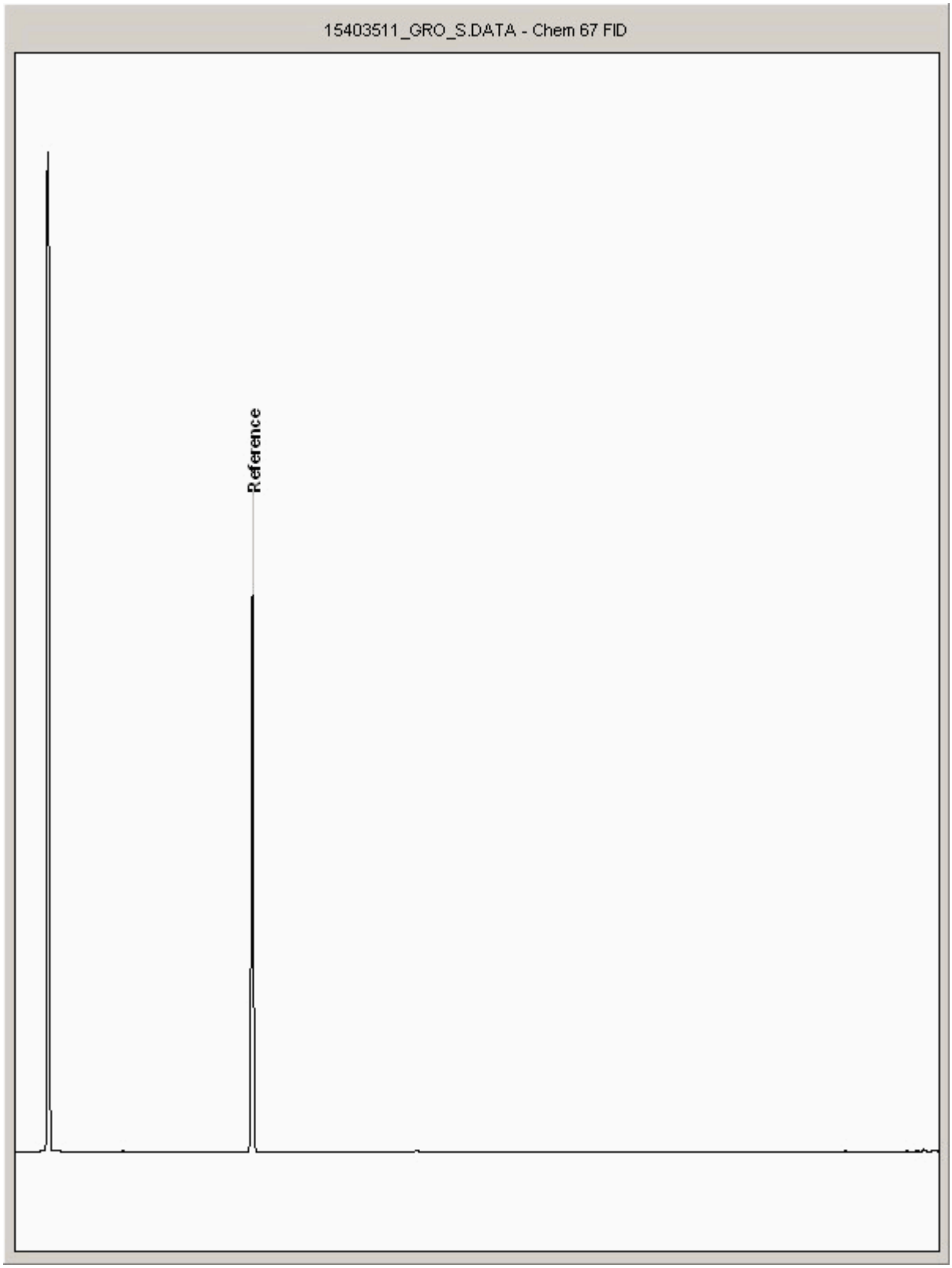
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403511
Sample ID : W5TP301

Depth : 0.15



CERTIFICATE OF ANALYSIS

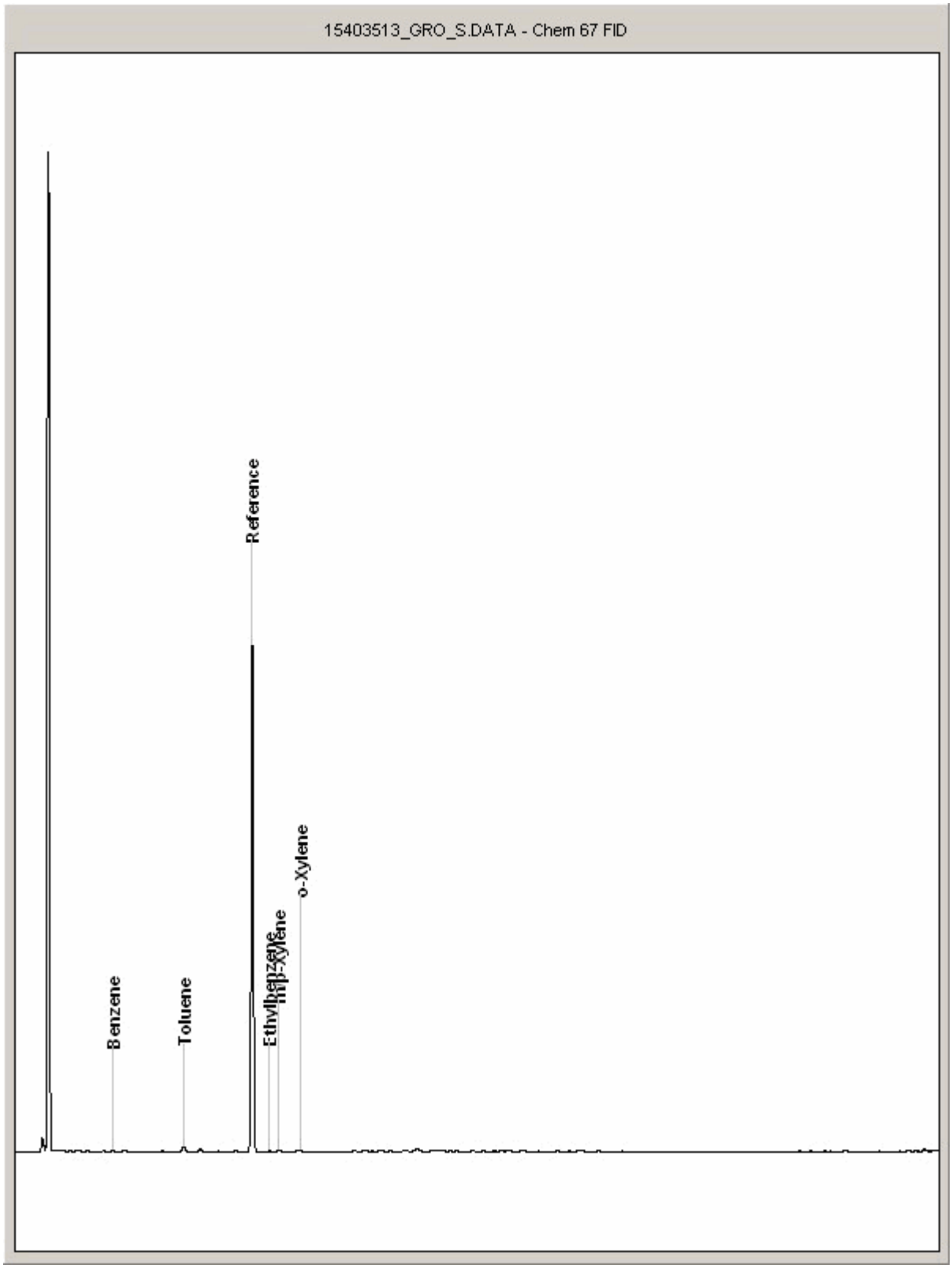
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403513
Sample ID : W4TP315

Depth : 0.90



CERTIFICATE OF ANALYSIS

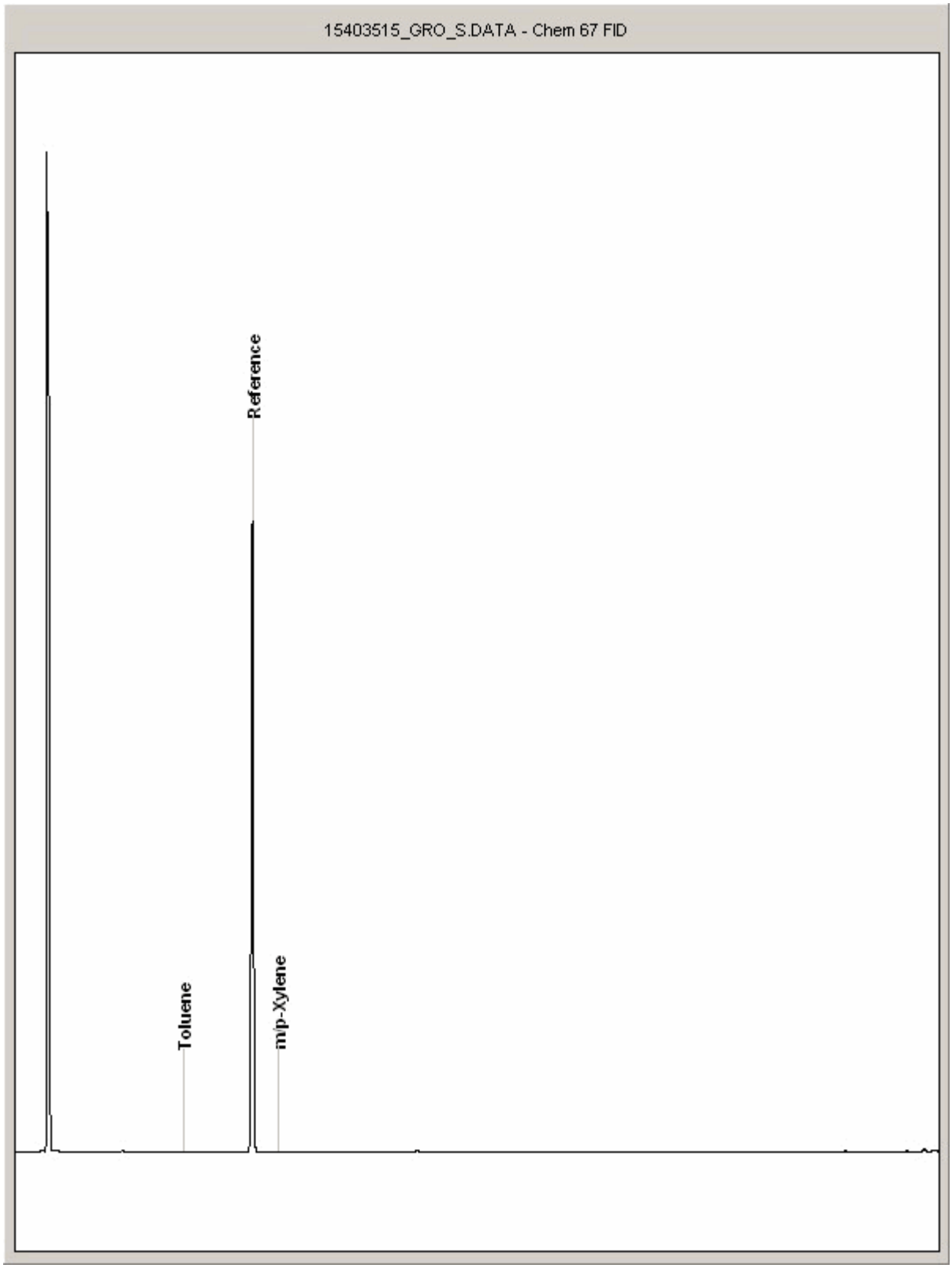
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403515
Sample ID : W4TP311

Depth : 1.70



CERTIFICATE OF ANALYSIS

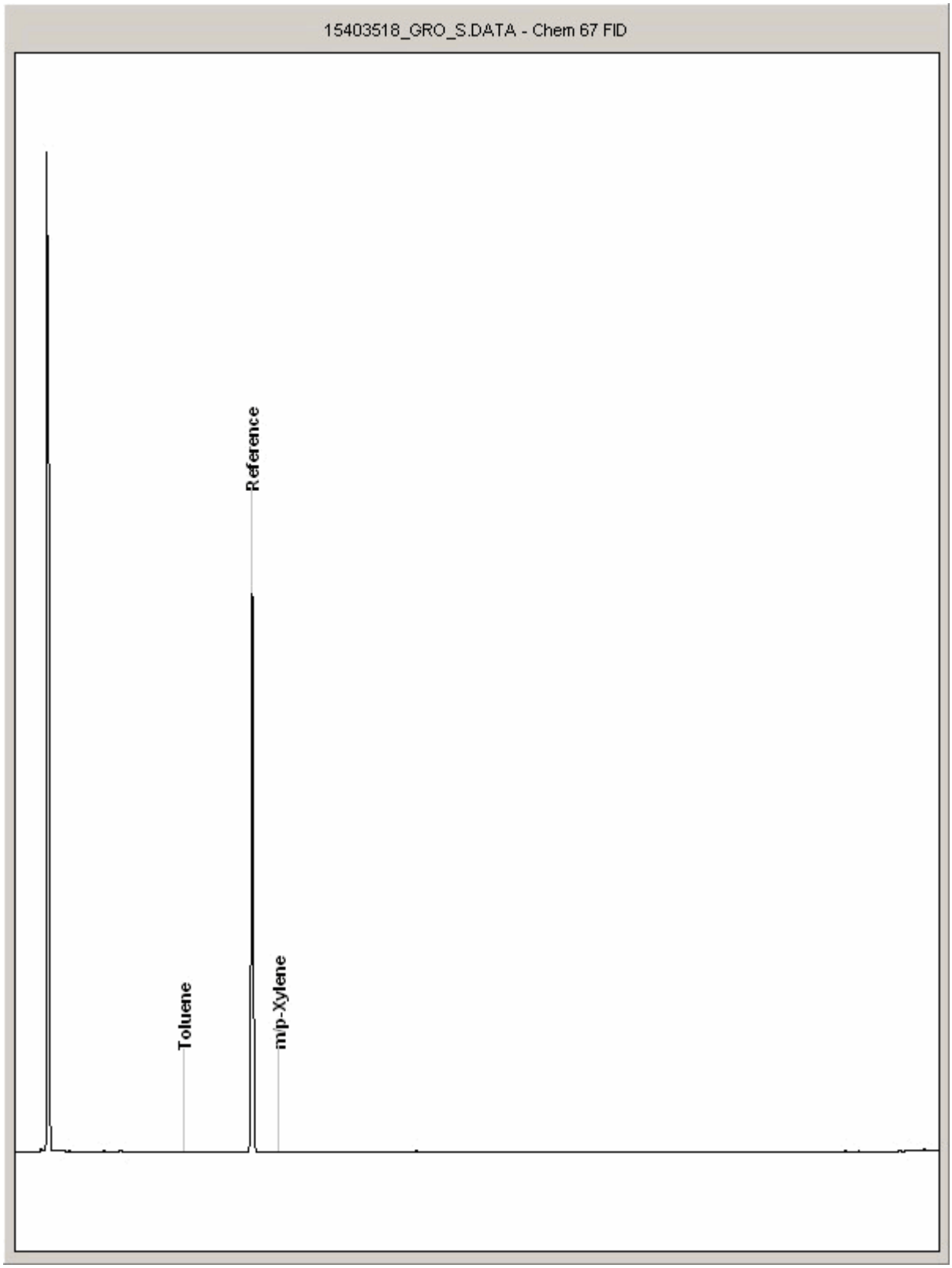
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403518
Sample ID : W5TP304

Depth : 0.20



CERTIFICATE OF ANALYSIS

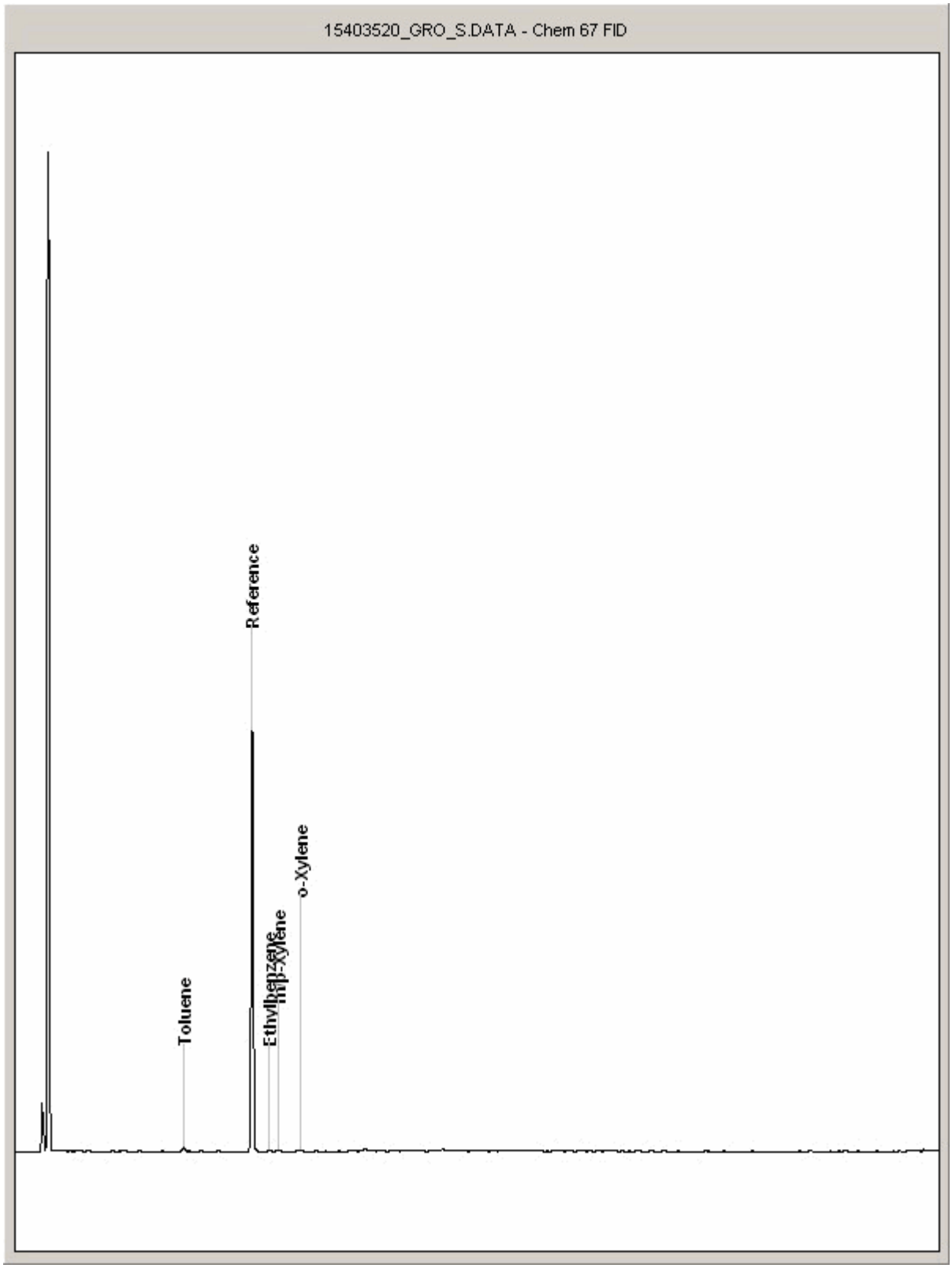
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15403520
Sample ID : W4TP311

Depth : 0.60



CERTIFICATE OF ANALYSIS

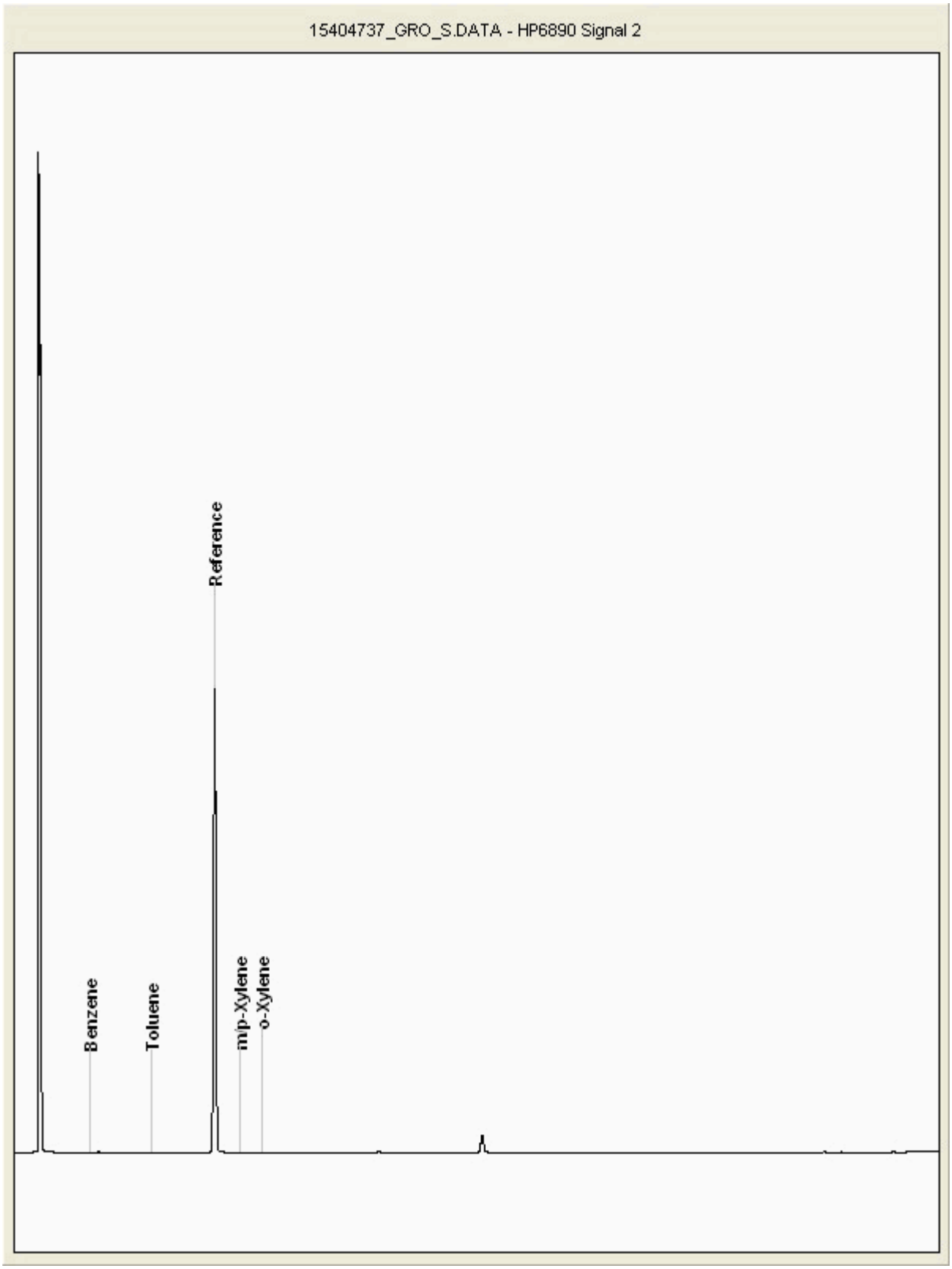
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15404737
Sample ID : W5TP301

Depth : 0.50



CERTIFICATE OF ANALYSIS

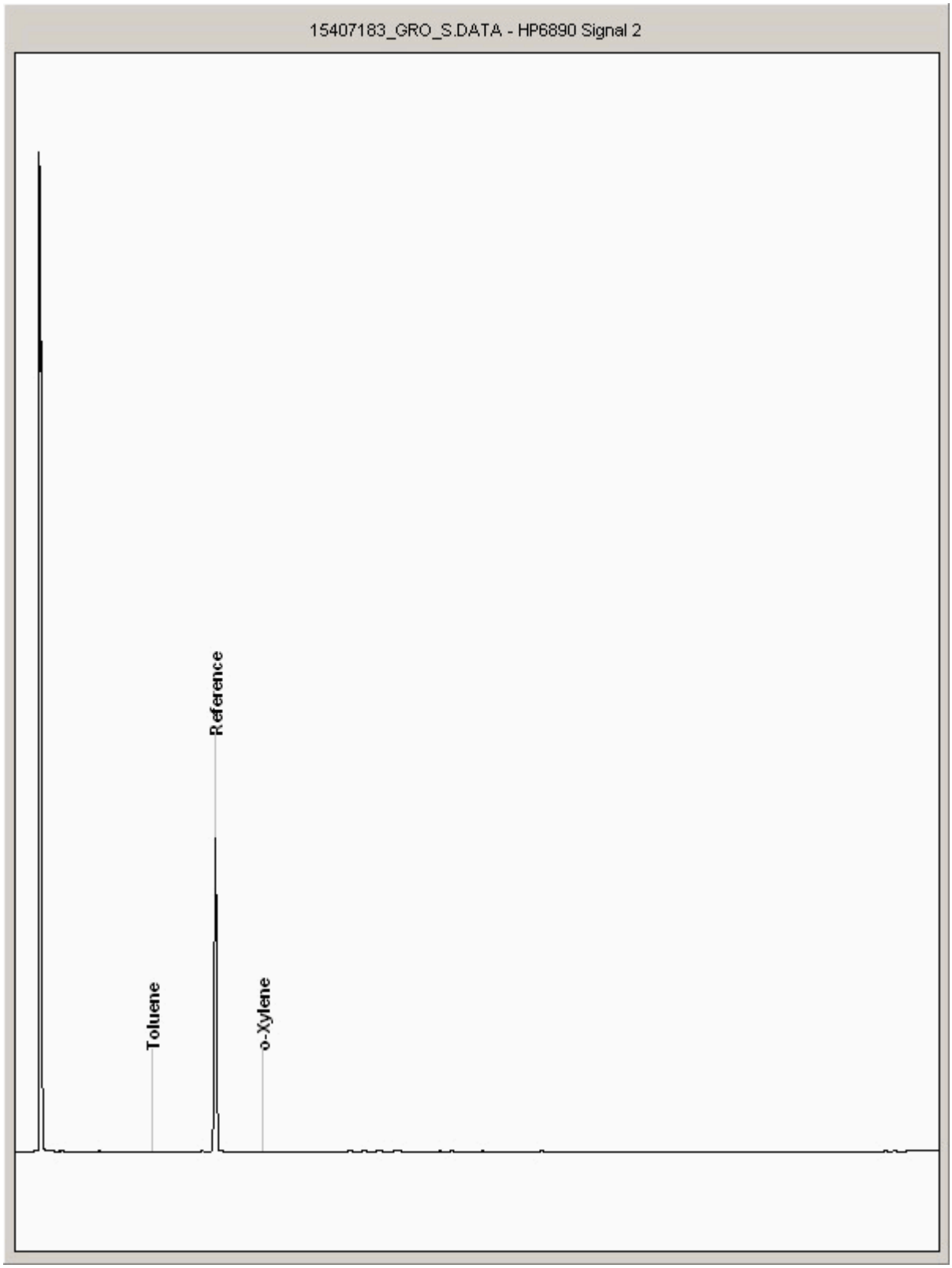
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15407183
Sample ID : W4TP316

Depth : 0.40



CERTIFICATE OF ANALYSIS

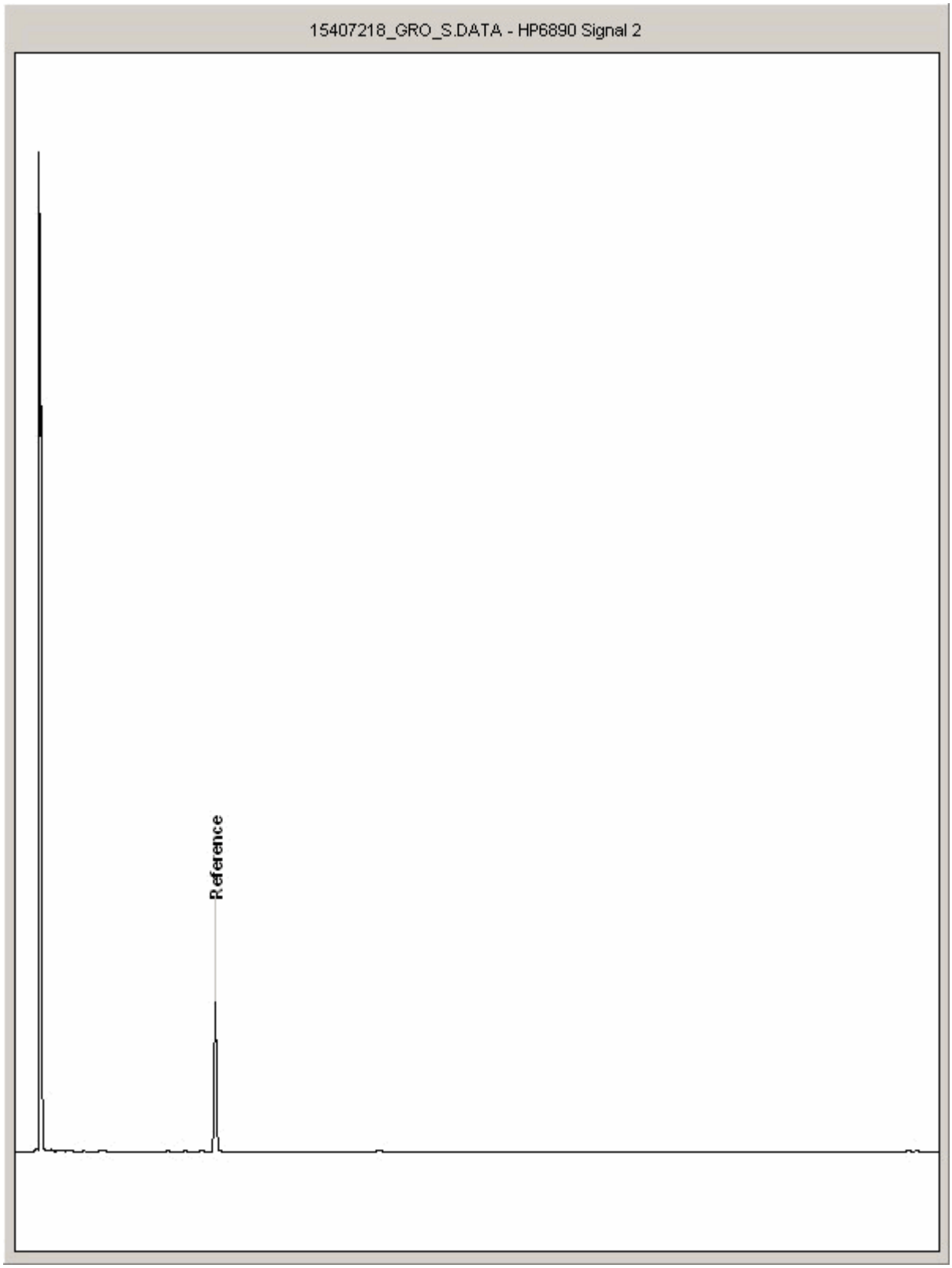
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15407218
Sample ID : W4TP315

Depth : 0.10



CERTIFICATE OF ANALYSIS

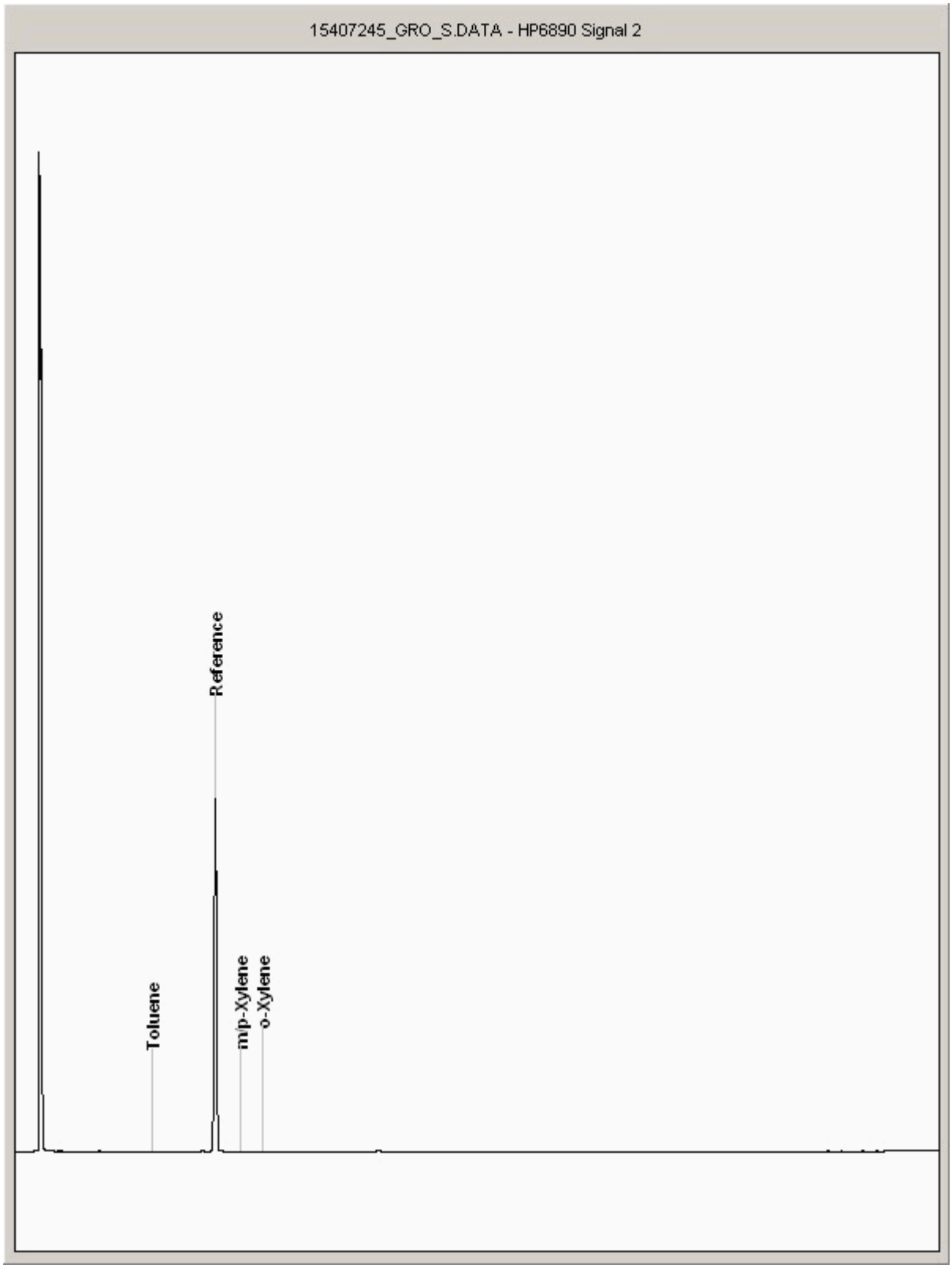
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15407245
Sample ID : W4TP316

Depth : 1.30



CERTIFICATE OF ANALYSIS

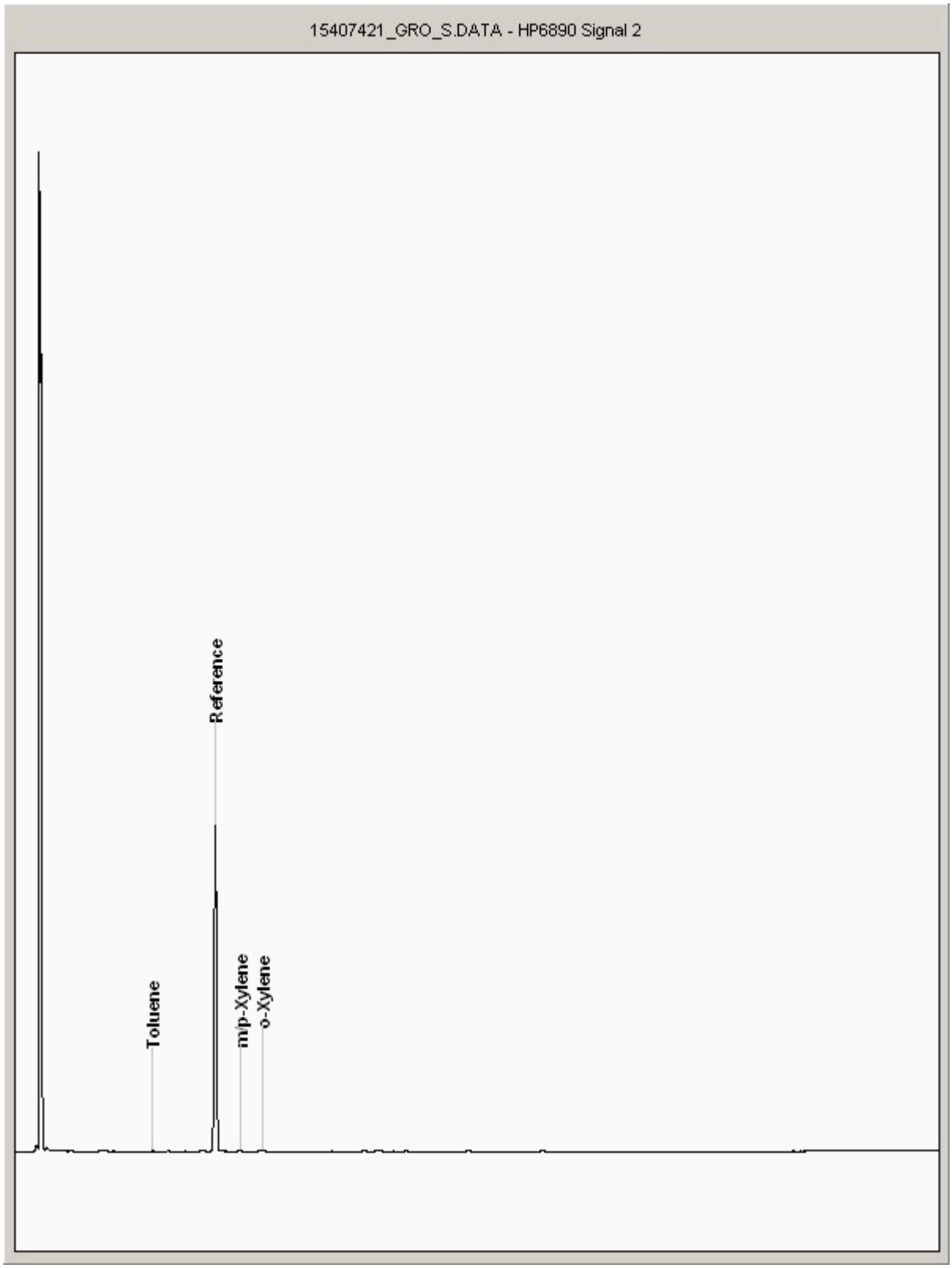
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15407421
Sample ID : W4TP316

Depth : 2.20



CERTIFICATE OF ANALYSIS

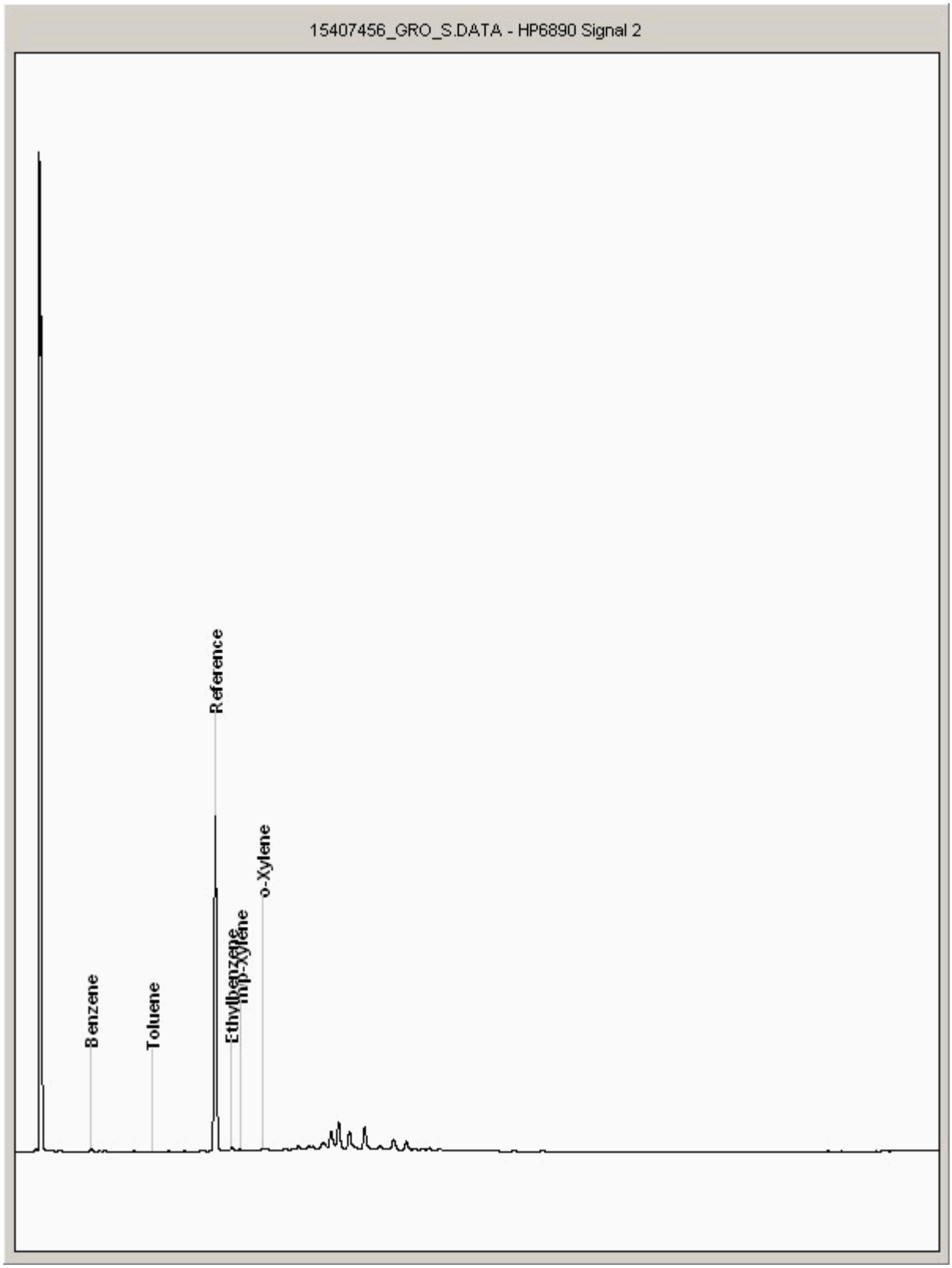
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15407456
Sample ID : W4TP313

Depth : 0.30



CERTIFICATE OF ANALYSIS

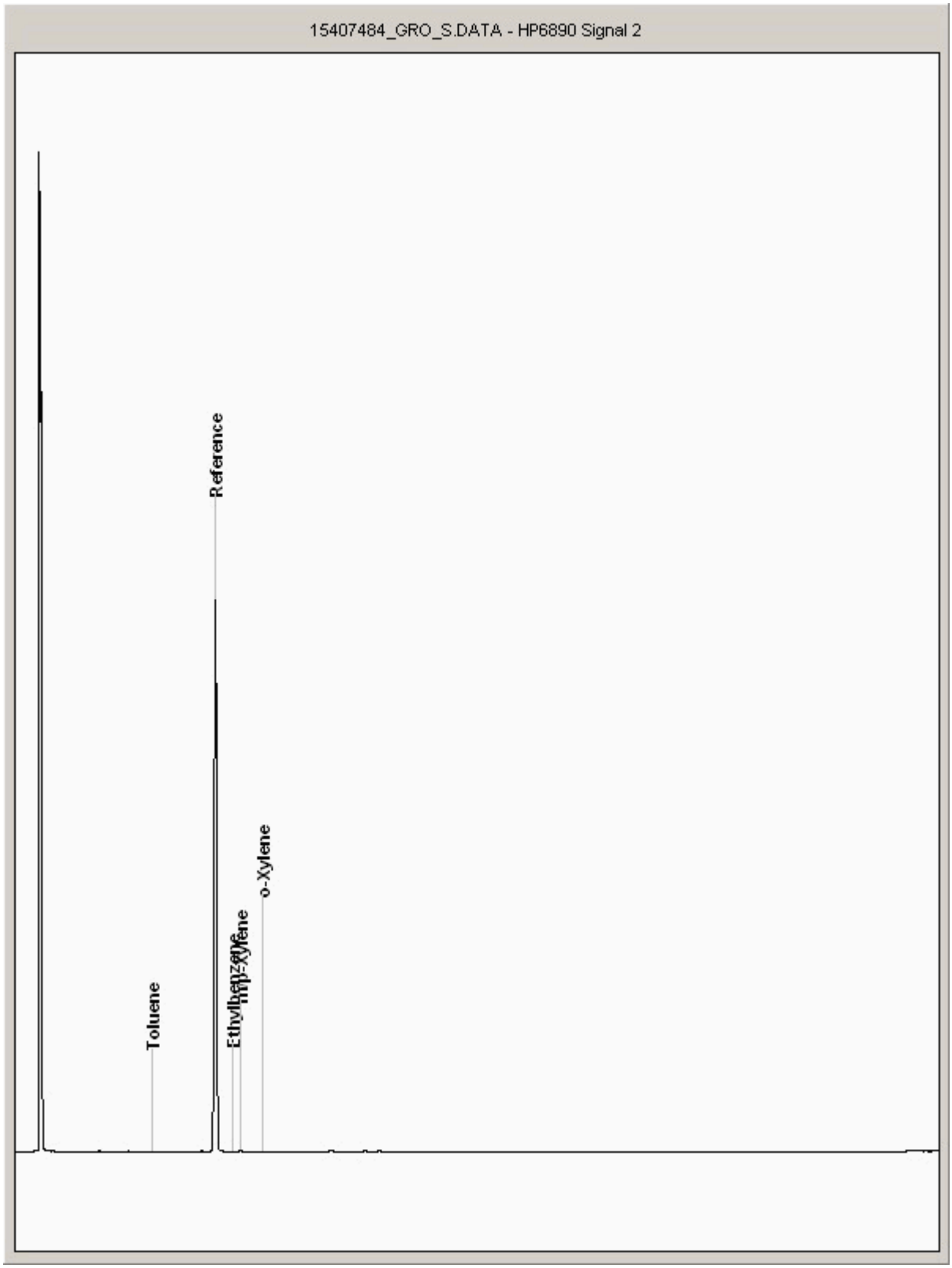
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15407484
Sample ID : W7WS309

Depth : 1.70



CERTIFICATE OF ANALYSIS

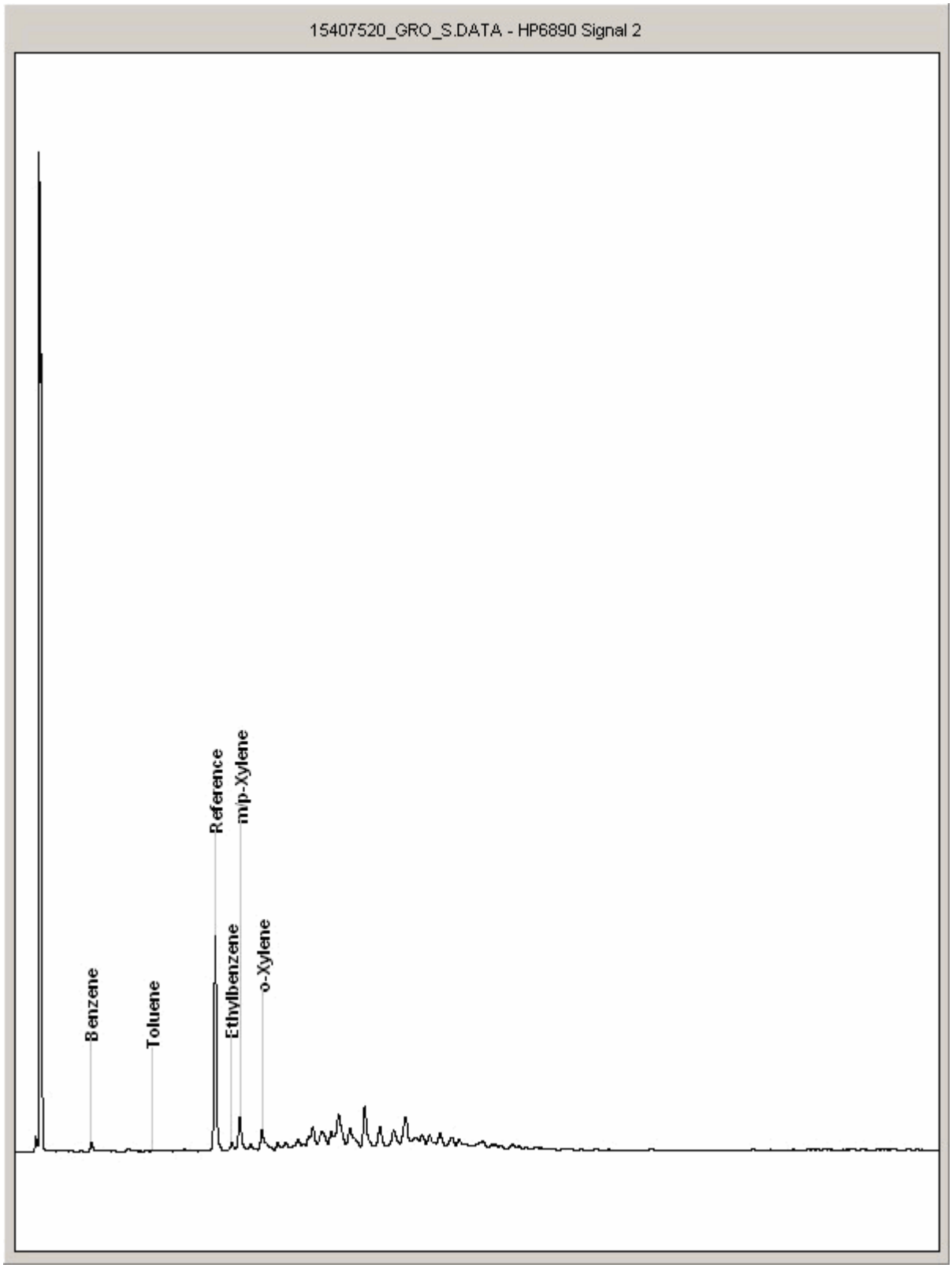
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15407520
Sample ID : W4TP313

Depth : 2.20



CERTIFICATE OF ANALYSIS

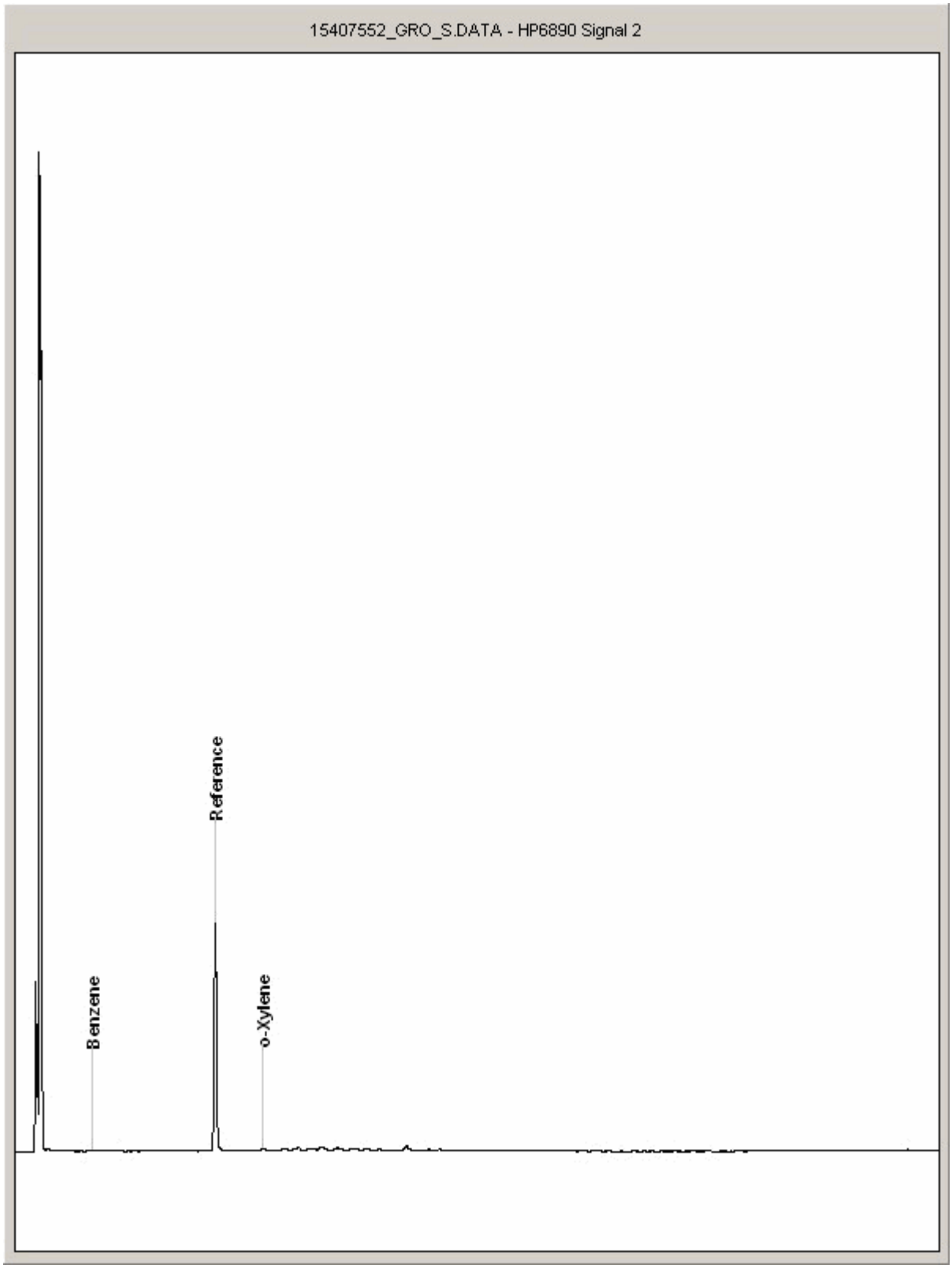
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15407552
Sample ID : W4TP314

Depth : 2.65



CERTIFICATE OF ANALYSIS

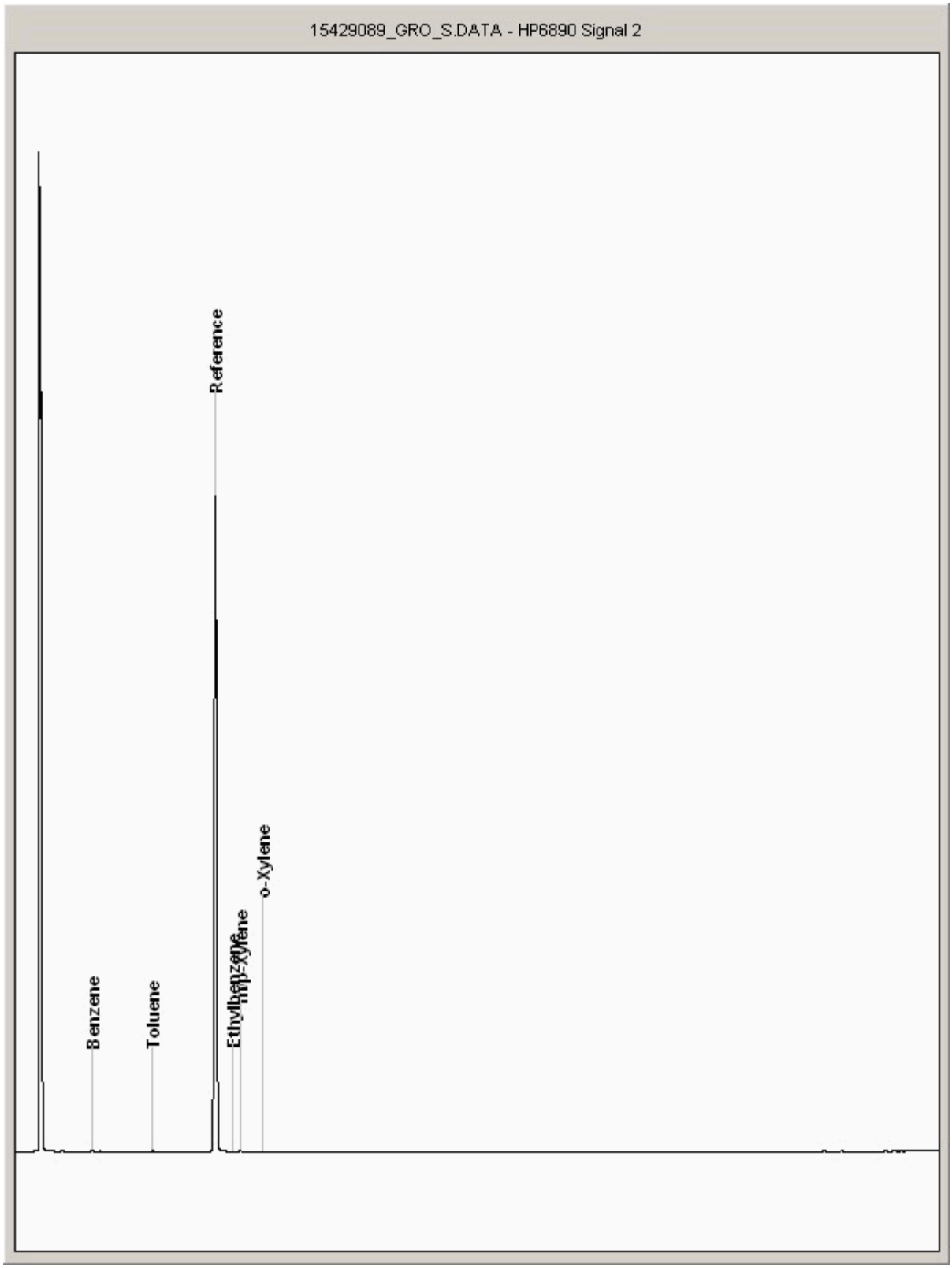
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429089
Sample ID : W7WS309

Depth : 0.90



CERTIFICATE OF ANALYSIS

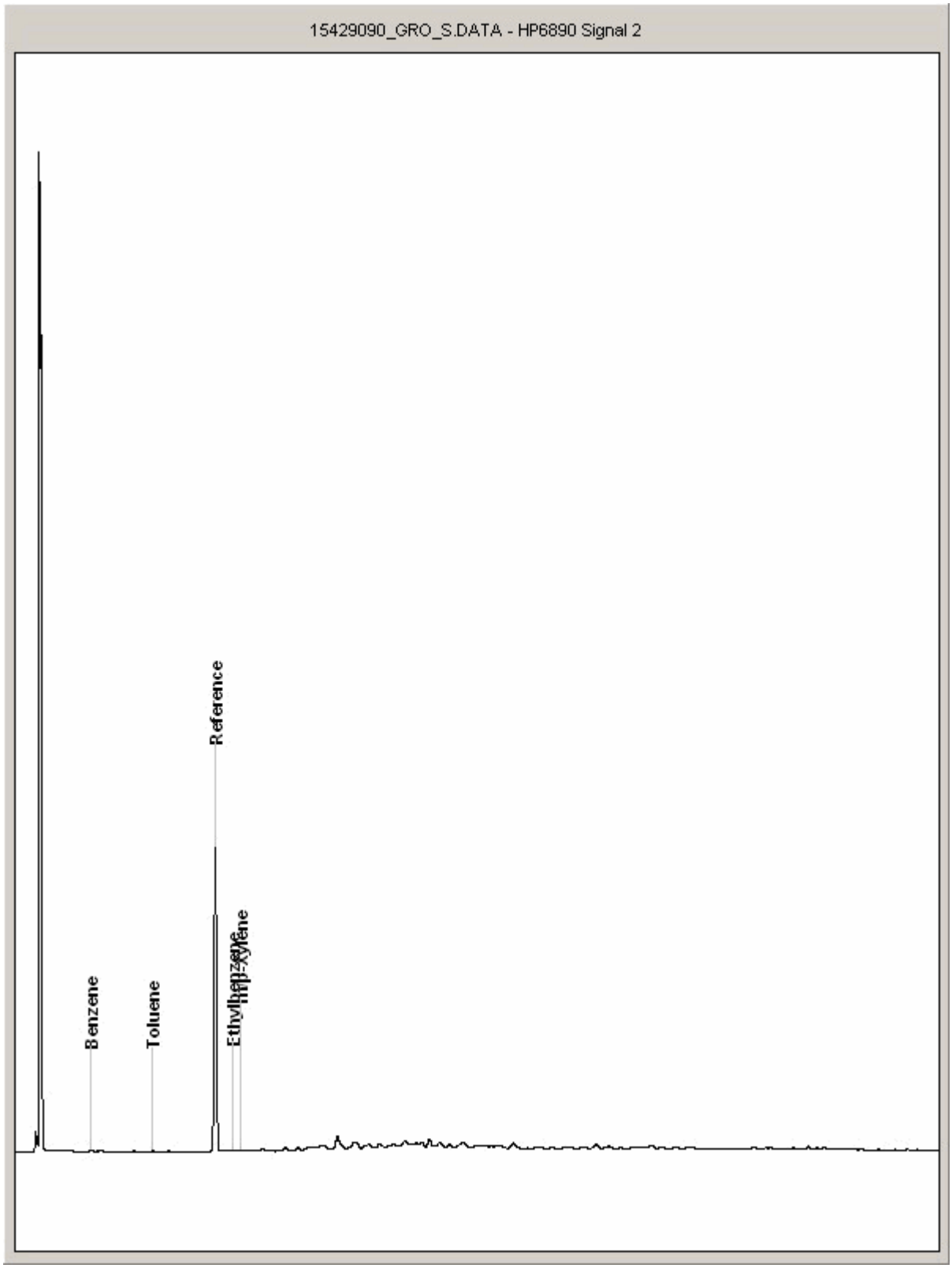
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429090
Sample ID : W4TP309

Depth : 2.50



CERTIFICATE OF ANALYSIS

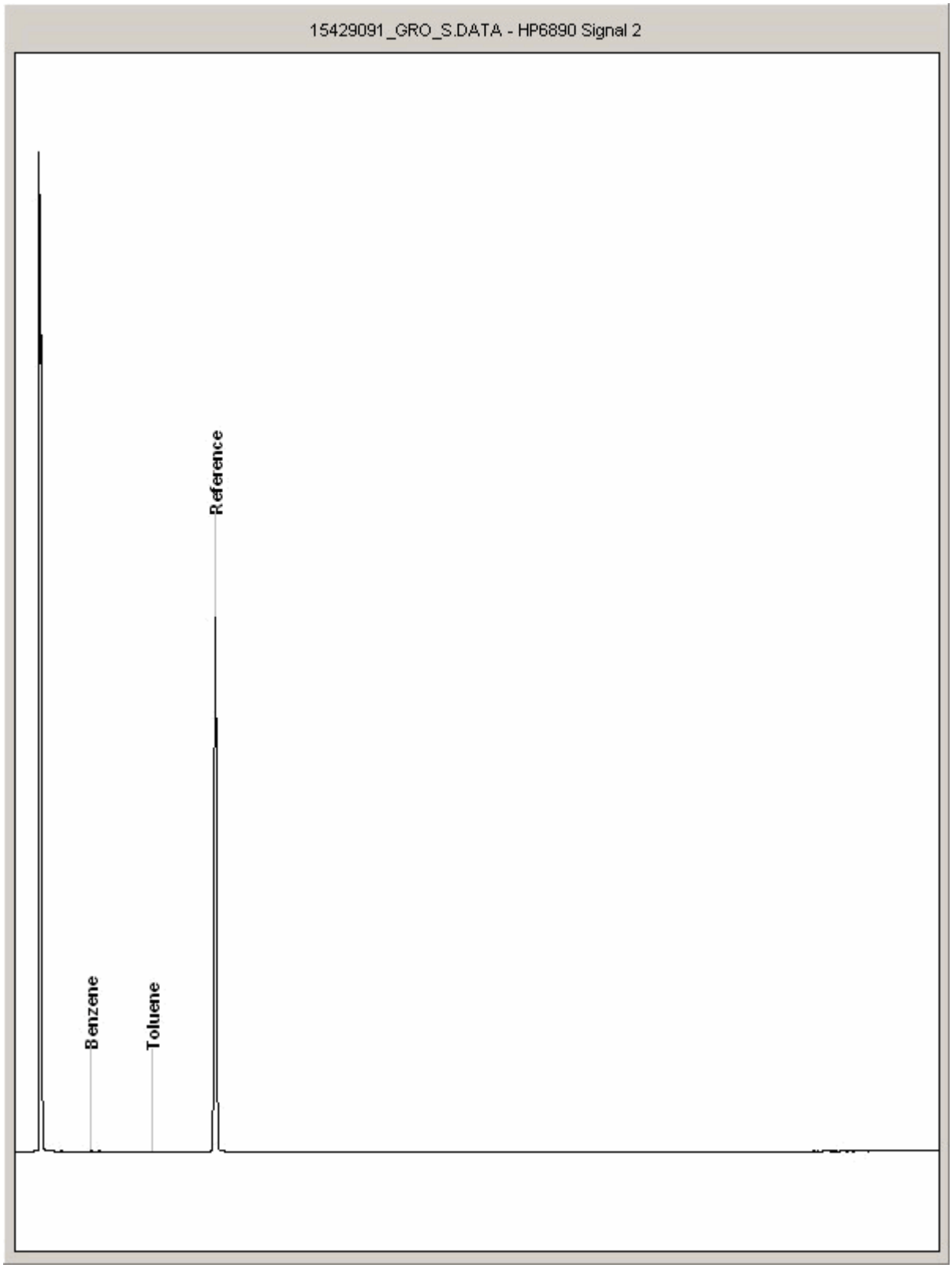
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429091
Sample ID : W4TP308

Depth : 1.70



CERTIFICATE OF ANALYSIS

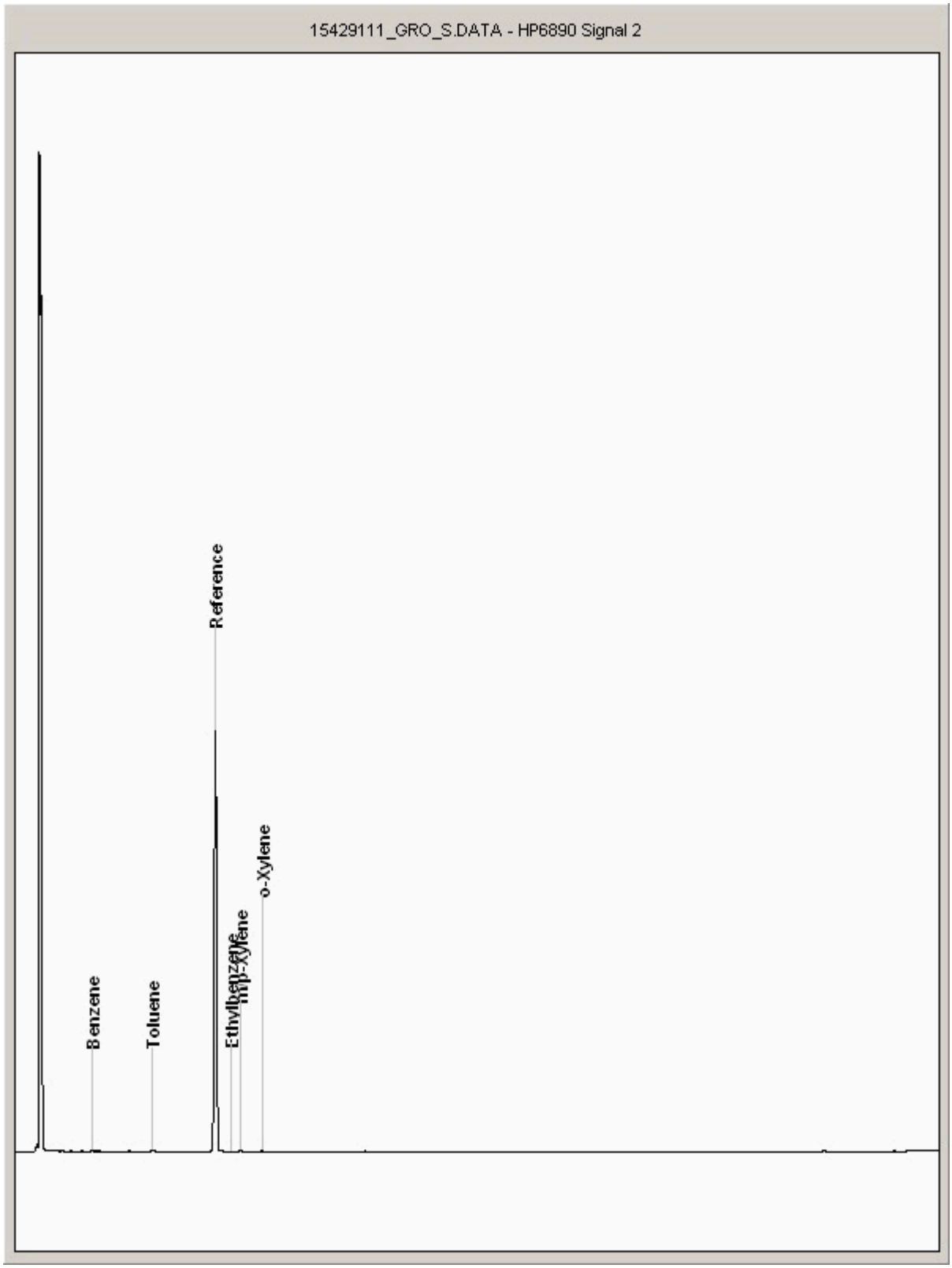
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429111
Sample ID : W7WS308

Depth : 0.30



CERTIFICATE OF ANALYSIS

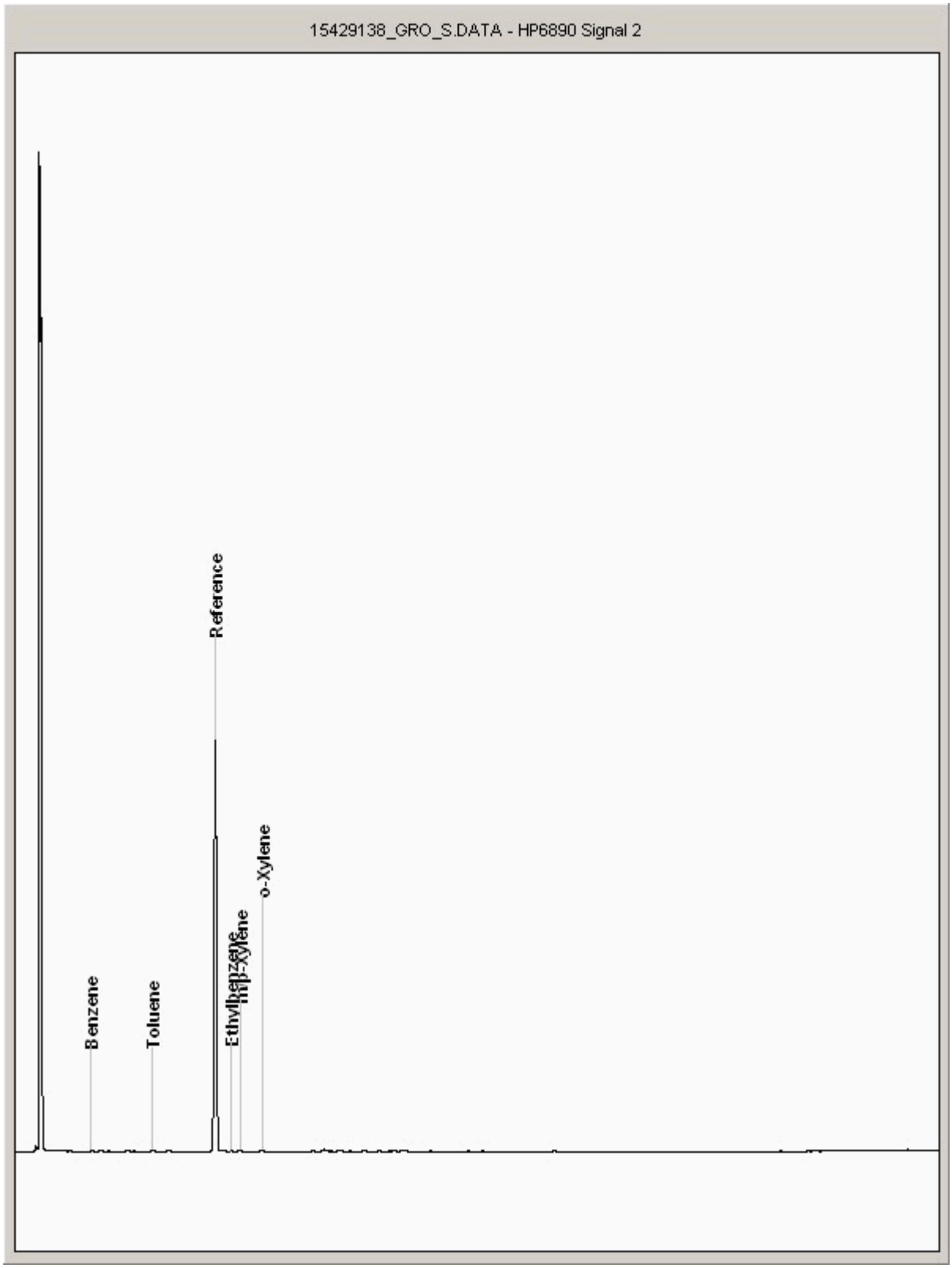
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429138
Sample ID : W4TP307

Depth : 3.00



CERTIFICATE OF ANALYSIS

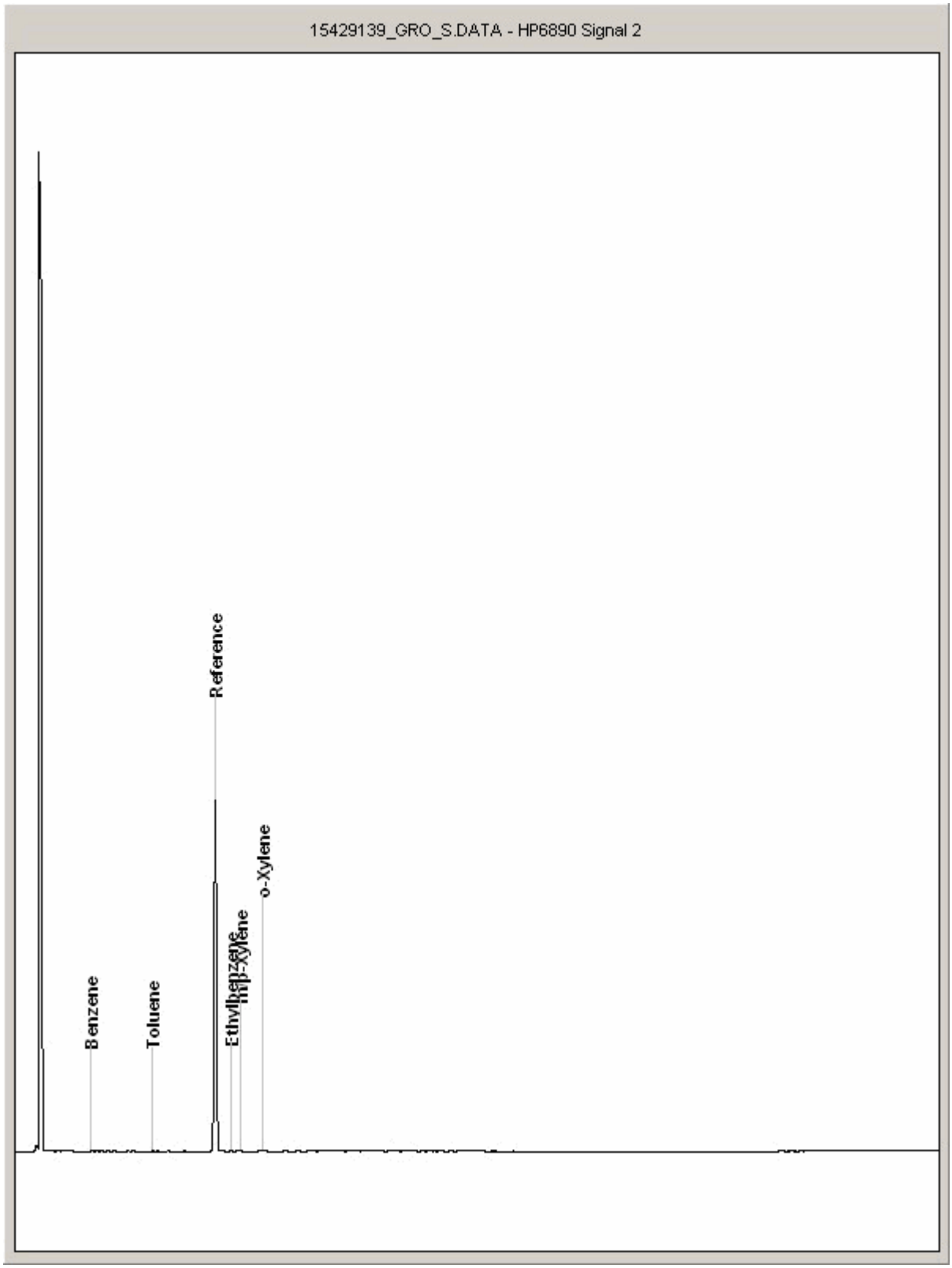
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429139
Sample ID : W4TP310

Depth : 1.25



CERTIFICATE OF ANALYSIS

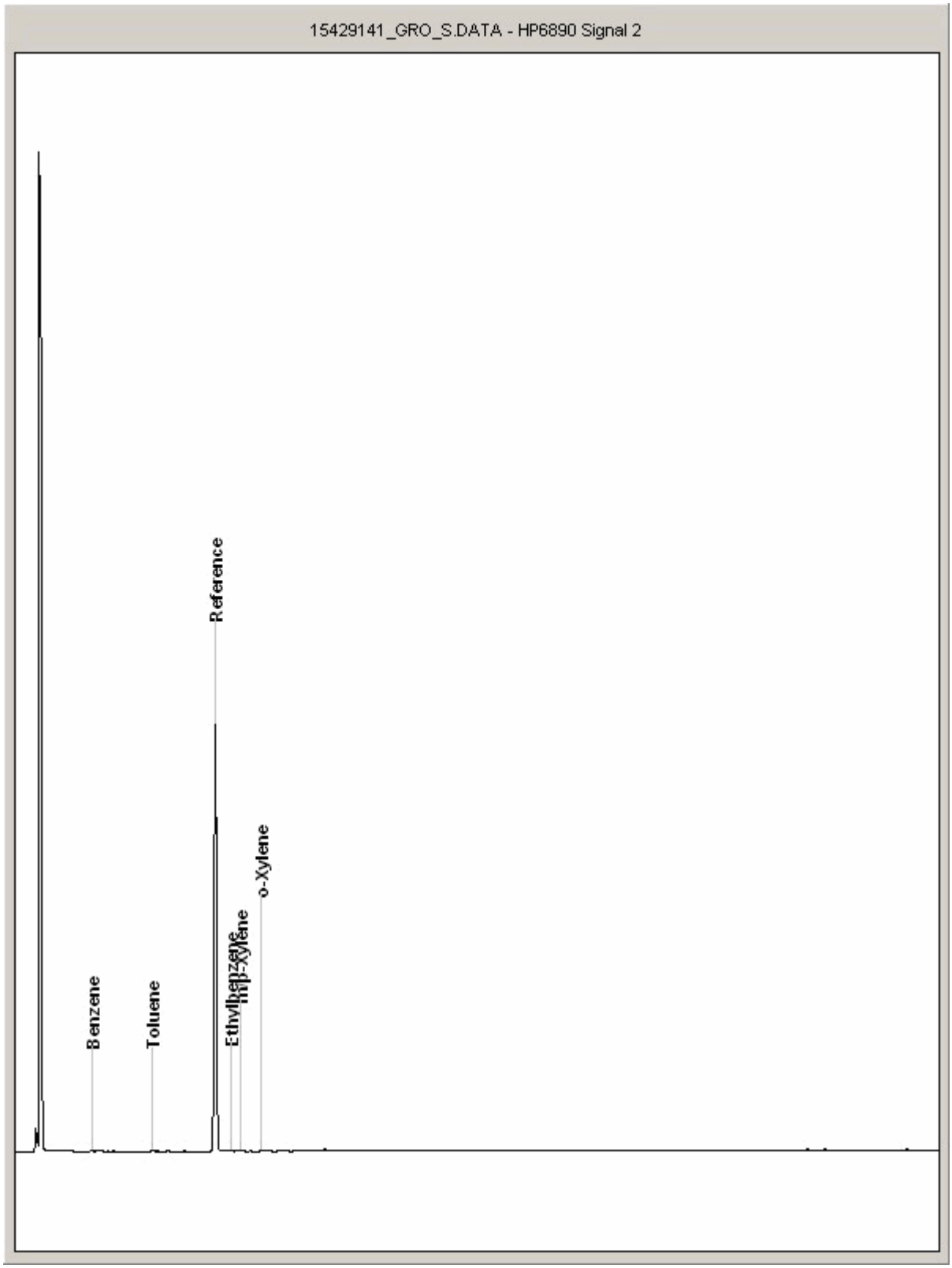
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429141
Sample ID : W4TP309

Depth : 0.10



CERTIFICATE OF ANALYSIS

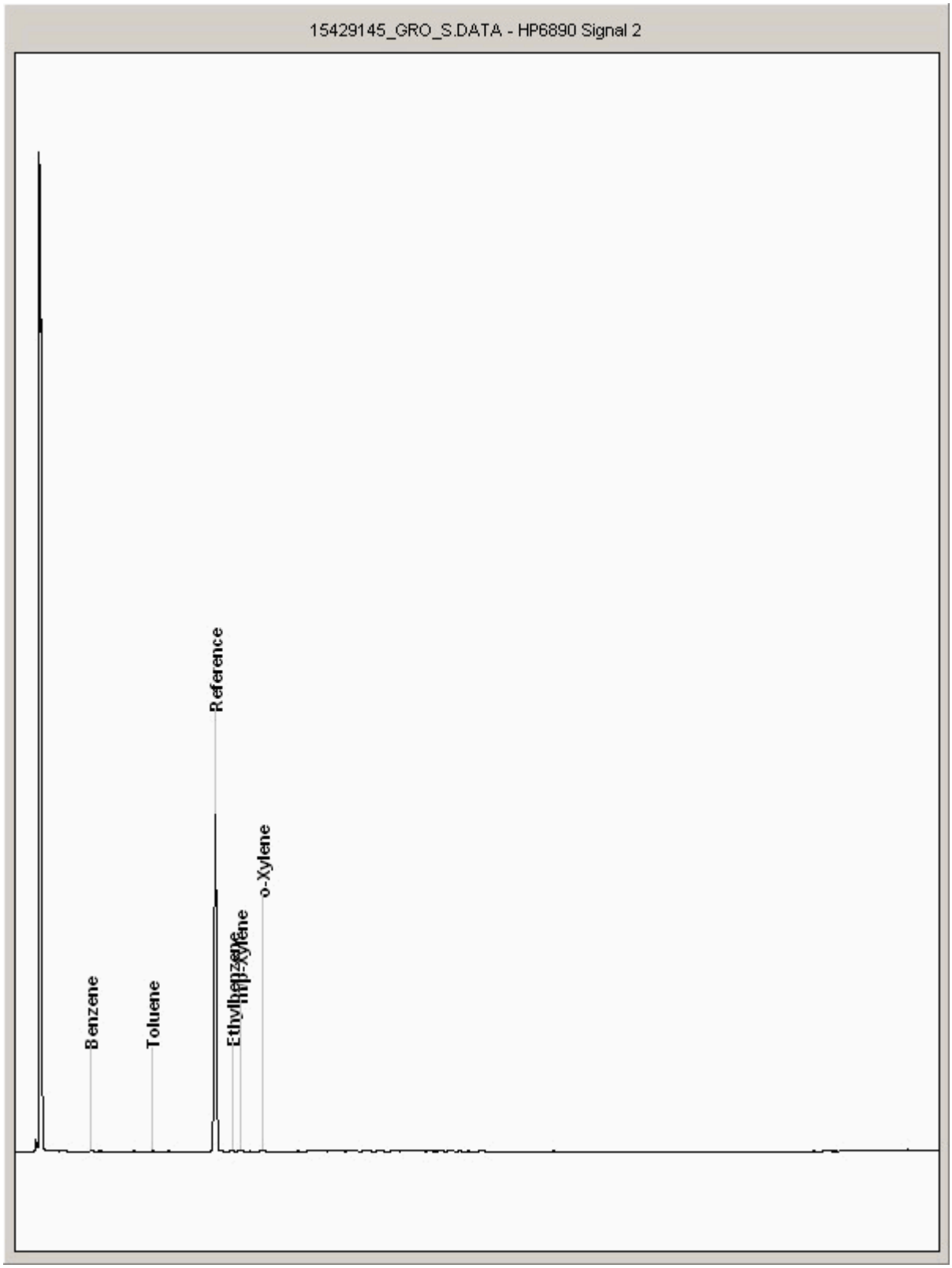
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429145
Sample ID : W4TP312

Depth : 1.90



CERTIFICATE OF ANALYSIS

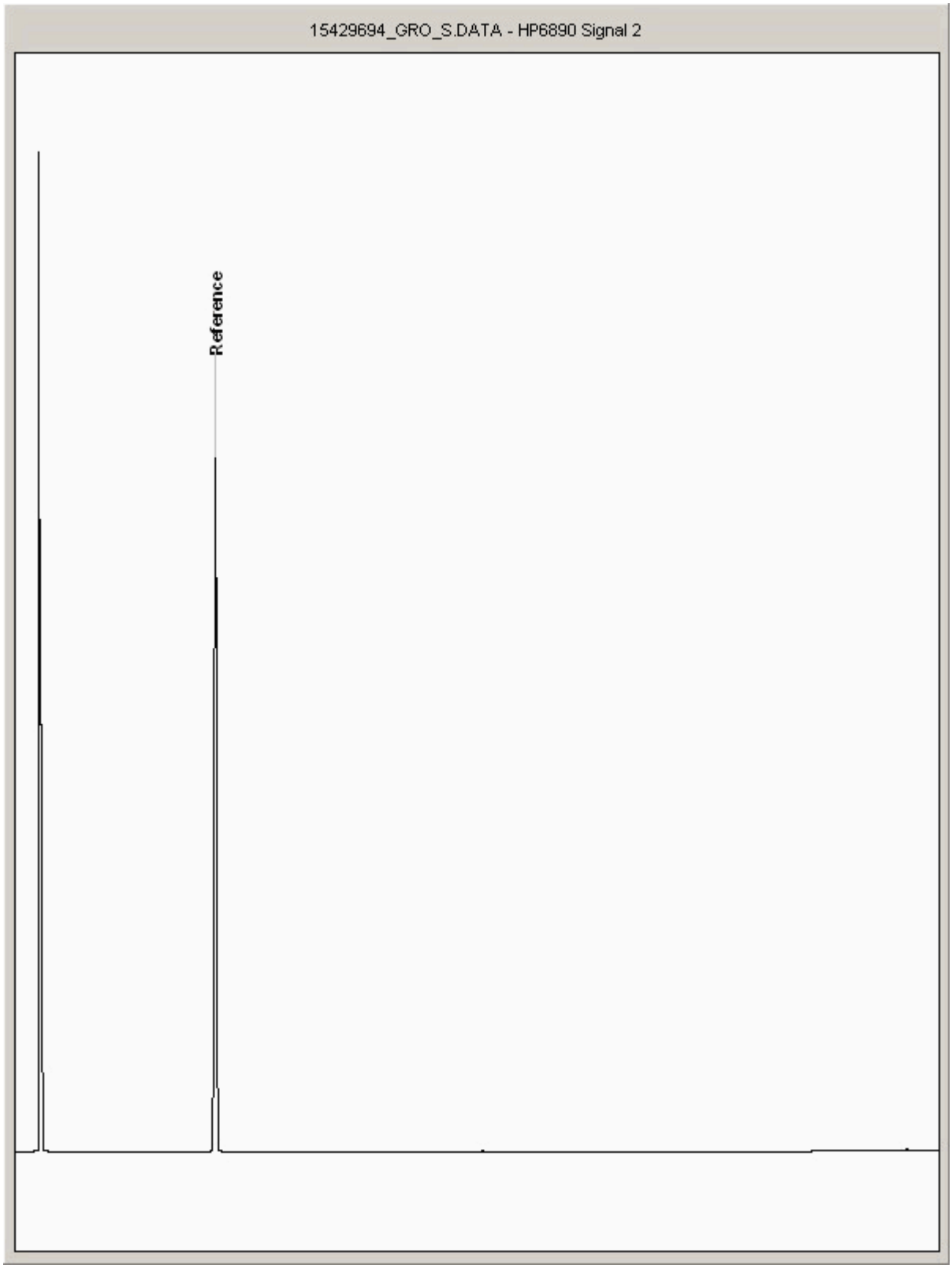
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429694
Sample ID : W7WS308

Depth : 2.40



CERTIFICATE OF ANALYSIS

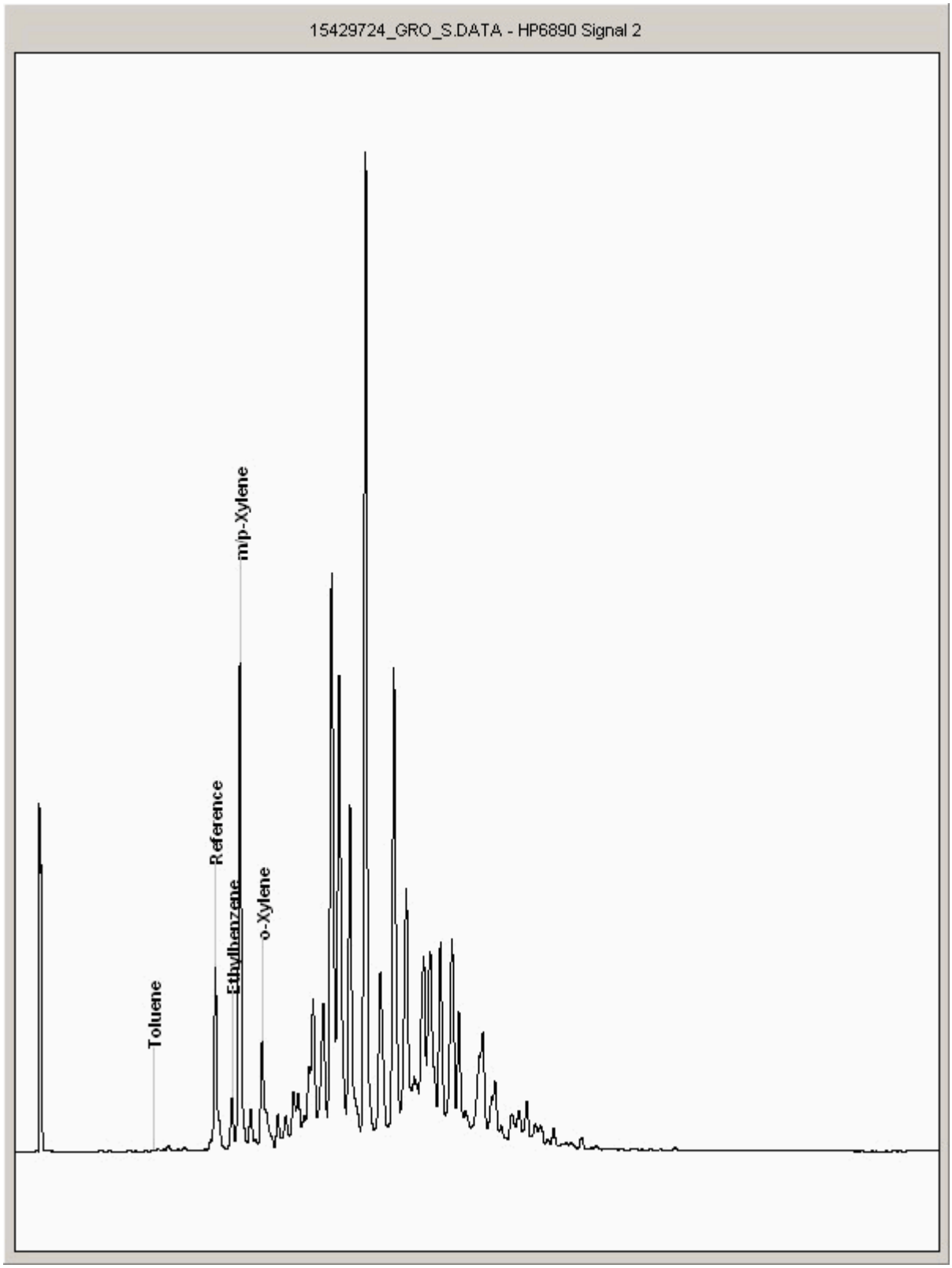
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15429724
Sample ID : W4TP307

Depth : 1.00



CERTIFICATE OF ANALYSIS

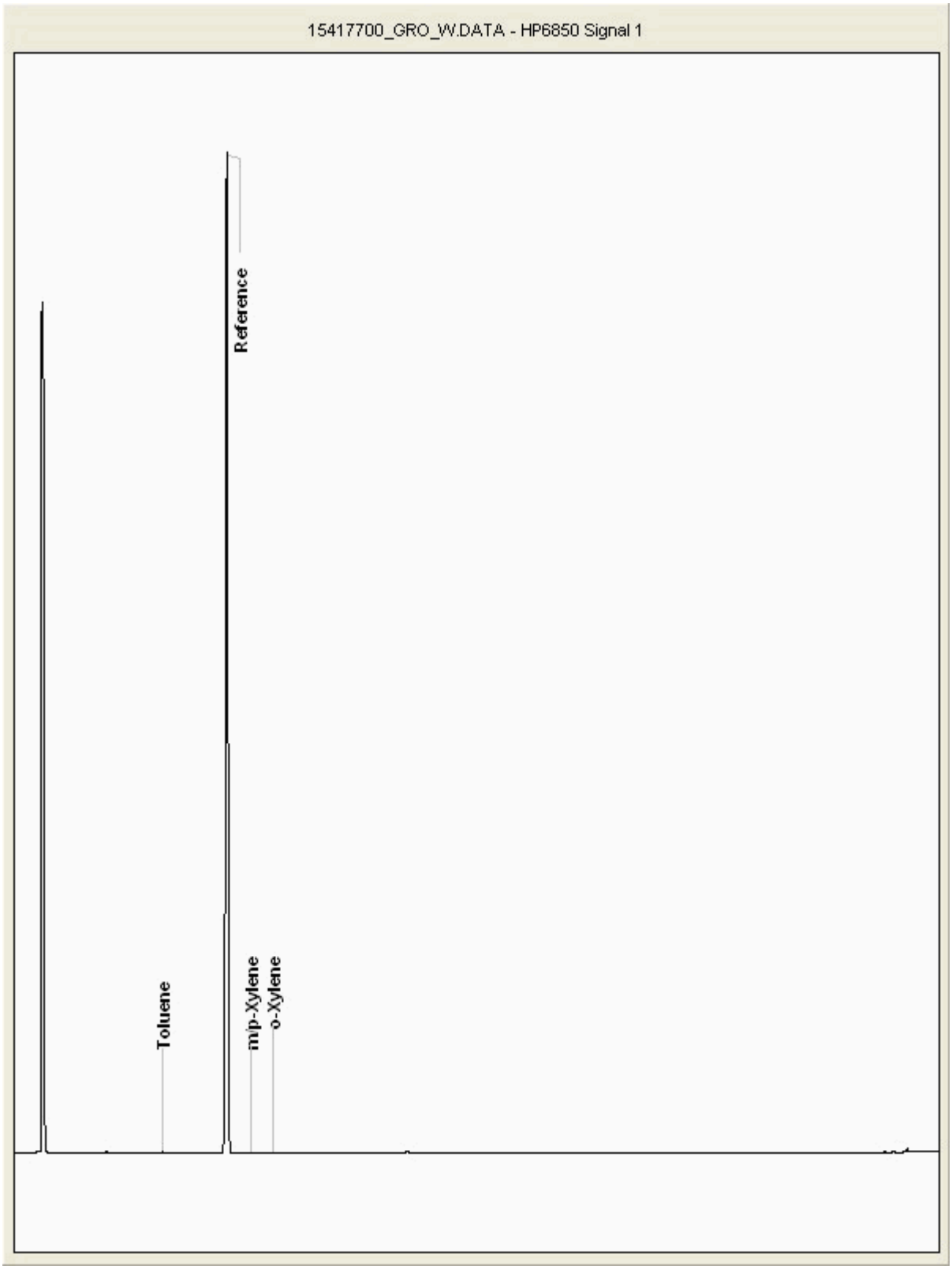
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15417700
Sample ID : W7WS308

Depth : 0.30



CERTIFICATE OF ANALYSIS

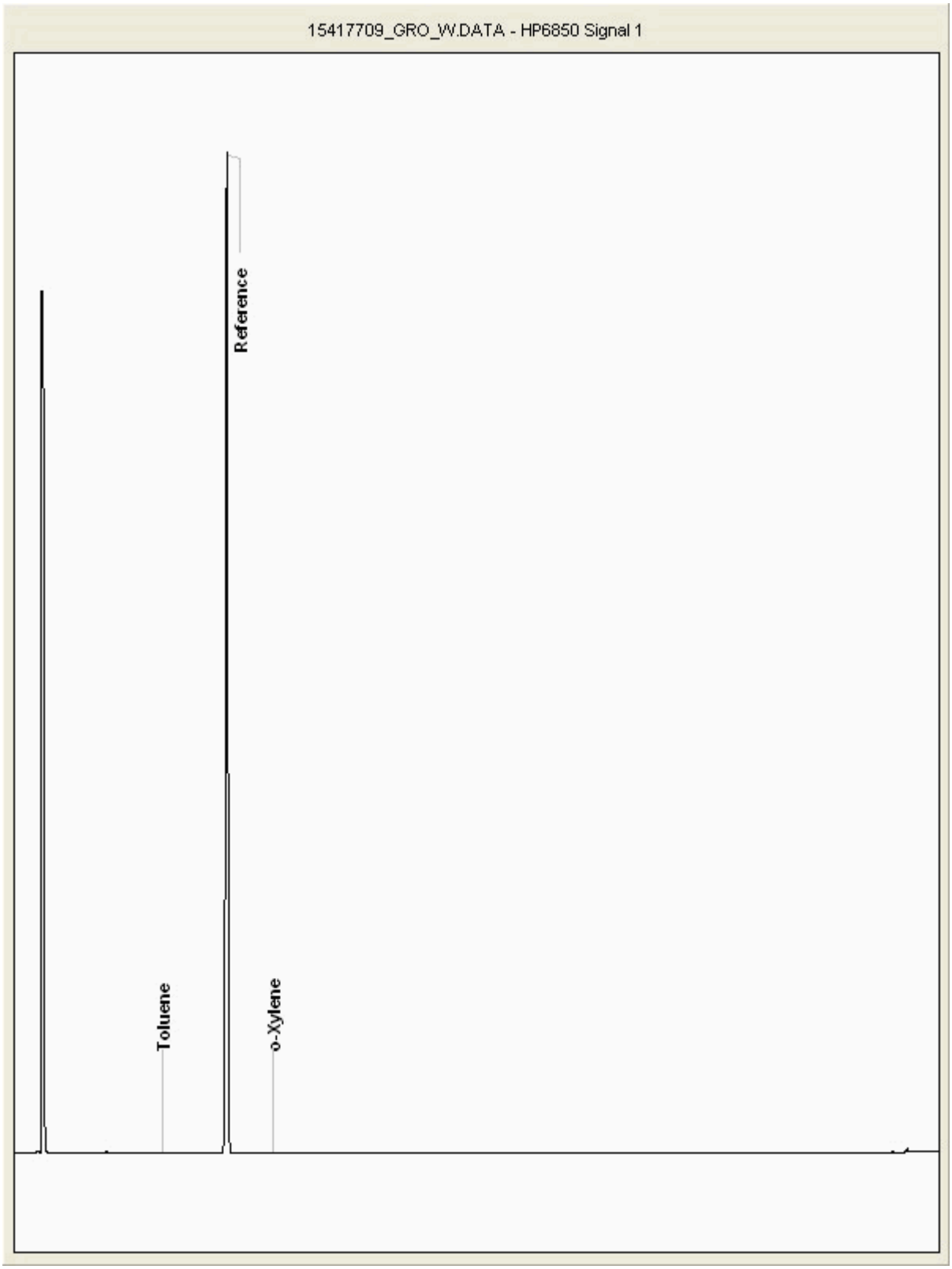
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15417709
Sample ID : W7WS311

Depth : 0.80 - 0.90



CERTIFICATE OF ANALYSIS

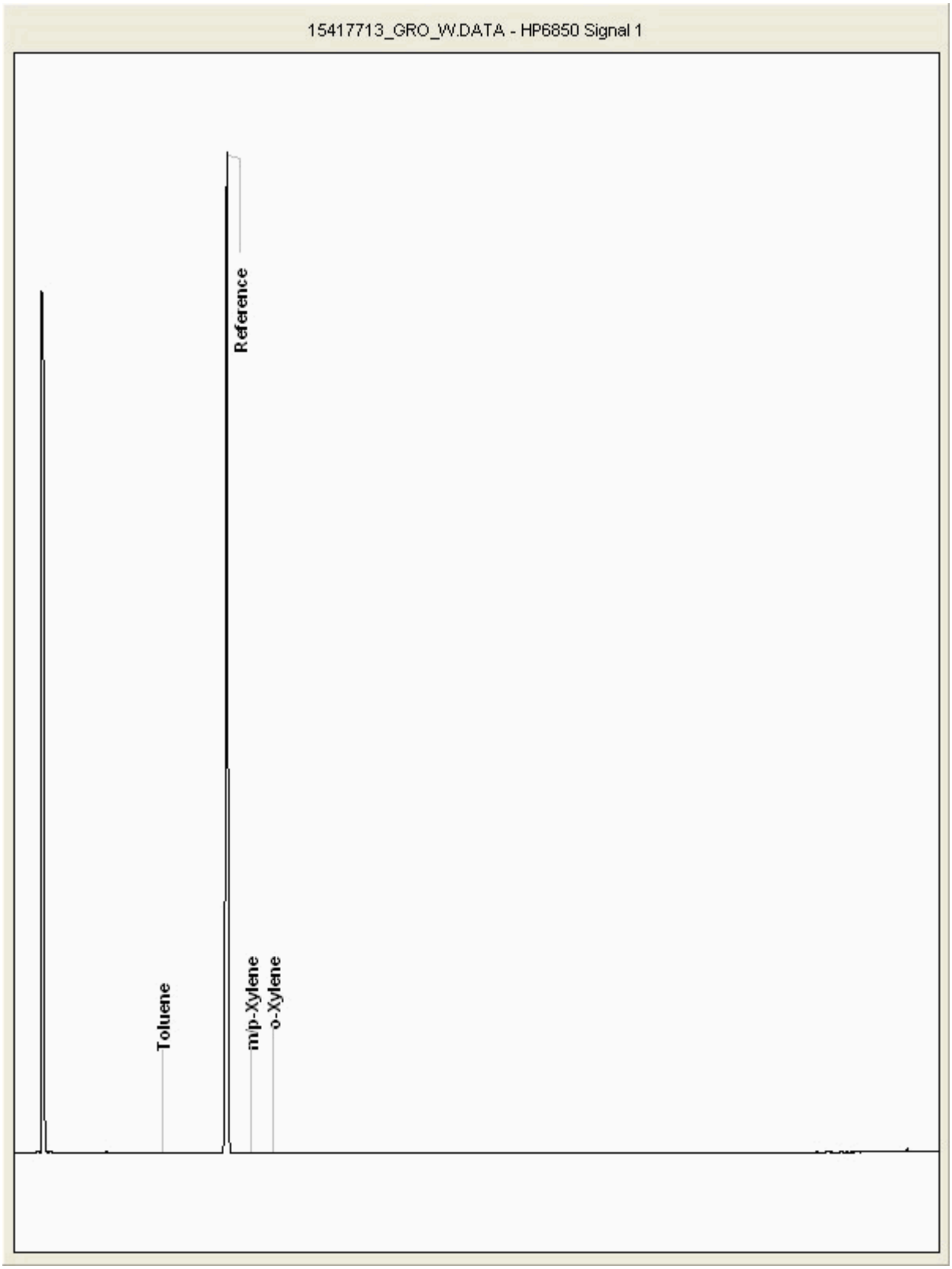
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15417713
Sample ID : W4BH306

Depth : 2.20 - 2.50



CERTIFICATE OF ANALYSIS

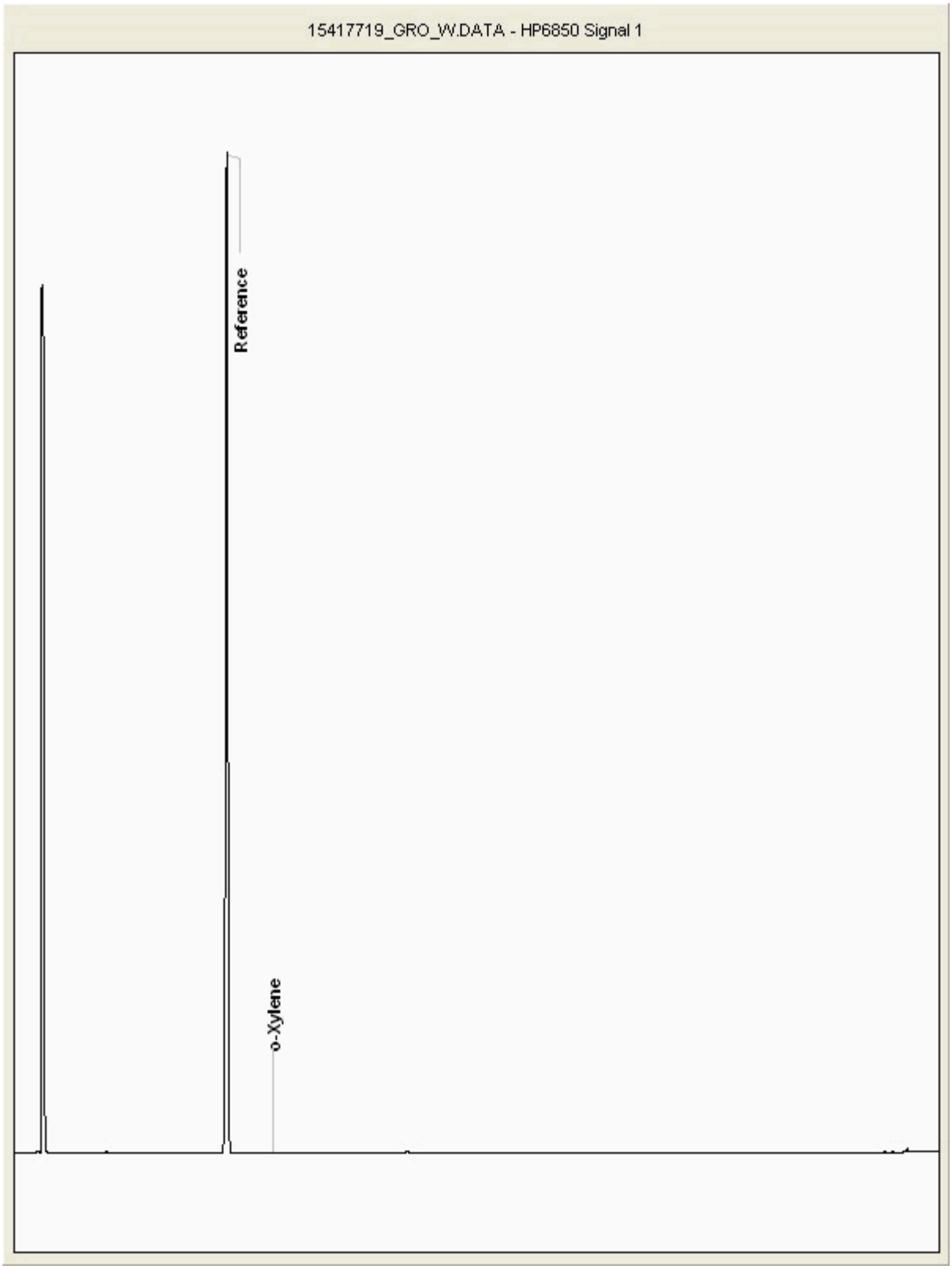
SDG:	170425-61	**Client Reference:**	70015362	**Report Number:**	436986
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409098

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15417719
Sample ID : W4BH306

Depth : 0.90 - 1.00



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Certificate of Analysis

Report No.: 17-61467-1

Issue No.: **1**
Date of Issue **10/05/2017**

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	33713
Customer Reference:	170425-61
Quotation Reference:	161220/03
Description:	13 soil samples
Date Received:	27/04/2017
Date Started:	02/05/2017
Date Completed:	08/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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Results Summary

Report No.: 17-61467-1

Customer Reference: 170425-61

Customer Order No: 33713

				Customer Sample No		**15400299**	**15399307**	**15398066**	**15399127**	**15397506**	**15398694**	**15400546**	**15398781**	**15396841**	**15397944**	**15400243**
				Customer Sample ID		W4BH306	W4TP307	W4TP309	W4TP312	W4TP313	W4TP314	W4TP314	W44TP316	W7WS308	W7WS309	W7WS310
				RPS Sample No		327853	327854	327855	327856	327857	327858	327859	327860	327861	327862	327863
				Sample Type		**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**
				Sample Depth (m)		2.20-2.50	1	1	1.9	0.7	0.9	2.65	2.2	0.3	0.9	1-1.1
				Sampling Date		20/04/2017	21/04/2017	21/04/2017	20/04/2017	21/04/2017	21/04/2017	21/04/2017	20/04/2017	20/04/2017	20/04/2017	20/04/2017
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**											
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

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Results Summary

Report No.: 17-61467-1

Customer Reference: 170425-61

Customer Order No: 33713

				Customer Sample No		**15398249**	**15400222**
				Customer Sample ID		W7WS311	W7WS311
				RPS Sample No		327864	327865
				Sample Type		**SOIL**	**SOIL**
				Sample Depth (m)		0.1-0.3	0.80-0.9
				Sampling Date		20/04/2017	20/04/2017
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**		
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.10	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02

2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
T +44 (0)1462 480 400, **F** +44 (0)1462 480 403, **E** rpsmh@rpsgroup.com, **W** rpsgroup.com

Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

CERTIFICATE OF ANALYSIS

Work Order	: **PR1712457**	Issue Date	: 11-May-2017
Client	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: Hawarden Subcontracting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: hawsub@alcontrol.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Facsimile	: ----	Facsimile	: +420 284 081 635
Project	: 170425-61	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 27-Apr-2017
C-O-C number	: ----	Quote number	: PR2017ALSAL-GB0002 (CZ-251-17-0022)
Site	: ----	Date of test	: 03-May-2017 - 10-May-2017
Sampled by	: Client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.
The laboratory declares that the test results relate only to the listed samples.

Responsible for accuracy

Testing Laboratory Accredited by CAI according to CSN EN ISO/IEC 17025:2005

Signatories		*Position*
Zdeněk Jirák		Environmental Business Unit Manager

Analytical Results

Sub-Matrix: SOIL	Client sample ID	15397753 W4BH306	----	----
	Laboratory sample ID	PR1712457-001	----	----
	Client sampling date / time	20-Apr-2017 00:00	----	----

Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.1	%	**89.7**	± 6.0%	----	----	----	----
PCDDs and PCDFs (Dioxins and Furans)									
2378-TCDD	S-DFHMS03	-	ng/g DW	<0.00072	----	----	----	----	----
12378-PeCDD	S-DFHMS03	-	ng/g DW	<0.0012	----	----	----	----	----
123478-HxCDD	S-DFHMS03	-	ng/g DW	<0.0022	----	----	----	----	----
123678-HxCDD	S-DFHMS03	-	ng/g DW	<0.0022	----	----	----	----	----
123789-HxCDD	S-DFHMS03	-	ng/g DW	<0.0022	----	----	----	----	----
1234678-HpCDD	S-DFHMS03	-	ng/g DW	<0.0041	----	----	----	----	----
OCDD	S-DFHMS03	-	ng/g DW	<0.0071	----	----	----	----	----
2378-TCDF	S-DFHMS03	-	ng/g DW	<0.00056	----	----	----	----	----
12378-PeCDF	S-DFHMS03	-	ng/g DW	<0.00064	----	----	----	----	----
23478-PeCDF	S-DFHMS03	-	ng/g DW	<0.00064	----	----	----	----	----
123478-HxCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	----	----	----	----
123678-HxCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	----	----	----	----
123789-HxCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	----	----	----	----
234678-HxCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	----	----	----	----
1234678-HpCDF	S-DFHMS03	-	ng/g DW	<0.0017	----	----	----	----	----
1234789-HpCDF	S-DFHMS03	-	ng/g DW	<0.0017	----	----	----	----	----
OCDF	S-DFHMS03	-	ng/g DW	<0.0058	----	----	----	----	----
TEQ-Lowerbound	S-DFHMS03	-	ng/g DW	**0**	----	----	----	----	----
TEQ-Upperbound	S-DFHMS03	-	ng/g DW	**0.003**	----	----	----	----	----

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, delivery date in brackets without a time component will be displayed instead. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: V Raji 906 Pardubice - Zelene Predmesti Czech Republic 530 02	
S-DFHMS03	CZ_SOP_D06_06_175 - except chap. 10.2.3.1, 10.2.3.7, 10.2.3.8, 10.2.5 (US EPA 1613-modified, CSN P CEN/TS 16190-modified): Determination of tetra- to octa-chlorinated dioxins and furanes by isotope dilution method using HRGC-HRMS and calculation of TEQ parameters from measured values. The samples were stored in laboratory in the darkness and under temperature <4°C. Actual LOQ are noticed in the annex.
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.

A `*` symbol preceeding any method indicates non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information.
The calculation methods of summation parameters are available on request in the client service.

CERTIFICATE OF ANALYSIS

Work Order	: **PR1714619**	Issue Date	: 18-May-2017
Client	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: Hawarden Subcontracting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: hawsub@alcontrol.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Facsimile	: ----	Facsimile	: +420 284 081 635
Project	: 170425-61	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 05-May-2017
C-O-C number	: ----	Quote number	: PR2017ALSAL-GB0002 (CZ-251-17-0022)
Site	: ----	Date of test	: 10-May-2017 - 18-May-2017
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.
The laboratory declares that the test results relate only to the listed samples.

Responsible for accuracy

Testing Laboratory Accredited by CAI according to CSN EN ISO/IEC 17025:2005

Signatories		*Position*
Zdeněk Jirák		Environmental Business Unit Manager

L 1163

Analytical Results

Sub-Matrix: SOIL	Client sample ID	15434179 W4BH306		15434221 W5TP304		----	
	Laboratory sample ID	PR1714619-001		PR1714619-002		----	
	Client sampling date / time	20-Apr-2017 00:00		21-Apr-2017 00:00		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.1	%	**82.2**	± 6.0%	**88.8**	± 6.0%	**----**	----
PCDDs and PCDFs (Dioxins and Furans)									
2378-TCDD	S-DFHMS03	-	ng/g DW	<0.00098	----	<0.00092	----	**----**	----
12378-PeCDD	S-DFHMS03	-	ng/g DW	<0.0011	----	<0.0014	----	**----**	----
123478-HxCDD	S-DFHMS03	-	ng/g DW	<0.0013	----	<0.0016	----	**----**	----
123678-HxCDD	S-DFHMS03	-	ng/g DW	<0.0013	----	<0.0016	----	**----**	----
123789-HxCDD	S-DFHMS03	-	ng/g DW	<0.0013	----	<0.0033	----	**----**	----
1234678-HpCDD	S-DFHMS03	-	ng/g DW	<0.0026	----	<0.002	----	**----**	----
OCDD	S-DFHMS03	-	ng/g DW	<0.046	----	<0.042	----	**----**	----
2378-TCDF	S-DFHMS03	-	ng/g DW	<0.0028	----	<0.0014	----	**----**	----
12378-PeCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	<0.001	----	**----**	----
23478-PeCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	<0.001	----	**----**	----
123478-HxCDF	S-DFHMS03	-	ng/g DW	<0.0014	----	<0.0025	----	**----**	----
123678-HxCDF	S-DFHMS03	-	ng/g DW	<0.0014	----	<0.0025	----	**----**	----
123789-HxCDF	S-DFHMS03	-	ng/g DW	<0.0014	----	<0.0013	----	**----**	----
234678-HxCDF	S-DFHMS03	-	ng/g DW	<0.0014	----	<0.0013	----	**----**	----
1234678-HpCDF	S-DFHMS03	-	ng/g DW	<0.013	----	<0.0019	----	**----**	----
1234789-HpCDF	S-DFHMS03	-	ng/g DW	<0.0065	----	<0.0019	----	**----**	----
OCDF	S-DFHMS03	-	ng/g DW	<0.0022	----	<0.0033	----	**----**	----
TEQ-Lowerbound	S-DFHMS03	-	ng/g DW	**0**	----	**0**	----	**----**	----
TEQ-Upperbound	S-DFHMS03	-	ng/g DW	**0.0037**	----	**0.0038**	----	**----**	----

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, delivery date in brackets without a time component will be displayed instead. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: V Raji 906 Pardubice - Zelene Predmesti Czech Republic 530 02	
S-DFHMS03	CZ_SOP_D06_06_175 - except chap. 10.2.3.1, 10.2.3.7, 10.2.3.8, 10.2.5 (US EPA 1613-modified, CSN P CEN/TS 16190-modified): Determination of tetra- to octa-chlorinated dioxins and furanes by isotope dilution method using HRGC-HRMS and calculation of TEQ parameters from measured values. The samples were stored in laboratory in the darkness and under temperature <4°C. Actual LOQ are noticed in the annex.
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.

A `*` symbol preceeding any method indicates non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information.
The calculation methods of summation parameters are available on request in the client service.

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
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Tel: (01244) 528700
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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	15 December 2017
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	170426-93
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	436989

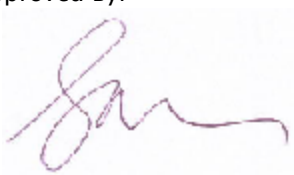
This report has been revised and directly supersedes 409058 in its entirety.

We received 13 samples on Wednesday April 26, 2017 and 6 of these samples were scheduled for analysis which was completed on Thursday May 18, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:



Sonia McWhan
Operations Manager

1291

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CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15400080	W4BH307	ES	0.10 - 0.30	21/04/2017
15400125	W4BH307	ES	0.80 - 1.00	21/04/2017
15400134	W4BH307	ES	2.40 - 2.60	21/04/2017
15400142	W4BH307	ES	4.00 - 4.20	21/04/2017
15400152	W4BH307	ES	7.50 - 7.80	21/04/2017
15400163	W4BH307	ES	9.50	21/04/2017
15400171	W4WS312	ES	0.00 - 0.10	21/04/2017
15400092	W4WS312	ES	0.80 - 1.20	21/04/2017
15400179	W4WS312	ES	1.70 - 2.00	21/04/2017
15400190	W4WS312	ES	2.90 - 3.00	21/04/2017
15400102	W4WS315	ES	2.30 - 2.40	21/04/2017
15400110	W4WS315	ES	3.30 - 3.40	21/04/2017
15400116	W4WS315	ES	4.20 - 4.40	21/04/2017

Maximum Sample/Coolbox Temperature (°C) : 12.6

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

Validated

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15400080		15400125		15400142		15400171		15400179			15400102		
			Customer Sample Reference	W4BH307		W4BH307		W4BH307		W4WS312		W4WS312			W4WS315		
			AGS Reference	ES		ES		ES		ES		ES			ES		
			Depth (m)	0.10 - 0.30		0.80 - 1.00		4.00 - 4.20		0.00 - 0.10		1.70 - 2.00			2.30 - 2.40		
			Container	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3				X		X				X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5		X		X				X			X			X	
Asbestos Quantification - Full	All	NDPs: 0 Tests: 3								X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4				X		X				X			X		
Dioxins/Furans (S)*	All	NDPs: 1 Tests: 2				X		X				N					
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 6		X		X		X		X		X			X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 6		X		X		X		X		X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6			X		X		X		X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6		X		X		X		X		X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 6		X		X		X		X		X			X		
Organotins on soils*	All	NDPs: 0 Tests: 2				X		X									
PAH by GCMS	All	NDPs: 0 Tests: 6		X		X		X		X		X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 3				X		X				X					
PFAS Solids	All	NDPs: 0 Tests: 3				X		X					X				
pH	All	NDPs: 0 Tests: 6		X		X		X		X		X			X		

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15400080		15400125		15400142		15400171		15400179			15400102		
			Customer Sample Reference	W4BH307		W4BH307		W4BH307		W4WS312		W4WS312			W4WS315		
			AGS Reference	ES		ES		ES		ES		ES			ES		
			Depth (m)	0.10 - 0.30		0.80 - 1.00		4.00 - 4.20		0.00 - 0.10		1.70 - 2.00			2.30 - 2.40		
			Container	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Sample description	All	NDPs: 0 Tests: 6		X		X		X		X		X			X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 4				X		X				X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 3				X				X		X					
TPH CWG GC (S)	All	NDPs: 0 Tests: 6		X		X		X		X		X			X		
VOC MS (S)	All	NDPs: 0 Tests: 6			X		X		X		X			X			X

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15400080	W4BH307	0.10 - 0.30	Dark Brown	Loamy Sand	Crushed Brick	Stones
15400125	W4BH307	0.80 - 1.00	Light Brown	Clay	Stones	Vegetation
15400142	W4BH307	4.00 - 4.20	Light Brown	Clay	Stones	None
15400171	W4WS312	0.00 - 0.10	Dark Brown	Loamy Sand	Concrete/Aggregate	Metal
15400179	W4WS312	1.70 - 2.00	Dark Brown	Sandy Clay Loam	Vegetation	Stones
15400102	W4WS315	2.30 - 2.40	Light Brown	Clay	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4BH307	0.10 - 0.30	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400080	ES
			W4BH307	0.80 - 1.00	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400125	ES
			W4BH307	4.00 - 4.20	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400142	ES
			W4WS312	0.00 - 0.10	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400171	ES
			W4WS312	1.70 - 2.00	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400179	ES
			W4WS315	2.30 - 2.40	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400102	ES
Moisture Content Ratio (% of as received sample)	%	PM024	5.1	16	13	6.8	16	18			
Exchangeable Ammonia as NH4	<15 mg/kg	TM024		<15 M	123 M		28.3 M				
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #		5.83 #	2 #				
pH	1 pH Units	TM133	8.99 M	9.38 M	9.11 M	8.33 M	9.66 M	8.62 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	10.4 #	<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M		<1 M	<1 M			
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M		<1 M	<1 M			
Cyanide, Complex	<1 mg/kg	TM153		<1	<1		<1	<1			
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M		15.5 M				
PCB congener 81	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 77	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 123	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 114	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 105	<3 µg/kg	TM168		<3 M	<3 M		5.11 M				
PCB congener 126	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 167	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 156	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 157	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 169	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
PCB congener 189	<3 µg/kg	TM168		<3 M	<3 M		<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168		<36	<36		<36				
Arsenic	<0.6 mg/kg	TM181	7.08 M	7.2 M	11.3 M	12 M	14 M	9.74 M			
Cadmium	<0.02 mg/kg	TM181	0.597 M	0.193 M	<0.02 M	10.3 M	0.778 M	0.106 M			
Chromium	<0.9 mg/kg	TM181	9.2 M	8.23 M	14.2 M	59.4 M	12.2 M	16.6 M			
Copper	<1.4 mg/kg	TM181	37.2 M	7.04 M	5.01 M	240 M	106 M	40.6 M			
Lead	<0.7 mg/kg	TM181	152 M	19.9 M	9.94 M	3670 M	240 M	77.2 M			
Mercury	<0.14 mg/kg	TM181	0.467 M	0.454 M	0.471 M	0.759 M	0.411 M	0.539 M			
Nickel	<0.2 mg/kg	TM181	13 M	50.9 M	59.6 M	31.4 M	19.1 M	29.1 M			
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #			
Tin	<0.24 mg/kg	TM181		1.53 #	1.83 #						
Zinc	<1.9 mg/kg	TM181	162 M	21.2 M	29.2 M	913 M	218 M	128 M			
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304				<0.001 #	0.0085 #	0.159 #			

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH307	W4BH307	W4BH307	W4WS312	W4WS312	W4WS315
			Depth (m)	0.10 - 0.30	0.80 - 1.00	4.00 - 4.20	0.00 - 0.10	1.70 - 2.00	2.30 - 2.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	26/04/2017	26/04/2017	26/04/2017	26/04/2017	26/04/2017	26/04/2017
			SDG Ref	170426-93	170426-93	170426-93	170426-93	170426-93	170426-93
			Lab Sample No.(s)	15400080	15400125	15400142	15400171	15400179	15400102
			AGS Reference	ES	ES	ES	ES	ES	ES
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304					<0.001 #	0.0049 #	0.003 #
Additional Asbestos Components (Using TM048)	-	TM304					None #	None #	None #
Analysts Comments	-	TM304					N/C	N/C	ACM debris found
Asbestos Quantification - Total - %	<0.001 %	TM304					<0.001 #	0.0134 #	0.162 #
PFBA (Perfluoro-n-butanoic acid) 357-22-44	<3 µg/kg	TM338		<3	<3			<3	
PFPA (Perfluoro-n-pentanoic acid) 2706-90-3	<3 µg/kg	TM338		<3	<3			<3	
PFHxA (Perfluoro-n-hexanoic acid) 307-24-4	<2 µg/kg	TM338		<2	<2			<2	
PFBS (Perfluoro-1-butanesulfonate)	<1 µg/kg	TM338		<1	<1			<1	
PFHpA (Perfluoro-n-heptanoic acid) 375-85-9	<1 µg/kg	TM338		<1	<1			<1	
PFOA (Perfluoro-n-octanoic acid) 335-67-1	<1 µg/kg	TM338		<1	<1			<1	
PFHxS (Perfluoro-1-hexanesulfonate)	<1 µg/kg	TM338		<1	<1			<1	
PFNA (Perfluoro-n-nonanoic acid) 375-95-1	<1 µg/kg	TM338		<1	<1			<1	
PFHpS (Perfluoro-1-heptanesulfonate)	<1 µg/kg	TM338		<1	<1			<1	
PFDA (Perfluoro-n-decanoic acid) 335-76-2	<1 µg/kg	TM338		<1	<1			<1	
Linear PFOS(Perfluoro-1-octanesulfon	<1 µg/kg	TM338		<1	<1			<1	
Branched PFOS	<1 µg/kg	TM338		<1	<1			<1	
PFUnA (Perfluoro-n-undecanoic acid) 2508-94-8	<1 µg/kg	TM338		<1	<1			<1	
PFDoA (Perfluoro-n-dodecanoic acid) 307-55-1	<1 µg/kg	TM338		<1	<1			<1	
PFOSA (Perfluoro-octanesulfonamide)	<1 µg/kg	TM338		<1	<1			<1	
6:2-PTS 27619-97-2	<1 µg/kg	TM338		<1	<1			<1	
Total PFOS	<1 µg/kg	TM338		<1	<1			<1	

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Dioxins/Furans (S)*

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH307	W4BH307				
			Depth (m)	0.80 - 1.00	4.00 - 4.20				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	21/04/2017	21/04/2017				
			Sampled Time	.	.				
			Date Received	26/04/2017	26/04/2017				
			SDG Ref	170426-93	170426-93				
			Lab Sample No.(s)	15400125	15400142				
			AGS Reference	ES	ES				
1,2,3,4,6,7,8 HpCDD*	ng/kg	SUB		<0.0056	0.018				
1,2,3,4,6,7,8 HpCDF*	ng/kg	SUB		<0.0043	0.066				
1,2,3,4,7,8 HxCDD*	ng/kg	SUB		<0.0017	<0.007				
1,2,3,4,7,8 HxCDF*	ng/kg	SUB		<0.0024	0.068				
1,2,3,4,7,8,9 HpCDF*	ng/kg	SUB		<0.0043	<0.0058				
1,2,3,6,7,8 HxCDD*	ng/kg	SUB		<0.0017	<0.007				
1,2,3,6,7,8 HxCDF*	ng/kg	SUB		<0.0024	0.031				
1,2,3,7,8 PeCDD*	ng/kg	SUB		<0.0012	<0.0013				
1,2,3,7,8 PeCDF*	ng/kg	SUB		<0.0012	0.053				
1,2,3,7,8,9 HxCDD*	ng/kg	SUB		<0.0017	<0.0035				
1,2,3,7,8,9 HxCDF*	ng/kg	SUB		<0.0024	0.005				
2,3,4,6,7,8 HxCDF*	ng/kg	SUB		<0.0024	0.014				
2,3,4,7,8 PeCDF*	ng/kg	SUB		<0.0012	0.047				
2,3,7,8 TCDD*	ng/kg	SUB		<0.00078	<0.0012				
2,3,7,8, TCDF*	ng/kg	SUB		<0.00069	0.074				
OCDD*	ng/kg	SUB		<0.005	0.24				
OCDF*	ng/kg	SUB		<0.0037	0.033				
I-PCDD/F-TEQ Lower Bound*	ng/kg	SUB		0	0.047				
I-PCDD/F-TEQ Upper Bound*	ng/kg	SUB		0.0037	0.05				

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH307	W4BH307				
			Depth (m)	0.80 - 1.00	4.00 - 4.20				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	21/04/2017	21/04/2017				
			Sampled Time	.	.				
			Date Received	26/04/2017	26/04/2017				
			SDG Ref	170426-93	170426-93				
			Lab Sample No.(s)	15400125	15400142				
			AGS Reference	ES	ES				
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02				
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02				
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05				
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02				
Monobutyl Tin*	mg/kg	SUB		<0.15	<0.15				
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02				
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			W4BH307	W4BH307	W4BH307	W4WS312	W4WS312	W4WS315
			0.10 - 0.30 Soil/Solid (S) 21/04/2017 . 26/04/2017 170426-93 15400080 ES	0.80 - 1.00 Soil/Solid (S) 21/04/2017 . 26/04/2017 170426-93 15400125 ES	4.00 - 4.20 Soil/Solid (S) 21/04/2017 . 26/04/2017 170426-93 15400142 ES	0.00 - 0.10 Soil/Solid (S) 21/04/2017 . 26/04/2017 170426-93 15400171 ES	1.70 - 2.00 Soil/Solid (S) 21/04/2017 . 26/04/2017 170426-93 15400179 ES	2.30 - 2.40 Soil/Solid (S) 21/04/2017 . 26/04/2017 170426-93 15400102 ES
Naphthalene-d8 % recovery**	%	TM218	102	102	103	103	104	101
Acenaphthene-d10 % recovery**	%	TM218	104	103	105	104	105	103
Phenanthrene-d10 % recovery**	%	TM218	100	98.7	101	102	101	99
Chrysene-d12 % recovery**	%	TM218	99.3	90.2	94.3	102	93.4	93.7
Perylene-d12 % recovery**	%	TM218	109	94.3	99.9	109	105	99.1
Naphthalene	<9 µg/kg	TM218	108 M	<9 M	<9 M	91.4 M	27.4 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	215 M	<12 M	<12 M	199 M	29.9 M	43.1 M
Acenaphthene	<8 µg/kg	TM218	299 M	<8 M	<8 M	118 M	49 M	10.8 M
Fluorene	<10 µg/kg	TM218	320 M	<10 M	<10 M	116 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	3000 M	<15 M	<15 M	1550 M	181 M	75 M
Anthracene	<16 µg/kg	TM218	792 M	<16 M	<16 M	499 M	55.5 M	37.6 M
Fluoranthene	<17 µg/kg	TM218	4030 M	<17 M	<17 M	4090 M	360 M	199 M
Pyrene	<15 µg/kg	TM218	3400 M	<15 M	<15 M	3750 M	294 M	164 M
Benz(a)anthracene	<14 µg/kg	TM218	2060 M	<14 M	<14 M	2900 M	218 M	140 M
Chrysene	<10 µg/kg	TM218	1610 M	<10 M	<10 M	2390 M	174 M	109 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	2550 M	<15 M	<15 M	4070 M	322 M	231 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	950 M	<14 M	<14 M	1520 M	127 M	99.5 M
Benzo(a)pyrene	<15 µg/kg	TM218	2150 M	<15 M	<15 M	3360 M	234 M	162 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	1080 M	<18 M	<18 M	1820 M	139 M	104 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	300 M	<23 M	<23 M	466 M	42.4 M	30.1 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	1340 M	<24 M	<24 M	2060 M	176 M	125 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	24200	<118	<118	29000	2430	1530

CERTIFICATE OF ANALYSIS

SDG: 170426-93 Client Reference: 70015362 Report Number: 436989
Location: City Deal Tipner West Order Number: 70015362-CS2 Superseded Report: 409058

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH307	W4BH307	W4WS312	W4WS315		
			Depth (m)	0.80 - 1.00	4.00 - 4.20	1.70 - 2.00	2.30 - 2.40		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017		
			Sampled Time	.	.	.	.		
			Date Received	26/04/2017	26/04/2017	26/04/2017	26/04/2017		
			SDG Ref	170426-93	170426-93	170426-93	170426-93		
			Lab Sample No.(s)	15400125	15400142	15400179	15400102		
			AGS Reference	ES	ES	ES	ES		
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100		
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100		
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100		
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100		
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100		
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100		
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100		
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100		
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100		
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100		
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100		
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100		
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100		
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100		
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH307	W4BH307	W4WS312	W4WS315		
			Depth (m)	0.80 - 1.00	4.00 - 4.20	1.70 - 2.00	2.30 - 2.40		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017		
			Sampled Time	.	.	.	.		
			Date Received	26/04/2017	26/04/2017	26/04/2017	26/04/2017		
			SDG Ref	170426-93	170426-93	170426-93	170426-93		
			Lab Sample No.(s)	15400125	15400142	15400179	15400102		
			AGS Reference	ES	ES	ES	ES		
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100		
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100		
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100		
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	184	1080		
Chrysene	<100 µg/kg	TM157		<100	<100	176	1020		
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100		
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100		

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH307	W4BH307	W4BH307	W4WS312	W4WS312	W4WS315
			Depth (m)	0.10 - 0.30	0.80 - 1.00	4.00 - 4.20	0.00 - 0.10	1.70 - 2.00	2.30 - 2.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	26/04/2017	26/04/2017	26/04/2017	26/04/2017	26/04/2017	26/04/2017
			SDG Ref	170426-93	170426-93	170426-93	170426-93	170426-93	170426-93
			Lab Sample No.(s)	15400080	15400125	15400142	15400171	15400179	15400102
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		52	78	54	49	91	70
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089		<44 M	<44 M	<44 M	175 M	83300 M	<44 M
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	15.5	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	107	783	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	17.2	22100	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10	<10	11.8	27400	<10
Aliphatics >C12-C16	<100 µg/kg	TM173		1450	<100	<100	1830	<100	331
Aliphatics >C16-C21	<100 µg/kg	TM173		11000	1450	<100	9340	5950	4380
Aliphatics >C21-C35	<100 µg/kg	TM173		64900	50100	633	84000	70400	21700
Aliphatics >C35-C44	<100 µg/kg	TM173		52800	10800	<100	27100	8160	6180
Total Aliphatics >C12-C44	<100 µg/kg	TM173		130000	62400	633	122000	84500	32600
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	21.5	14700	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10	<10	<10	18300	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173		1790	<100	<100	2060	942	617
Aromatics >EC16-EC21	<100 µg/kg	TM173		13500	432	<100	20300	6180	3900
Aromatics >EC21-EC35	<100 µg/kg	TM173		90700	14800	687	114000	38700	25900
Aromatics >EC35-EC44	<100 µg/kg	TM173		78800	1750	350	46000	11700	12200
Aromatics >EC40-EC44	<100 µg/kg	TM173		36200	<100	<100	18500	4070	4770
Total Aromatics >EC12-EC44	<100 µg/kg	TM173		185000	17000	1040	182000	57600	42600
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		315000	79400	1710	304000	225000	75200
Aromatics >EC16-EC35	<100 µg/kg	TM173		104000	15200	687	134000	44900	29800

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4BH307	0.10 - 0.30	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400080	ES
			W4BH307	0.80 - 1.00	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400125	ES
			W4BH307	4.00 - 4.20	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400142	ES
			W4WS312	0.00 - 0.10	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400171	ES
			W4WS312	1.70 - 2.00	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400179	ES
			W4WS315	2.30 - 2.40	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400102	ES
Dibromofluoromethane**	%	TM116		108	107		111	115			
Toluene-d8**	%	TM116		102	100		101	101			
4-Bromofluorobenzene**	%	TM116		101	99.2		101	101			
Dichlorodifluoromethane	<6 µg/kg	TM116		<60 M	<60 M		<60 M	<60 M			
Chloromethane	<7 µg/kg	TM116		<70 #	<70 #		<70 #	<70 #			
Vinyl Chloride	<6 µg/kg	TM116		<60 M	<60 M		<60 M	<60 M			
Bromomethane	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			
Chloroethane	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			
Trichlorofluorormethane	<6 µg/kg	TM116		<60 M	<60 M		<60 M	<60 M			
1,1-Dichloroethene	<10 µg/kg	TM116		<100 #	<100 #		<100 #	<100 #			
Carbon Disulphide	<7 µg/kg	TM116		<70 M	<70 M		<70 M	<70 M			
Dichloromethane	<10 µg/kg	TM116		<100 #	<100 #		<100 #	<100 #			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100 M	<100 M	<100 M	<100 M	<100 M	<100 M			
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			
1,1-Dichloroethane	<8 µg/kg	TM116		<80 M	<80 M		<80 M	<80 M			
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<60 M	<60 M		<60 M	<60 M			
2,2-Dichloropropane	<10 µg/kg	TM116		<100	<100		<100	<100			
Bromochloromethane	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			
Chloroform	<8 µg/kg	TM116		<80 M	<80 M		<80 M	<80 M			
1,1,1-Trichloroethane	<7 µg/kg	TM116		<70 M	<70 M		<70 M	<70 M			
1,1-Dichloropropene	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			
Carbontetrachloride	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			
1,2-Dichloroethane	<5 µg/kg	TM116		<50 M	<50 M		<50 M	<50 M			
Benzene	<9 µg/kg	TM116	<90 M	<90 M	<90 M	<90 M	<90 M	<90 M			
Trichloroethene	<9 µg/kg	TM116		<90 #	<90 #		<90 #	<90 #			
1,2-Dichloropropane	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			
Dibromomethane	<9 µg/kg	TM116		<90 M	<90 M		<90 M	<90 M			
Bromodichloromethane	<7 µg/kg	TM116		<70 M	<70 M		<70 M	<70 M			
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			
Toluene	<7 µg/kg	TM116	<70 M	<70 M	<70 M	<70 M	<70 M	<70 M			
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<100	<100		<100	<100			
1,1,2-Trichloroethane	<10 µg/kg	TM116		<100 M	<100 M		<100 M	<100 M			

CERTIFICATE OF ANALYSIS

SDG: 170426-93 Client Reference: 70015362 Report Number: 436989
Location: City Deal Tipner West Order Number: 70015362-CS2 Superseded Report: 409058

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH307	W4BH307	W4BH307	W4WS312	W4WS312	W4WS315
			Depth (m)	0.10 - 0.30	0.80 - 1.00	4.00 - 4.20	0.00 - 0.10	1.70 - 2.00	2.30 - 2.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017	21/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	26/04/2017	26/04/2017	26/04/2017	26/04/2017	26/04/2017	26/04/2017
			SDG Ref	170426-93	170426-93	170426-93	170426-93	170426-93	170426-93
			Lab Sample No.(s)	15400080	15400125	15400142	15400171	15400179	15400102
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<7 µg/kg	TM116			<70 M	<70 M		<70 M	<70 M
Tetrachloroethene	<5 µg/kg	TM116			<50 M	<50 M		<50 M	<50 M
Dibromochloromethane	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
1,2-Dibromoethane	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
Chlorobenzene	<5 µg/kg	TM116			<50 M	<50 M		<50 M	<50 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
Ethylbenzene	<4 µg/kg	TM116		<40 M	<40 M	<40 M	<40 M	<40 M	<40 M
p/m-Xylene	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	<100 #	<100 #
o-Xylene	<10 µg/kg	TM116		<100 M	<100 M	<100 M	<100 M	<100 M	<100 M
Styrene	<10 µg/kg	TM116			<100 #	<100 #		<100 #	<100 #
Bromoform	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
Isopropylbenzene	<5 µg/kg	TM116			<50 #	<50 #		<50 #	<50 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
1,2,3-Trichloropropane	<16 µg/kg	TM116			<160 M	<160 M		<160 M	<160 M
Bromobenzene	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
Propylbenzene	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
2-Chlorotoluene	<9 µg/kg	TM116			<90 M	<90 M		<90 M	<90 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116			<80 M	<80 M		<80 M	<80 M
4-Chlorotoluene	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
tert-Butylbenzene	<14 µg/kg	TM116			<140 M	<140 M		<140 M	<140 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116			<90 #	<90 #		<90 #	<90 #
sec-Butylbenzene	<10 µg/kg	TM116			<100	<100		<100	<100
4-Isopropyltoluene	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
1,3-Dichlorobenzene	<8 µg/kg	TM116			<80 M	<80 M		<80 M	<80 M
1,4-Dichlorobenzene	<5 µg/kg	TM116			<50 M	<50 M		<50 M	<50 M
n-Butylbenzene	<11 µg/kg	TM116			<110	<110		<110	<110
1,2-Dichlorobenzene	<10 µg/kg	TM116			<100 M	<100 M		<100 M	<100 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116			<140 M	<140 M		<140 M	<140 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<100 #	<100 #	<100 #	<100 #	<100 #	<100 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116			<200	<200		<200	<200
Hexachlorobutadiene	<20 µg/kg	TM116			<200	<200		<200	<200
Naphthalene	<13 µg/kg	TM116			<130 M	<130 M		<130 M	<130 M

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4BH307	0.10 - 0.30	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400080	ES
			W4BH307	0.80 - 1.00	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400125	ES
			W4BH307	4.00 - 4.20	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400142	ES
			W4WS312	0.00 - 0.10	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400171	ES
			W4WS312	1.70 - 2.00	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400179	ES
			W4WS315	2.30 - 2.40	Soil/Solid (S)	21/04/2017	.	26/04/2017	170426-93	15400102	ES
1,2,3-Trichlorobenzene	<20 µg/kg	TM116		<200 #				<200 #		<200 #	

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH307 ES 0.10 - 0.30 SOLID 21/04/2017 00:00:00 27/04/2017 10:03:39 170426-93 15400080 TM048	02/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH307 ES 0.80 - 1.00 SOLID 21/04/2017 00:00:00 27/04/2017 09:30:22 170426-93 15400125 TM048	02/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS312 ES 0.00 - 0.10 SOLID 21/04/2017 00:00:00 27/04/2017 10:11:08 170426-93 15400171 TM048	02/05/17	Chris Swindells	Loose fibres in soil	Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS312 ES 1.70 - 2.00 SOLID 21/04/2017 00:00:00 27/04/2017 09:59:33 170426-93 15400179 TM048	02/05/17	Chris Swindells	Loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS315 ES 2.30 - 2.40 SOLID 21/04/2017 00:00:00 27/04/2017 09:57:13 170426-93 15400102 TM048	02/05/17	Chris Swindells	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

CERTIFICATE OF ANALYSIS

SDG: 170426-93 **Client Reference:** 70015362 **Report Number:** 436989
Location: City Deal Tipner West **Order Number:** 70015362-CS2 **Superseded Report:** 409058

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS312 ES 0.00 - 0.10 SOLID 21/04/2017 00:00:00 05/05/2017 08:18:37 170426-93 15400171 TM304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS312 ES 1.70 - 2.00 SOLID 21/04/2017 00:00:00 05/05/2017 08:27:55 170426-93 15400179 TM304	None (#)	N/C	0.0085 (#)	0.0049 (#)	0.0134 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS315 ES 2.30 - 2.40 SOLID 21/04/2017 00:00:00 05/05/2017 08:19:52 170426-93 15400102 TM304	None (#)	ACM debris found during gravimetric analysis	0.1594 (#)	0.0030 (#)	0.1624 (#)

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Notification of NDPs (No determination possible)

Date Received : 26/04/2017 11:55:33

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
15400179	W4WS312 ESZ	1.70 - 2.00	Dioxins/Furans (S)*	Unsuitable sample for analysis

Table of Results - Appendix

Method No	Reference	Description
ASB_PREP		
PM001		Preparation of Samples for Metals Analysis
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only
TM338		

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Test Completion Dates

Lab Sample No(s)	15400080	15400125	15400142	15400171	15400179	15400102
Customer Sample Ref.	W4BH307	W4BH307	W4BH307	W4WS312	W4WS312	W4WS315
AGS Ref.	ES	ES	ES	ES	ES	ES
Depth	0.10 - 0.30	0.80 - 1.00	4.00 - 4.20	0.00 - 0.10	1.70 - 2.00	2.30 - 2.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammonium Soil by Titration		03-May-2017	03-May-2017		03-May-2017	
Asbestos ID in Solid Samples	02-May-2017	02-May-2017		02-May-2017	02-May-2017	02-May-2017
Asbestos Quantification - Full				10-May-2017	10-May-2017	10-May-2017
Cyanide Comp/Free/Total/Thiocyanate		29-Apr-2017	29-Apr-2017		29-Apr-2017	29-Apr-2017
Dioxins/Furans (S)*		18-May-2017	12-May-2017			
EPH CWG (Aliphatic) GC (S)	01-May-2017	01-May-2017	02-May-2017	01-May-2017	01-May-2017	01-May-2017
EPH CWG (Aromatic) GC (S)	01-May-2017	01-May-2017	02-May-2017	01-May-2017	01-May-2017	01-May-2017
GRO by GC-FID (S)	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
Hexavalent Chromium (s)	02-May-2017	02-May-2017	03-May-2017	03-May-2017	02-May-2017	02-May-2017
Metals in solid samples by OES	03-May-2017	03-May-2017	02-May-2017	03-May-2017	03-May-2017	03-May-2017
Organotins on soils*		11-May-2017	11-May-2017			
PAH by GCMS	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
PCBs by GCMS		02-May-2017	02-May-2017		02-May-2017	
PFAS Solids		11-May-2017	11-May-2017		11-May-2017	
pH	28-Apr-2017	28-Apr-2017	02-May-2017	28-Apr-2017	02-May-2017	02-May-2017
Sample description	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017	27-Apr-2017
Semi Volatile Organic Compounds		02-May-2017	02-May-2017		02-May-2017	02-May-2017
Total Organic Carbon		02-May-2017		02-May-2017	02-May-2017	
TPH CWG GC (S)	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017
VOC MS (S)	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017	02-May-2017

CERTIFICATE OF ANALYSIS

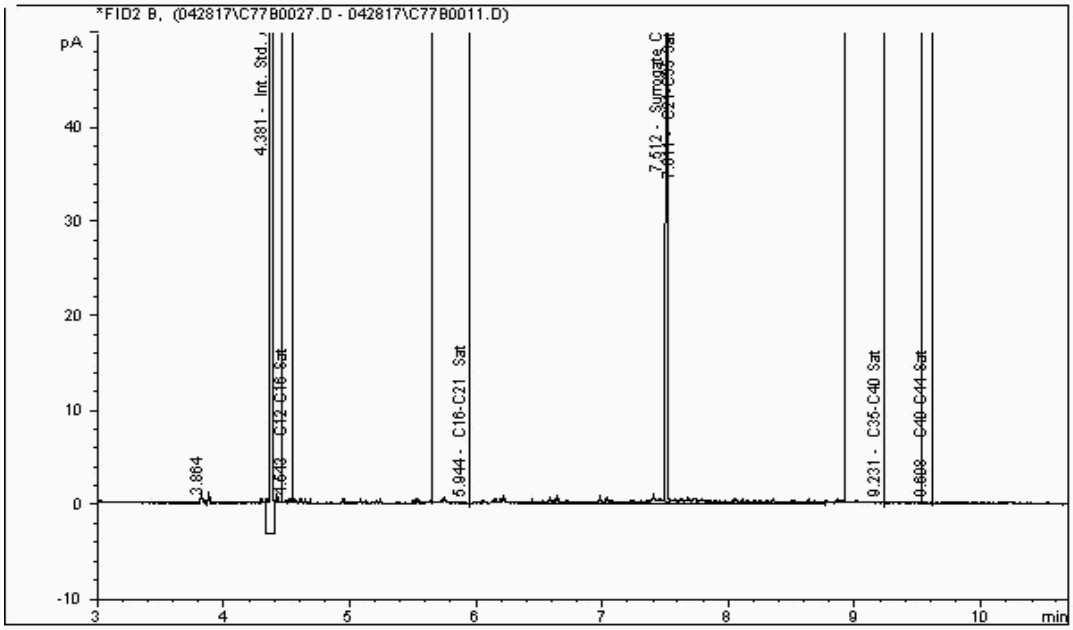
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15404509 **Depth :** 4.00 - 4.20
Sample ID : W4BH307

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14425911-
Date Acquired : 01/05/2017 11:04:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

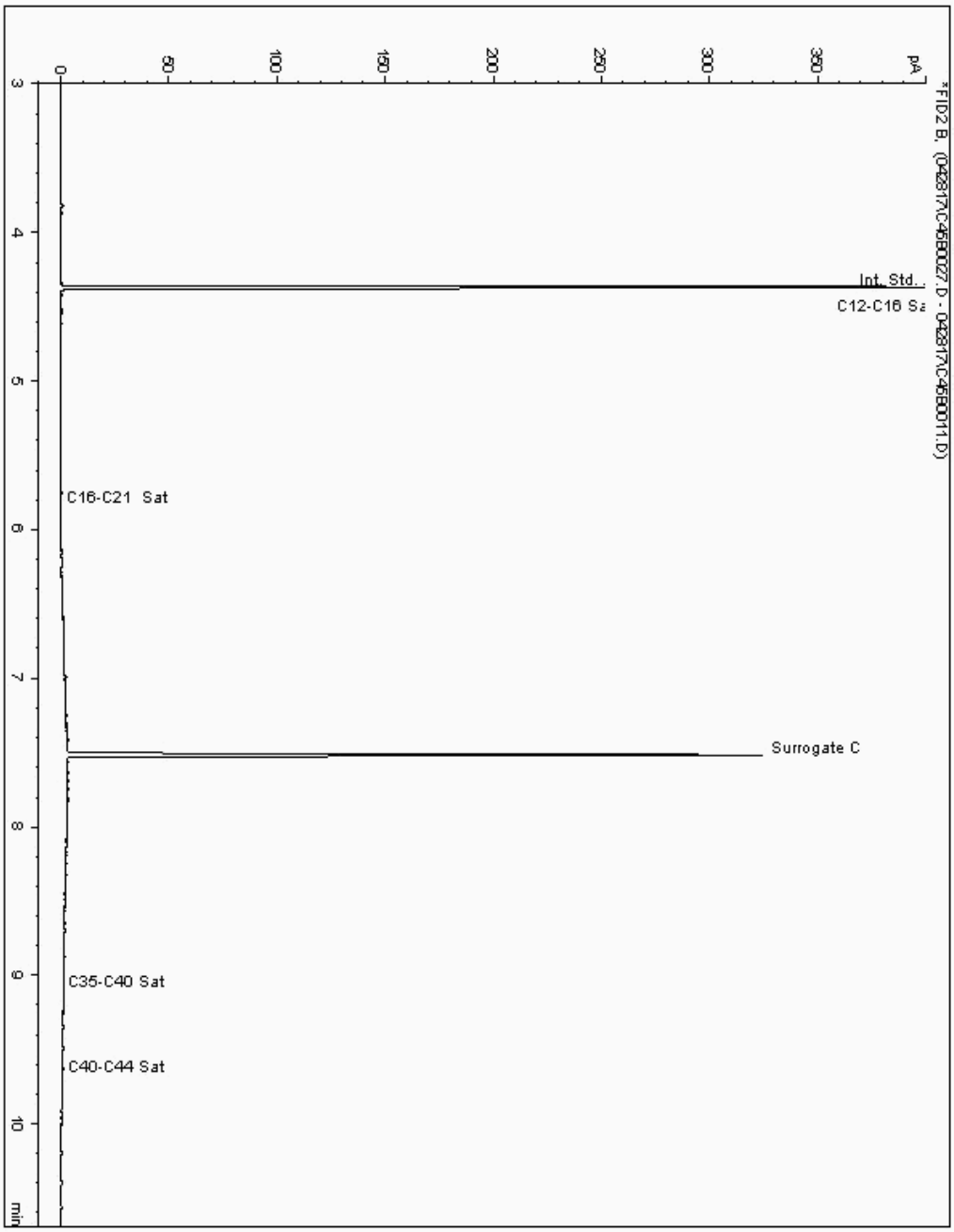
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15406492 **Sample ID :** W4BH307 **Depth :** 0.80 - 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14425878-
Date Acquired : 28/04/2017 21:14:33 PM
Units : ppb
Dilution: W4BH307[0.80 - 1.00] ->



CERTIFICATE OF ANALYSIS

SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

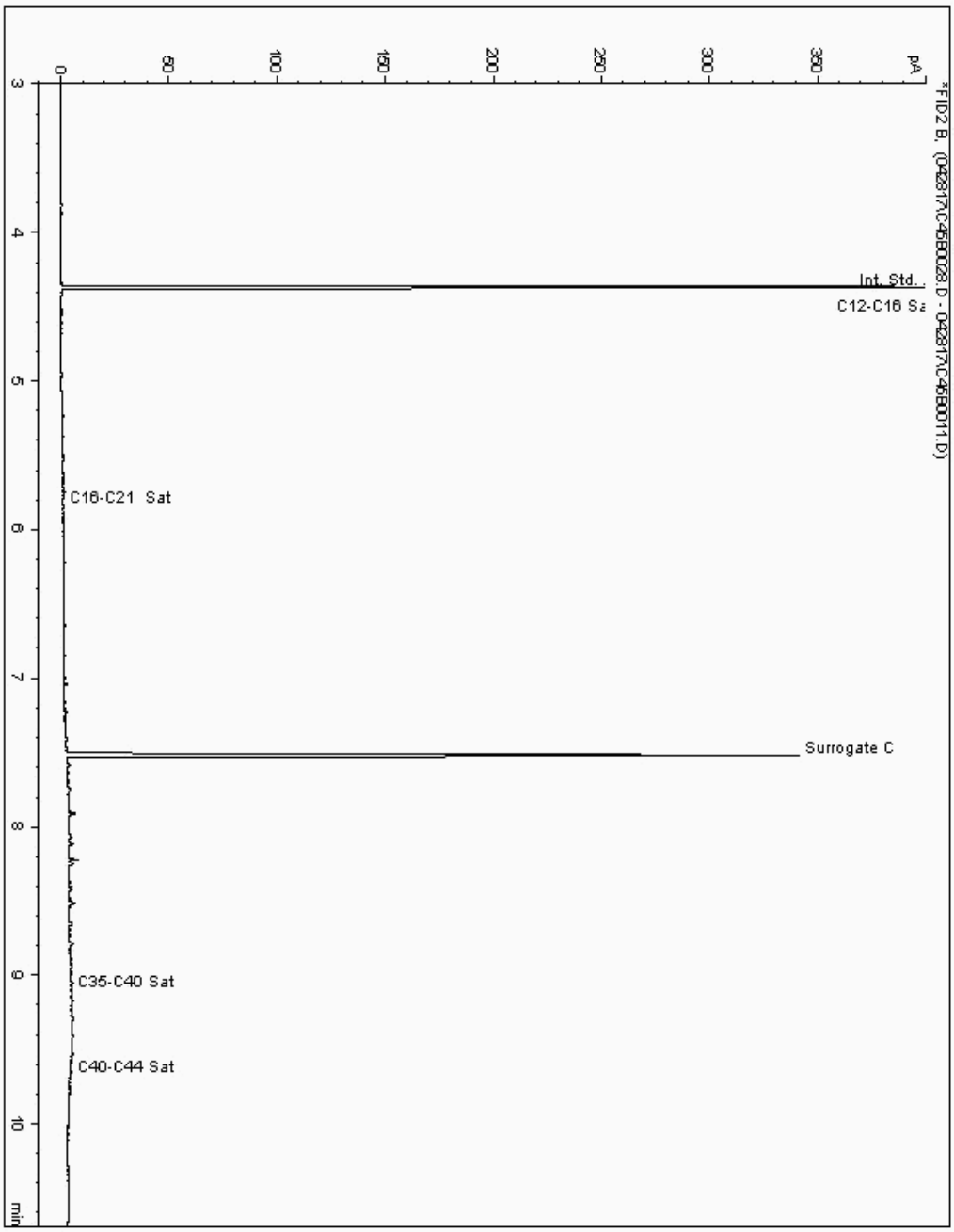
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 15406881
Sample ID : W4BH307

Depth : 0.10 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14425814-
Date Acquired : 28/04/2017 21:35:14 PM
Units : ppb
Dilution: W4BH307[0.10 - 0.30] ->



CERTIFICATE OF ANALYSIS

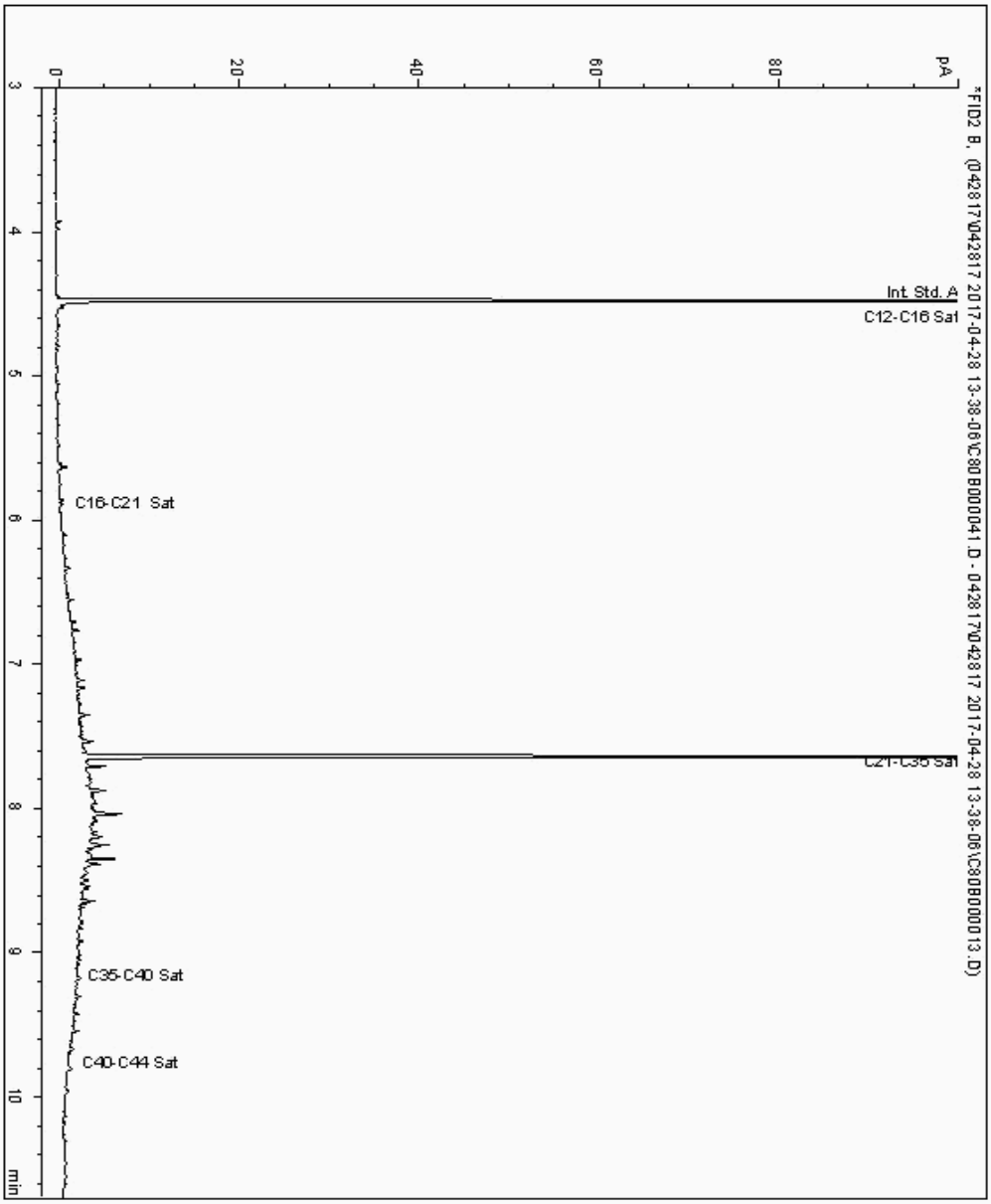
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15406981 **Sample ID :** W4WS312 **Depth :** 0.00 - 0.10

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14425928-
Date Acquired : 28/04/17 22:07:12
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

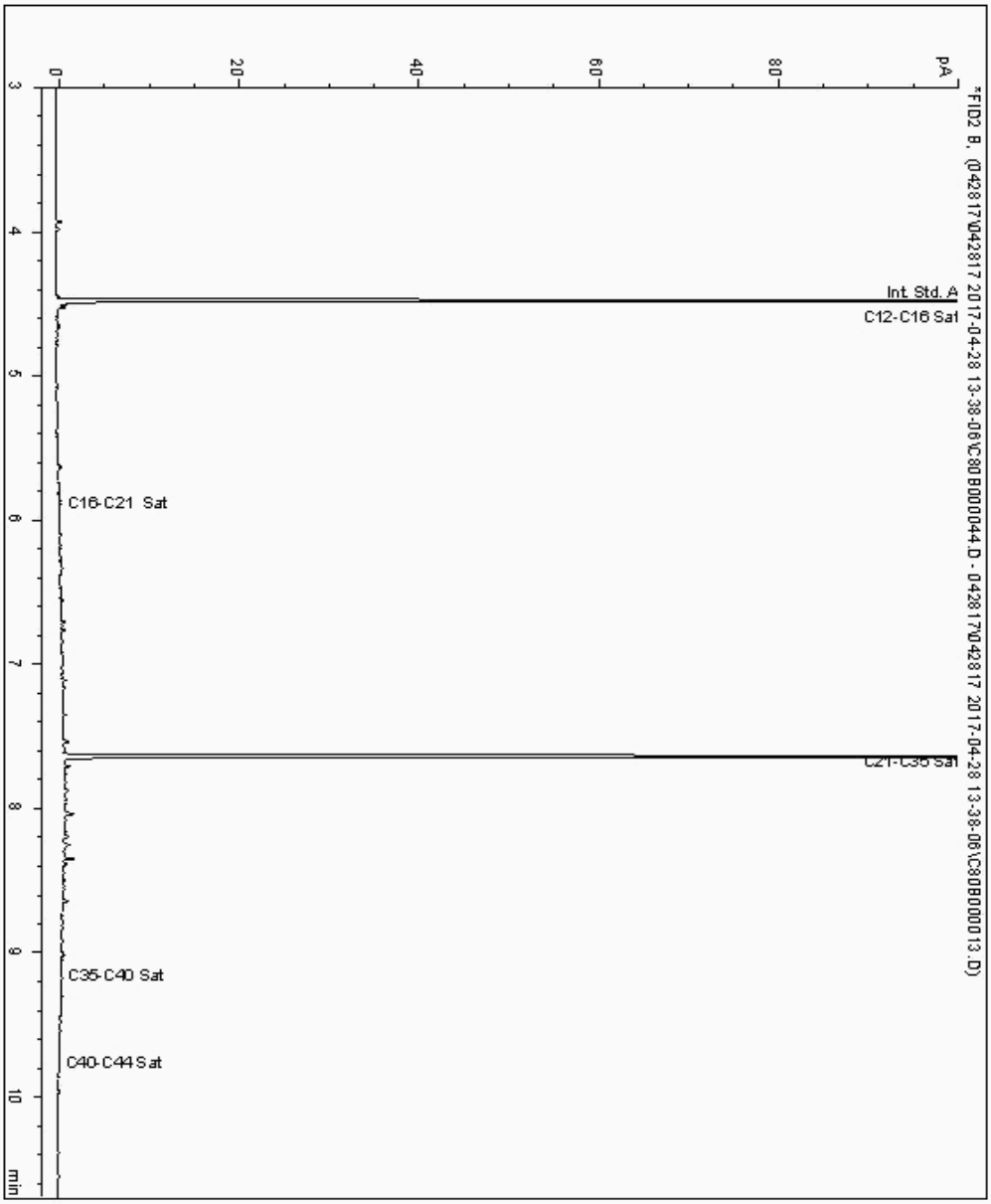
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15407117 **Sample ID :** W4WS315 **Depth :** 2.30 - 2.40

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14425836-
Date Acquired : 28/04/17 22:51:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

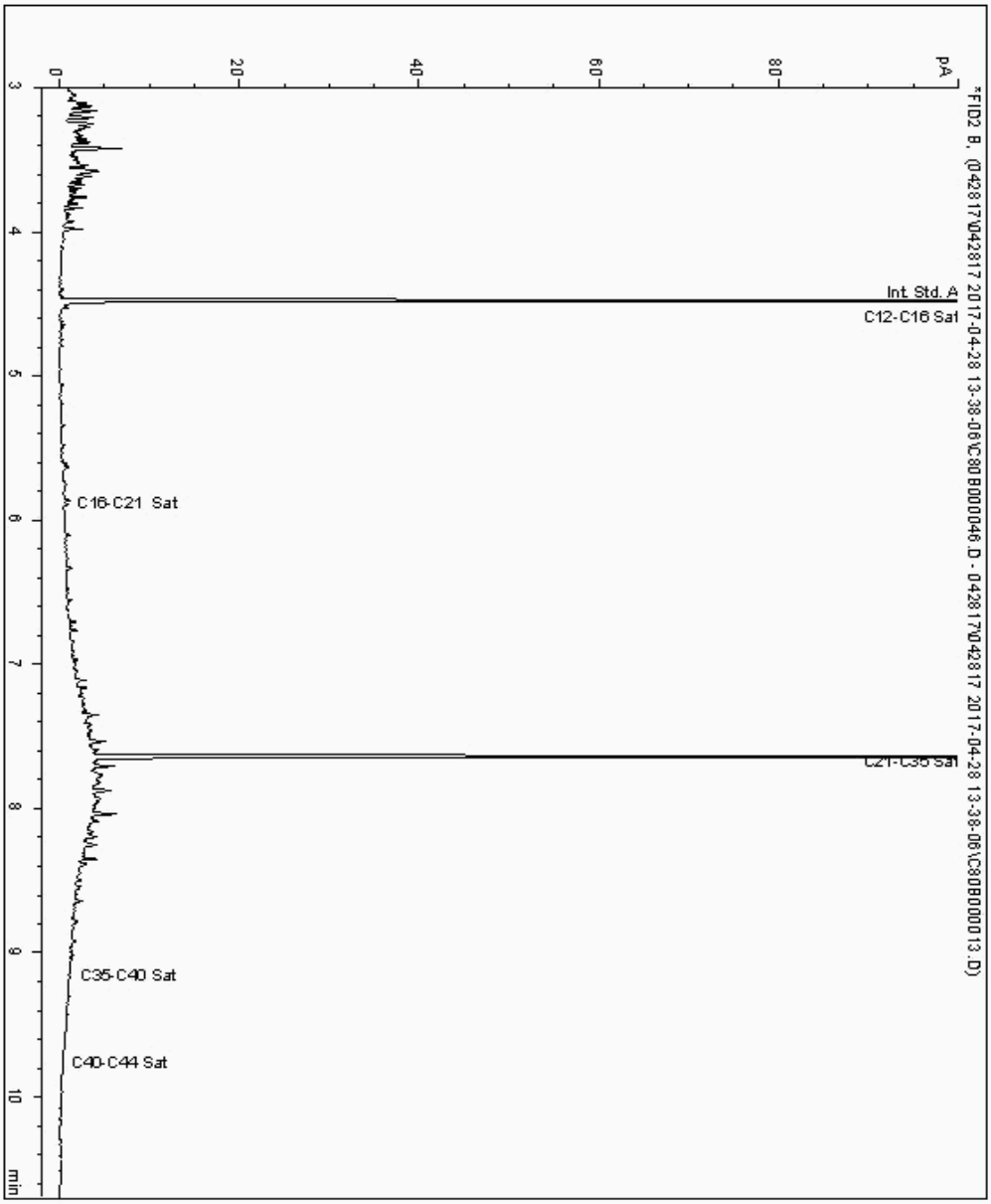
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15407233 **Sample ID :** W4WS312 **Depth :** 1.70 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14425949-
Date Acquired : 28/04/17 23:24:00
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

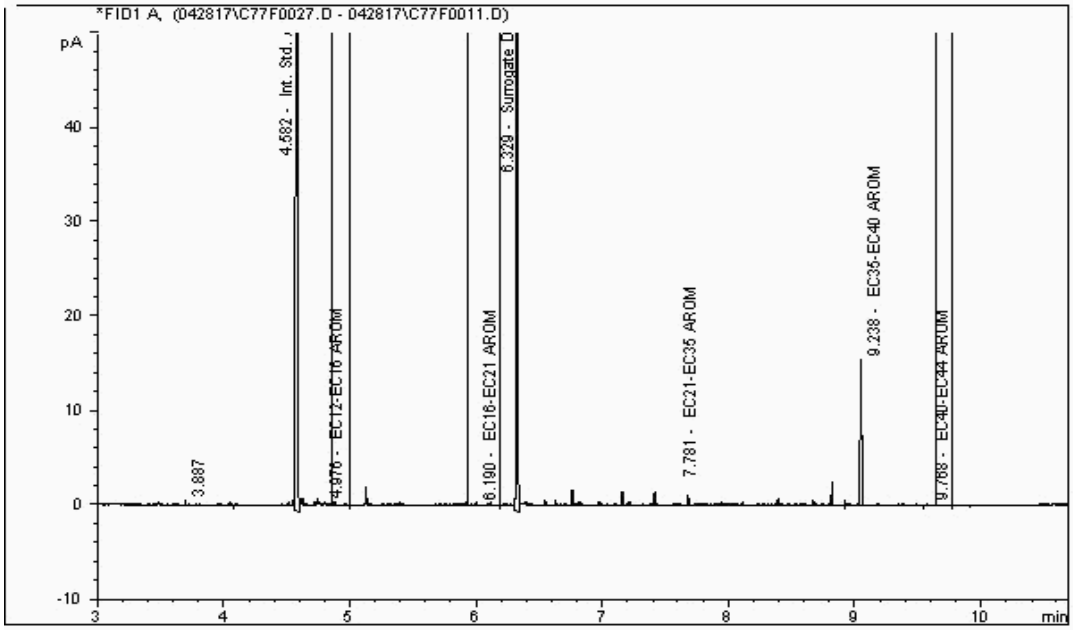
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15404509 **Sample ID :** W4BH307 **Depth :** 4.00 - 4.20

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14425912-
Date Acquired : 01/05/2017 11:04:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

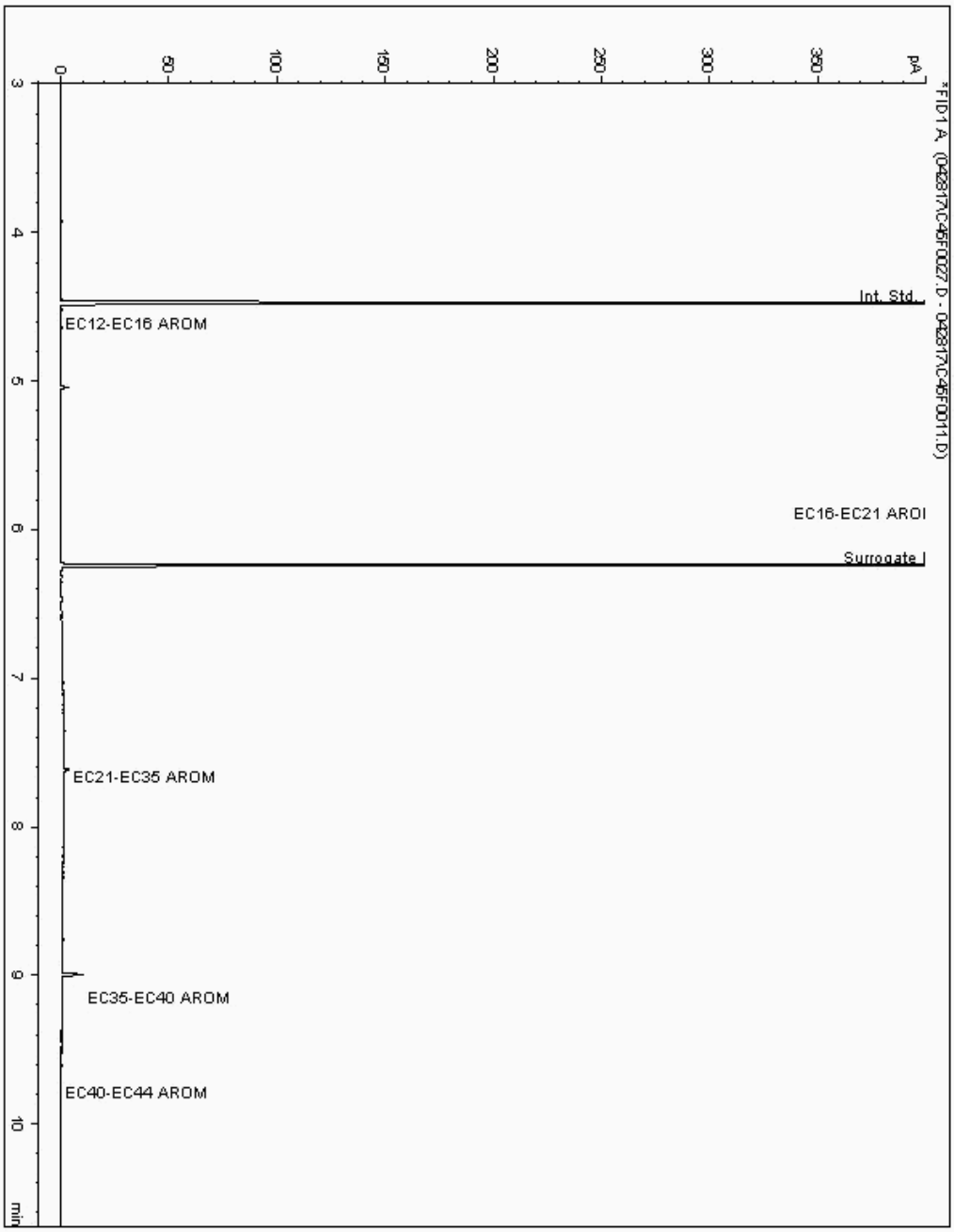
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15406492 **Sample ID :** W4BH307 **Depth :** 0.80 - 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14425879-
Date Acquired : 28/04/2017 21:14:34 PM
Units : ppb
Dilution: W4BH307[0.80 - 1.00] ->



CERTIFICATE OF ANALYSIS

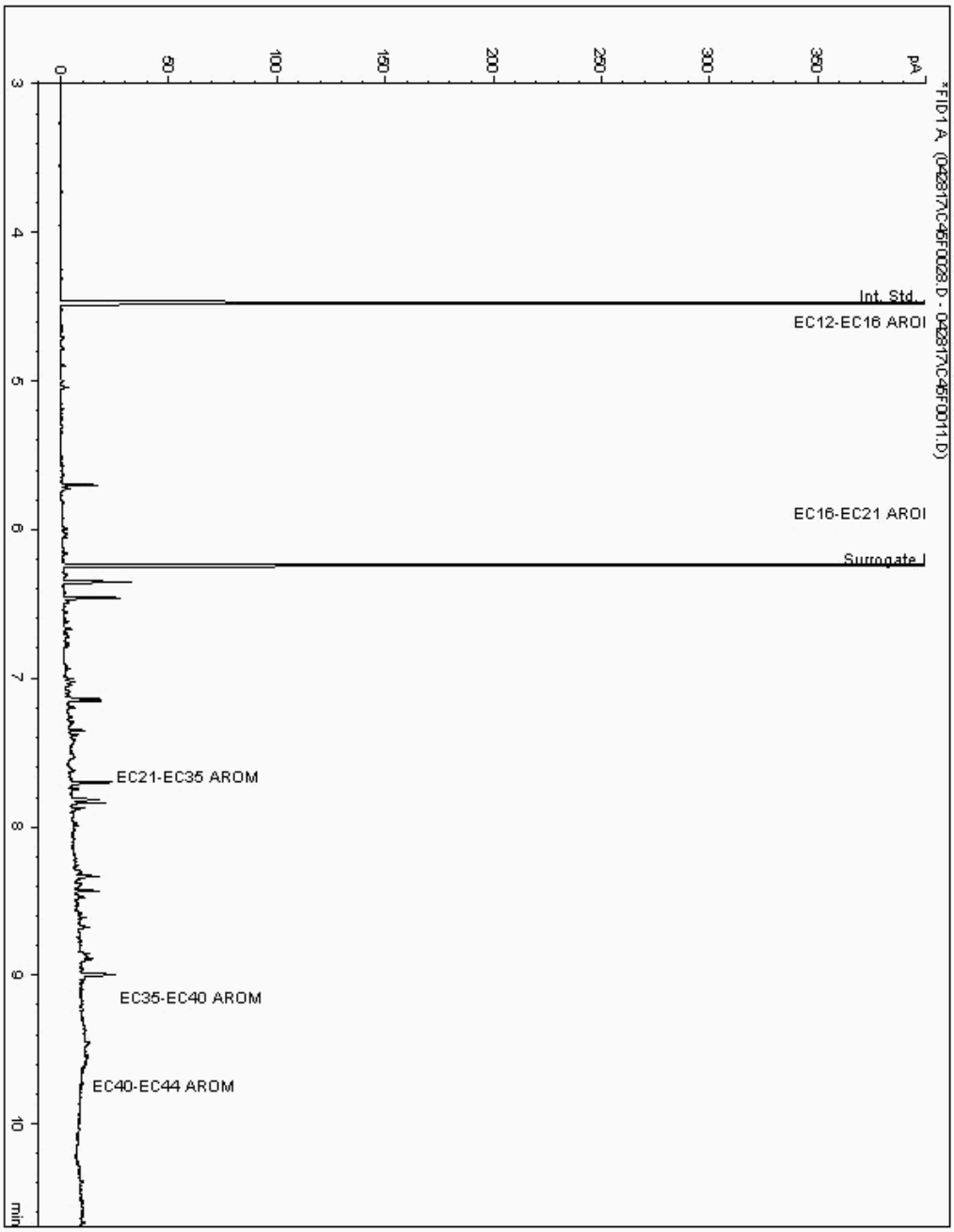
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15406881 **Sample ID :** W4BH307 **Depth :** 0.10 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14425815-
Date Acquired : 28/04/2017 21:35:13 PM
Units : ppb
Dilution: W4BH307[0.10 - 0.30] ->



CERTIFICATE OF ANALYSIS

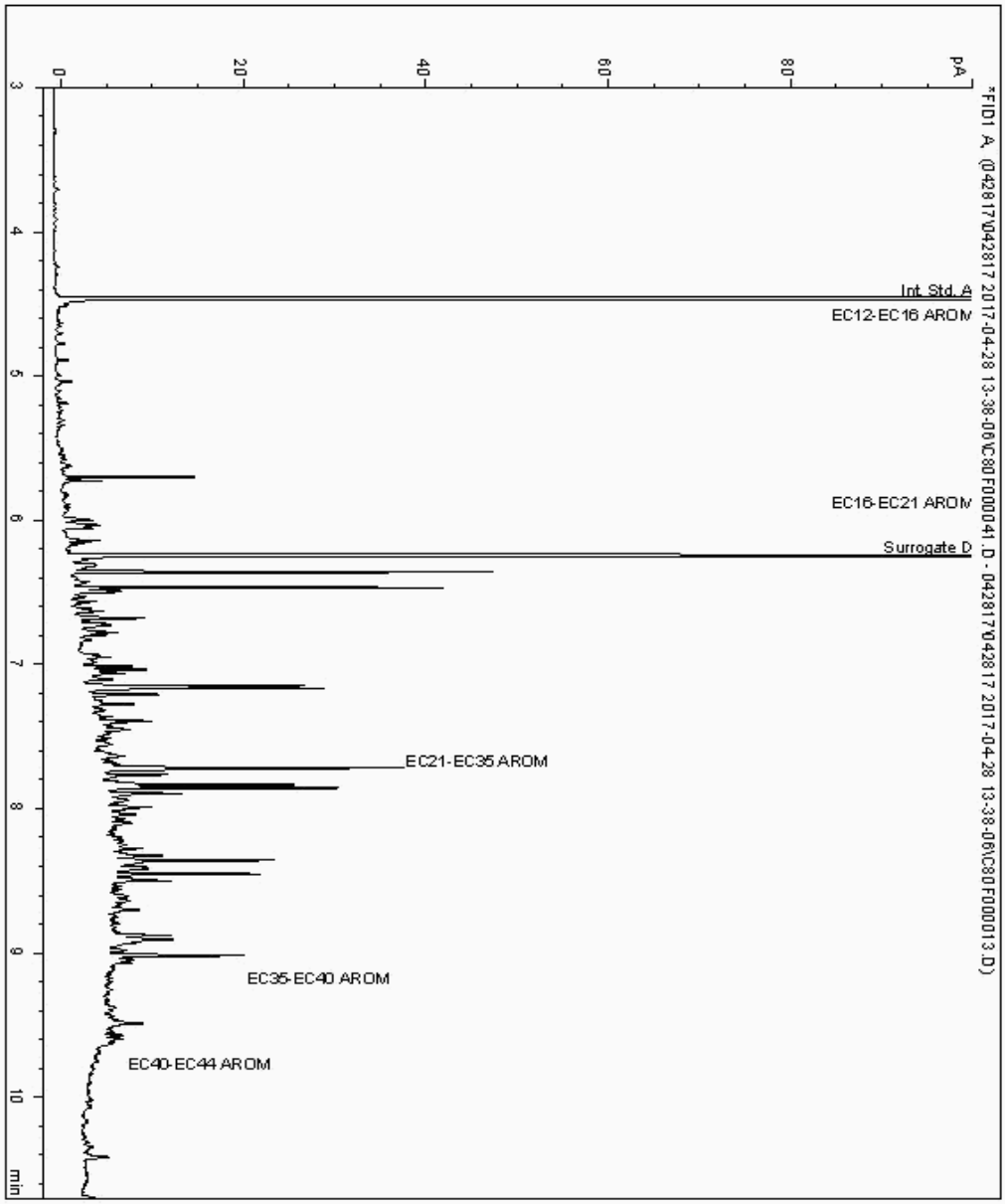
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15406981 **Sample ID :** W4WS312 **Depth :** 0.00 - 0.10

Speciated TPH - AROMS (C12 - C44)

Sample Identity: 14425929-
Date Acquired : 28/04/17 22:07:12
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

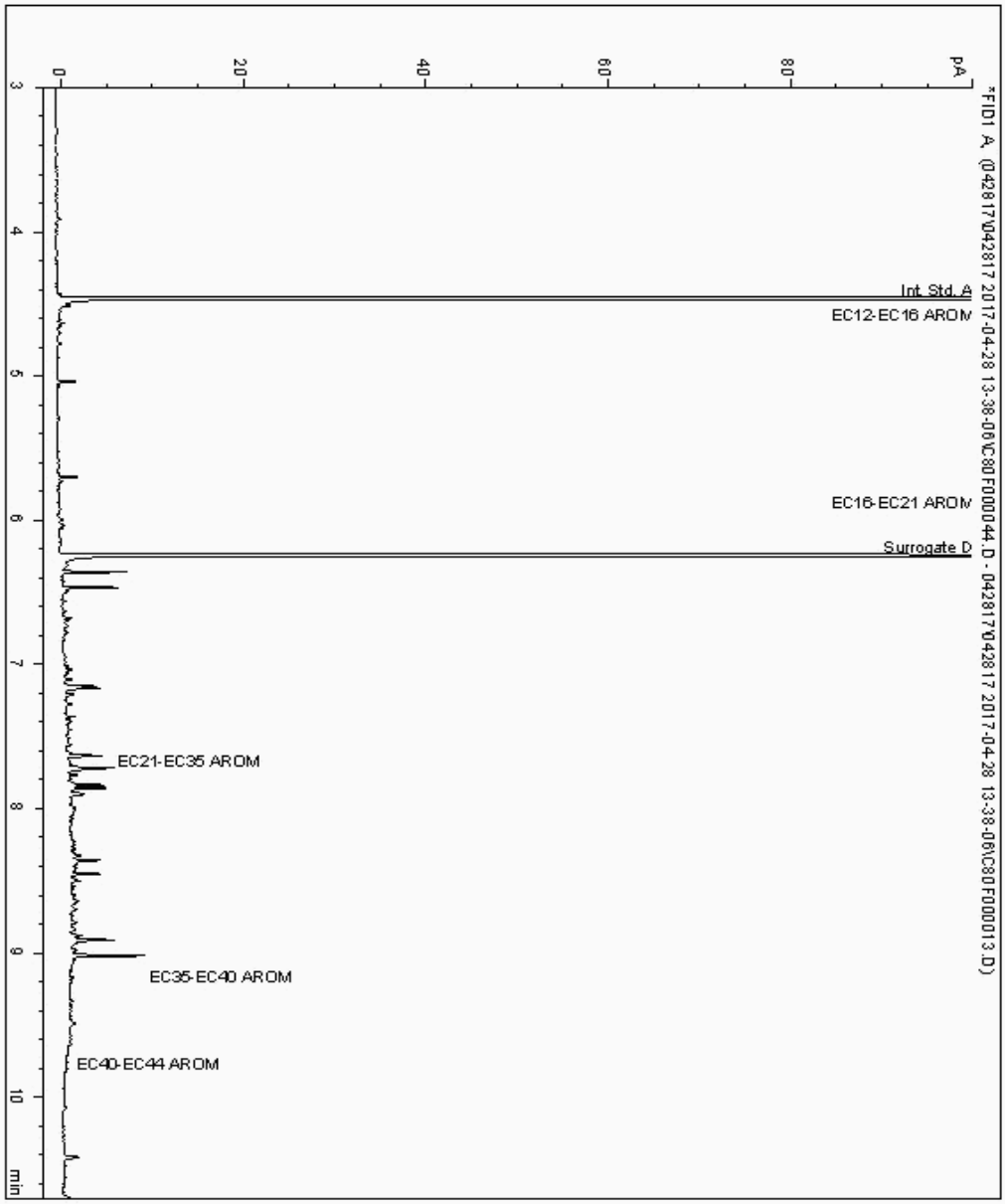
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15407117 **Sample ID :** W4WS315 **Depth :** 2.30 - 2.40

Speciated TPH - AROMS (C12 - C44)

Sample Identity: 14425837-
Date Acquired : 28/04/17 22:51:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

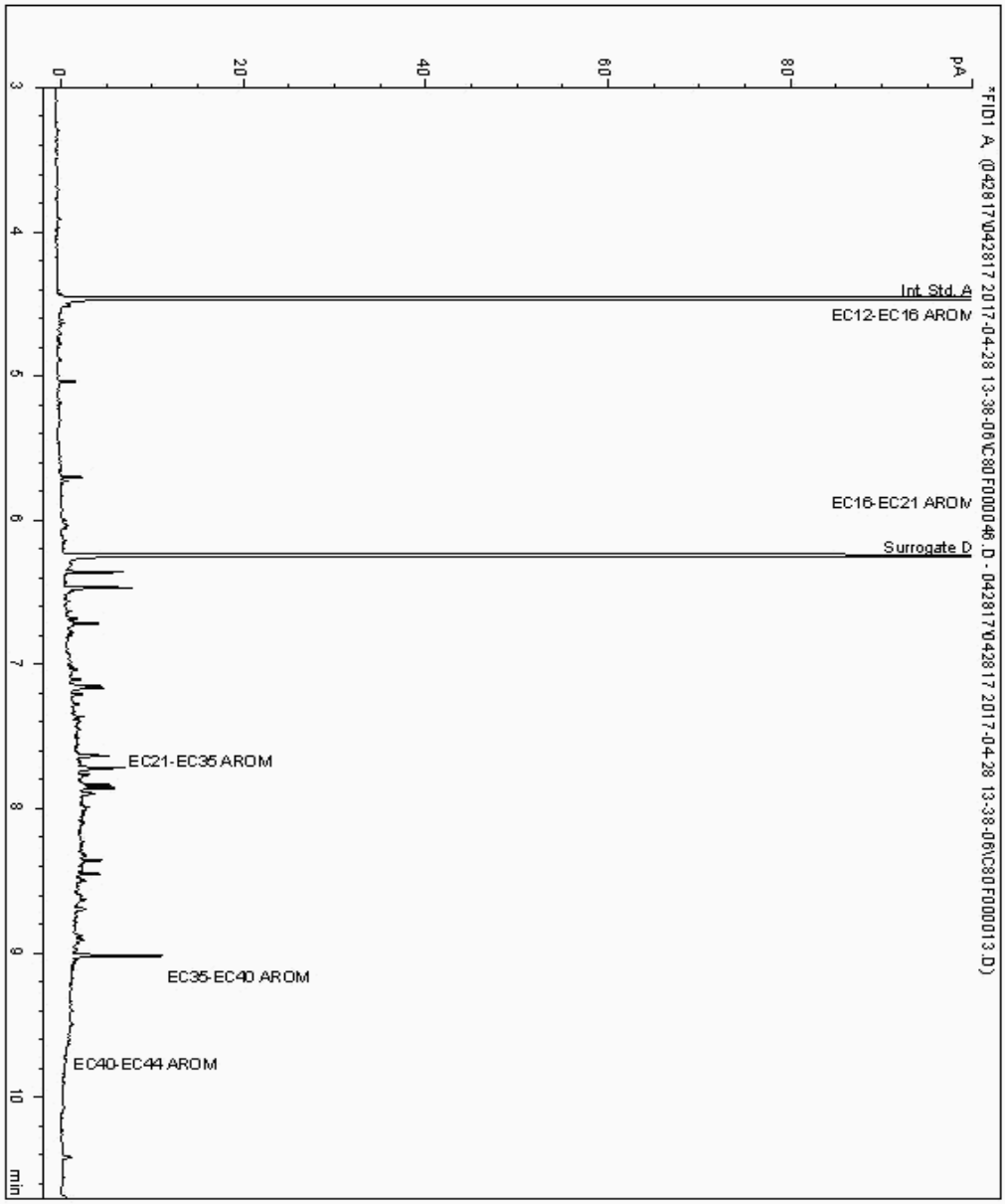
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15407233 **Sample ID :** W4WS312 **Depth :** 1.70 - 2.00

Speciated TPH - AROMS (C12 - C44)

Sample Identity: 14425950-
Date Acquired : 28/04/17 23:24:00
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

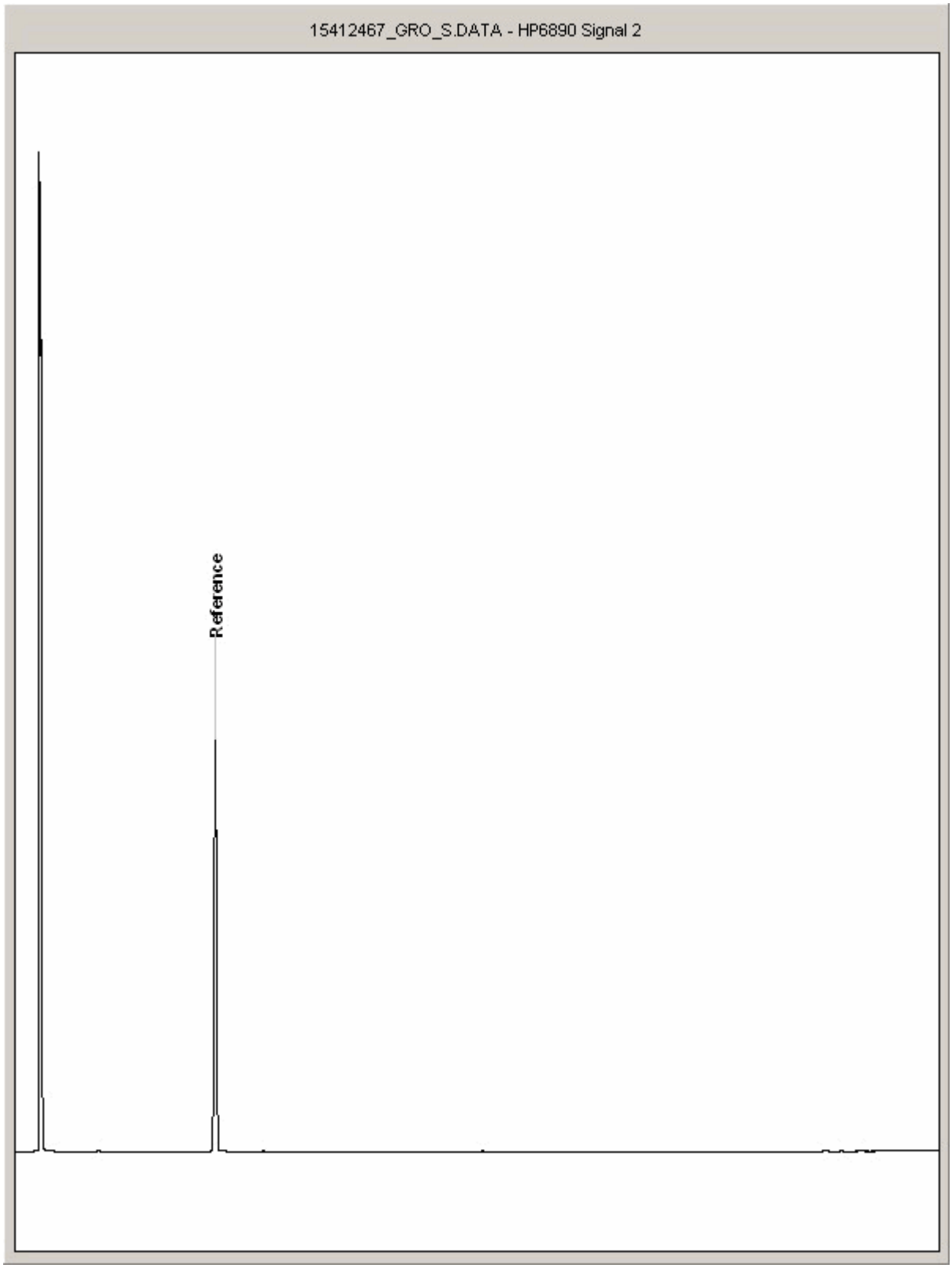
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15412467
Sample ID : W4BH307

Depth : 4.00 - 4.20



CERTIFICATE OF ANALYSIS

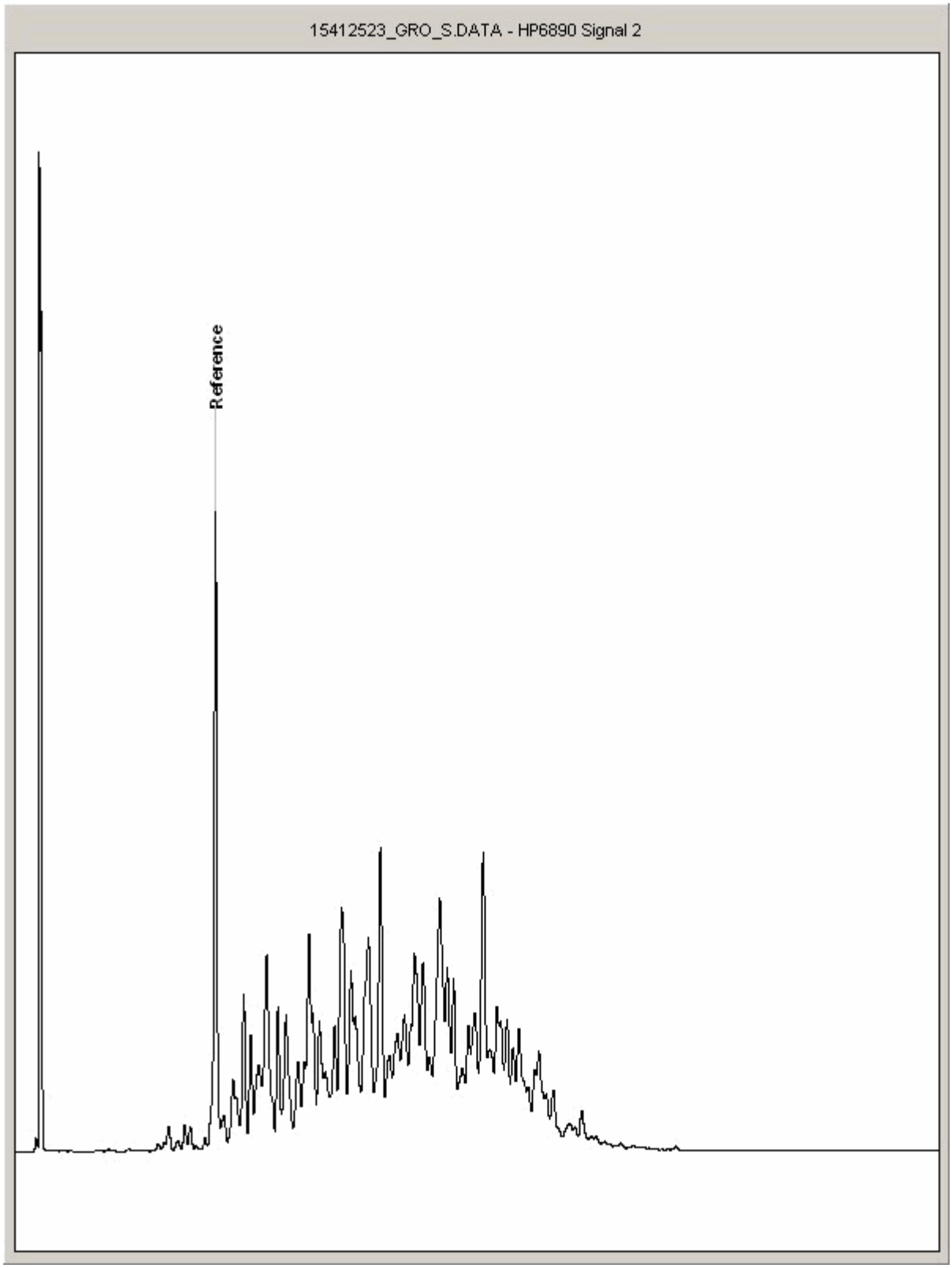
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15412523
Sample ID : W4WS312

Depth : 1.70 - 2.00



CERTIFICATE OF ANALYSIS

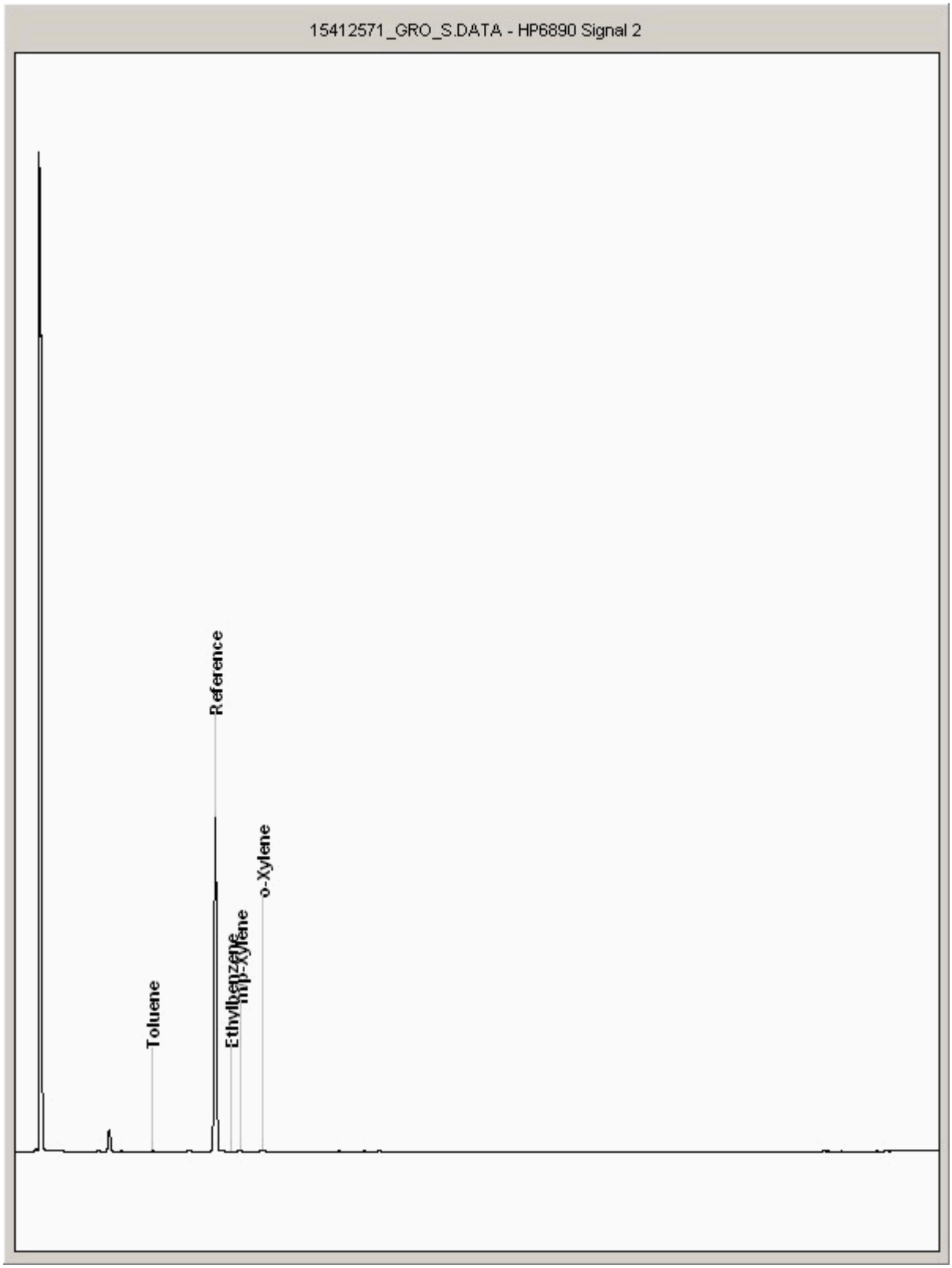
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15412571
Sample ID : W4WS312

Depth : 0.00 - 0.10



CERTIFICATE OF ANALYSIS

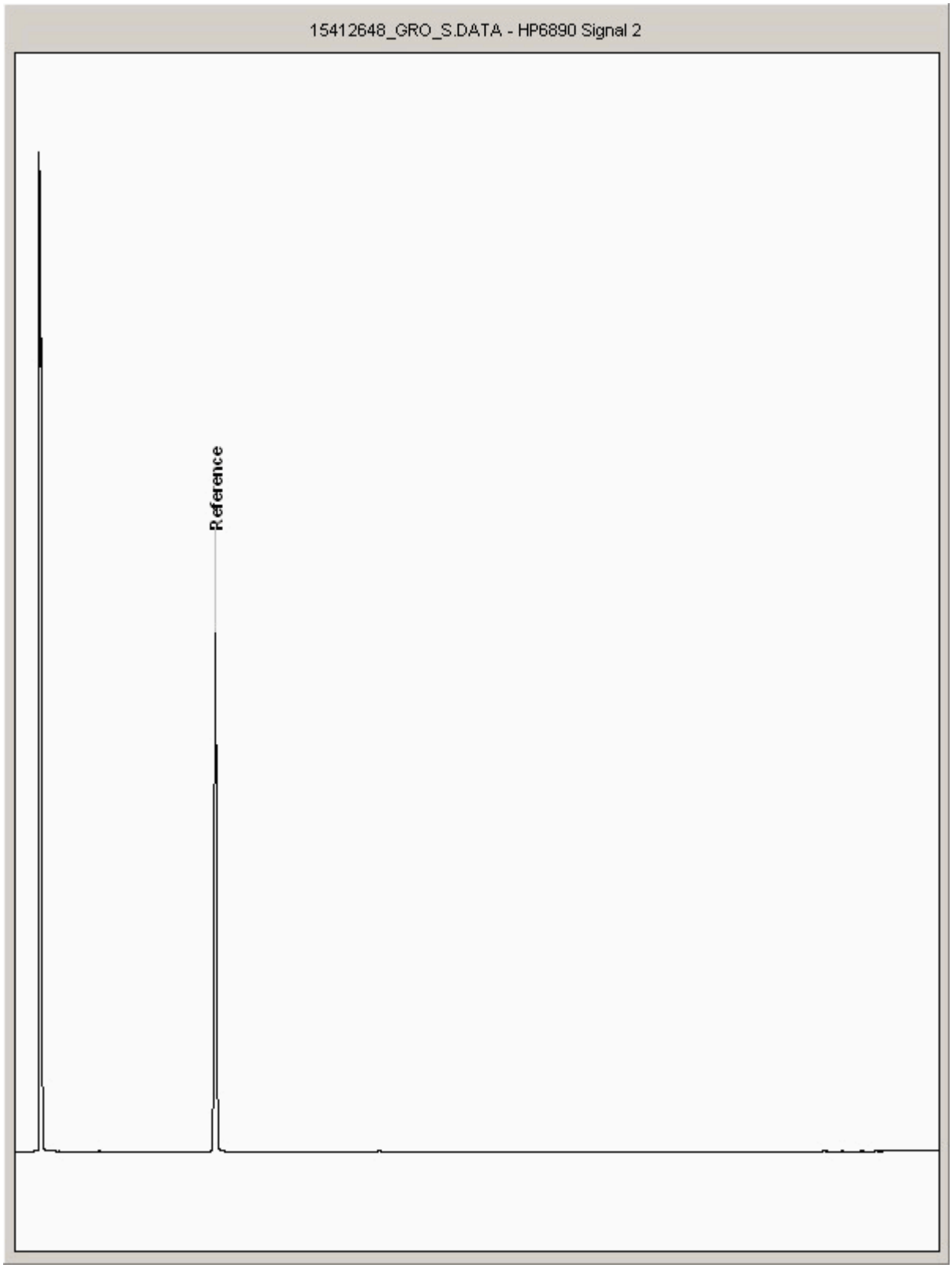
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15412648
Sample ID : W4WS315

Depth : 2.30 - 2.40



CERTIFICATE OF ANALYSIS

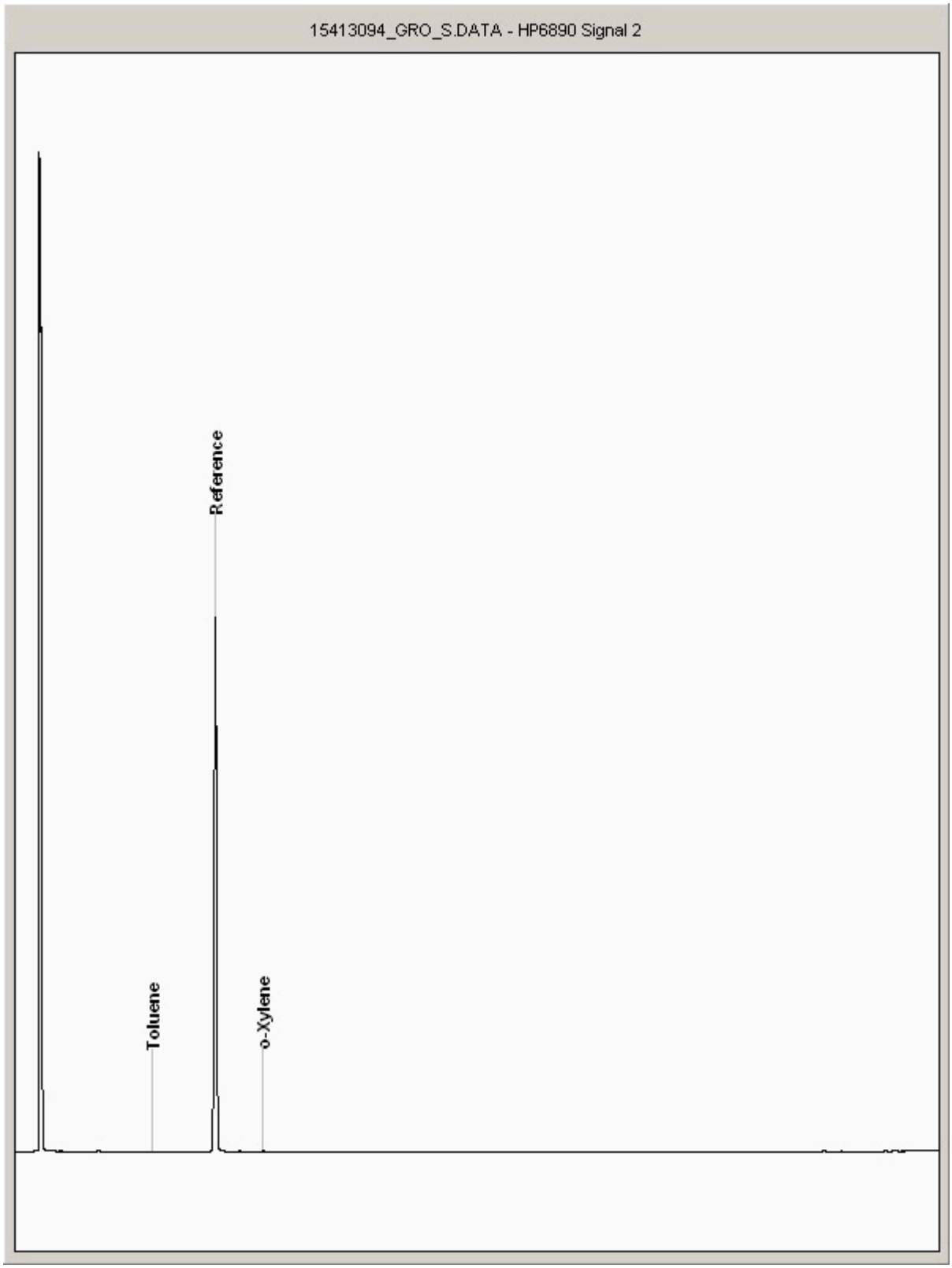
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15413094
Sample ID : W4BH307

Depth : 0.80 - 1.00



CERTIFICATE OF ANALYSIS

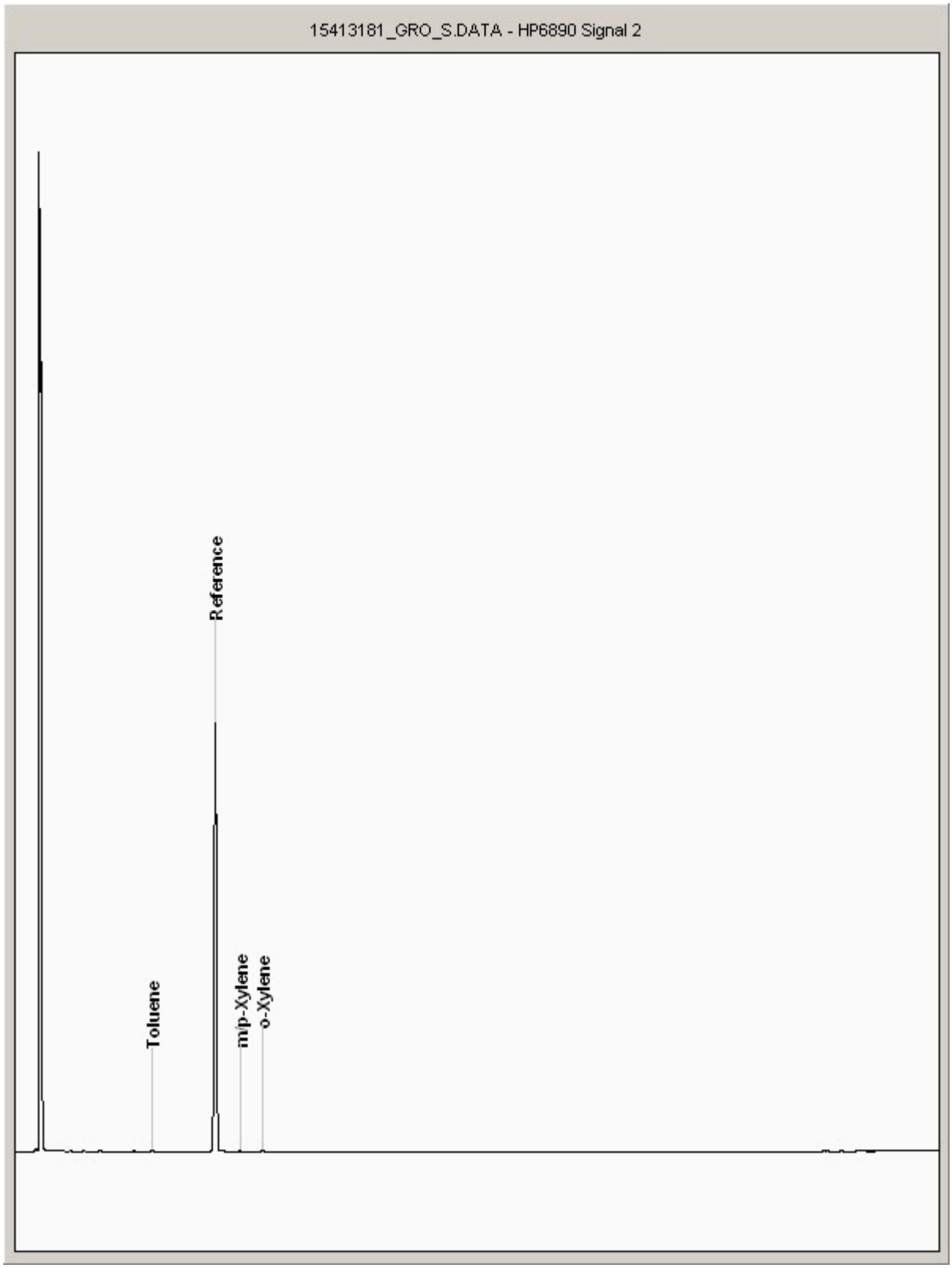
SDG:	170426-93	**Client Reference:**	70015362	**Report Number:**	436989
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	409058

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15413181
Sample ID : W4BH307

Depth : 0.10 - 0.30



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Certificate of Analysis

Report No.: 17-61506-1

Issue No.: 1
Date of Issue 11/05/2017

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	33729
Customer Reference:	170426-93
Quotation Reference:	161220/03
Description:	1 soil sample
Date Received:	28/04/2017
Date Started:	02/05/2017
Date Completed:	09/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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Results Summary

Report No.: 17-61506-1

Customer Reference: 170426-93

Customer Order No: 33729

Customer Sample No	**15406622**
Customer Sample ID	W4BH307
RPS Sample No	327993
Sample Type	**SOIL**
Sample Depth (m)	0.8-1.00
Sampling Date	21/04/2017

Determinand	CAS No	Codes	SOP	Units	RL	
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.15
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
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S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

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Certificate of Analysis

Report No.: 17-61504-1

Issue No.: 1
Date of Issue 11/05/2017

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	33729
Customer Reference:	170426-93
Quotation Reference:	161220/03
Description:	1 soil sample
Date Received:	28/04/2017
Date Started:	02/05/2017
Date Completed:	09/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

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Results Summary

Report No.: 17-61504-1

Customer Reference: 170426-93

Customer Order No: 33729

Customer Sample No	**15404705**
Customer Sample ID	W4BH307
RPS Sample No	327982
Sample Type	**SOIL**
Sample Depth (m)	4.0-4.2
Sampling Date	24/04/2017

Determinand	CAS No	Codes	SOP	Units	RL	
dry solids (at 105øC)		N	208	% w/w		76.5
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation DW	0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation DW	0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation DW	0.1	< 0.15
monophenyltin (MPT)		N	in house	mg/kg as cation DW	0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation DW	0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation DW	0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation DW	0.02	< 0.02

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MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
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U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
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Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

CERTIFICATE OF ANALYSIS

Work Order	: **PR1712831**	Issue Date	: 12-May-2017
Client	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: Hawarden Subcontracting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: hawsub@alcontrol.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Facsimile	: ----	Facsimile	: +420 284 081 635
Project	: 170426-93	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 02-May-2017
C-O-C number	: ----	Quote number	: PR2017ALSAL-GB0002 (CZ-251-17-0022)
Site	: ----	Date of test	: 04-May-2017 - 11-May-2017
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

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The laboratory declares that the test results relate only to the listed samples.

Responsible for accuracy

Testing Laboratory Accredited by CAI according to CSN EN ISO/IEC 17025:2005

Signatories		*Position*
Zdeněk Jirák		Environmental Business Unit Manager

Analytical Results

Sub-Matrix: SOIL	Client sample ID	15404646 W4BH307		----		----	
	Laboratory sample ID	PR1712831-001		----		----	
	Client sampling date / time	21-Apr-2017 00:00		----		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.1	%	83.2	± 6.0%	----	----	----	----
PCDDs and PCDFs (Dioxins and Furans)									
2378-TCDD	S-DFHMS03	-	ng/g DW	<0.0012	----	----	----	----	----
12378-PeCDD	S-DFHMS03	-	ng/g DW	<0.0013	----	----	----	----	----
123478-HxCDD	S-DFHMS03	-	ng/g DW	<0.007	----	----	----	----	----
123678-HxCDD	S-DFHMS03	-	ng/g DW	<0.007	----	----	----	----	----
123789-HxCDD	S-DFHMS03	-	ng/g DW	<0.0035	----	----	----	----	----
1234678-HpCDD	S-DFHMS03	-	ng/g DW	0.0180	± 30.0%	----	----	----	----
OCDD	S-DFHMS03	-	ng/g DW	0.240	± 30.0%	----	----	----	----
2378-TCDF	S-DFHMS03	-	ng/g DW	0.0740	± 30.0%	----	----	----	----
12378-PeCDF	S-DFHMS03	-	ng/g DW	0.0530	± 30.0%	----	----	----	----
23478-PeCDF	S-DFHMS03	-	ng/g DW	0.0470	± 30.0%	----	----	----	----
123478-HxCDF	S-DFHMS03	-	ng/g DW	0.0680	± 30.0%	----	----	----	----
123678-HxCDF	S-DFHMS03	-	ng/g DW	0.0310	± 30.0%	----	----	----	----
123789-HxCDF	S-DFHMS03	-	ng/g DW	0.00500	± 30.0%	----	----	----	----
234678-HxCDF	S-DFHMS03	-	ng/g DW	0.0140	± 30.0%	----	----	----	----
1234678-HpCDF	S-DFHMS03	-	ng/g DW	0.0660	± 30.0%	----	----	----	----
1234789-HpCDF	S-DFHMS03	-	ng/g DW	<0.0058	----	----	----	----	----
OCDF	S-DFHMS03	-	ng/g DW	0.0330	± 30.0%	----	----	----	----
TEQ-Lowerbound	S-DFHMS03	-	ng/g DW	0.047	----	----	----	----	----
TEQ-Upperbound	S-DFHMS03	-	ng/g DW	0.05	----	----	----	----	----

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, delivery date in brackets without a time component will be displayed instead. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: V Raji 906 Pardubice - Zelene Predmesti Czech Republic 530 02	
S-DFHMS03	CZ_SOP_D06_06_175 - except chap. 10.2.3.1, 10.2.3.7, 10.2.3.8, 10.2.5 (US EPA 1613-modified, CSN P CEN/TS 16190-modified): Determination of tetra- to octa-chlorinated dioxins and furanes by isotope dilution method using HRGC-HRMS and calculation of TEQ parameters from measured values. The samples were stored in laboratory in the darkness and under temperature <4°C. Actual LOQ are noticed in the annex.
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.

A `*` symbol preceeding any method indicates non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information.
The calculation methods of summation parameters are available on request in the client service.

CERTIFICATE OF ANALYSIS

Work Order	: **PR1714620**	Issue Date	: 18-May-2017
Client	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: Hawarden Subcontracting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: hawsub@alcontrol.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Facsimile	: ----	Facsimile	: +420 284 081 635
Project	: 170426-93	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 05-May-2017
C-O-C number	: ----	Quote number	: PR2017ALSAL-GB0002 (CZ-251-17-0022)
Site	: ----	Date of test	: 10-May-2017 - 18-May-2017
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

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Responsible for accuracy

Testing Laboratory Accredited by CAI according to CSN EN ISO/IEC 17025:2005

Signatories		*Position*
Zdeněk Jirák		Environmental Business Unit Manager

L 1163

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**15434144 W4BH307**		**----**		**----**	
			Laboratory sample ID	*PR1714620-001*		----		----	
			Client sampling date / time	21-Apr-2017 00:00		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.1	%	**78.9**	± 6.0%	**----**	----	**----**	----
PCDDs and PCDFs (Dioxins and Furans)									
2378-TCDD	S-DFHMS03	-	ng/g DW	<0.00078	----	**----**	----	**----**	----
12378-PeCDD	S-DFHMS03	-	ng/g DW	<0.0012	----	**----**	----	**----**	----
123478-HxCDD	S-DFHMS03	-	ng/g DW	<0.0017	----	**----**	----	**----**	----
123678-HxCDD	S-DFHMS03	-	ng/g DW	<0.0017	----	**----**	----	**----**	----
123789-HxCDD	S-DFHMS03	-	ng/g DW	<0.0017	----	**----**	----	**----**	----
1234678-HpCDD	S-DFHMS03	-	ng/g DW	<0.0056	----	**----**	----	**----**	----
OCDD	S-DFHMS03	-	ng/g DW	<0.005	----	**----**	----	**----**	----
2378-TCDF	S-DFHMS03	-	ng/g DW	<0.00069	----	**----**	----	**----**	----
12378-PeCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	**----**	----	**----**	----
23478-PeCDF	S-DFHMS03	-	ng/g DW	<0.0012	----	**----**	----	**----**	----
123478-HxCDF	S-DFHMS03	-	ng/g DW	<0.0024	----	**----**	----	**----**	----
123678-HxCDF	S-DFHMS03	-	ng/g DW	<0.0024	----	**----**	----	**----**	----
123789-HxCDF	S-DFHMS03	-	ng/g DW	<0.0024	----	**----**	----	**----**	----
234678-HxCDF	S-DFHMS03	-	ng/g DW	<0.0024	----	**----**	----	**----**	----
1234678-HpCDF	S-DFHMS03	-	ng/g DW	<0.0043	----	**----**	----	**----**	----
1234789-HpCDF	S-DFHMS03	-	ng/g DW	<0.0043	----	**----**	----	**----**	----
OCDF	S-DFHMS03	-	ng/g DW	<0.0037	----	**----**	----	**----**	----
TEQ-Lowerbound	S-DFHMS03	-	ng/g DW	**0**	----	**----**	----	**----**	----
TEQ-Upperbound	S-DFHMS03	-	ng/g DW	**0.0037**	----	**----**	----	**----**	----

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The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: V Raji 906 Pardubice - Zelene Predmesti Czech Republic 530 02	
S-DFHMS03	CZ_SOP_D06_06_175 - except chap. 10.2.3.1, 10.2.3.7, 10.2.3.8, 10.2.5 (US EPA 1613-modified, CSN P CEN/TS 16190-modified): Determination of tetra- to octa-chlorinated dioxins and furanes by isotope dilution method using HRGC-HRMS and calculation of TEQ parameters from measured values. The samples were stored in laboratory in the darkness and under temperature <4°C. Actual LOQ are noticed in the annex.
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.

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The calculation methods of summation parameters are available on request in the client service.

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjecte to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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EC2M 4YE

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	31 May 2017
Customer:	H_WSP_LON
Sample Delivery Group (SDG):	170504-73
Your Reference:	70015362
Location:	Tipner
Report No:	410540

We received 38 samples on Thursday May 04, 2017 and 23 of these samples were scheduled for analysis which was completed on Wednesday May 31, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan

Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15444071	W8BH308	ES	0.10 - 0.30	24/04/2017
15444077	W8BH308	ES	0.90 - 1.00	24/04/2017
15444086	W8BH308	ES	2.00 - 2.30	24/04/2017
15444102	W8BH308	ES	3.40 - 3.60	24/04/2017
15444111	W8BH308	ES	5.60 - 6.00	24/04/2017
15444120	W8BH308	ES	7.20 - 7.50	24/04/2017
15444126	W9BH310	ES	0.10 - 0.30	25/04/2017
15444133	W9BH310	ES	0.80 - 1.00	25/04/2017
15444140	W9BH310	ES	1.50 - 2.00	25/04/2017
15444146	W9BH310	ES	3.50 - 3.80	25/04/2017
15444155	W9BH310	ES	6.00 - 6.30	25/04/2017
15444160	W9BH310	ES	7.80 - 8.00	25/04/2017
15444187	W8WS318	ES	0.10 - 0.20	24/04/2017
15444194	W8WS318	ES	0.60 - 0.80	24/04/2017
15444199	W8WS318	ES	1.20 - 1.40	24/04/2017
15443970	W8WS318	ES	1.60 - 2.00	24/04/2017
15443960	W8WS318	ES	2.70 - 2.80	24/04/2017
15444001	W8WS319	ES	0.40 - 0.60	24/04/2017
15444009	W8WS319	ES	0.80 - 1.00	24/04/2017
15444019	W8WS319	ES	1.50 - 1.60	25/04/2017
15444030	W8WS319	ES	2.50 - 2.60	25/04/2017
15444036	W8WS319	ES	4.50 - 4.70	25/04/2017
15443975	W8WS320	ES	0.10 - 0.30	24/04/2017
15443980	W8WS320	ES	0.90 - 1.00	24/04/2017
15443985	W8WS320	ES	1.70 - 1.80	24/04/2017
15443990	W8WS320	ES	2.65 - 2.75	25/04/2017
15443996	W8WS320	ES	3.40 - 3.50	25/04/2017
15444041	W8WS321	ES	0.20 - 0.30	25/04/2017
15444046	W8WS321	ES	0.60 - 0.80	25/04/2017
15444053	W8WS321	ES	1.20 - 1.40	25/04/2017
15444059	W8WS321	ES	2.60 - 2.70	25/04/2017
15444064	W8WS321	ES	3.50 - 3.60	25/04/2017
15443952	W8WS317A	ES	0.10 - 0.20	24/04/2017
15444024	W8WS317B	ES	0.10 - 0.20	24/04/2017
15444097	W8WS317C	ES	0.40 - 0.50	24/04/2017
15444167	W8WS317C	ES	0.90 - 1.00	24/04/2017
15444176	W8WS317C	ES	1.55 - 1.75	24/04/2017
15444182	W8WS317C	ES	2.45 - 3.00	24/04/2017

Maximum Sample/Coolbox Temperature (°C) : **5**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15444071			15444086		15444102		15444120		15444133			15444146		15444160	15444187	
Customer Sample Reference			W8BH308			W8BH308		W8BH308		W8BH308		W9BH310			W9BH310		W9BH310	W8WS318	
AGS Reference			ES			ES		ES		ES		ES			ES		ES	ES	
Depth (m)			0.10 - 0.30			2.00 - 2.30		3.40 - 3.60		7.20 - 7.50		0.80 - 1.00			3.50 - 3.80		7.80 - 8.00	0.10 - 0.20	
Container			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	400g Tub (ALE214)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5											X						
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 13		X									X						X
CEN Readings	All	NDPs: 1 Tests: 5											X						
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5											X						
Dissolved Tin by ICPMS	All	NDPs: 0 Tests: 5											X						
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5											X						
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 23	X			X		X		X		X			X		X	X	
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5											X						
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 23	X			X		X		X		X			X		X	X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 23			X		X		X		X			X		X	X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5											X						
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 23	X			X		X		X		X			X		X	X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 5											X						
Low Level Cyanide (W)	All	NDPs: 0 Tests: 5											X						
Mercury Dissolved	All	NDPs: 0 Tests: 5											X						

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15444071			15444086		15444102		15444120		15444133			15444146		15444160	15444187		
Customer Sample Reference			W8BH308			W8BH308		W8BH308		W8BH308		W9BH310			W9BH310		W9BH310	W8WS318		
AGS Reference			ES			ES		ES		ES		ES			ES		ES	ES		
Depth (m)			0.10 - 0.30			2.00 - 2.30		3.40 - 3.60		7.20 - 7.50		0.80 - 1.00			3.50 - 3.80		7.80 - 8.00	0.10 - 0.20		
Container			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	400g Tub (ALE214)	
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Metals in solid samples by OES	All	NDPs: 0 Tests: 23	X			X		X		X		X			X		X	X		
Organotins in Aqueous Samples	All	NDPs: 1 Tests: 4											X							
Organotins on soils*	All	NDPs: 0 Tests: 5																		
PAH by GCMS	All	NDPs: 0 Tests: 23	X			X		X		X		X			X		X	X		
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 5											X							
pH	All	NDPs: 0 Tests: 23	X			X		X		X		X			X		X	X		
pH Value	All	NDPs: 0 Tests: 5											X							
Sample description	All	NDPs: 0 Tests: 23	X			X		X		X		X			X		X	X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3																		
Total Organic Carbon	All	NDPs: 0 Tests: 5										X								
TPH CWG (W)	All	NDPs: 0 Tests: 5											X							
TPH CWG GC (S)	All	NDPs: 0 Tests: 23	X			X		X		X		X			X		X	X		
VOC MS (S)	All	NDPs: 0 Tests: 23			X		X		X		X			X		X	X			
VOC MS (W)	All	NDPs: 0 Tests: 5											X							

15443985	W8WS320	ES	1.70 - 1.80	60g VOC (ALE215)	S																X		
				400g Tub (ALE214)	S																		
				250g Amber Jar (ALE210)	S		X				X			X			X					X		
15443975	W8WS320	ES	0.10 - 0.30	60g VOC (ALE215)	S																X		
				400g Tub (ALE214)	S			X				X			X					X				X
				250g Amber Jar (ALE210)	S		X			X	X			X			X					X		
15444036	W8WS319	ES	4.50 - 4.70	60g VOC (ALE215)	S																X		
				250g Amber Jar (ALE210)	S		X				X			X			X					X		
15444030	W8WS319	ES	2.50 - 2.60	60g VOC (ALE215)	S																X		
				400g Tub (ALE214)	S																		
				250g Amber Jar (ALE210)	S		X				X			X			X	X	X			X		
15444019	W8WS319	ES	1.50 - 1.60	60g VOC (ALE215)	S																X		
				400g Tub (ALE214)	S																		
				250g Amber Jar (ALE210)	S		X				X			X			X					X		
15444001	W8WS319	ES	0.40 - 0.60	60g VOC (ALE215)	S																X		
				400g Tub (ALE214)	S			X				X			X					X				X
				250g Amber Jar (ALE210)	S		X			X	X			X			X					X		
15443960	W8WS318	ES	2.70 - 2.80	60g VOC (ALE215)	S																X		
				250g Amber Jar (ALE210)	S		X				X			X			X					X		
15444199	W8WS318	ES	1.20 - 1.40	60g VOC (ALE215)	S																X		
				400g Tub (ALE214)	S																		
				250g Amber Jar (ALE210)	S		X				X			X			X					X		
15444187	W8WS318	ES	0.10 - 0.20	60g VOC (ALE215)	S																X		

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			15443996	15444041				15444046			15444059		15444097			15444176		15444182
Lab Sample No(s)																		
Customer Sample Reference			W8WS320	W8WS321				W8WS321			W8WS321		W8WS317C			W8WS317C		W8WS317C
AGS Reference			ES	ES				ES			ES		ES			ES		ES
Depth (m)			3.40 - 3.50	0.20 - 0.30				0.60 - 0.80			2.60 - 2.70		0.40 - 0.50			1.55 - 1.75		2.45 - 3.00
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5				X											X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 13				X			X					X			X		
CEN Readings	All	NDPs: 1 Tests: 5				X											N X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5				X											X		
Dissolved Tin by ICPMS	All	NDPs: 0 Tests: 5				X											X		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5				X											X		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 23	X		X			X			X		X			X			X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5				X											X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 23	X		X			X			X		X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 23		X			X			X		X			X			X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5				X											X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 23	X		X			X			X		X			X			X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 5				X											X		
Low Level Cyanide (W)	All	NDPs: 0 Tests: 5				X											X		
Mercury Dissolved	All	NDPs: 0 Tests: 5				X											X		

15444182	W8WS317C	ES	2.45 - 3.00	60g VOC (ALE215)	S
					X

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15443996		15444041			15444046			15444059		15444097			15444176			15444182	
Customer Sample Reference			W8WS320		W8WS321			W8WS321			W8WS321		W8WS317C			W8WS317C			W8WS317C	
AGS Reference			ES		ES			ES			ES		ES			ES			ES	
Depth (m)			3.40 - 3.50		0.20 - 0.30			0.60 - 0.80			2.60 - 2.70		0.40 - 0.50			1.55 - 1.75			2.45 - 3.00	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Metals in solid samples by OES	All	NDPs: 0 Tests: 23	X		X			X			X		X			X			X	
Organotins in Aqueous Samples	All	NDPs: 1 Tests: 4				X											N			
Organotins on soils*	All	NDPs: 0 Tests: 5			X								X			X				
PAH by GCMS	All	NDPs: 0 Tests: 23	X		X			X			X		X			X			X	
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 5				X											X			
pH	All	NDPs: 0 Tests: 23	X		X			X			X		X			X			X	
pH Value	All	NDPs: 0 Tests: 5				X											X			
Sample description	All	NDPs: 0 Tests: 23	X		X			X			X		X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X											X				
Total Organic Carbon	All	NDPs: 0 Tests: 5			X								X			X				
TPH CWG (W)	All	NDPs: 0 Tests: 5				X											X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 23	X		X			X			X		X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 23		X			X			X		X			X			X		
VOC MS (W)	All	NDPs: 0 Tests: 5				X											X			

15444182	W8WS317C	ES	2.45 - 3.00	60g VOC (ALE215)	S
					X

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15444071	W8BH308	0.10 - 0.30	Dark Brown	Sand	Stones	Vegetation
15444086	W8BH308	2.00 - 2.30	Light Brown	Sandy Clay	Stones	None
15444102	W8BH308	3.40 - 3.60	Dark Brown	Sandy Clay	Stones	None
15444120	W8BH308	7.20 - 7.50	Dark Brown	Sandy Clay	Stones	None
15444133	W9BH310	0.80 - 1.00	Light Brown	Sandy Silt Loam	Stones	None
15444146	W9BH310	3.50 - 3.80	Light Brown	Sand	Stones	None
15444160	W9BH310	7.80 - 8.00	Light Brown	Silt Loam	None	None
15443960	W8WS318	2.70 - 2.80	Light Brown	Sand	Stones	None
15444187	W8WS318	0.10 - 0.20	Dark Brown	Sandy Loam	Brick	Stones
15444199	W8WS318	1.20 - 1.40	Light Brown	Silt Loam	Stones	N/A
15444001	W8WS319	0.40 - 0.60	Dark Brown	Sandy Silt Loam	Brick	Stones
15444019	W8WS319	1.50 - 1.60	Light Brown	Sandy Clay Loam	Stones	Vegetation
15444030	W8WS319	2.50 - 2.60	Light Brown	Sandy Clay	Vegetation	Stones
15444036	W8WS319	4.50 - 4.70	Dark Brown	Sandy Clay	Stones	None
15443975	W8WS320	0.10 - 0.30	Grey	Dry Sample Received	Brick	Concrete/Aggregate
15443985	W8WS320	1.70 - 1.80	Light Brown	Silt Loam	None	None
15443996	W8WS320	3.40 - 3.50	Light Brown	Sandy Clay	Stones	None
15444041	W8WS321	0.20 - 0.30	Dark Brown	Loamy Sand	Stones	Brick
15444046	W8WS321	0.60 - 0.80	Dark Brown	Sandy Clay Loam	Vegetation	Stones
15444059	W8WS321	2.60 - 2.70	Light Brown	Sandy Clay	Stones	Vegetation
15444097	W8WS317C	0.40 - 0.50	Dark Brown	Sandy Loam	Crushed Brick	Hardcore/Rubble
15444176	W8WS317C	1.55 - 1.75	Light Brown	Silty Clay	None	None
15444182	W8WS317C	2.45 - 3.00	Cream	Sand	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8BH308	W8BH308	W8BH308	W8BH308	W9BH310	W9BH310
			Depth (m)	0.10 - 0.30	2.00 - 2.30	3.40 - 3.60	7.20 - 7.50	0.80 - 1.00	3.50 - 3.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444071	15444086	15444102	15444120	15444133	15444146
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		4.3	16	15	14	8.1	9
Soil Organic Matter (SOM)	<0.35 %	TM132						0.71 #	
pH	1 pH Units	TM133		9.09 #	8.13 #	7.79 #	8.36 #	8.57 #	8.96 #
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		7.23 #	2.16 #	2.43 #	2.46 #	4.85 #	7.11 #
Cadmium	<0.02 mg/kg	TM181		0.125 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	0.146 #
Chromium	<0.9 mg/kg	TM181		1.66 #	6.63 #	6.54 #	9.72 #	8.15 #	1.68 #
Copper	<1.4 mg/kg	TM181		40.2 #	22.3 #	8.24 #	10.4 #	33 #	2.55 #
Lead	<0.7 mg/kg	TM181		955 #	7.53 #	8.45 #	9.43 #	140 #	4.92 #
Mercury	<0.14 mg/kg	TM181		0.211 #	0.255 #	0.318 #	0.342 #	0.24 #	0.264 #
Nickel	<0.2 mg/kg	TM181		5.17 #	34.9 #	74.8 #	38.1 #	9.57 #	8.46 #
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		186 #	56.2 #	121 #	72.2 #	29.1 #	17.7 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH310	W8WS318	W8WS318	W8WS318	W8WS319	W8WS319
			Depth (m)	7.80 - 8.00	0.10 - 0.20	1.20 - 1.40	2.70 - 2.80	0.40 - 0.60	1.50 - 1.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444160	15444187	15444199	15443960	15444001	15444019
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		25	7.2	17	16	15	14
pH	1 pH Units	TM133		8.37 #	8.8 #	7.72 #	8.32 #	8.35 #	8.31 #
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		3.62 #	8.96 #	11.7 #	3.25 #	12.5 #	3.78 #
Cadmium	<0.02 mg/kg	TM181		<0.02 #	0.172 #	<0.02 #	0.0282 #	0.141 #	0.115 #
Chromium	<0.9 mg/kg	TM181		21.3 #	7.26 #	21.8 #	3.91 #	8.32 #	12.5 #
Copper	<1.4 mg/kg	TM181		55.6 #	56.2 #	16.2 #	5 #	69.8 #	3.71 #
Lead	<0.7 mg/kg	TM181		23 #	67.5 #	28.4 #	4.09 #	224 #	7.81 #
Mercury	<0.14 mg/kg	TM181		0.506 #	0.573 #	0.631 #	<0.14 #	0.911 #	0.215 #
Nickel	<0.2 mg/kg	TM181		47.5 #	12.5 #	21.1 #	7.41 #	17.3 #	17.4 #
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		58.6 #	88.3 #	49.8 #	16.7 #	110 #	31.4 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS319	W8WS320	W8WS320	W8WS320	W8WS321
			Depth (m)	2.50 - 2.60	4.50 - 4.70	0.10 - 0.30	1.70 - 1.80	3.40 - 3.50	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444030	15444036	15443975	15443985	15443996	15444041
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		15	14	6.5	16	15	9
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #					5.5 #
pH	1 pH Units	TM133		8.69 #	9.02 #	8.8 #	8.52 #	8.77 #	8.36 #
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		2.37 #	2.42 #	8 #	15.4 #	2.02 #	8.16 #
Cadmium	<0.02 mg/kg	TM181		<0.02 #	<0.02 #	0.166 #	0.0769 #	<0.02 #	0.109 #
Chromium	<0.9 mg/kg	TM181		3.52 #	7.55 #	10.5 #	22.5 #	6.23 #	3.11 #
Copper	<1.4 mg/kg	TM181		12 #	8.75 #	47 #	9.94 #	9.76 #	61.2 #
Lead	<0.7 mg/kg	TM181		10.9 #	8.44 #	110 #	15.6 #	7.83 #	95.1 #
Mercury	<0.14 mg/kg	TM181		0.427 #	0.297 #	0.471 #	0.48 #	0.277 #	0.299 #
Nickel	<0.2 mg/kg	TM181		50 #	25.3 #	12.5 #	28.5 #	28.4 #	10.2 #
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		85.9 #	48.1 #	156 #	61.8 #	51.4 #	96.2 #

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS321	W8WS321	W8WS317C	W8WS317C	W8WS317C
			Depth (m)	0.60 - 0.80	2.60 - 2.70	0.40 - 0.50	1.55 - 1.75	2.45 - 3.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	24/04/2017
			Sample Time	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444046	15444059	15444097	15444176	15444182
			AGS Reference	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		7.4	15	2.8	12	8.7
Soil Organic Matter (SOM)	<0.35 %	TM132				8.52 #	<0.35 #	
pH	1 pH Units	TM133		8.63 #	9.55 #	8.96 #	8.07 #	8.45 #
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		21.3 #	2.62 #	5.15 #	30.9 #	0.834 #
Cadmium	<0.02 mg/kg	TM181		<0.02 #	<0.02 #	0.38 #	<0.02 #	<0.02 #
Chromium	<0.9 mg/kg	TM181		<0.9 #	8.41 #	6.23 #	<0.9 #	2.82 #
Copper	<1.4 mg/kg	TM181		9.48 #	10.1 #	11.2 #	6.32 #	3.96 #
Lead	<0.7 mg/kg	TM181		20.9 #	10.3 #	36.5 #	13.3 #	3.37 #
Mercury	<0.14 mg/kg	TM181		0.417 #	0.398 #	0.348 #	0.703 #	<0.14 #
Nickel	<0.2 mg/kg	TM181		5.63 #	56 #	6.24 #	20.3 #	4.06 #
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		19.2 #	119 #	101 #	47.1 #	8.06 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W8WS321	W8WS317C	W8WS317C
			Depth (m)	0.40 - 0.60	0.10 - 0.30	0.20 - 0.30	0.40 - 0.50	1.55 - 1.75
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	24/04/2017	24/04/2017	25/04/2017	24/04/2017	24/04/2017
			Sample Time	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444001	15443975	15444041	15444097	15444176
			AGS Reference	ES	ES	ES	ES	ES
Dibutyl Tin*	mg/kg	SUB		0.07	0.17	0.28	<0.02	<0.02
Tributyl Tin*	mg/kg	SUB		0.35	0.82	0.59	<0.02	<0.02
Triphenyl Tin*	mg/kg	SUB		<0.05	0.06	<0.05	<0.05	<0.05
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1	<0.1	<0.1	<0.1
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02	<0.02	<0.02	<0.02

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8BH308	W8BH308	W8BH308	W8BH308	W9BH310	W9BH310
			Depth (m)	0.10 - 0.30	2.00 - 2.30	3.40 - 3.60	7.20 - 7.50	0.80 - 1.00	3.50 - 3.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444071	15444086	15444102	15444120	15444133	15444146
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		91.8	112	111	113	98.9	101
Acenaphthene-d10 % recovery**	%	TM218		87.3	110	110	111	99.5	98.6
Phenanthrene-d10 % recovery**	%	TM218		85.5	104	103	104	93.3	95.2
Chrysene-d12 % recovery**	%	TM218		86.9	92.2	92.3	91.8	98.8	95.6
Perylene-d12 % recovery**	%	TM218		101	95.1	96.2	95.6	109	105
Naphthalene	<0.009 mg/kg	TM218		0.0262 #	<0.009 #	<0.009 #	<0.009 #	0.0171 #	<0.009 #
Acenaphthylene	<0.012 mg/kg	TM218		0.0296 #	<0.012 #	<0.012 #	<0.012 #	0.122 #	<0.012 #
Acenaphthene	<0.008 mg/kg	TM218		0.02 #	<0.008 #	<0.008 #	<0.008 #	0.0729 #	<0.008 #
Fluorene	<0.01 mg/kg	TM218		0.0117 #	<0.01 #	<0.01 #	<0.01 #	0.0462 #	<0.01 #
Phenanthrene	<0.015 mg/kg	TM218		0.192 #	<0.015 #	<0.015 #	<0.015 #	1.18 #	<0.015 #
Anthracene	<0.016 mg/kg	TM218		0.0571 #	<0.016 #	<0.016 #	<0.016 #	0.392 #	<0.016 #
Fluoranthene	<0.017 mg/kg	TM218		0.505 #	<0.017 #	<0.017 #	<0.017 #	4.43 #	<0.017 #
Pyrene	<0.015 mg/kg	TM218		0.471 #	<0.015 #	<0.015 #	<0.015 #	3.45 #	<0.015 #
Benz(a)anthracene	<0.014 mg/kg	TM218		0.392 #	<0.014 #	<0.014 #	<0.014 #	2.09 #	<0.014 #
Chrysene	<0.01 mg/kg	TM218		0.361 #	<0.01 #	<0.01 #	<0.01 #	1.72 #	<0.01 #
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.715 #	<0.015 #	<0.015 #	<0.015 #	2.57 #	<0.015 #
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.362 #	<0.014 #	<0.014 #	<0.014 #	1.01 #	<0.014 #
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.625 #	<0.015 #	<0.015 #	<0.015 #	2.18 #	<0.015 #
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.393 #	<0.018 #	<0.018 #	<0.018 #	1.12 #	<0.018 #
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0955 #	<0.023 #	<0.023 #	<0.023 #	0.342 #	<0.023 #
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.476 #	<0.024 #	<0.024 #	<0.024 #	1.29 #	<0.024 #
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		4.73	<0.118	<0.118	<0.118	22	<0.118

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH310	W8WS318	W8WS318	W8WS318	W8WS319	W8WS319
			Depth (m)	7.80 - 8.00	0.10 - 0.20	1.20 - 1.40	2.70 - 2.80	0.40 - 0.60	1.50 - 1.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444160	15444187	15444199	15443960	15444001	15444019
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		102	114	90.1	113	96.8	87.7
Acenaphthene-d10 % recovery**	%	TM218		98.3	109	85.1	112	92.2	82.6
Phenanthrene-d10 % recovery**	%	TM218		93.6	106	82.7	104	89.8	80.1
Chrysene-d12 % recovery**	%	TM218		92.9	97.7	80.4	91.9	88.5	77.6
Perylene-d12 % recovery**	%	TM218		107	105	93	95.8	106	89.9
Naphthalene	<0.009 mg/kg	TM218		<0.009 #	0.0653 @ #	<0.009 #	<0.009 #	0.0414 #	<0.009 #
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 #	0.122 @ #	<0.012 #	<0.012 #	0.0506 #	<0.012 #
Acenaphthene	<0.008 mg/kg	TM218		<0.008 #	0.0344 @ #	<0.008 #	<0.008 #	0.0388 #	<0.008 #
Fluorene	<0.01 mg/kg	TM218		<0.01 #	0.0342 @ #	<0.01 #	<0.01 #	0.0249 #	<0.01 #
Phenanthrene	<0.015 mg/kg	TM218		<0.015 #	0.481 @ #	<0.015 #	<0.015 #	0.533 #	<0.015 #
Anthracene	<0.016 mg/kg	TM218		<0.016 #	0.235 @ #	<0.016 #	<0.016 #	0.175 #	<0.016 #
Fluoranthene	<0.017 mg/kg	TM218		<0.017 #	2.17 @ #	<0.017 #	<0.017 #	2 #	<0.017 #
Pyrene	<0.015 mg/kg	TM218		<0.015 #	1.97 @ #	<0.015 #	<0.015 #	1.85 #	<0.015 #
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 #	1.64 @ #	<0.014 #	<0.014 #	1.31 #	<0.014 #
Chrysene	<0.01 mg/kg	TM218		<0.01 #	1.58 @ #	<0.01 #	<0.01 #	1.15 #	<0.01 #
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 #	3.45 @ #	<0.015 #	<0.015 #	1.74 #	<0.015 #
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 #	1.22 @ #	<0.014 #	<0.014 #	0.782 #	<0.014 #
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 #	2.85 @ #	<0.015 #	<0.015 #	1.83 #	<0.015 #
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 #	1.99 @ #	<0.018 #	<0.018 #	0.867 #	<0.018 #
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 #	0.578 @ #	<0.023 #	<0.023 #	0.264 #	<0.023 #
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 #	2.72 @ #	<0.024 #	<0.024 #	1.1 #	<0.024 #
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	21.1	<0.118	<0.118	13.8	<0.118

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS319	W8WS320	W8WS320	W8WS320	W8WS321
			Depth (m)	2.50 - 2.60	4.50 - 4.70	0.10 - 0.30	1.70 - 1.80	3.40 - 3.50	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444030	15444036	15443975	15443985	15443996	15444041
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		79.6	111	84.5	96.8	110	96.4
Acenaphthene-d10 % recovery**	%	TM218		75	108	80.5	92.9	108	95.3
Phenanthrene-d10 % recovery**	%	TM218		72.9	102	78.7	89.6	102	92.6
Chrysene-d12 % recovery**	%	TM218		70.2	88.6	79.1	85	89.6	95.1
Perylene-d12 % recovery**	%	TM218		82.8	91.8	92.2	102	93.1	103
Naphthalene	<0.009 mg/kg	TM218		<0.009 #	<0.009 #	0.0118 #	<0.009 #	<0.009 #	0.0687 #
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 #	<0.012 #	0.0191 #	<0.012 #	<0.012 #	0.0545 #
Acenaphthene	<0.008 mg/kg	TM218		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	0.0404 #
Fluorene	<0.01 mg/kg	TM218		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0404 #
Phenanthrene	<0.015 mg/kg	TM218		<0.015 #	<0.015 #	0.0767 #	<0.015 #	<0.015 #	0.419 #
Anthracene	<0.016 mg/kg	TM218		<0.016 #	<0.016 #	0.0264 #	<0.016 #	<0.016 #	0.13 #
Fluoranthene	<0.017 mg/kg	TM218		<0.017 #	<0.017 #	0.186 #	<0.017 #	<0.017 #	1.09 #
Pyrene	<0.015 mg/kg	TM218		<0.015 #	<0.015 #	0.17 #	<0.015 #	<0.015 #	1.02 #
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 #	<0.014 #	0.171 #	<0.014 #	<0.014 #	0.782 #
Chrysene	<0.01 mg/kg	TM218		<0.01 #	<0.01 #	0.165 #	<0.01 #	<0.01 #	0.788 #
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 #	<0.015 #	0.325 #	<0.015 #	<0.015 #	1.36 #
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 #	<0.014 #	0.103 #	<0.014 #	<0.014 #	0.471 #
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 #	<0.015 #	0.249 #	<0.015 #	<0.015 #	1.13 #
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 #	<0.018 #	0.153 #	<0.018 #	<0.018 #	0.752 #
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 #	<0.023 #	0.0423 #	<0.023 #	<0.023 #	0.182 #
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 #	<0.024 #	0.2 #	<0.024 #	<0.024 #	0.94 #
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118	1.9	<0.118	<0.118	9.27

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS321	W8WS321	W8WS317C	W8WS317C	W8WS317C
			Depth (m)	0.60 - 0.80	2.60 - 2.70	0.40 - 0.50	1.55 - 1.75	2.45 - 3.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	24/04/2017
			Sample Time	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444046	15444059	15444097	15444176	15444182
			AGS Reference	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		98.9	114	118	113	114
Acenaphthene-d10 % recovery**	%	TM218		97.9	111	113	110	112
Phenanthrene-d10 % recovery**	%	TM218		94.6	104	113	105	106
Chrysene-d12 % recovery**	%	TM218		95.5	90.8	103	97.7	96.1
Perylene-d12 % recovery**	%	TM218		104	94	113	107	99.9
Naphthalene	<0.009 mg/kg	TM218		<0.009 #	<0.009 #	0.367 @ #	<0.009 @ #	<0.009 #
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 #	<0.012 #	0.259 @ #	<0.012 @ #	<0.012 #
Acenaphthene	<0.008 mg/kg	TM218		<0.008 #	<0.008 #	2.03 @ #	<0.008 @ #	<0.008 #
Fluorene	<0.01 mg/kg	TM218		<0.01 #	<0.01 #	1.74 @ #	<0.01 @ #	<0.01 #
Phenanthrene	<0.015 mg/kg	TM218		0.0563 #	<0.015 #	15.7 @ #	<0.015 @ #	<0.015 #
Anthracene	<0.016 mg/kg	TM218		<0.016 #	<0.016 #	4.19 @ #	<0.016 @ #	<0.016 #
Fluoranthene	<0.017 mg/kg	TM218		0.114 #	<0.017 #	20.3 @ #	<0.017 @ #	<0.017 #
Pyrene	<0.015 mg/kg	TM218		0.0949 #	<0.015 #	13.8 @ #	<0.015 @ #	<0.015 #
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0782 #	<0.014 #	9.76 @ #	<0.014 @ #	<0.014 #
Chrysene	<0.01 mg/kg	TM218		0.0603 #	<0.01 #	8.09 @ #	<0.01 @ #	<0.01 #
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.108 #	<0.015 #	13.6 @ #	<0.015 @ #	<0.015 #
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0391 #	<0.014 #	4.5 @ #	<0.014 @ #	<0.014 #
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.081 #	<0.015 #	9.92 @ #	<0.015 @ #	<0.015 #
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0509 #	<0.018 #	5.05 @ #	<0.018 @ #	<0.018 #
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 #	<0.023 #	1.63 @ #	<0.023 @ #	<0.023 #
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0583 #	<0.024 #	5.49 @ #	<0.024 @ #	<0.024 #
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.741	<0.118	116	<0.118	<0.118

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS321	W8WS317C			
			Depth (m)	2.50 - 2.60	0.20 - 0.30	1.55 - 1.75			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	25/04/2017	25/04/2017	24/04/2017			
			Sample Time	.	.	.			
			Date Received	04/05/2017	04/05/2017	04/05/2017			
			SDG Ref	170504-73	170504-73	170504-73			
			Lab Sample No.(s)	15444030	15444041	15444176			
			AGS Reference	ES	ES	ES			
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	0.188	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Carbazole	<0.1 mg/kg	TM157		<0.1	0.141	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	0.353	<0.1			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS321	W8WS317C			
			Depth (m)	2.50 - 2.60	0.20 - 0.30	1.55 - 1.75			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	25/04/2017	25/04/2017	24/04/2017			
			Sample Time	.	.	.			
			Date Received	04/05/2017	04/05/2017	04/05/2017			
			SDG Ref	170504-73	170504-73	170504-73			
			Lab Sample No.(s)	15444030	15444041	15444176			
			AGS Reference	ES	ES	ES			
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthene	<0.1 mg/kg	TM157		<0.1	0.163	<0.1			
Anthracene	<0.1 mg/kg	TM157		<0.1	0.344	<0.1			
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	1.41	<0.1			
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	1.27	<0.1			
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	1.27	<0.1			
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	1.74	<0.1			
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	1.17	<0.1			
Chrysene	<0.1 mg/kg	TM157		<0.1	1.45	<0.1			
Fluoranthene	<0.1 mg/kg	TM157		<0.1	2.32	<0.1			
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	1.22	<0.1			
Phenanthrene	<0.1 mg/kg	TM157		<0.1	1.08	0.14			
Pyrene	<0.1 mg/kg	TM157		<0.1	2.22	<0.1			
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	0.224	<0.1			
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8BH308	W8BH308	W8BH308	W8BH308	W9BH310	W9BH310
			Depth (m)	0.10 - 0.30	2.00 - 2.30	3.40 - 3.60	7.20 - 7.50	0.80 - 1.00	3.50 - 3.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444071	15444086	15444102	15444120	15444133	15444146
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		63 @	92 @	92 @	106 @	91	108
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		0.0533 @ #	0.0672 @ #	<0.044 @ #	<0.044 @ #	<0.044 #	<0.044 #
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0115 @	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01 @	0.0312 @	<0.01 @	<0.01 @	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.344	0.301	0.765	0.761	<0.1	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		7.34	<0.1	0.417	0.28	0.83	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173		67	0.877	0.475	4.96	8.1	0.595
Aliphatics >C35-C44	<0.1 mg/kg	TM173		19.1	<0.1	<0.1	<0.1	0.581	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		93.8	1.18	1.66	6	9.51	0.595
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0136 @	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01 @	0.0204 @	<0.01 @	<0.01 @	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		1.03	<0.1	<0.1	<0.1	<0.1	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		9.66	<0.1	<0.1	<0.1	2.68	<0.1
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		69.9	<0.1	<0.1	<0.1	15.1	0.187
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		37.7	<0.1	<0.1	<0.1	5.27	<0.1
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		15.7	<0.1	<0.1	<0.1	1.61	<0.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		118	<0.1	<0.1	<0.1	23.1	0.187
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		212	1.22	1.66	6	32.6	0.781
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		79.6	<0.1	<0.1	<0.1	17.8	0.187

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH310	W8WS318	W8WS318	W8WS318	W8WS319	W8WS319
			Depth (m)	7.80 - 8.00	0.10 - 0.20	1.20 - 1.40	2.70 - 2.80	0.40 - 0.60	1.50 - 1.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444160	15444187	15444199	15443960	15444001	15444019
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		106 2	28	87	109	51	116
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		0.95 2 #	<0.044 #	<0.044 #	<0.044 #	<0.044 #	<0.044 #
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 2	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0174 2	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0402 2	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		0.513 2	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		7.15	2.51	<0.1	<0.1	0.674	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		0.929	19.9	<0.1	<0.1	3.14	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173		43.5	135	0.602	<0.1	11.8	1.71
Aliphatics >C35-C44	<0.1 mg/kg	TM173		6.38	170	<0.1	<0.1	1.43	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		58	327	0.602	<0.1	17.1	1.71
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 2	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 2	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0281 2	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		0.342 2	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	1.24	<0.1	<0.1	3.24	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.651	23.8	<0.1	<0.1	29.9	<0.1
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		15	304	0.972	<0.1	84.7	<0.1
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		2.06	400	3.27	<0.1	25.6	0.464
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		0.907	206	1.92	<0.1	10.1	<0.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		17.8	730	4.24	<0.1	143	0.464
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		76.7	1060	4.84	<0.1	161	2.2
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		15.7	328	0.972	<0.1	115	<0.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS319	W8WS320	W8WS320	W8WS320	W8WS321
			Depth (m)	2.50 - 2.60	4.50 - 4.70	0.10 - 0.30	1.70 - 1.80	3.40 - 3.50	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444030	15444036	15443975	15443985	15443996	15444041
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		69	110	58	106	93	34
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 #	1.99 #	<0.044 #	<0.044 #	<0.044 #	<0.044 #
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	0.0116	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	0.198	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	0.987	<0.01	<0.01	0.0153	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	0.56	1.22	<0.1	<0.1	177
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	0.493	18.8	<0.1	<0.1	152
Aliphatics >C21-C35	<0.1 mg/kg	TM173		<0.1	3.59	46.1	0.173	1.47	617
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	14.9	<0.1	<0.1	163
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		<0.1	4.65	81	0.173	1.47	1110
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	0.132	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	0.659	<0.01	<0.01	0.0106	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	<0.1	1.71	<0.1	<0.1	26.7
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		<0.1	<0.1	13.6	0.217	<0.1	96.8
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		<0.1	<0.1	56.3	0.538	<0.1	330
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		1.88	<0.1	46.2	2.44	<0.1	298
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		1.54	<0.1	22.3	1.84	<0.1	140
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		1.88	<0.1	118	3.2	<0.1	751
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		1.88	6.64	199	3.37	1.5	1860
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		<0.1	<0.1	69.9	0.754	<0.1	427

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS321	W8WS321	W8WS317C	W8WS317C	W8WS317C
			Depth (m)	0.60 - 0.80	2.60 - 2.70	0.40 - 0.50	1.55 - 1.75	2.45 - 3.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	24/04/2017
			Sample Time	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444046	15444059	15444097	15444176	15444182
			AGS Reference	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		107	106	21	105	107
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 #	<0.044 #	<0.044 #	<0.044 #	<0.044 #
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	<0.1	14.6	<0.1	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	<0.1	46.5	<0.1	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173		6.46	<0.1	450	<0.1	<0.1
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	403	<0.1	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		6.46	<0.1	914	<0.1	<0.1
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	<0.1	4.12	<0.1	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.725	<0.1	45.8	<0.1	<0.1
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		4.54	<0.1	708	<0.1	<0.1
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		4.21	<0.1	939	<0.1	<0.1
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		2.44	<0.1	435	<0.1	<0.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		9.47	<0.1	1700	<0.1	<0.1
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		16	<0.1	2610	<0.1	<0.1
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		5.26	<0.1	754	<0.1	<0.1

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8BH308	W8BH308	W8BH308	W8BH308	W9BH310	W9BH310
			Depth (m)	0.10 - 0.30	2.00 - 2.30	3.40 - 3.60	7.20 - 7.50	0.80 - 1.00	3.50 - 3.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444071	15444086	15444102	15444120	15444133	15444146
			AGS Reference	ES	ES	ES	ES	ES	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 @ #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Benzene	<0.009 mg/kg	TM116		<0.009 @ #	<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.09 #
Toluene	<0.007 mg/kg	TM116		<0.007 @ #	<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #
Ethylbenzene	<0.004 mg/kg	TM116		<0.004 @ #	<0.04 #	0.0728 #	<0.04 #	<0.04 #	<0.04 #
p/m-Xylene	<0.01 mg/kg	TM116		0.0127 @ #	<0.1 #	0.169 #	<0.1 #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.01 @ #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.01 @ #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH310	W8WS318	W8WS318	W8WS318	W8WS319	W8WS319
			Depth (m)	7.80 - 8.00	0.10 - 0.20	1.20 - 1.40	2.70 - 2.80	0.40 - 0.60	1.50 - 1.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444160	15444187	15444199	15443960	15444001	15444019
			AGS Reference	ES	ES	ES	ES	ES	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 2 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Benzene	<0.009 mg/kg	TM116		<0.09 2 #	<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.09 #
Toluene	<0.007 mg/kg	TM116		<0.07 2 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 2 #	<0.04 #	<0.04 #	<0.04 #	<0.04 #	<0.04 #
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 2 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 2 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 2 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS319	W8WS320	W8WS320	W8WS320	W8WS321
			Depth (m)	2.50 - 2.60	4.50 - 4.70	0.10 - 0.30	1.70 - 1.80	3.40 - 3.50	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444030	15444036	15443975	15443985	15443996	15444041
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116		103					101
Toluene-d8**	%	TM116		96.3					93.5
4-Bromofluorobenzene**	%	TM116		110					101
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.06 #					<0.06 #
Chloromethane	<0.007 mg/kg	TM116		<0.07 #					<0.07 #
Vinyl Chloride	<0.006 mg/kg	TM116		<0.06 #					<0.06 #
Bromomethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Chloroethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.06 #					<0.06 #
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Carbon Disulphide	<0.007 mg/kg	TM116		<0.07 #					<0.07 #
Dichloromethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.08 #					<0.08 #
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.06 #					<0.06 #
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1					<0.1
Bromochloromethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Chloroform	<0.008 mg/kg	TM116		<0.08 #					<0.08 #
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.07 #					<0.07 #
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Carbontetrachloride	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.05 #					<0.05 #
Benzene	<0.009 mg/kg	TM116		<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.09 #
Trichloroethene	<0.009 mg/kg	TM116		<0.09 #					<0.09 #
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Dibromomethane	<0.009 mg/kg	TM116		<0.09 #					<0.09 #
Bromodichloromethane	<0.007 mg/kg	TM116		<0.07 #					<0.07 #
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Toluene	<0.007 mg/kg	TM116		<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1					<0.1
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.07 #					<0.07 #

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS319	W8WS320	W8WS320	W8WS320	W8WS321
			Depth (m)	2.50 - 2.60	4.50 - 4.70	0.10 - 0.30	1.70 - 1.80	3.40 - 3.50	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	25/04/2017	25/04/2017
			Sample Time	.	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444030	15444036	15443975	15443985	15443996	15444041
			AGS Reference	ES	ES	ES	ES	ES	ES
Tetrachloroethene	<0.005 mg/kg	TM116		<0.05 #					<0.05 #
Dibromochloromethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Chlorobenzene	<0.005 mg/kg	TM116		<0.05 #					<0.05 #
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 #	<0.04 #	<0.04 #	<0.04 #	<0.04 #	<0.04 #
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Styrene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Bromoform	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Isopropylbenzene	<0.005 mg/kg	TM116		<0.05 #					<0.05 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.16 #					<0.16 #
Bromobenzene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
Propylbenzene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.09 #					<0.09 #
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.08 #					<0.08 #
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.14 #					<0.14 #
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.09 #					<0.09 #
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.1					<0.1
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.08 #					<0.08 #
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.05 #					<0.05 #
n-Butylbenzene	<0.011 mg/kg	TM116		<0.11					<0.11
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.1 #					<0.1 #
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.14 #					<0.14 #
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2					<0.2
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.2					<0.2
Naphthalene	<0.013 mg/kg	TM116		<0.13 #					<0.13 #
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2 #					<0.2 #

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS321	W8WS321	W8WS317C	W8WS317C	W8WS317C
			Depth (m)	0.60 - 0.80	2.60 - 2.70	0.40 - 0.50	1.55 - 1.75	2.45 - 3.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	24/04/2017
			Sample Time	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444046	15444059	15444097	15444176	15444182
			AGS Reference	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116					102	
Toluene-d8**	%	TM116					96.1	
4-Bromofluorobenzene**	%	TM116					109	
Dichlorodifluoromethane	<0.006 mg/kg	TM116					<0.06 #	
Chloromethane	<0.007 mg/kg	TM116					<0.07 #	
Vinyl Chloride	<0.006 mg/kg	TM116					<0.06 #	
Bromomethane	<0.01 mg/kg	TM116					<0.1 #	
Chloroethane	<0.01 mg/kg	TM116					<0.1 #	
Trichlorofluorormethane	<0.006 mg/kg	TM116					<0.06 #	
1,1-Dichloroethene	<0.01 mg/kg	TM116					<0.1 #	
Carbon Disulphide	<0.007 mg/kg	TM116					<0.07 #	
Dichloromethane	<0.01 mg/kg	TM116					<0.1 #	
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116					<0.1 #	
1,1-Dichloroethane	<0.008 mg/kg	TM116					<0.08 #	
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116					<0.06 #	
2,2-Dichloropropane	<0.01 mg/kg	TM116					<0.1	
Bromochloromethane	<0.01 mg/kg	TM116					<0.1 #	
Chloroform	<0.008 mg/kg	TM116					<0.08 #	
1,1,1-Trichloroethane	<0.007 mg/kg	TM116					<0.07 #	
1,1-Dichloropropene	<0.01 mg/kg	TM116					<0.1 #	
Carbontetrachloride	<0.01 mg/kg	TM116					<0.1 #	
1,2-Dichloroethane	<0.005 mg/kg	TM116					<0.05 #	
Benzene	<0.009 mg/kg	TM116	<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.09 #	
Trichloroethene	<0.009 mg/kg	TM116					<0.09 #	
1,2-Dichloropropane	<0.01 mg/kg	TM116					<0.1 #	
Dibromomethane	<0.009 mg/kg	TM116					<0.09 #	
Bromodichloromethane	<0.007 mg/kg	TM116					<0.07 #	
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.1 #	
Toluene	<0.007 mg/kg	TM116	<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #	
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.1	
1,1,2-Trichloroethane	<0.01 mg/kg	TM116					<0.1 #	
1,3-Dichloropropane	<0.007 mg/kg	TM116					<0.07 #	

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS321	W8WS321	W8WS317C	W8WS317C	W8WS317C
			Depth (m)	0.60 - 0.80	2.60 - 2.70	0.40 - 0.50	1.55 - 1.75	2.45 - 3.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/04/2017	25/04/2017	24/04/2017	24/04/2017	24/04/2017
			Sample Time	.	.	.	.	.
			Date Received	04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
			SDG Ref	170504-73	170504-73	170504-73	170504-73	170504-73
			Lab Sample No.(s)	15444046	15444059	15444097	15444176	15444182
			AGS Reference	ES	ES	ES	ES	ES
Tetrachloroethene	<0.005 mg/kg	TM116					<0.05 #	
Dibromochloromethane	<0.01 mg/kg	TM116					<0.1 #	
1,2-Dibromoethane	<0.01 mg/kg	TM116					<0.1 #	
Chlorobenzene	<0.005 mg/kg	TM116					<0.05 #	
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116					<0.1 #	
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 #	<0.04 #	<0.04 #	<0.04 #	<0.04 #	
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	
o-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	
Styrene	<0.01 mg/kg	TM116				<0.1 #		
Bromoform	<0.01 mg/kg	TM116				<0.1 #		
Isopropylbenzene	<0.005 mg/kg	TM116				<0.05 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.1 #		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116				<0.16 #		
Bromobenzene	<0.01 mg/kg	TM116				<0.1 #		
Propylbenzene	<0.01 mg/kg	TM116				<0.1 #		
2-Chlorotoluene	<0.009 mg/kg	TM116				<0.09 #		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116				<0.08 #		
4-Chlorotoluene	<0.01 mg/kg	TM116				<0.1 #		
tert-Butylbenzene	<0.014 mg/kg	TM116				<0.14 #		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116				<0.09 #		
sec-Butylbenzene	<0.01 mg/kg	TM116				<0.1		
4-Isopropyltoluene	<0.01 mg/kg	TM116				<0.1 #		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116				<0.08 #		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116				<0.05 #		
n-Butylbenzene	<0.011 mg/kg	TM116				<0.11		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116				<0.1 #		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116				<0.14 #		
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116				<0.2		
Hexachlorobutadiene	<0.02 mg/kg	TM116				<0.2		
Naphthalene	<0.013 mg/kg	TM116				<0.13 #		
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116				<0.2 #		

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8BH308 ES 0.10 - 0.30 SOLID 24/04/2017 00:00:00 05/05/2017 11:29:10 170504-73 15444071 TM048	09/05/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W9BH310 ES 0.80 - 1.00 SOLID 25/04/2017 00:00:00 05/05/2017 15:48:13 170504-73 15444133 TM048	09/05/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS318 ES 0.10 - 0.20 SOLID 24/04/2017 00:00:00 05/05/2017 20:50:58 170504-73 15444187 TM048	09/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS318 ES 1.20 - 1.40 SOLID 24/04/2017 00:00:00 05/05/2017 12:55:29 170504-73 15444199 TM048	09/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS319 ES 0.40 - 0.60 SOLID 24/04/2017 00:00:00 05/05/2017 12:53:07 170504-73 15444001 TM048	09/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS319 ES 1.50 - 1.60 SOLID 25/04/2017 00:00:00 05/05/2017 11:47:24 170504-73 15444019 TM048	09/05/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS319 ES 2.50 - 2.60 SOLID 25/04/2017 00:00:00 05/05/2017 11:45:10 170504-73 15444030 TM048	09/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS320 ES 0.10 - 0.30 SOLID 24/04/2017 00:00:00 05/05/2017 12:50:41 170504-73 15443975 TM048	09/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS320 ES 1.70 - 1.80 SOLID 24/04/2017 00:00:00 05/05/2017 13:00:06 170504-73 15443985 TM048	09/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS321 ES 0.20 - 0.30 SOLID 25/04/2017 00:00:00 05/05/2017 11:11:29 170504-73 15444041 TM048	09/05/17	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS321 ES 0.60 - 0.80 SOLID 25/04/2017 00:00:00 05/05/2017 11:10:06 170504-73 15444046 TM048	09/05/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS317C ES 0.40 - 0.50 SOLID 24/04/2017 00:00:00 05/05/2017 20:47:29 170504-73 15444097 TM048	09/05/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W8WS317C ES 1.55 - 1.75 SOLID 24/04/2017 00:00:00 05/05/2017 20:49:14 170504-73 15444176 TM048	09/05/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.95
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.5
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15443975
Sampled Date	24-Apr-2017
Customer Sample Ref.	W8WS320 ESZ
Depth (m)	0.10 - 0.30

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	0.0000203	<0.00001	0.000203	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.00439	<0.0005	0.0439	<0.005	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Dibutyl Tin	0.0000179	<0.005	0.000179	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	0.0000217	<0.001	0.000217	<0.01	-	-	-
Fluoranthene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	0.00000116	<0.001	0.0000116	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	0.00246	<0.001	0.0246	<0.01	-	-	-
Pyrene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.0131	<0.0003	0.131	<0.003	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	0.00101	<0.0002	0.0101	<0.002	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	0.000758	<0.0004	0.00758	<0.004	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	0.000801	<0.0005	0.00801	<0.005	-	-	-
Zinc	0.00196	<0.001	0.0196	<0.01	-	-	-

Leach Test Information

Date Prepared	20-May-2017
pH (pH Units)	8.89
Conductivity (µS/cm)	118.00
Temperature (°C)	20.30
Volume Leachant (Litres)	0.894

Mcerts Certification does not apply to leachates

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12:50:35 31/05/2017

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.95
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.5
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15443975
Sampled Date	24-Apr-2017
Customer Sample Ref.	W8WS320 ESZ
Depth (m)	0.10 - 0.30

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	1.09	<0.01	10.9	<0.1	-	-	-
Total Aliphatics >C12-C35	1.09	<0.01	10.9	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	0.019	<0.01	0.19	<0.1	-	-	-
Aromatics >EC16-EC21	0.012	<0.01	0.12	<0.1	-	-	-
Aromatics >EC21-EC35	2.14	<0.01	21.4	<0.1	-	-	-
Total Aromatics >EC12-EC35	2.17	<0.01	21.7	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	3.26	<0.01	32.6	<0.1	-	-	-
Aromatics >EC16-EC35	2.15	<0.01	21.5	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	20-May-2017
pH (pH Units)	8.89
Conductivity (µS/cm)	118.00
Temperature (°C)	20.30
Volume Leachant (Litres)	0.894

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15444001
Sampled Date	24-Apr-2017
Customer Sample Ref.	W8WS319 ESZ
Depth (m)	0.40 - 0.60

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.00163	<0.0005	0.0163	<0.005	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	0.0000187	<0.000015	0.000187	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	0.000042	<0.000017	0.00042	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.0000646	<0.000022	0.000646	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	0.00135	<0.001	0.0135	<0.01	-	-	-
Pyrene (diss.filt)	0.0000344	<0.000015	0.000344	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	0.0000433	<0.000023	0.000433	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.0125	<0.0003	0.125	<0.003	-	-	-
Benzo(a)pyrene (diss.filt)	0.0000092	<0.000009	0.000092	<0.00009	-	-	-
Lead	0.00213	<0.0002	0.0213	<0.002	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	0.00127	<0.0004	0.0127	<0.004	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	0.000621	<0.0005	0.00621	<0.005	-	-	-
Zinc	0.00299	<0.001	0.0299	<0.01	-	-	-

Leach Test Information

Date Prepared	20-May-2017
pH (pH Units)	8.23
Conductivity (µS/cm)	114.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.884

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15444001
Sampled Date	24-Apr-2017
Customer Sample Ref.	W8WS319 ESZ
Depth (m)	0.40 - 0.60

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	20-May-2017
pH (pH Units)	8.23
Conductivity (µS/cm)	114.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.884

Mcerts Certification does not apply to leachates

31/05/2017 12:50:58

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CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	9.89
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15444041
Sampled Date	25-Apr-2017
Customer Sample Ref.	W8WS321 ESZ
Depth (m)	0.20 - 0.30

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.00458	<0.0005	0.0458	<0.005	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	0.0000171	<0.000015	0.000171	<0.00015	-	-	-
Dibutyl Tin	0.0000158	<0.005	0.000158	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	0.0000322	<0.001	0.000322	<0.01	-	-	-
Fluoranthene (diss.filt)	0.000096	<0.000017	0.00096	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.0000636	<0.000022	0.000636	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Pyrene (diss.filt)	0.0000645	<0.000015	0.000645	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	0.0000236	<0.000017	0.000236	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	0.0000273	<0.000023	0.000273	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.0184	<0.0003	0.184	<0.003	-	-	-
Benzo(a)pyrene (diss.filt)	0.0000171	<0.000009	0.000171	<0.00009	-	-	-
Lead	0.00266	<0.0002	0.0266	<0.002	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	0.0000207	<0.000016	0.000207	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000142	<0.000014	0.000142	<0.00014	-	-	-
Nickel	0.00143	<0.0004	0.0143	<0.004	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	0.000344	<0.000344	0.00344	<0.00344	-	-	-
Selenium	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Zinc	0.00211	<0.001	0.0211	<0.01	-	-	-

Leach Test Information

Date Prepared	22-May-2017
pH (pH Units)	8.03
Conductivity (µS/cm)	181.00
Temperature (°C)	20.90
Volume Leachant (Litres)	0.891

Mcerts Certification does not apply to leachates

31/05/2017 12:50:58

12:50:35 31/05/2017

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	9.89
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15444041
Sampled Date	25-Apr-2017
Customer Sample Ref.	W8WS321 ESZ
Depth (m)	0.20 - 0.30

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	22-May-2017
pH (pH Units)	8.03
Conductivity (µS/cm)	181.00
Temperature (°C)	20.90
Volume Leachant (Litres)	0.891

Mcerts Certification does not apply to leachates

31/05/2017 12:50:58

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CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.098	**Natural Moisture Content (%)**	8.81
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.9
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15444133
Sampled Date	25-Apr-2017
Customer Sample Ref.	W9BH310 ESZ
Depth (m)	0.80 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.000575	<0.0005	0.00575	<0.005	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	0.0000311	<0.000017	0.000311	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.0000583	<0.000022	0.000583	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Pyrene (diss.filt)	0.0000231	<0.000015	0.000231	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.00387	<0.0003	0.0387	<0.003	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	0.00174	<0.0002	0.0174	<0.002	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	0.000407	<0.0004	0.00407	<0.004	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Zinc	0.00966	<0.001	0.0966	<0.01	-	-	-

Leach Test Information

Date Prepared	20-May-2017
pH (pH Units)	8.84
Conductivity (µS/cm)	88.40
Temperature (°C)	20.20
Volume Leachant (Litres)	0.892

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.098	**Natural Moisture Content (%)**	8.81
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.9
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15444133
Sampled Date	25-Apr-2017
Customer Sample Ref.	W9BH310 ESZ
Depth (m)	0.80 - 1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	20-May-2017
pH (pH Units)	8.84
Conductivity (µS/cm)	88.40
Temperature (°C)	20.20
Volume Leachant (Litres)	0.892

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	13.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15444176
Sampled Date	24-Apr-2017
Customer Sample Ref.	W8WS317C ESZ
Depth (m)	1.55 - 1.75

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Pyrene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.000342	<0.0003	0.00342	<0.003	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	0.000902	<0.0004	0.00902	<0.004	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	20-May-2017
pH (pH Units)	8.15
Conductivity (µS/cm)	126.00
Temperature (°C)	21.10
Volume Leachant (Litres)	0.888

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Tipner
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	13.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88
Particle Size <4mm	>95%		

Case	
SDG	170504-73
Lab Sample Number(s)	15444176
Sampled Date	24-Apr-2017
Customer Sample Ref.	W8WS317C ESZ
Depth (m)	1.55 - 1.75

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	20-May-2017
pH (pH Units)	8.15
Conductivity (µS/cm)	126.00
Temperature (°C)	21.10
Volume Leachant (Litres)	0.888

Mcerts Certification does not apply to leachates

31/05/2017 12:50:58

12:50:35 31/05/2017

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 04/05/2017 13:46:34

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
15444176	W8WS317C	1.55 - 1.75	Organotins in Aqueous Samples	Sample used up
15444176	W8WS317C	1.55 - 1.75	CEN 10:1 Leachate (1 Stage)	Sample used up
15444176	W8WS317C	1.55 - 1.75	CEN Readings	Sample used up

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
SUB		Subcontracted Test		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM279		Determination of Low Level Easily Liberatable (Free) Cyanides and Total Cyanides in Waters using the Skalar SANS+ System Segmented Flow Analyser		
TM283		Determination of Dissolved Niobium, Tungsten, and Zirconium in Water Matrices by ICP-MS		
TM328				

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	15444071	15444086	15444102	15444120	15444133	15444146	15444160	15443960	15444187	15444199
Customer Sample Ref.	W8BH308	W8BH308	W8BH308	W8BH308	W9BH310	W9BH310	W9BH310	W8WS318	W8WS318	W8WS318
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.10 - 0.30	2.00 - 2.30	3.40 - 3.60	7.20 - 7.50	0.80 - 1.00	3.50 - 3.80	7.80 - 8.00	2.70 - 2.80	0.10 - 0.20	1.20 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen					25-May-2017					
Asbestos ID in Solid Samples	09-May-2017				09-May-2017				09-May-2017	09-May-2017
CEN 10:1 Leachate (1 Stage)					20-May-2017					
CEN Readings					24-May-2017					
Dissolved Metals by ICP-MS					25-May-2017					
Dissolved Tin by ICPMS					26-May-2017					
EPH CWG (Aliphatic) Aqueous GC (W)					25-May-2017					
EPH CWG (Aliphatic) GC (S)	09-May-2017	08-May-2017	08-May-2017	08-May-2017	09-May-2017	10-May-2017	09-May-2017	08-May-2017	10-May-2017	09-May-2017
EPH CWG (Aromatic) Aqueous GC (W)					25-May-2017					
EPH CWG (Aromatic) GC (S)	09-May-2017	08-May-2017	08-May-2017	08-May-2017	09-May-2017	10-May-2017	09-May-2017	08-May-2017	10-May-2017	09-May-2017
GRO by GC-FID (S)	10-May-2017	10-May-2017	10-May-2017	10-May-2017	09-May-2017	09-May-2017	10-May-2017	09-May-2017	10-May-2017	09-May-2017
GRO by GC-FID (W)					24-May-2017					
Hexavalent Chromium (s)	09-May-2017	08-May-2017	08-May-2017	08-May-2017	09-May-2017	09-May-2017	09-May-2017	08-May-2017	10-May-2017	09-May-2017
Hexavalent Chromium (w)					26-May-2017					
Low Level Cyanide (W)					26-May-2017					
Mercury Dissolved					25-May-2017					
Metals in solid samples by OES	10-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	10-May-2017	10-May-2017	09-May-2017	10-May-2017	09-May-2017
Organotins in Aqueous Samples					25-May-2017					
PAH by GCMS	08-May-2017	08-May-2017	08-May-2017	08-May-2017	09-May-2017	09-May-2017	09-May-2017	08-May-2017	10-May-2017	08-May-2017
PAH in waters by GC-MS (diss.filt)					25-May-2017					
pH	10-May-2017	09-May-2017	09-May-2017	09-May-2017	10-May-2017	10-May-2017	10-May-2017	09-May-2017	10-May-2017	10-May-2017
pH Value					25-May-2017					
Sample description	05-May-2017	04-May-2017	04-May-2017	04-May-2017	05-May-2017	05-May-2017	05-May-2017	04-May-2017	09-May-2017	05-May-2017
Total Organic Carbon					09-May-2017					
TPH CWG (W)					25-May-2017					
TPH CWG GC (S)	10-May-2017	10-May-2017	10-May-2017	10-May-2017	09-May-2017	10-May-2017	10-May-2017	09-May-2017	10-May-2017	09-May-2017
VOC MS (S)	10-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	10-May-2017	09-May-2017	10-May-2017	09-May-2017
VOC MS (W)					24-May-2017					

Lab Sample No(s)	15444001	15444019	15444030	15444036	15443975	15443985	15443996	15444041	15444046	15444059
Customer Sample Ref.	W8WS319	W8WS319	W8WS319	W8WS319	W8WS320	W8WS320	W8WS320	W8WS321	W8WS321	W8WS321
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.40 - 0.60	1.50 - 1.60	2.50 - 2.60	4.50 - 4.70	0.10 - 0.30	1.70 - 1.80	3.40 - 3.50	0.20 - 0.30	0.60 - 0.80	2.60 - 2.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen	25-May-2017				25-May-2017			26-May-2017		
Asbestos ID in Solid Samples	09-May-2017	09-May-2017	09-May-2017		09-May-2017	09-May-2017		09-May-2017	09-May-2017	
CEN 10:1 Leachate (1 Stage)	20-May-2017				20-May-2017			22-May-2017		
CEN Readings	24-May-2017				24-May-2017			25-May-2017		
Dissolved Metals by ICP-MS	25-May-2017				25-May-2017			26-May-2017		
Dissolved Tin by ICPMS	26-May-2017				26-May-2017			26-May-2017		
EPH CWG (Aliphatic) Aqueous GC (W)	25-May-2017				25-May-2017			26-May-2017		
EPH CWG (Aliphatic) GC (S)	09-May-2017	09-May-2017	09-May-2017	08-May-2017	09-May-2017	09-May-2017	08-May-2017	09-May-2017	09-May-2017	08-May-2017
EPH CWG (Aromatic) Aqueous GC (W)	25-May-2017				25-May-2017			26-May-2017		
EPH CWG (Aromatic) GC (S)	09-May-2017	09-May-2017	09-May-2017	08-May-2017	09-May-2017	09-May-2017	08-May-2017	09-May-2017	09-May-2017	08-May-2017
GRO by GC-FID (S)	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017
GRO by GC-FID (W)	24-May-2017				24-May-2017			25-May-2017		
Hexavalent Chromium (s)	09-May-2017	09-May-2017	09-May-2017	08-May-2017	09-May-2017	09-May-2017	08-May-2017	09-May-2017	09-May-2017	08-May-2017
Hexavalent Chromium (w)	26-May-2017				26-May-2017			26-May-2017		
Low Level Cyanide (W)	26-May-2017				26-May-2017			26-May-2017		
Mercury Dissolved	25-May-2017				25-May-2017			26-May-2017		
Metals in solid samples by OES	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017
Organotins in Aqueous Samples	25-May-2017				25-May-2017			31-May-2017		
Organotins on soils*	31-May-2017				31-May-2017			31-May-2017		
PAH by GCMS	10-May-2017	08-May-2017	08-May-2017	08-May-2017	08-May-2017	10-May-2017	08-May-2017	08-May-2017	08-May-2017	08-May-2017
PAH in waters by GC-MS (diss.filt)	25-May-2017				25-May-2017			26-May-2017		
pH	10-May-2017	10-May-2017	10-May-2017	09-May-2017	10-May-2017	10-May-2017	09-May-2017	10-May-2017	10-May-2017	09-May-2017
pH Value	25-May-2017				25-May-2017			25-May-2017		
Sample description	06-May-2017	05-May-2017	05-May-2017	04-May-2017	04-May-2017	05-May-2017	04-May-2017	05-May-2017	05-May-2017	04-May-2017
Semi Volatile Organic Compounds			09-May-2017					09-May-2017		
Total Organic Carbon			09-May-2017					09-May-2017		
TPH CWG (W)	25-May-2017				25-May-2017			26-May-2017		
TPH CWG GC (S)	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017
VOC MS (S)	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017	09-May-2017
VOC MS (W)	25-May-2017				24-May-2017			25-May-2017		

Validated

CERTIFICATE OF ANALYSIS

SDG:	170504-73	**Client Reference:**	70015362	**Report Number:**	410540
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Lab Sample No(s)	15444097	15444176	15444182
Customer Sample Ref.	W8WS317C	W8WS317C	W8WS317C
AGS Ref.	ES	ES	ES
Depth	0.40 - 0.50	1.55 - 1.75	2.45 - 3.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen		25-May-2017	
Asbestos ID in Solid Samples	09-May-2017	09-May-2017	
CEN 10:1 Leachate (1 Stage)		20-May-2017	
CEN Readings		24-May-2017	
Dissolved Metals by ICP-MS		25-May-2017	
Dissolved Tin by ICPMS		26-May-2017	
EPH CWG (Aliphatic) Aqueous GC (W)		25-May-2017	
EPH CWG (Aliphatic) GC (S)	10-May-2017	10-May-2017	11-May-2017
EPH CWG (Aromatic) Aqueous GC (W)		25-May-2017	
EPH CWG (Aromatic) GC (S)	10-May-2017	10-May-2017	11-May-2017
GRO by GC-FID (S)	10-May-2017	10-May-2017	09-May-2017
GRO by GC-FID (W)		24-May-2017	
Hexavalent Chromium (s)	10-May-2017	10-May-2017	10-May-2017
Hexavalent Chromium (w)		26-May-2017	
Low Level Cyanide (W)		26-May-2017	
Mercury Dissolved		25-May-2017	
Metals in solid samples by OES	10-May-2017	10-May-2017	10-May-2017
Organotins on soils*	31-May-2017	31-May-2017	
PAH by GCMS	10-May-2017	10-May-2017	05-May-2017
PAH in waters by GC-MS (diss.filt)		25-May-2017	
pH	10-May-2017	10-May-2017	10-May-2017
pH Value		25-May-2017	
Sample description	09-May-2017	09-May-2017	04-May-2017
Semi Volatile Organic Compounds		10-May-2017	
Total Organic Carbon	11-May-2017	11-May-2017	
TPH CWG (W)		25-May-2017	
TPH CWG GC (S)	10-May-2017	10-May-2017	11-May-2017
VOC MS (S)	10-May-2017	10-May-2017	09-May-2017
VOC MS (W)		24-May-2017	

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Certificate of Analysis

Report No.: 17-62167-1

Issue No.: **1**
Date of Issue **30/05/2017**

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	34438
Customer Reference:	170504-73
Quotation Reference:	161220/03
Description:	5 soil samples
Date Received:	22/05/2017
Date Started:	24/05/2017
Date Completed:	30/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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A member of the RPS Group plc. Terms and conditions apply - copy on request

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Results Summary

Report No.: 17-62167-1

Customer Reference: 170504-73

Customer Order No: 34438

					Customer Sample No	**15479509**	**15479557**	**15518644**	**15518540**	**15518587**
					Customer Sample ID	W8W317C 0.4-0.5	W8W317C 1.55-1.75	W8W319	W8W320	W8W321
					RPS Sample No	329976	329977	329978	329979	329980
					Sample Type	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**
					Sample Depth (m)	0.40-0.50m	1.55-1.75m	0.40-0.60m	0.10-0.30m	0.20-0.30m
					Sampling Date	24/04/2017	24/04/2017	24/04/2017	24/04/2017	25/04/2017
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**					
dry solids (at 105øC)		N	208	% w/w		96.1	85.6	84.6	90.0	87.0
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02	0.07	0.17	0.28
diphenyltin (DPT)		N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation DW	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02	0.35	0.82	0.59
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation DW	0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

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Report No.: 17-62167-1
Customer Reference: 170504-73
Customer Order No: 34438

Comments

RPS Sample Number	Customer Number	Sample Comments
329978	15518644	The result for TBT was outside the normal dynamic range of the method and it was necessary to dilute the extract (1:10) in order to bring the response within the calibrated range.
329979	15518540	The results for DBT and TBT were outside the normal dynamic range of the method and it was necessary to dilute the extract (1:10) in order to bring the responses within the calibrated range.
329980	15518587	The results for DBT and TBT were outside the normal dynamic range of the method and it was necessary to dilute the extract (1:10) in order to bring the responses within the calibrated range.

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Website: www.alsenvironmental.co.uk

WSP PB LBH
WSP PB
4th Floor
6 Devonshire Square
London
EC2M 4YE

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	02 June 2017
Customer:	H_WSP_LON
Sample Delivery Group (SDG):	170527-54
Your Reference:	70015362
Location:	Tipner
Report No:	410858

We received 1 sample on Saturday May 27, 2017 and 1 of these samples were scheduled for analysis which was completed on Friday June 02, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan

Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	170527-54	**Client Reference:**	70015362	**Report Number:**	410858
Location:	Tipner	**Order Number:**		**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15591637	W4BH307			26/05/2015

Maximum Sample/Coolbox Temperature (°C) : **19.2**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	170527-54	**Client Reference:**	70015362	**Report Number:**	410858
Location:	Tipner	**Order Number:**		**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15591637
Customer Sample Reference			W4BH307
AGS Reference			
Depth (m)			
Container			1000ml glass bottle (ALE220)
Sample Type			OTH
Character of hydrocarbon samples	All	NDPs: 0 Tests: 1	X

Validated

CERTIFICATE OF ANALYSIS

SDG:	170527-54	**Client Reference:**	70015362	**Report Number:**	410858
Location:	Tipner	**Order Number:**		**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM059	In - house Method	Determination of whole oil by gas chromatography (C4-C40)		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Validated

CERTIFICATE OF ANALYSIS

SDG:	170527-54	**Client Reference:**	70015362	**Report Number:**	410858
Location:	Tipner	**Order Number:**		**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	15591637
Customer Sample Ref.	W4BH307
AGS Ref.	
Depth	
Type	Product (P)
Character of hydrocarbon samples	02-Jun-2017

Chemical Oil Fingerprint

Client: WSP PB LBH

Job Number: 170527-54

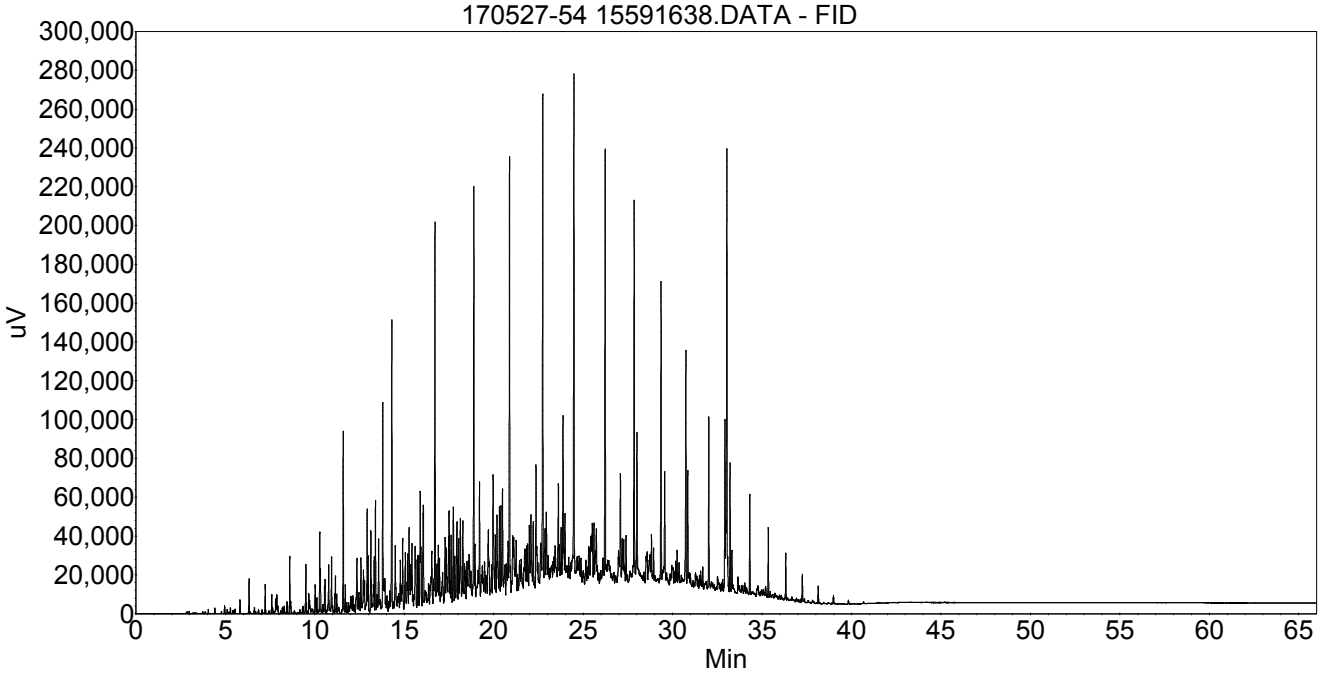
Identity: W4BH307

Description: Pale orange product on liquid

Carbon Range:	C5-C29
Boiling Point Range:	36-441°C
Pristane/Phytane Ratio:	1.36
nC17/Pristane Ratio:	2.69
Fingerprint:	Diesel
Comments:	N/A
Diesel Age:	-1 +/- 2 Years

The age of diesel is calculated using methodology from Christensen and Larsen, 1993.
The sample needs to have the following characteristics for the age to be considered accurate:
1. The methodology can only be used for ageing diesel spills.
2. The sample must have >100mg/kg diesel.
3. The sample has to be collected from at least 1m below ground level.
4. The sample has to be collected from under a paved area.
5. The sample has to be collected from the unsaturated zone.
6. The sample needs to be from a discrete spill, not a prolonged or continuous spill.

In the event that all six criteria are not met, the age result has to be considered as indicative information only.



Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	11 December 2017
Customer:	H_WSP_LON
Sample Delivery Group (SDG):	170812-1
Your Reference:	70015362
Location:	Tipner
Report No:	436347

We received 40 samples on Saturday August 12, 2017 and 39 of these samples were scheduled for analysis which was completed on Monday December 11, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan
Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
16000453	BH203	ES	0.00 - 0.00	07/08/2017
16000460	BH204	ES	0.00 - 0.00	07/08/2017
16000479	BH205	ES	0.00 - 0.00	07/08/2017
16000500	BH207	ES	0.00 - 0.00	07/08/2017
16000511	BH208	ES	0.00 - 0.00	07/08/2017
16000691	BH208	ES	0.00 - 0.00	08/08/2017
16000701	BH209	ES	0.00 - 0.00	08/08/2017
16000384	BH303			
16000594	H1BH203	ES	0.00 - 0.00	08/08/2017
16000578	H1BH204	ES	0.00 - 0.00	08/08/2017
16000740	HIBH201	ES	0.00 - 0.00	03/08/2017
16000441	HIBH201	EW	0.00 - 0.00	07/08/2017
16000607	HIBH202	ES	0.00 - 0.00	03/08/2017
16000433	HIBH205	EW	0.00 - 0.00	07/08/2017
16000465	HIWS204	ES	0.00 - 0.00	03/08/2017
16000651	HIWS205	ES	0.00 - 0.00	08/08/2017
16000425	HIWS210	ES	0.00 - 0.00	07/08/2017
16000417	HIWS211	ES	0.00 - 0.00	07/08/2017
16000446	HIWS212	ES	0.00 - 0.00	07/08/2017
16000637	H1WS206	ES	0.00 - 0.00	08/08/2017
16000623	H1WS207	ES	0.00 - 0.00	08/08/2017
16000666	H1WS208	ES	0.00 - 0.00	08/08/2017
16000756	W3BH301	ES	0.00 - 0.00	03/08/2017
16000397	W4BH304	ES	0.00 - 0.00	07/08/2017
16000404	W4BH305	ES	0.00 - 0.00	07/08/2017
16000722	W9BH309	ES	0.00 - 0.00	08/08/2017
16000731	W9BH310	ES	0.00 - 0.00	08/08/2017
16000490	WS209	ES	0.00 - 0.00	07/08/2017
16000712	WS210	ES	0.00 - 0.00	08/08/2017
16000771	W3WS301	ES	0.00 - 0.00	03/08/2017
16000785	W3WS304	ES	0.00 - 0.00	03/08/2017
16000815	W4WS312	ES	0.00 - 0.00	07/08/2017
16000802	W4WS313	ES	0.00 - 0.00	07/08/2017
16000538	W4WS315	ES	0.00 - 0.00	08/08/2017
16000389	W7WS309	ES	0.00 - 0.00	02/08/2017
16000411	W8WS317	ES	0.00 - 0.00	07/08/2017
16000565	W8WS318	ES	0.00 - 0.00	08/08/2017
16000551	W8WS319	ES	0.00 - 0.00	08/08/2017
16000520	W8WS320	ES	0.00 - 0.00	08/08/2017
16000679	W9WS325	ES	0.00 - 0.00	08/08/2017

Maximum Sample/Coolbox Temperature (°C) : **16.2**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			16000453			16000460			16000479			16000500			16000511			16000691			16000701
Customer Sample Reference			BH203			BH204			BH205			BH207			BH208			BH208			BH209
AGS Reference			ES			ES			ES			ES			ES			ES			ES
Depth (m)			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00
Container			1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	500ml Plastic (ALE208)	Vial (ALE297)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 36		X			X								X			X			X
Anions by Kone (w)	All	NDPs: 0 Tests: 36		X			X								X			X			X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X																		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 39	X			X			X			X			X		X			X	
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 39	X			X			X			X			X		X			X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 39			X			X			X			X		X			X		
Low Level Cyanide (W)	All	NDPs: 1 Tests: 18	X			X									X						
Mercury Unfiltered	All	NDPs: 1 Tests: 38	X			X			X			X				X			X		
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 22		X			X								X						
Nitrite by Kone (w)	All	NDPs: 0 Tests: 36		X			X								X			X			X
Organotins in Aqueous Samples	All	NDPs: 1 Tests: 29	X			X						X			X		X			X	
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 39	X			X			X			X			X		X			X	
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 14	X			X			X			X					X			X	
pH Value	All	NDPs: 0 Tests: 39		X			X			X			X		X			X			X
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 39	X			X			X			X			X		X			X	

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			16000453			16000460			16000479			16000500			16000511			16000691			16000701
Customer Sample Reference			BH203			BH204			BH205			BH207			BH208			BH208			BH209
AGS Reference			ES			ES			ES			ES			ES			ES			ES
Depth (m)			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00
Container			1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	500ml Plastic (ALE208)	Vial (ALE297)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Total Metals by ICP-MS	All	NDPs: 0 Tests: 39		X			X			X			X		X			X			X
TPH CWG (W)	All	NDPs: 0 Tests: 39	X			X			X			X			X		X			X	
VOC MS (W)	All	NDPs: 0 Tests: 39			X			X			X			X		X			X		

16000465	HIWS204	ES	0.00 - 0.00	1000ml glass bottle (ALE220)	GW			X
16000433	HIBH205	EW	0.00 - 0.00	Vial (ALE297)	GW			X
				1plastic (ALE221)	GW		X	
				1000ml glass bottle (ALE220)	GW			X
16000607	HIBH202	ES	0.00 - 0.00	Vial (ALE297)	GW			X
				HNO3 Filtered (ALE204)	GW			
				1plastic (ALE221)	GW		X	
				1000ml glass bottle (ALE220)	GW			X
16000441	HIBH201	EW	0.00 - 0.00	Vial (ALE297)	GW			X
				1000ml glass bottle (ALE220)	GW		X	
16000740	HIBH201	ES	0.00 - 0.00	Vial (ALE297)	GW			X
				HNO3 Filtered (ALE204)	GW			
				1plastic (ALE221)	GW		X	
				1000ml glass bottle (ALE220)	GW			X
16000578	H1BH204	ES	0.00 - 0.00	Vial (ALE297)	GW			X
				1plastic (ALE221)	GW		X	
				1000ml glass bottle (ALE220)	GW			X
16000594	H1BH203	ES	0.00 - 0.00	Vial (ALE297)	GW			X
				1plastic (ALE221)	GW		X	
				1000ml glass bottle (ALE220)	GW			X
16000701	BH209	ES	0.00 - 0.00	Vial (ALE297)	GW			X

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			16000465			16000651			16000425			16000417			16000446			16000637		
Customer Sample Reference			HIWS204			HIWS205			HIWS210			HIWS211			HIWS212			H1WS206		
AGS Reference			ES			ES			ES			ES			ES			ES		
Depth (m)			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00			0.00 - 0.00		
Container			1plastic (ALE221)	HNO3 Filtered (ALE204)	Vial (ALE297)	1000ml glass bottle (ALE220)	500ml Plastic (ALE208)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	HNO3 Filtered (ALE204)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 36	X				X			X			X				X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 36	X				X			X			X				X			X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3																			
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 39				X			X			X				X			X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 39				X			X			X				X			X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 39			X			X			X				X			X			X
Low Level Cyanide (W)	All	NDPs: 1 Tests: 18				X															
Mercury Unfiltered	All	NDPs: 1 Tests: 38				X			X			X				X			X		
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 22		X			X							X							
Nitrite by Kone (w)	All	NDPs: 0 Tests: 36	X				X			X			X				X			X	
Organotins in Aqueous Samples	All	NDPs: 1 Tests: 29				X						X									
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 39				X			X			X				X			X		
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 14																			
pH Value	All	NDPs: 0 Tests: 39	X				X			X			X				X			X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 39				X			X			X				X			X		

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			16000465	16000651	16000425	16000417	16000446	16000637												
Customer Sample Reference			HIWS204	HIWS205	HIWS210	HIWS211	HIWS212	H1WS206												
AGS Reference			ES	ES	ES	ES	ES	ES												
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00												
Container			1plastic (ALE221)	HNO3 Filtered (ALE204)	Vial (ALE297)	1000ml glass bottle (ALE220)	500ml Plastic (ALE208)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	HNO3 Filtered (ALE204)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Total Metals by ICP-MS	All	NDPs: 0 Tests: 39	X				X			X			X				X			X	
TPH CWG (W)	All	NDPs: 0 Tests: 39				X			X			X				X			X		
VOC MS (W)	All	NDPs: 0 Tests: 39			X			X			X				X			X			X

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			16000731	16000490			16000712			16000771				16000785			16000815		16000802
Customer Sample Reference			W9BH310	WS209			WS210			W3WS301				W3WS304			W4WS312		W4WS313
AGS Reference			ES	ES			ES			ES				ES			ES		ES
Depth (m)			0.00 - 0.00	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00				0.00 - 0.00			0.00 - 0.00		0.00 - 0.00
Container			Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	500ml Plastic (ALE208)	HNO3 Filtered (ALE204)	Vial (ALE297)	1000ml glass bottle (ALE220)	500ml Plastic (ALE208)	HNO3 Filtered (ALE204)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 36						X			X				X				X		
Anions by Kone (w)	All	NDPs: 0 Tests: 36						X			X				X				X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3																			
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 39		X			X			X				X				X			X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 39		X			X			X				X				X			X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 39	X			X			X				X				X			X	
Low Level Cyanide (W)	All	NDPs: 1 Tests: 18								X								X			X
Mercury Unfiltered	All	NDPs: 1 Tests: 38		X			X			X				X				X			X
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 22										X				X			X		
Nitrite by Kone (w)	All	NDPs: 0 Tests: 36						X			X				X				X		
Organotins in Aqueous Samples	All	NDPs: 1 Tests: 29		X			X			X				X				X			X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 39		X			X			X				X				X			X
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 14		X			X														
PFAS Liquids	All	NDPs: 0 Tests: 1																			
pH Value	All	NDPs: 0 Tests: 39			X			X			X				X				X		

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	16000731	16000490			16000712			16000771				16000785				16000815			16000802	
Customer Sample Reference	W9BH310	WS209			WS210			W3WS301				W3WS304				W4WS312			W4WS313	
AGS Reference	ES	ES			ES			ES				ES				ES			ES	
Depth (m)	0.00 - 0.00	0.00 - 0.00			0.00 - 0.00			0.00 - 0.00				0.00 - 0.00				0.00 - 0.00			0.00 - 0.00	
Container	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	500ml Plastic (ALE208)	HNO3 Filtered (ALE204)	Vial (ALE297)	1000ml glass bottle (ALE220)	500ml Plastic (ALE208)	HNO3 Filtered (ALE204)	Vial (ALE297)	1000ml glass bottle (ALE220)	1plastic (ALE221)	Vial (ALE297)	1000ml glass bottle (ALE220)	
Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 39		X			X			X				X				X			X
Total Metals by ICP-MS	All	NDPs: 0 Tests: 39			X			X			X				X				X		
TPH CWG (W)	All	NDPs: 0 Tests: 39		X			X			X				X				X			X
VOC MS (W)	All	NDPs: 0 Tests: 39	X			X			X				X				X			X	

16000679	W9WS325	ES	0.00 - 0.00	1000ml glass bottle (ALE220)	GW							
16000520	W8WS320	ES	0.00 - 0.00	Vial (ALE297)	GW							X
				1plastic (ALE221)	GW						X	
				1000ml glass bottle (ALE220)	GW					X		
16000551	W8WS319	ES	0.00 - 0.00	Vial (ALE297)	GW				X			
				1plastic (ALE221)	GW			X				
				1000ml glass bottle (ALE220)	GW		X					
16000565	W8WS318	ES	0.00 - 0.00	Vial (ALE297)	GW				X			
				1plastic (ALE221)	GW			X				
				1000ml glass bottle (ALE220)	GW		X					
16000411	W8WS317	ES	0.00 - 0.00	Vial (ALE297)	GW				X			
				1000ml glass bottle (ALE220)	GW		X					
16000389	W7WS309	ES	0.00 - 0.00	Vial (ALE297)	GW				X			
				HNO3 Filtered (ALE204)	GW							
				1plastic (ALE221)	GW			X				
				1000ml glass bottle (ALE220)	GW		X					
16000538	W4WS315	ES	0.00 - 0.00	Vial (ALE297)	GW				X			
				1plastic (ALE221)	GW			X				
				1000ml glass bottle (ALE220)	GW		X					
16000802	W4WS313	ES	0.00 - 0.00	Vial (ALE297)	GW				X			
				1plastic (ALE221)	GW	X						

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			16000679	
Customer Sample Reference			W9WS325	
AGS Reference			ES	
Depth (m)			0.00 - 0.00	
Container			1lplastic (ALE221)	Vial (ALE297)
Sample Type			GW	GW
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 36	X	
Anions by Kone (w)	All	NDPs: 0 Tests: 36	X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 39		X
Nitrite by Kone (w)	All	NDPs: 0 Tests: 36	X	
pH Value	All	NDPs: 0 Tests: 39	X	
Total Metals by ICP-MS	All	NDPs: 0 Tests: 39	X	
VOC MS (W)	All	NDPs: 0 Tests: 39		X

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
Carbon, Organic (diss.filt)	<3000 µg/l	TM090		<3000					
Ammoniacal Nitrogen as NH4	<300 µg/l	TM099		<300 #	<300 #			499 #	1130 #
Mercury (tot.unfilt)	<0.02 µg/l	TM183		<0.02 #	<0.02 #	<0.02 #	0.0304 #	0.866 #	0.0326 #
Nitrite as NO2	<50 µg/l	TM184		<50 2 #	<50 2 #			<50 2 #	<50 2 #
Sulphate	<2000 µg/l	TM184		683000 #	135000 #			37000 #	38300 #
Chloride	<2000 µg/l	TM184		5150000 #	215000 #			60900 #	
Nitrate as NO3	<300 µg/l	TM184		<300	1420			<1500	<300
Arsenic (tot.unfilt)	<2 µg/l	TM191		12.2	4.04	<2	10.3	42.3	8.27
Cadmium (tot.unfilt)	<0.5 µg/l	TM191		<0.5	<0.5	<0.5	<0.5	1.08	<0.5
Chromium (tot.unfilt)	<3 µg/l	TM191		<3	<3	4.44	13.5	91.4	5.56
Copper (tot.unfilt)	<4 µg/l	TM191		<4	10.2	7.99	32.8	464	51.2
Nickel (tot.unfilt)	<0.5 µg/l	TM191		15.4	20.2	9.76	33.9	230	30.4
Lead (tot.unfilt)	<0.5 µg/l	TM191		0.695	5.59	8.96	51.2	1010	181
Selenium (tot.unfilt)	<1 µg/l	TM191		42	7.93	1.32	2.24	3.36	12.3
Zinc (tot.unfilt)	<3 µg/l	TM191		14.3	47.2	12.6	78.5	1170	121
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 77	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 81	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 105	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 114	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 123	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 126	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 156	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 157	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 167	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 169	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
PCB congener 189	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		<0.015
Hardness, Total as CaCO3	<1000 µg/l	TM228		1890000	527000			90500	
pH	<1 pH Units	TM256		7.46 #	7.13 #	7.79 #	7.23 #	7.31 #	7.5 #
Cyanide, Total (low level)	<5 µg/l	TM279		<5 #	<5 #			<5 #	
Dibutyl tin	<0.005 µg/l	TM328		<0.005	<0.005		<0.005	<0.03	<0.005
Tributyl tin	<0.001 µg/l	TM328		<0.001	<0.001		<0.001	<0.006	<0.001
Tetrabutyl tin	<0.002 µg/l	TM328		<0.002	<0.002		<0.002	<0.012	<0.002

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
Triphenyl tin	<0.001 µg/l	TM328		<0.001	<0.001		<0.001	<0.006	<0.001
Surrogate	%	TM328		92.6	68.4		91.2	52.1	99.4

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
Ammoniacal Nitrogen as NH4	<300 µg/l	TM099		<300 #	595 #	<300 #	<300 #	<300 #	<300 #
Mercury (tot.unfilt)	<0.02 µg/l	TM183		<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #
Nitrite as NO2	<50 µg/l	TM184		<50 2 #	<50 2 #	<50 2 #	<50 2 #	<50 2 #	74 2 #
Sulphate	<2000 µg/l	TM184		44100 #	451000 #	40100 #	147000 #	144000 #	538000 #
Chloride	<2000 µg/l	TM184			1670000 #	27800 #	163000 #		1980000 #
Nitrate as NO3	<300 µg/l	TM184		3250	<300	17200	<300	<300	<300
Arsenic (tot.unfilt)	<2 µg/l	TM191		2.21	5.54	<2	6.07	5.92	8.35
Cadmium (tot.unfilt)	<0.5 µg/l	TM191		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium (tot.unfilt)	<3 µg/l	TM191		<3	<3	<3	3.33	11	3.02
Copper (tot.unfilt)	<4 µg/l	TM191		<4	<4	<4	4.81	8.17	6.72
Nickel (tot.unfilt)	<0.5 µg/l	TM191		4.63	11.3	4.4	11.3	12	14.8
Lead (tot.unfilt)	<0.5 µg/l	TM191		3.47	<0.5	0.89	2.27	1.9	3.34
Selenium (tot.unfilt)	<1 µg/l	TM191		3.49	16.1	1.73	6.73	6.59	21.7
Zinc (tot.unfilt)	<3 µg/l	TM191		8.76	4.68	10.8	10	13	16.5
PCB congener 118	<0.015 µg/l	TM197		<0.015					
PCB congener 77	<0.015 µg/l	TM197		<0.015					
PCB congener 81	<0.015 µg/l	TM197		<0.015					
PCB congener 105	<0.015 µg/l	TM197		<0.015					
PCB congener 114	<0.015 µg/l	TM197		<0.015					
PCB congener 123	<0.015 µg/l	TM197		<0.015					
PCB congener 126	<0.015 µg/l	TM197		<0.015					
PCB congener 156	<0.015 µg/l	TM197		<0.015					
PCB congener 157	<0.015 µg/l	TM197		<0.015					
PCB congener 167	<0.015 µg/l	TM197		<0.015					
PCB congener 169	<0.015 µg/l	TM197		<0.015					
PCB congener 189	<0.015 µg/l	TM197		<0.015					
Hardness, Total as CaCO3	<1000 µg/l	TM228				387000	72800		788000
pH	<1 pH Units	TM256		7.12 #	7.6 #	7.52 #	8.2 #	8.08 #	7.76 #
Cyanide, Total (low level)	<5 µg/l	TM279				<5 #	<5 #		<5 #
Dibutyl tin	<0.005 µg/l	TM328		<0.005		<0.005	<0.005		<0.005
Tributyl tin	<0.001 µg/l	TM328		<0.001		<0.001	<0.001		<0.001
Tetrabutyl tin	<0.002 µg/l	TM328		<0.002		<0.002	<0.002		<0.002
Triphenyl tin	<0.001 µg/l	TM328		<0.001		<0.001	<0.001		<0.001

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
Surrogate	%	TM328		102		101	70		87.9

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			HIBH205	0.00 - 0.00	Ground Water (GW)	07/08/2017	.	12/08/2017	170812-1	16000433	EW
			HIWS204	0.00 - 0.00	Ground Water (GW)	03/08/2017	.	12/08/2017	170812-1	16000465	ES
			HIWS205	0.00 - 0.00	Ground Water (GW)	08/08/2017	.	12/08/2017	170812-1	16000651	ES
			HIWS210	0.00 - 0.00	Ground Water (GW)	07/08/2017	.	12/08/2017	170812-1	16000425	ES
			HIWS211	0.00 - 0.00	Ground Water (GW)	07/08/2017	.	12/08/2017	170812-1	16000417	ES
			HIWS212	0.00 - 0.00	Ground Water (GW)	07/08/2017	.	12/08/2017	170812-1	16000446	ES
Ammoniacal Nitrogen as NH4	<300 µg/l	TM099	<300 #	332 #	<300 #	<300 #	<300 #	<300 #			
Mercury (tot.unfilt)	<0.02 µg/l	TM183	<0.02 #		<0.02 #	<0.02 #	<0.02 #	<0.02 #			
Nitrite as NO2	<50 µg/l	TM184	<50 2 #	<50 2 #	<50 2 #	<50 2 #	96 2 #	<50 2 #			
Sulphate	<2000 µg/l	TM184	146000 #	444000 #	679000 #	14600 #	372000 #	190000 #			
Chloride	<2000 µg/l	TM184		689000 #	4550000 #		134000 #				
Nitrate as NO3	<300 µg/l	TM184	109000	1530	797	2480	8060	751			
Arsenic (tot.unfilt)	<2 µg/l	TM191	<2	28.9	10.9	<2	<2	<2			
Cadmium (tot.unfilt)	<0.5 µg/l	TM191	<0.5	13.9	<0.5	<0.5	<0.5	<0.5			
Chromium (tot.unfilt)	<3 µg/l	TM191	3.25	142	<3	3.46	3.26	<3			
Copper (tot.unfilt)	<4 µg/l	TM191	<4	252	10.7	<4	<4	<4			
Nickel (tot.unfilt)	<0.5 µg/l	TM191	3.46	214	22	4.04	5.87	2.91			
Lead (tot.unfilt)	<0.5 µg/l	TM191	0.967	998	0.766	1.52	0.942	<0.5			
Selenium (tot.unfilt)	<1 µg/l	TM191	2.78	7.51	39.1	1.86	3.31	1.49			
Zinc (tot.unfilt)	<3 µg/l	TM191	9.8	1110	5.57	12.6	12	5.29			
Hardness, Total as CaCO3	<1000 µg/l	TM228		334000	1570000		387000				
pH	<1 pH Units	TM256	7.42 #	7.76 #	7.73 #	7.39 #	7.49 #	7.43 #			
Cyanide, Total (low level)	<5 µg/l	TM279			<5 #						
Dibutyl tin	<0.005 µg/l	TM328			<0.1		<0.005				
Tributyl tin	<0.001 µg/l	TM328			<0.02		<0.001				
Tetrabutyl tin	<0.002 µg/l	TM328			<0.04		<0.002				
Triphenyl tin	<0.001 µg/l	TM328			<0.02		<0.001				
Surrogate	%	TM328			77.7		92.9				

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
Carbon, Organic (diss.filt)	<3000 µg/l	TM090					13000 @		
Ammoniacal Nitrogen as NH4	<300 µg/l	TM099		<300 #	<300 #	<300 #	1990 #	3630 #	2400 #
Mercury (tot.unfilt)	<0.02 µg/l	TM183		<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #
Nitrite as NO2	<50 µg/l	TM184		<50 2 #	<50 2 #	<50 2 #	<50 2 #	<50 2 #	<50 2 #
Sulphate	<2000 µg/l	TM184		73700 #	799000 #	113000 #	1130000 #	161000 #	187000 #
Chloride	<2000 µg/l	TM184					3460000 #	70800 #	326000 #
Nitrate as NO3	<300 µg/l	TM184		5580	<300	1220	<300	<300	<300
Arsenic (tot.unfilt)	<2 µg/l	TM191		<2	16.5	<2	24	<2	18.5
Cadmium (tot.unfilt)	<0.5 µg/l	TM191		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium (tot.unfilt)	<3 µg/l	TM191		4.15	<3	<3	<3	4.25	6.31
Copper (tot.unfilt)	<4 µg/l	TM191		<4	5.06	5.07	15.5	<4	5.45
Nickel (tot.unfilt)	<0.5 µg/l	TM191		4.05	22	4.34	16.4	6.82	10.9
Lead (tot.unfilt)	<0.5 µg/l	TM191		1.39	3	1.35	1.48	<0.5	11.4
Selenium (tot.unfilt)	<1 µg/l	TM191		2.34	56.6	1.92	32.6	1.78	5.66
Zinc (tot.unfilt)	<3 µg/l	TM191		10.9	11.2	7.26	28.9	10.6	23.3
PCB congener 118	<0.015 µg/l	TM197					<0.015		
PCB congener 77	<0.015 µg/l	TM197					<0.015		
PCB congener 81	<0.015 µg/l	TM197					<0.015		
PCB congener 105	<0.015 µg/l	TM197					<0.015		
PCB congener 114	<0.015 µg/l	TM197					<0.015		
PCB congener 123	<0.015 µg/l	TM197					<0.015		
PCB congener 126	<0.015 µg/l	TM197					<0.015		
PCB congener 156	<0.015 µg/l	TM197					<0.015		
PCB congener 157	<0.015 µg/l	TM197					<0.015		
PCB congener 167	<0.015 µg/l	TM197					<0.015		
PCB congener 169	<0.015 µg/l	TM197					<0.015		
PCB congener 189	<0.015 µg/l	TM197					<0.015		
Hardness, Total as CaCO3	<1000 µg/l	TM228					1510000	541000	371000
pH	<1 pH Units	TM256		7.38 #	7.26 #	7.75 #	7.37 #	7.28 #	7.53 #
Cyanide, Total (low level)	<5 µg/l	TM279						<5 #	<5 #
Dibutyl tin	<0.005 µg/l	TM328					<0.005	<0.005	<0.005
Tributyl tin	<0.001 µg/l	TM328					<0.001	<0.001	<0.001
Tetrabutyl tin	<0.002 µg/l	TM328					<0.002	<0.002	<0.002

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
Triphenyl tin	<0.001 µg/l	TM328					<0.001	<0.001	<0.001
Surrogate	%	TM328					87.5	112	91.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
Ammoniacal Nitrogen as NH4	<300 µg/l	TM099		1630 #	1340 #		1160 #	<300 #	1080 #
Mercury (tot.unfilt)	<0.02 µg/l	TM183		0.0212 #	<0.02 #	0.515 #	0.314 #	0.0622 #	0.127 #
Nitrite as NO2	<50 µg/l	TM184		1400 2 #	144 2 #		214 2 #	<50 2 #	114 2 #
Sulphate	<2000 µg/l	TM184		1220000 #	255000 #		29400 #	74200 #	540000 #
Chloride	<2000 µg/l	TM184						65200 #	195000 #
Nitrate as NO3	<300 µg/l	TM184		1450	<300		1270	12800	420
Arsenic (tot.unfilt)	<2 µg/l	TM191		8.04	6.25	29.1	13	2.79	21.5
Cadmium (tot.unfilt)	<0.5 µg/l	TM191		<0.5	<0.5	1.27	1.25	<0.5	4.03
Chromium (tot.unfilt)	<3 µg/l	TM191		<3	<3	65.9	16.2	<3	40
Copper (tot.unfilt)	<4 µg/l	TM191		7.06	4.81	180	30	18.2	255
Nickel (tot.unfilt)	<0.5 µg/l	TM191		199	23.7	157	53.5	6.8	74
Lead (tot.unfilt)	<0.5 µg/l	TM191		11	1.66	316	89.5	2.02	1290
Selenium (tot.unfilt)	<1 µg/l	TM191		22.8	17	2.57	<1	12	6.27
Zinc (tot.unfilt)	<3 µg/l	TM191		138	18	448	73.5	21	615
PCB congener 118	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 77	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 81	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 105	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 114	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 123	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 126	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 156	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 157	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 167	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 169	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
PCB congener 189	<0.015 µg/l	TM197		<0.015	<0.015	<0.015	<0.015		
Hardness, Total as CaCO3	<1000 µg/l	TM228						257000	972000
pH	<1 pH Units	TM256		6.88 #	7.26 #	8.14 #	6.98 #	7.37 #	7.13 #
Cyanide, Total (low level)	<5 µg/l	TM279		<5 #	<5 #			<5 #	
Dibutyl tin	<0.005 µg/l	TM328		<0.005	<0.005	<0.005	<0.03	<0.005	<0.005
Tributyl tin	<0.001 µg/l	TM328		<0.001	<0.001	<0.001	<0.006	0.00956	<0.001
Tetrabutyl tin	<0.002 µg/l	TM328		<0.002	<0.002	<0.002	<0.012	<0.002	<0.002
Triphenyl tin	<0.001 µg/l	TM328		<0.001	<0.001	<0.001	<0.006	<0.001	<0.001

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
Surrogate	%	TM328		106	111	79.4	70.1	106	94.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
Carbon, Organic (diss.filt)	<3000 µg/l	TM090					3670 @		
Ammoniacal Nitrogen as NH4	<300 µg/l	TM099		13200 #	3720 #	5820 #	<300 #	<300 #	<300 #
Mercury (tot.unfilt)	<0.02 µg/l	TM183		<0.02 #	<0.02 #	<0.02 #	<0.02 #	0.36 #	0.203 #
Nitrite as NO2	<50 µg/l	TM184		61 2 #	<50 2 #	<50 2 #	55 2 #	<50 2 #	503 2 #
Sulphate	<2000 µg/l	TM184		282000 #	458000 #	87400 #	78600 #	257000 #	351000 #
Chloride	<2000 µg/l	TM184		158000 #	176000 #	83800 #	197000 #	110000 #	50200 #
Nitrate as NO3	<300 µg/l	TM184		<300	<300	<300	45500	<300	2650
Arsenic (tot.unfilt)	<2 µg/l	TM191		31.3	6.26	2.46	3.03	16.6	21.2
Cadmium (tot.unfilt)	<0.5 µg/l	TM191		<0.5	<0.5	<0.5	<0.5	1.3	<0.5
Chromium (tot.unfilt)	<3 µg/l	TM191		<3	<3	3.3	7.75	82.7	24.1
Copper (tot.unfilt)	<4 µg/l	TM191		8.58	<4	<4	7.1	115	52.8
Nickel (tot.unfilt)	<0.5 µg/l	TM191		6.33	11.8	6.74	10.1	91.4	29.4
Lead (tot.unfilt)	<0.5 µg/l	TM191		13	1.57	0.935	7.68	268	104
Selenium (tot.unfilt)	<1 µg/l	TM191		2.75	2.34	4.52	7.67	2.17	4.71
Zinc (tot.unfilt)	<3 µg/l	TM191		34.5	5.5	3.71	22.8	391	155
PCB congener 118	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 77	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 81	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 105	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 114	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 123	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 126	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 156	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 157	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 167	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 169	<0.015 µg/l	TM197				<0.015			<0.015
PCB congener 189	<0.015 µg/l	TM197				<0.015			<0.015
Hardness, Total as CaCO3	<1000 µg/l	TM228		880000	839000	907000	447000	889000	442000
pH	<1 pH Units	TM256		7.81 #	7.45 #	7.34 #	7.34 #	7.53 #	7.74 #
Cyanide, Total (low level)	<5 µg/l	TM279		<5 #	<5 #	<5 #	<5 #	<5 #	
Dibutyl tin	<0.005 µg/l	TM328		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tributyl tin	<0.001 µg/l	TM328		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tetrabutyl tin	<0.002 µg/l	TM328		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
Triphenyl tin	<0.001 µg/l	TM328		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Surrogate	%	TM328		69.5	69.3	87.4	80.7	95.8	90.6
PFBA (Perfluoro-n-butanoic acid) 357-22-44	<0.002 µg/l	TM337					<0.02 #		
PFPA (Perfluoro-n-pentanoic acid) 2706-90-3	<0.001 µg/l	TM337					<0.01 #		
PFHxA (Perfluoro-n-hexanoic acid) 307-24-4	<0.001 µg/l	TM337					<0.01 #		
PFBS (Perfluoro-1-butanesulfonate)	<0.001 µg/l	TM337					<0.01 #		
PFHpA (Perfluoro-n-heptanoic acid) 375-85-9	<0.001 µg/l	TM337					<0.01 #		
6:2 PTS (Perfluoro-octane sulfonate 6:2) 27619-97-	<0.001 µg/l	TM337					<0.01 #		
PFOA (Perfluoro-n-octanoic acid) 335-67-1	<0.00065 µg/l	TM337					<0.0065 #		
PFHxS (Perfluoro-1-hexanesulfonate)	<0.001 µg/l	TM337					<0.01 #		
PFNA (Perfluoro-n-nonanoic acid) 375-95-1	<0.001 µg/l	TM337					<0.01 #		
PFHpS (Perfluoro-1-heptanesulfonate)	<0.001 µg/l	TM337					<0.01 #		
PFDA (Perfluoro-n-decanoic acid) 335-76-2	<0.001 µg/l	TM337					<0.01 #		
Linear PFOS (Perfluoro-1-octanesulfonate)	<0.00065 µg/l	TM337					<0.0065 #		
Branched PFOS	<0.001 µg/l	TM337					<0.01 #		
PFUnA (Perfluoro-n-undecanoic acid) 2508-94-8	<0.001 µg/l	TM337					<0.01 #		
PFDoA (Perfluoro-n-dodecanoic acid) 307-55-1	<0.001 µg/l	TM337					<0.01 #		
PFOSA (Perfluoro-octanesulfonamide)	<0.002 µg/l	TM337					<0.02 #		
PFDS (Perfluoro-n-decanesulfonate)	<0.001 µg/l	TM337					<0.01		
PFPeS (Perfluoro-n-pentanesulfonate)	<0.001 µg/l	TM337					<0.01 #		
Total PFOS	<0.001 µg/l	TM337					<0.0165 #		

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017
			Sample Time	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000551	16000520	16000679
			AGS Reference	ES	ES	ES
Ammoniacal Nitrogen as NH4	<300 µg/l	TM099		<300 #	<300 #	3020 #
Mercury (tot.unfilt)	<0.02 µg/l	TM183		<0.02 #	<0.02 #	0.0405 #
Nitrite as NO2	<50 µg/l	TM184		<50 2 #	<50 2 #	55 2 #
Sulphate	<2000 µg/l	TM184		118000 #	338000 #	125000 #
Chloride	<2000 µg/l	TM184		99700 #	135000 #	
Nitrate as NO3	<300 µg/l	TM184		2180	<300	<300
Arsenic (tot.unfilt)	<2 µg/l	TM191		2.43	6.22	7.37
Cadmium (tot.unfilt)	<0.5 µg/l	TM191		<0.5	<0.5	<0.5
Chromium (tot.unfilt)	<3 µg/l	TM191		<3	7.02	6.93
Copper (tot.unfilt)	<4 µg/l	TM191		<4	10.7	4.72
Nickel (tot.unfilt)	<0.5 µg/l	TM191		5.8	16.5	17
Lead (tot.unfilt)	<0.5 µg/l	TM191		0.71	6.05	5.98
Selenium (tot.unfilt)	<1 µg/l	TM191		4.21	4.71	2.72
Zinc (tot.unfilt)	<3 µg/l	TM191		27.2	34.3	17.6
PCB congener 118	<0.015 µg/l	TM197				<0.015
PCB congener 77	<0.015 µg/l	TM197				<0.015
PCB congener 81	<0.015 µg/l	TM197				<0.015
PCB congener 105	<0.015 µg/l	TM197				<0.015
PCB congener 114	<0.015 µg/l	TM197				<0.015
PCB congener 123	<0.015 µg/l	TM197				<0.015
PCB congener 126	<0.015 µg/l	TM197				<0.015
PCB congener 156	<0.015 µg/l	TM197				<0.015
PCB congener 157	<0.015 µg/l	TM197				<0.015
PCB congener 167	<0.015 µg/l	TM197				<0.015
PCB congener 169	<0.015 µg/l	TM197				<0.015
PCB congener 189	<0.015 µg/l	TM197				<0.015
Hardness, Total as CaCO3	<1000 µg/l	TM228		576000	688000	
pH	<1 pH Units	TM256		7.72 #	7.37 #	7.15 #
Cyanide, Total (low level)	<5 µg/l	TM279		<5 #		
Dibutyl tin	<0.005 µg/l	TM328		<0.005	<0.005	0.005
Tributyl tin	<0.001 µg/l	TM328		<0.001	0.00943	0.001
Tetrabutyl tin	<0.002 µg/l	TM328		<0.002	<0.002	0.002
Triphenyl tin	<0.001 µg/l	TM328		<0.001	<0.001	0.001

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	08/08/2017	08/08/2017	08/08/2017			
			Sample Time	-	-	-			
			Date Received	12/08/2017	12/08/2017	12/08/2017			
			SDG Ref	170812-1	170812-1	170812-1			
			Lab Sample No.(s)	16000551	16000520	16000679			
			AGS Reference	ES	ES	ES			
Surrogate	%	TM328		118	102	74.9			

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	0.23 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	<0.011 #	<0.011 #	<0.011 #	<0.011 #	<0.011 #
Fluoranthene (aq)	<0.017 µg/l	TM178		0.0229 #	<0.017 #	0.0851 #	<0.017 #	0.0326 #	0.0905 #
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 #	0.0162 #
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	<0.022 #	0.0225 #	<0.022 #	<0.022 #	<0.022 #
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 #	<0.014 #	<0.014 #
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	<0.013 #	0.0172 #	<0.013 #	0.12 #	0.0245 #
Pyrene (aq)	<0.015 µg/l	TM178		0.036 #	0.025 #	0.0805 #	<0.015 #	0.0756 #	0.0528 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	<0.017 #	<0.017 #	0.107 #	<0.017 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	<0.023 #	<0.023 #	<0.023 #	0.157 #	0.0357 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.027 #	<0.027 #	<0.027 #	<0.027 #	<0.027 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	<0.009 #	<0.009 #	<0.009 #	0.0785 #	0.021 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 #	0.118 #	<0.016 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 #	0.126 #	0.0221 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 #	0.1 #	0.0196 #
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		<0.344 #	<0.344 #	<0.344 #	<0.344 #	0.916 #	<0.344 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
Naphthalene (aq)	<0.1 µg/l	TM178		0.163 #	<0.1 #	<0.1 #	<0.1 @#	<0.1 #	<0.1 @#
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 @#	<0.015 #	<0.015 @#
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	<0.011 #	<0.011 #	<0.011 @#	<0.011 #	<0.011 @#
Fluoranthene (aq)	<0.017 µg/l	TM178		0.0216 #	<0.017 #	<0.017 #	<0.017 @#	<0.017 #	<0.017 @#
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 @#	<0.015 #	<0.015 @#
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	<0.022 #	<0.022 #	<0.022 @#	<0.022 #	<0.022 @#
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 @#	<0.014 #	<0.014 @#
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	<0.013 #	<0.013 #	<0.013 @#	<0.013 #	<0.013 @#
Pyrene (aq)	<0.015 µg/l	TM178		0.0358 #	<0.015 #	<0.015 #	<0.015 @#	<0.015 #	<0.015 @#
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	<0.017 #	<0.017 @#	<0.017 #	<0.017 @#
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	<0.023 #	<0.023 #	<0.023 @#	<0.023 #	<0.023 @#
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.027 #	<0.027 #	<0.027 @#	<0.027 #	<0.027 @#
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	<0.009 #	<0.009 #	<0.009 @#	<0.009 #	<0.009 @#
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 @#	<0.016 #	<0.016 @#
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 @#	<0.016 #	<0.016 @#
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 @#	<0.014 #	<0.014 @#
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		<0.344 #	<0.344 #	<0.344 #	<0.344 @#	<0.344 #	<0.344 @#

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIBH205	HIWS204	HIWS205	HIWS210	HIWS211	HIWS212
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	03/08/2017	08/08/2017	07/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000433	16000465	16000651	16000425	16000417	16000446
			AGS Reference	EW	ES	ES	ES	ES	ES
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	<0.3 @ #	<0.1 #	0.599 #	<0.1 #	<0.1 #
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	0.118 @ #	<0.015 #	0.027 #	<0.015 #	<0.015 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	0.292 @ #	<0.011 #	<0.011 #	<0.011 #	<0.011 #
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 #	8.22 @ #	<0.017 #	<0.017 #	<0.017 #	<0.017 #
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	0.613 @ #	<0.015 #	<0.015 #	<0.015 #	<0.015 #
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	1.7 @ #	<0.022 #	<0.022 #	<0.022 #	<0.022 #
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	0.111 @ #	<0.014 #	<0.014 #	<0.014 #	<0.014 #
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	5.9 @ #	<0.013 #	<0.013 #	<0.013 #	<0.013 #
Pyrene (aq)	<0.015 µg/l	TM178		<0.015 #	8.14 @ #	<0.015 #	<0.015 #	<0.015 #	<0.015 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	6.22 @ #	<0.017 #	<0.017 #	<0.017 #	<0.017 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	22.1 @ #	<0.023 #	<0.023 #	<0.023 #	<0.023 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	9.09 @ #	<0.027 #	<0.027 #	<0.027 #	<0.027 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	16.4 @ #	<0.009 #	<0.009 #	<0.009 #	<0.009 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	2.61 @ #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	13.1 @ #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	11 @ #	<0.014 #	<0.014 #	<0.014 #	<0.014 #
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		<0.344 #	106 @ #	<0.344 #	0.626 #	<0.344 #	<0.344 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	<0.1 #	<0.1 #	0.412 @ #	<0.1 #	<0.1 #
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 @ #	<0.015 #	0.0383 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	<0.011 #	<0.011 #	<0.011 @ #	<0.011 #	<0.011 #
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	<0.017 #	<0.017 @ #	<0.017 #	0.0275 #
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 @ #	<0.015 #	<0.015 #
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	<0.022 #	<0.022 #	<0.022 @ #	<0.022 #	0.0265 #
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 @ #	<0.014 #	0.0178 #
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	<0.013 #	<0.013 #	<0.013 @ #	<0.013 #	<0.013 #
Pyrene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	0.0196 @ #	<0.015 #	0.0236 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	<0.017 #	<0.017 @ #	<0.017 #	0.0177 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	<0.023 #	<0.023 #	<0.023 @ #	<0.023 #	<0.023 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.027 #	<0.027 #	<0.027 @ #	<0.027 #	<0.027 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	<0.009 #	<0.009 #	<0.009 @ #	<0.009 #	0.0159 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 @ #	<0.016 #	<0.016 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 @ #	<0.016 #	<0.016 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 @ #	<0.014 #	<0.014 #
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		<0.344 #	<0.344 #	<0.344 #	0.432 @ #	<0.344 #	<0.344 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 @ #	<0.1 @ #
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 @ #	0.0536 @ #
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	<0.011 #	<0.011 #	<0.011 #	<0.011 @ #	0.0461 @ #
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	0.0262 #	0.114 #	<0.017 @ #	3.12 @ #
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 @ #	0.341 @ #
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	<0.022 #	<0.022 #	0.0319 #	<0.022 @ #	0.668 @ #
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 #	<0.014 @ #	0.0523 @ #
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	<0.013 #	<0.013 #	0.0555 #	<0.013 @ #	2.03 @ #
Pyrene (aq)	<0.015 µg/l	TM178		<0.015 #	<0.015 #	0.122 #	0.13 #	<0.015 @ #	2.32 @ #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	<0.017 #	0.0845 #	<0.017 @ #	2.02 @ #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	<0.023 #	0.0438 #	0.114 #	<0.023 @ #	4.07 @ #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.027 #	<0.027 #	0.0461 #	<0.027 @ #	1.61 @ #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	<0.009 #	0.013 #	0.0723 #	<0.009 @ #	3.01 @ #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	0.0163 #	<0.016 @ #	0.578 @ #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	0.0522 #	<0.016 @ #	2.03 @ #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	0.0395 #	<0.014 @ #	1.78 @ #
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		<0.344 #	<0.344 #	<0.344 #	0.757 #	<0.344 @ #	23.7 @ #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	<0.1 #	<0.1 #	<0.1 @ #	<0.1 #	<0.1 #
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	0.535 #	0.581 #	<0.015 @ #	0.0202 #	<0.015 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	0.019 #	0.0247 #	<0.011 @ #	0.0217 #	0.0204 #
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 #	0.269 #	0.064 #	<0.017 @ #	0.616 #	0.386 #
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	0.0403 #	0.0287 #	<0.015 @ #	0.0766 #	0.0408 #
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	<0.022 #	0.0317 #	<0.022 @ #	0.222 #	0.0788 #
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	0.234 #	0.0962 #	<0.014 @ #	0.0216 #	<0.014 #
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	0.0173 #	<0.013 #	<0.013 @ #	0.831 #	0.481 #
Pyrene (aq)	<0.015 µg/l	TM178		0.0205 #	0.206 #	0.0624 #	<0.015 @ #	0.932 #	0.403 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	<0.017 #	<0.017 @ #	0.782 #	0.379 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	<0.023 #	<0.023 #	<0.023 @ #	6.82 #	1.93 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.027 #	<0.027 #	<0.027 @ #	2.76 #	0.782 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	<0.009 #	<0.009 #	0.0127 @ #	5.29 #	1.51 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 @ #	0.734 #	0.322 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #	<0.016 @ #	3.51 #	1.51 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #	<0.014 @ #	2.92 #	1.18 #
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		<0.344 #	1.32 #	0.889 #	<0.344 @ #	25.6 #	9.01 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	08/08/2017	08/08/2017	08/08/2017			
			Sample Time	.	.	.			
			Date Received	12/08/2017	12/08/2017	12/08/2017			
			SDG Ref	170812-1	170812-1	170812-1			
			Lab Sample No.(s)	16000551	16000520	16000679			
			AGS Reference	ES	ES	ES			
Naphthalene (aq)	<0.1 µg/l	TM178		1.8 #	<0.1 #	<0.1 #			
Acenaphthene (aq)	<0.015 µg/l	TM178		0.0862 #	<0.015 #	<0.015 #			
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.0185 #	<0.011 #	<0.011 #			
Fluoranthene (aq)	<0.017 µg/l	TM178		0.0925 #	<0.017 #	<0.017 #			
Anthracene (aq)	<0.015 µg/l	TM178		0.0208 #	<0.015 #	<0.015 #			
Phenanthrene (aq)	<0.022 µg/l	TM178		0.0525 #	<0.022 #	<0.022 #			
Fluorene (aq)	<0.014 µg/l	TM178		0.0393 #	<0.014 #	<0.014 #			
Chrysene (aq)	<0.013 µg/l	TM178		<0.013 #	<0.013 #	<0.013 #			
Pyrene (aq)	<0.015 µg/l	TM178		0.183 #	0.0185 #	0.0152 #			
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.017 #	<0.017 #			
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	<0.023 #	<0.023 #			
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.027 #	<0.027 #			
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		<0.009 #	<0.009 #	<0.009 #			
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #			
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.016 #	<0.016 #			
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.014 #	<0.014 #			
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		2.3 #	<0.344 #	<0.344 #			

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<8	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<8	<1
Azobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Acenaphthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<2 #	<2 #	<2 #	<2 #	<16 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Carbazole (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Chrysene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<5 #	<5 #	<5 #	<40 #	<5 #
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Fluorene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<8	<1
Phenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<8	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<8	<1
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #
Pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<8 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2-Chlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
2-Nitrophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
3-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
4-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
4-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
Azobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Acenaphthylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Acenaphthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<2 #	<2 #	<2 #	<2 @ #	<2 #	<2 @ #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Carbazole (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Chrysene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<5 #	<5 #	<5 @ #	<5 #	<5 @ #
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Fluorene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
Phenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Isophorone (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #
Pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<1 #	<1 @ #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIBH205	HIWS204	HIWS205	HIWS210	HIWS211	HIWS212
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	03/08/2017	08/08/2017	07/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000433	16000465	16000651	16000425	16000417	16000446
			AGS Reference	EW	ES	ES	ES	ES	ES
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<8	<1	<1	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<8	<1	<1	<1	<1
Azobenzene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Acenaphthene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Anthracene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<2 #	24.6 @ #	<2 #	<2 #	<2 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	11 @ #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIBH205	HIWS204	HIWS205	HIWS210	HIWS211	HIWS212
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	03/08/2017	08/08/2017	07/08/2017	07/08/2017	07/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000433	16000465	16000651	16000425	16000417	16000446
			AGS Reference	EW	ES	ES	ES	ES	ES
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	18.2 @ #	<1 #	<1 #	<1 #	<1 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	9.02 @ #	<1 #	<1 #	<1 #	<1 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	13.7 @ #	<1 #	<1 #	<1 #	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	11.7 @ #	<1 #	<1 #	<1 #	<1 #
Carbazole (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Chrysene (aq)	<1 µg/l	TM176		<1 #	9.26 @ #	<1 #	<1 #	<1 #	<1 #
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<2.45 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<40 @ #	<5 #	<5 #	<5 #	<5 #
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	16.1 @ #	<1 #	<1 #	<1 #	<1 #
Fluorene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<8	<1	<1	<1	<1
Phenol (aq)	<1 µg/l	TM176		<1	<8	<1	<1	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<8	<1	<1	<1	<1
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<8 @ #	<1 #	<1 #	<1 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	8.44 @ #	<1 #	<1 #	<1 #	<1 #
Pyrene (aq)	<1 µg/l	TM176		<1 #	16.3 @ #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
Azobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Acenaphthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbazole (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chrysene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<2.45 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Fluorene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
Phenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<1	<1
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176		<2	<1	<4	<8	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176		<2	<1	<4	<8	<1	<1
Azobenzene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Acenaphthene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Anthracene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<4 #	<2 #	<8 #	<16 #	<2 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	1.79 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	3.08 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	1.25 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	2.09 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	1.55 #
Carbazole (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Chrysene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	1.54 #
Dibenzofuran (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176		<2 #	<1 #	<5 #	<8 #	<1 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	2.24 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<10 #	<5 #	<20 #	<40 #	<5 #	<5 #
Fluoranthene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	2.45 #
Fluorene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<2	<1	<4	<8	<1	<1
Phenol (aq)	<1 µg/l	TM176		<2	<1	<4	<8	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Naphthalene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<2	<1	<4	<8	<1	<1
Phenanthrene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	1.21 #
Pyrene (aq)	<1 µg/l	TM176		<2 #	<1 #	<4 #	<8 #	<1 #	1.84 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<4	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<4	<1
Azobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Acenaphthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<2 #	<2 #	<2 #	<2 @ #	9.61 #	2.1 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Carbazole (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Chrysene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176		<2.45 #	<1 #	<2.45 #	<2.45 @ #	<4 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<5 #	<5 #	<5 @ #	<20 #	<5 #
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Fluorene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<4	<1
Phenol (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<4	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<1	<1	<1	<4	<1
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #
Pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #	<1 @ #	<4 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	08/08/2017	08/08/2017	08/08/2017			
			Sample Time	.	.	.			
			Date Received	12/08/2017	12/08/2017	12/08/2017			
			SDG Ref	170812-1	170812-1	170812-1			
			Lab Sample No.(s)	16000551	16000520	16000679			
			AGS Reference	ES	ES	ES			
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2-Chlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
2-Nitrophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
3-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<1	<1			
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
4-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
4-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<1	<1			
Azobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Acenaphthylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Acenaphthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<2 #	<2 #	<2 #			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	08/08/2017	08/08/2017	08/08/2017			
			Sample Time	-	-	-			
			Date Received	12/08/2017	12/08/2017	12/08/2017			
			SDG Ref	170812-1	170812-1	170812-1			
			Lab Sample No.(s)	16000551	16000520	16000679			
			AGS Reference	ES	ES	ES			
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Carbazole (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Chrysene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<2.45 #	<1 #			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<5 #	<5 #			
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Fluorene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<1	<1			
Phenol (aq)	<1 µg/l	TM176		<1	<1	<1			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Isophorone (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<1	<1			
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			
Pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<1 #			

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM245		95	93	89	94	101	92
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	12	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	67	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	155	28	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	234	28	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	17	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	20	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	64	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	101	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	71	<10	236	146	66
Aromatics >EC16-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	84	<10

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
GRO Surrogate % recovery**	%	TM245		81	76	89	73	77	94
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		46	<10	<10	<10	<10	<10
Aromatics >EC16-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIBH205	HIWS204	HIWS205	HIWS210	HIWS211	HIWS212
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	03/08/2017	08/08/2017	07/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000433	16000465	16000651	16000425	16000417	16000446
			AGS Reference	EW	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM245		94	94 1	94	71	94	79
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 1 #	<50 #	<50 #	<50 #	<50 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10 1	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10 1	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10 1	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10 1	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<100	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	268	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	2820	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	3120	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10 1	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10 1	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10 1	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10 1	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<100	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	242	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	1500	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	1770	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	4900	<10	<10	<10	<10
Aromatics >EC16-EC35 (aq)	<10 µg/l	TM174		<10	1750	<10	<10	<10	<10

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM245		75	93	77	94	96	100
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	15
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	15
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	15
Aromatics >EC16-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM245		83	89	99	93	92	90
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		30	<10	10	30	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		26	<10	<10	179	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		66	<10	10	209	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	14	<10	13
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	43	<10	32
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	177	<10	96
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	234	<10	141
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		66	<10	10	462	<10	157
Aromatics >EC16-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	220	<10	128

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM245		84	97	88	97 @	72	76
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 @ #	<50 #	<50 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10 @	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10 @	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10 @	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10 @	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	40	47
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	344	251
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	384	298
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10 @	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10 @	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10 @	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10 @	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	11	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	43	34
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	248	172
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	302	206
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		27	<10	<10	<10	686	504
Aromatics >EC16-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	291	206

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	08/08/2017	08/08/2017	08/08/2017			
			Sample Time	.	.	.			
			Date Received	12/08/2017	12/08/2017	12/08/2017			
			SDG Ref	170812-1	170812-1	170812-1			
			Lab Sample No.(s)	16000551	16000520	16000679			
			AGS Reference	ES	ES	ES			
GRO Surrogate % recovery**	%	TM245		77	95	95			
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #			
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	46	<10			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	46	<10			
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	46	82			
Aromatics >EC16-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10			

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM208		107	107	109	109	109	109
Toluene-d8**	%	TM208		98.2	92.9	98.6	98.4	97.4	99.1
4-Bromofluorobenzene**	%	TM208		93.3	96.1	94.7	85.6	94.9	96.3
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	07/08/2017	07/08/2017	07/08/2017	08/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000453	16000460	16000479	16000500	16000511	16000691
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
VOC TIC	-	TM208		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	<2	<2	<2	<2
Total VOC TIC	<10 µg/l	TM208		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
Dibromofluoromethane**	%	TM208		105	104	107	106	106	103
Toluene-d8**	%	TM208		98.2	100	101	98.9	99.4	93.6
4-Bromofluorobenzene**	%	TM208		96.3	98.5	103	104	102	97.4
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH209	H1BH203	H1BH204	HIBH201	HIBH201	HIBH202
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	03/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000701	16000594	16000578	16000740	16000441	16000607
			AGS Reference	ES	ES	ES	ES	EW	ES
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
VOC TIC	-	TM208		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	<2	-	<2	<2
Total VOC TIC	<10 µg/l	TM208		<10	0	0	0	0	0

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIBH205	HIWS204	HIWS205	HIWS210	HIWS211	HIWS212
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	03/08/2017	08/08/2017	07/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000433	16000465	16000651	16000425	16000417	16000446
			AGS Reference	EW	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM208		105	104 1	105	104	105	108
Toluene-d8**	%	TM208		99.3	99.8 1	97.6	101	99.4	99.9
4-Bromofluorobenzene**	%	TM208		98.7	98.7 1	96.1	103	97.9	100
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 1 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1 1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIBH205	HIWS204	HIWS205	HIWS210	HIWS211	HIWS212
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	03/08/2017	08/08/2017	07/08/2017	07/08/2017	07/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000433	16000465	16000651	16000425	16000417	16000446
			AGS Reference	EW	ES	ES	ES	ES	ES
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1 1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIBH205	HIWS204	HIWS205	HIWS210	HIWS211	HIWS212
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	03/08/2017	08/08/2017	07/08/2017	07/08/2017	07/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000433	16000465	16000651	16000425	16000417	16000446
			AGS Reference	EW	ES	ES	ES	ES	ES
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1 1	<1	<1	<1	<1
VOC TIC	-	TM208		Not Detected	Not Detected 1	Not Detected	Not Detected	Not Detected	Not Detected
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2 1	<2	<2	<2	<2
Total VOC TIC	<10 µg/l	TM208		0	0 1	<10	0	0	<10

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM208		107	104	105	106	109	105
Toluene-d8**	%	TM208		101	98.3	98	98.8	98.4	100
4-Bromofluorobenzene**	%	TM208		103	100	98.6	96.7	97.1	97.5
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	H1WS206	H1WS207	H1WS208	W3BH301	W4BH304	W4BH305
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	08/08/2017	03/08/2017	07/08/2017	07/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000637	16000623	16000666	16000756	16000397	16000404
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
VOC TIC	-	TM208		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	-	<2	<2	<2
Total VOC TIC	<10 µg/l	TM208		0	0	0	<10	0	0

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM208		106	104	107	107	108	107
Toluene-d8**	%	TM208		100	100	92	98.2	98.1	98.2
4-Bromofluorobenzene**	%	TM208		98.8	101	100	95.9	96.4	96.4
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	08/08/2017	08/08/2017	07/08/2017	08/08/2017	03/08/2017	03/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000722	16000731	16000490	16000712	16000771	16000785
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
VOC TIC	-	TM208		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	<2	<2	<2	<2
Total VOC TIC	<10 µg/l	TM208		0	0	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	.	.	.	.	.	.
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM208		106	108	105	107	109	107
Toluene-d8**	%	TM208		100	92.2	94.1	101	101	97.8
4-Bromofluorobenzene**	%	TM208		102	87.7	101	98.5	99.6	98.5
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		1.34 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		2.14 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	07/08/2017	07/08/2017	08/08/2017	02/08/2017	07/08/2017	08/08/2017
			Sample Time	-	-	-	-	-	-
			Date Received	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017	12/08/2017
			SDG Ref	170812-1	170812-1	170812-1	170812-1	170812-1	170812-1
			Lab Sample No.(s)	16000815	16000802	16000538	16000389	16000411	16000565
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
VOC TIC	-	TM208		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	<2	<2	-	-
Total VOC TIC	<10 µg/l	TM208		0	<10	<10	0	0	0

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	08/08/2017	08/08/2017	08/08/2017			
			Sample Time	.	.	.			
			Date Received	12/08/2017	12/08/2017	12/08/2017			
			SDG Ref	170812-1	170812-1	170812-1			
			Lab Sample No.(s)	16000551	16000520	16000679			
			AGS Reference	ES	ES	ES			
Dibromofluoromethane**	%	TM208		106	108	110			
Toluene-d8**	%	TM208		101	99	97.4			
4-Bromofluorobenzene**	%	TM208		98.1	99.3	102			
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1			
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	08/08/2017	08/08/2017	08/08/2017			
			Sample Time	-	-	-			
			Date Received	12/08/2017	12/08/2017	12/08/2017			
			SDG Ref	170812-1	170812-1	170812-1			
			Lab Sample No.(s)	16000551	16000520	16000679			
			AGS Reference	ES	ES	ES			
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W8WS319	W8WS320	W9WS325			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	08/08/2017	08/08/2017	08/08/2017			
			Sample Time	-	-	-			
			Date Received	12/08/2017	12/08/2017	12/08/2017			
			SDG Ref	170812-1	170812-1	170812-1			
			Lab Sample No.(s)	16000551	16000520	16000679			
			AGS Reference	ES	ES	ES			
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1			
VOC TIC	-	TM208		Not Detected	Not Detected	Not Detected			
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	<2			
Total VOC TIC	<10 µg/l	TM208		0	0	<10			

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 12/08/2017 04:01:31

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
16000465	HIWS204 ESZ	0.00 - 0.00	Mercury Unfiltered	Sample used up
16000465	HIWS204 ESZ	0.00 - 0.00	Organotins in Aqueous Samples	Sample used up
16000465	HIWS204 ESZ	0.00 - 0.00	Low Level Cyanide (W)	Sample used up

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM279		Determination of Low Level Easily Liberatable (Free) Cyanides and Total Cyanides in Waters using the Skalar SANS+ System Segmented Flow Analyser
TM328		
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	16000453	16000460	16000479	16000500	16000511	16000691	16000701	16000594	16000578	16000441
Customer Sample Ref.	BH203	BH204	BH205	BH207	BH208	BH208	BH209	H1BH203	H1BH204	HIBH201
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	EW
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	14-Aug-2017	16-Aug-2017			14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017
Anions by Kone (w)	18-Aug-2017	18-Aug-2017			18-Aug-2017	17-Aug-2017	16-Aug-2017	18-Aug-2017	18-Aug-2017	17-Aug-2017
Dissolved Organic/Inorganic Carbon	15-Aug-2017									
EPH CWG (Aliphatic) Aqueous GC (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
EPH CWG (Aromatic) Aqueous GC (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	17-Aug-2017
GRO by GC-FID (W)	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	17-Aug-2017	16-Aug-2017	17-Aug-2017
Low Level Cyanide (W)	14-Aug-2017	14-Aug-2017			14-Aug-2017				14-Aug-2017	
Mercury Unfiltered	21-Aug-2017	21-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	21-Aug-2017	21-Aug-2017	21-Aug-2017	18-Aug-2017	21-Aug-2017
Metals by iCap-OES Dissolved (W)	18-Aug-2017	17-Aug-2017			17-Aug-2017				17-Aug-2017	
Nitrite by Kone (w)	14-Aug-2017	14-Aug-2017			14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017
Organotins in Aqueous Samples	16-Aug-2017	16-Aug-2017		16-Aug-2017	16-Aug-2017	11-Dec-2017	16-Aug-2017		11-Dec-2017	
PAH Spec MS - Aqueous (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	17-Aug-2017	18-Aug-2017	18-Aug-2017
PCB Congeners - Aqueous (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017		18-Aug-2017	18-Aug-2017			
pH Value	15-Aug-2017	16-Aug-2017	16-Aug-2017	15-Aug-2017	16-Aug-2017	15-Aug-2017	16-Aug-2017	15-Aug-2017	16-Aug-2017	16-Aug-2017
SVOC MS (W) - Aqueous	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	18-Aug-2017	16-Aug-2017	16-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017
Total Metals by ICP-MS	17-Aug-2017	17-Aug-2017	15-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017
TPH CWG (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
VOC MS (W)	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017

Lab Sample No(s)	16000740	16000607	16000433	16000465	16000651	16000425	16000417	16000446	16000637	16000623
Customer Sample Ref.	HIBH201	HIBH202	HIBH205	HIWS204	HIWS205	HIWS210	HIWS211	HIWS212	H1WS206	H1WS207
AGS Ref.	ES	ES	EW	ES	ES	ES	ES	ES	ES	ES
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	16-Aug-2017
Anions by Kone (w)	18-Aug-2017	18-Aug-2017	17-Aug-2017	18-Aug-2017	18-Aug-2017	17-Aug-2017	18-Aug-2017	17-Aug-2017	16-Aug-2017	17-Aug-2017
EPH CWG (Aliphatic) Aqueous GC (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
EPH CWG (Aromatic) Aqueous GC (W)	18-Aug-2017	17-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	17-Aug-2017	18-Aug-2017	18-Aug-2017
GRO by GC-FID (W)	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	16-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	18-Aug-2017
Low Level Cyanide (W)	14-Aug-2017	14-Aug-2017			14-Aug-2017					
Mercury Unfiltered	21-Aug-2017	18-Aug-2017	18-Aug-2017		18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	21-Aug-2017	21-Aug-2017
Metals by iCap-OES Dissolved (W)	17-Aug-2017	18-Aug-2017		17-Aug-2017	18-Aug-2017		17-Aug-2017			
Nitrite by Kone (w)	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017
Organotins in Aqueous Samples	16-Aug-2017	11-Dec-2017			17-Aug-2017		11-Dec-2017			
PAH Spec MS - Aqueous (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	17-Aug-2017	18-Aug-2017
pH Value	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017
SVOC MS (W) - Aqueous	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	16-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017
Total Metals by ICP-MS	17-Aug-2017	17-Aug-2017	15-Aug-2017	17-Aug-2017	17-Aug-2017	15-Aug-2017	17-Aug-2017	15-Aug-2017	15-Aug-2017	17-Aug-2017
TPH CWG (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
VOC MS (W)	18-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	15-Aug-2017	17-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017

Lab Sample No(s)	16000666	16000756	16000397	16000404	16000722	16000731	16000490	16000712	16000771	16000785
Customer Sample Ref.	H1WS208	W3BH301	W4BH304	W4BH305	W9BH309	W9BH310	WS209	WS210	W3WS301	W3WS304
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017		14-Aug-2017	14-Aug-2017	14-Aug-2017
Anions by Kone (w)	17-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	16-Aug-2017	17-Aug-2017		16-Aug-2017	18-Aug-2017	18-Aug-2017
Dissolved Organic/Inorganic Carbon		15-Aug-2017								
EPH CWG (Aliphatic) Aqueous GC (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
EPH CWG (Aromatic) Aqueous GC (W)	17-Aug-2017	18-Aug-2017	18-Aug-2017	17-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
GRO by GC-FID (W)	17-Aug-2017	16-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017
Low Level Cyanide (W)			14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017			14-Aug-2017	
Mercury Unfiltered	18-Aug-2017	21-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
Metals by iCap-OES Dissolved (W)		18-Aug-2017	17-Aug-2017	17-Aug-2017					17-Aug-2017	17-Aug-2017
Nitrite by Kone (w)	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017		14-Aug-2017	14-Aug-2017	14-Aug-2017
Organotins in Aqueous Samples		16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	11-Dec-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017
PAH Spec MS - Aqueous (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	17-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
PCB Congeners - Aqueous (W)		18-Aug-2017			18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017		
pH Value	15-Aug-2017	15-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	15-Aug-2017	16-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017
SVOC MS (W) - Aqueous	17-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	18-Aug-2017	16-Aug-2017	16-Aug-2017
Total Metals by ICP-MS	17-Aug-2017	17-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017
TPH CWG (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
VOC MS (W)	18-Aug-2017	15-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017

Validated

CERTIFICATE OF ANALYSIS

SDG:	170812-1	**Client Reference:**	70015362	**Report Number:**	436347
Location:	Tipner	**Order Number:**	70015362-CS2	**Superseded Report:**	

Lab Sample No(s)	16000815	16000802	16000538	16000389	16000411	16000565	16000551	16000520	16000679
Customer Sample Ref.	W4WS312	W4WS313	W4WS315	W7WS309	W8WS317	W8WS318	W8WS319	W8WS320	W9WS325
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	16-Aug-2017	14-Aug-2017	16-Aug-2017	14-Aug-2017	14-Aug-2017
Anions by Kone (w)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	16-Aug-2017
Dissolved Organic/Inorganic Carbon				15-Aug-2017					
EPH CWG (Aliphatic) Aqueous GC (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
EPH CWG (Aromatic) Aqueous GC (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
GRO by GC-FID (W)	17-Aug-2017	16-Aug-2017	16-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	18-Aug-2017	16-Aug-2017
Low Level Cyanide (W)	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017		14-Aug-2017		
Mercury Unfiltered	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
Metals by iCap-OES Dissolved (W)	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	
Nitrite by Kone (w)	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017	14-Aug-2017
Organotins in Aqueous Samples	11-Dec-2017	11-Dec-2017	11-Dec-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	11-Dec-2017	11-Dec-2017
PAH Spec MS - Aqueous (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
PCB Congeners - Aqueous (W)			18-Aug-2017			18-Aug-2017			18-Aug-2017
PFAS Liquids				17-Aug-2017					
pH Value	16-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017
SVOC MS (W) - Aqueous	16-Aug-2017	16-Aug-2017	16-Aug-2017	16-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	16-Aug-2017	16-Aug-2017
Total Metals by ICP-MS	15-Aug-2017	17-Aug-2017	17-Aug-2017	15-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017	17-Aug-2017
TPH CWG (W)	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017
VOC MS (W)	16-Aug-2017	15-Aug-2017	15-Aug-2017	16-Aug-2017	18-Aug-2017	18-Aug-2017	18-Aug-2017	16-Aug-2017	15-Aug-2017

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Attention: Claire Nichols

CERTIFICATE OF ANALYSIS

Date:	11 October 2017
Customer:	H_WSP_BAS
Sample Delivery Group (SDG):	171003-65
Your Reference:	70015362
Location:	TIPNER
Report No:	427852

This report has been revised and directly supersedes 427758 in its entirety.

We received 3 samples on Tuesday October 03, 2017 and 3 of these samples were scheduled for analysis which was completed on Wednesday October 11, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan
Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

Validated

CERTIFICATE OF ANALYSIS

SDG:	171003-65	**Client Reference:**	70015362	**Report Number:**	427852
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	427758

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
16291862	HIWS201		2.88	29/09/2017
16291861	HIWS209			29/09/2017
16291860	W9WS323			29/09/2017

Maximum Sample/Coolbox Temperature (°C) : 13

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	171003-65	**Client Reference:**	70015362	**Report Number:**	427852
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	427758

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	16291862	16291861	16291860
			Customer Sample Reference	HIWS201	HIWS209	W9WS323
			AGS Reference			
			Depth (m)	2.88		
			Container	Gas Canister	Gas Canister	Gas Canister
			Sample Type	G	G	G
Bulk Gas	All	NDPs: 0 Tests: 3		X	X	X
Determination of C1 C7 Hydrocarbons	All	NDPs: 0 Tests: 3		X	X	X
Odourant Gas Analysis (G)	All	NDPs: 0 Tests: 3		X	X	X

Validated

CERTIFICATE OF ANALYSIS

SDG:	171003-65	**Client Reference:**	70015362	**Report Number:**	427852
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	427758

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIWS201	HIWS209	W9WS323			
			Depth (m)	2.88	.	.			
			Sample Type	Gas (G)	Gas (G)	Gas (G)			
			Date Sampled	29/09/2017	29/09/2017	29/09/2017			
			Sample Time	.	.	.			
			Date Received	03/10/2017	03/10/2017	03/10/2017			
			SDG Ref	171003-65	171003-65	171003-65			
			Lab Sample No.(s)	16291862	16291861	16291860			
			AGS Reference						
Methane	<1 ppm	TM147		<5	<5	<5			
Ethane	<1 ppm	TM147		<1	<1	<1			
Ethene	<1 ppm	TM147		<1	<1	<1			
Propane	<1 ppm	TM147		<1	<1	<1			
iso-Butane	<1 ppm	TM147		<1	<1	<1			
Butane	<1 ppm	TM147		<1	<1	<1			
iso-Pentane	<1 ppm	TM147		<1	<1	<1			
Pentane	<1 ppm	TM147		<1	<1	<1			
Hexane	<1 ppm	TM147		<1	<1	<1			
Heptane	<1 ppm	TM147		<1	<1	<1			
Number of Others	-	TM147		0	0	1			
Concentration of Others	ppm	TM147		0	0	3.63			
Volatile gases, Total	<1 ppm	TM147		<1	<1	3.63			
Distributed Natural Gas	-	TM147		NO	NO	NO			
Hydrogen sulphide	<0.1 ppm v/v	TM216		<0.1	<0.1	<0.1			

Validated

CERTIFICATE OF ANALYSIS

SDG:	171003-65	**Client Reference:**	70015362	**Report Number:**	427852
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	427758

Bulk Gas

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	HIWS201	HIWS209	W9WS323			
			Depth (m)	2.88	.	.			
			Sample Type	Gas (G)	Gas (G)	Gas (G)			
			Date Sampled	29/09/2017	29/09/2017	29/09/2017			
			Sample Time	.	.	.			
			Date Received	03/10/2017	03/10/2017	03/10/2017			
			SDG Ref	171003-65	171003-65	171003-65			
			Lab Sample No.(s)	16291862	16291861	16291860			
			AGS Reference						
Hydrogen	<0.5 %	TM053		<0.5	<0.5	<0.5			
Oxygen	<0.5 %	TM053		10.2	<0.5	9.35			
Nitrogen	<1 %	TM053		82.3	81.8	82			
Carbon monoxide	<0.05 %	TM053		<0.05	<0.05	<0.05			
Methane	<0.05 %	TM053		<0.05	<0.05	<0.05			
Carbon dioxide	<0.05 %	TM053		7.51	18.2	8.66			
Bulk gas, Total	%	TM053		100	100	100			

CERTIFICATE OF ANALYSIS

SDG:	171003-65	**Client Reference:**	70015362	**Report Number:**	427852
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	427758

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM053	MEWAM Methane & Hydrocarbon gases HMSO 1988	Determination of Bulk Gas Composition		
TM147	ASTM D-1945-91	Determination of C1-C7 Hydrocarbons in Gas Samples		
TM216	The Determination of Sulphur Gases in Natural Gas with Pulsed Flame Photometric Detector", Varian application note number 60, Norman Kirshen	The Determination of Odourant Compounds in Gases by Gas Chromatography with PFPD Detection		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	171003-65	**Client Reference:**	70015362	**Report Number:**	427852
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	427758

Test Completion Dates

Lab Sample No(s)	16291862	16291861	16291860
Customer Sample Ref.	HIWS201	HIWS209	W9WS323
AGS Ref.			
Depth	2.88		
Type	Gas (G)	Gas (G)	Gas (G)
Bulk Gas	10-Oct-2017	10-Oct-2017	10-Oct-2017
Determination of C1 C7 Hydrocarbons	11-Oct-2017	11-Oct-2017	11-Oct-2017
Odourant Gas Analysis (G)	05-Oct-2017	05-Oct-2017	05-Oct-2017

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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WSP Environmental
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Attention: Claire Nichols

CERTIFICATE OF ANALYSIS

Date:	11 October 2017
Customer:	H_WSP_BAS
Sample Delivery Group (SDG):	171003-67
Your Reference:	70015362
Location:	TIPNER
Report No:	427818

We received 3 samples on Tuesday October 03, 2017 and 3 of these samples were scheduled for analysis which was completed on Wednesday October 11, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan

Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

Validated

CERTIFICATE OF ANALYSIS

SDG:	171003-67	**Client Reference:**	70015362	**Report Number:**	427818
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
16291931	W3WS304			28/09/2017
16291929	W4WS314			28/09/2017
16291933	W8WS318			28/09/2017

Maximum Sample/Coolbox Temperature (°C) : **13**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	171003-67	**Client Reference:**	70015362	**Report Number:**	427818
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)		
			16291931	16291929	16291933
			Customer Sample Reference		
			W3WS304	W4WS314	W8WS318
			AGS Reference		
			Depth (m)		
			Container		
			Gas Canister	Gas Canister	Gas Canister
			Sample Type		
			G	G	G
Bulk Gas	All	NDPs: 0 Tests: 3	X	X	X
Determination of C1 C7 Hydrocarbons	All	NDPs: 0 Tests: 3	X	X	X
Odourant Gas Analysis (G)	All	NDPs: 0 Tests: 3	X	X	X

Validated

CERTIFICATE OF ANALYSIS

SDG:	171003-67	**Client Reference:**	70015362	**Report Number:**	427818
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3WS304	W4WS314	W8WS318			
			Depth (m)	.	.	.			
			Sample Type	Gas (G)	Gas (G)	Gas (G)			
			Date Sampled	28/09/2017	28/09/2017	28/09/2017			
			Sample Time	.	.	.			
			Date Received	03/10/2017	03/10/2017	03/10/2017			
			SDG Ref	171003-67	171003-67	171003-67			
			Lab Sample No.(s)	16291931	16291929	16291933			
			AGS Reference						
Methane	<1 ppm	TM147		11700	289000	<5			
Ethane	<1 ppm	TM147		<25	<25	<1			
Ethene	<1 ppm	TM147		<25	<25	<1			
Propane	<1 ppm	TM147		<1	13.7	<1			
iso-Butane	<1 ppm	TM147		<1	1.18	<1			
Butane	<1 ppm	TM147		<1	2.49	<1			
iso-Pentane	<1 ppm	TM147		<1	1.13	<1			
Pentane	<1 ppm	TM147		<1	<1	<1			
Hexane	<1 ppm	TM147		<1	<1	<1			
Heptane	<1 ppm	TM147		<1	<1	<1			
Number of Others	-	TM147		2	10	0			
Concentration of Others	ppm	TM147		2.17	4.57	0			
Volatile gases, Total	<1 ppm	TM147		11700	289000	<1			
Distributed Natural Gas	-	TM147		NO	NO	NO			
Hydrogen sulphide	<0.1 ppm v/v	TM216		<0.1	<0.1	<0.1			

Validated

CERTIFICATE OF ANALYSIS

SDG:	171003-67	**Client Reference:**	70015362	**Report Number:**	427818
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Bulk Gas

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W3WS304	W4WS314	W8WS318			
Depth (m)	.	.	.			
Sample Type	Gas (G)	Gas (G)	Gas (G)			
Date Sampled	28/09/2017	28/09/2017	28/09/2017			
Sample Time	.	.	.			
Date Received	03/10/2017	03/10/2017	03/10/2017			
SDG Ref	171003-67	171003-67	171003-67			
Lab Sample No.(s)	16291931	16291929	16291933			
AGS Reference						

Component	LOD/Units	Method						
Hydrogen	<0.5 %	TM053	<0.5	<0.5	<0.5			
Oxygen	<0.5 %	TM053	<0.5	<0.5	16.3			
Nitrogen	<1 %	TM053	87.2	66.2	83.4			
Carbon monoxide	<0.05 %	TM053	<0.05	<0.05	<0.05			
Methane	<0.05 %	TM053	1.66	31.1	<0.05			
Carbon dioxide	<0.05 %	TM053	11.1	2.73	0.31			
Bulk gas, Total	%	TM053	100	100	100			

CERTIFICATE OF ANALYSIS

SDG:	171003-67	**Client Reference:**	70015362	**Report Number:**	427818
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM053	MEWAM Methane & Hydrocarbon gases HMSO 1988	Determination of Bulk Gas Composition		
TM147	ASTM D-1945-91	Determination of C1-C7 Hydrocarbons in Gas Samples		
TM216	The Determination of Sulphur Gases in Natural Gas with Pulsed Flame Photometric Detector", Varian application note number 60, Norman Kirshen	The Determination of Odourant Compounds in Gases by Gas Chromatography with PFPD Detection		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	171003-67	**Client Reference:**	70015362	**Report Number:**	427818
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	16291931	16291929	16291933
Customer Sample Ref.	W3WS304	W4WS314	W8WS318
AGS Ref.			
Depth			
Type	Gas (G)	Gas (G)	Gas (G)
Bulk Gas	10-Oct-2017	10-Oct-2017	10-Oct-2017
Determination of C1 C7 Hydrocarbons	11-Oct-2017	11-Oct-2017	11-Oct-2017
Odourant Gas Analysis (G)	05-Oct-2017	05-Oct-2017	05-Oct-2017

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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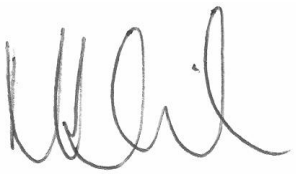
Certificate of Analysis

Report No.: 17-61513-1

Issue No.: **1**
Date of Issue **04/05/2017**

Customer Details:	WSP / Parsons Brinckerhoff, 6th Floor Mountbatten House, Basing View, Basingstoke, RG21 4HJ
Customer Contact:	Martin Weil
Customer Order No.:	Not Supplied
Customer Reference:	70015362
Quotation Reference:	170425/15
Description:	5 soil samples
Date Received:	28/04/2017
Date Started:	02/05/2017
Date Completed:	04/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None



Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
This certificate shall not be reproduced except in full without the prior written approval of the laboratory.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

UKAS TESTING 1663

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

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Results Summary

Report No.: 17-61513-1

Customer Reference: 70015362

Customer Order No: Not Supplied

					Customer Sample No	**W9BH209**	**W9WS322**	**W9WS323**	**W9WS324**	**W9WS326**
					RPS Sample No	328047	328048	328049	328050	328051
					Sample Type	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**
					Sample Depth (m)	1.5-2.0m	1.0-1.2m	0.5m	1.8-2.0m	1.5-2.0m
					Sampling Date	26/04/2017	26/04/2017	26/04/2017	27/04/2017	26/04/2017
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**					
courier charges		N	in house	n/a		Sent				
description of removed material		N	in house	n/a					Stones	Stones,asphalt
soil type		N	in house	n/a		Type 7	Type 4	Type 1	Type 4	Type 7
weight of removed material		N	in house	g		184	43.2	50.7	81.0	217
2,4,6-trinitrophenol (picric acid)	88-89-1	M	375	mg/kg as DW	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-dinitrotoluene	121-14-2	M	375	mg/kg as DW	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-dinitrotoluene	606-20-2	M	375	mg/kg as DW	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ethylene glycol dinitrate (EGDN)	628-96-2	M	374	mg/kg as DW	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
cyclotetramethylenetetranitramine (HMX)	2691-41-0	M	375	mg/kg as DW	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
hexanitrostilbene (HNS)	20062-22-0	M	375	mg/kg as DW	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
nitrocellulose (NC)	9004-70-0	U	376	mg/kg	5000	< 5000	< 5000	< 5000	< 5000	< 5000
nitroglycerine (NG)	55-63-0	M	374	mg/kg as DW	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
pentaerythritol tetranitrate (PETN)	78-11-5	M	375	mg/kg as DW	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
picrite	556-88-7	M	375	mg/kg as DW	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX)	121-82-4	M	375	mg/kg as DW	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-trinitrotoluene (TNT)	118-96-7	M	375	mg/kg as DW	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-methyl-N,2,4,6-tetranitroaniline (tetryl)	479-45-8	M	375	mg/kg as DW	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
courier charges		N	in house	n/a	0	Sent				

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Deviating Samples

Report No.: 17-61513-1

Customer Reference: 70015362

Customer Order No: Not Supplied

Our policy on Deviating Samples and reference list of Holding Times applied can be supplied on request. These have been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling, and it is possible that samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be invalid. The reason for a sample being declared to be deviating is indicated below.
Where no sampling date was supplied, samples have been declared to be deviating. However, if a date of sampling can be supplied, the results may be reissued with the deviating sample status removed.
Where the sample container used was unsuitable, the appropriate Holding Time was exceeded, or the sample is flagged as deviating for some other reason, re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating Sample	Reason for Sample Deviation
328047	W9BH209		26/04/2017	250ml amber glass jar	No	
328048	W9WS322		26/04/2017	250ml amber glass jar	No	
328049	W9WS323		26/04/2017	250ml amber glass jar	No	
328050	W9WS324		27/04/2017	250ml amber glass jar	No	
328051	W9WS326		26/04/2017	250ml amber glass jar	No	

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

MCERTS Notes

Note 1	This test report shall not be reproduced except in full, without written approval of the Laboratory.
Note 2	All results for soil samples are reported based on the dry weight of soil which has been air-dried in open, shallow trays at temperatures below 30°C and subsequently ground and sieved to pass through a nominal 710µm aperture sieve. Prior to grinding, any material which is retained on a sieve of mesh size 4.75mm is discarded. In most cases, analysis is carried out directly on these prepared soils.
Note 3	Unless otherwise stated, results are not corrected for analytical recoveries.
Note 4	All samples were received in good condition unless otherwise stated. Results provided by the Laboratory are based on samples submitted by clients. Once submitted, samples requiring analysis are stored at 5 ± 3°C. The Laboratory cannot be held responsible for the storage, condition or preservation of samples prior to arrival.
Note 5	Samples were taken by the customer and, unless otherwise stated, sampling locations were not supplied.
Note 6	Soil descriptions are given in order to provide a log of sample matrices submitted and are not intended as full geological descriptions.
Note 7	Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

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Website: www.alsenvironmental.co.uk

WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

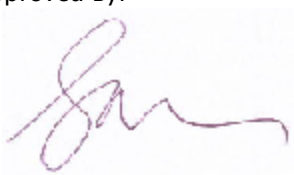
Date:	03 May 2017
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	170413-49
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	406995

We received 13 samples on Thursday April 13, 2017 and 7 of these samples were scheduled for analysis which was completed on Tuesday May 02, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:



Sonia McWhan
Operations Manager

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Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15336871	W3BH301	ES	3.60 - 3.80	11/04/2017
15336902	W3BH301	ES	6.50 - 6.70	11/04/2017
15336884	W3WS301	ES	0.20 - 0.30	11/04/2017
15336892	W3WS301	ES	0.70 - 0.80	11/04/2017
15336948	W3WS302	ES	0.20 - 0.25	11/04/2017
15336953	W3WS302	ES	0.50 - 0.60	11/04/2017
15336879	W3WS302	ES	0.80 - 0.85	11/04/2017
15336897	W3WS304	ES	0.15 - 0.25	11/04/2017
15336911	W3WS304	ES	0.65 - 0.70	11/04/2017
15336925	W3WS304	ES	1.30 - 1.40	11/04/2017
15336931	W3WS304	ES	1.90 - 2.00	11/04/2017
15336938	W3WS304	ES	2.50 - 2.60	11/04/2017
15336943	W3WS304	ES	3.60 - 3.70	11/04/2017

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

Validated

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			15336902	W3BH301	ES	6.50 - 6.70	1kg TUB	S
			15336884	W3WS301	ES	0.20 - 0.30	250g Amber Jar (ALE210)	S
			15336892	W3WS301	ES	0.70 - 0.80	60g VOC (ALE215)	S
			15336948	W3WS302	ES	0.20 - 0.25	400g Tub (ALE214)	S
			15336879	W3WS302	ES	0.80 - 0.85	250g Amber Jar (ALE210)	S
			15336911	W3WS304	ES	0.65 - 0.70	60g VOC (ALE215)	S
			15336938	W3WS304	ES	2.50 - 2.60	60g VOC (ALE215)	S
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5					400g Tub (ALE214)	S
							1kg TUB	S
							400g Tub (ALE214)	S
Asbestos Quantification - Full	All	NDPs: 0 Tests: 3					400g Tub (ALE214)	S
							1kg TUB	S
							400g Tub (ALE214)	S
CEN Readings	All	NDPs: 0 Tests: 1	X				1kg TUB	S
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X				1kg TUB	S
Dissolved Tin by ICPMS	All	NDPs: 0 Tests: 1	X				1kg TUB	S
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1	X				1kg TUB	S
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 7		X		X		S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1	X				1kg TUB	S
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 7		X		X		S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
GRO by GC-FID (S)	All	NDPs: 0 Tests: 7			X		60g VOC (ALE215)	S
							60g VOC (ALE215)	S
							60g VOC (ALE215)	S
							60g VOC (ALE215)	S
							60g VOC (ALE215)	S
							60g VOC (ALE215)	S
							60g VOC (ALE215)	S
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X				1kg TUB	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 7		X		X		S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
Mercury Dissolved	All	NDPs: 0 Tests: 1	X				1kg TUB	S
Metals in solid samples by OES	All	NDPs: 0 Tests: 7		X		X		S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
							250g Amber Jar (ALE210)	S
Organotins in Aqueous Samples	All	NDPs: 0 Tests: 1	X				1kg TUB	S

CERTIFICATE OF ANALYSIS

Validated

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15336902			15336884			15336892			15336948			15336879			15336911			15336938		
Customer Sample Reference			W3BH301			W3WS301			W3WS301			W3WS302			W3WS302			W3WS304			W3WS304		
AGS Reference			ES			ES			ES			ES			ES			ES			ES		
Depth (m)			6.50 - 6.70			0.20 - 0.30			0.70 - 0.80			0.20 - 0.25			0.80 - 0.85			0.65 - 0.70			2.50 - 2.60		
Container			1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Organotins on soils*	All	NDPs: 0 Tests: 2		X									X			X							
PAH by GCMS	All	NDPs: 0 Tests: 7		X		X			X			X			X		X			X		
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1	X																				
pH	All	NDPs: 0 Tests: 7		X		X			X			X			X		X			X		
Sample description	All	NDPs: 0 Tests: 6		X		X			X			X			X		X					
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X								X											
Total Organic Carbon	All	NDPs: 0 Tests: 1		X																			
TPH CWG (W)	All	NDPs: 0 Tests: 1	X																				
TPH CWG GC (S)	All	NDPs: 0 Tests: 7		X		X			X			X			X		X				X		
VOC MS (S)	All	NDPs: 0 Tests: 7			X			X			X			X			X			X			X
VOC MS (W)	All	NDPs: 0 Tests: 1	X																				

CERTIFICATE OF ANALYSIS

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15336902	W3BH301	6.50 - 6.70	Cream	Chalk	None	None
15336884	W3WS301	0.20 - 0.30	Black	Sandy Loam	Stones	None
15336892	W3WS301	0.70 - 0.80	Dark Brown	Sandy Clay Loam	Stones	Crushed Brick
15336879	W3WS302	0.80 - 0.85	Dark Brown	Sandy Clay Loam	Stones	N/A
15336948	W3WS302	0.20 - 0.25	Dark Brown	Loamy Sand	Stones	None
15336911	W3WS304	0.65 - 0.70	Dark Brown	Loamy Sand	Crushed Brick	Stones
15336938	W3WS304	2.50 - 2.60	Dark Brown	Silty Clay	N/A	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3WS301	W3WS301	W3WS302	W3WS302	W3WS304
			Depth (m)	6.50 - 6.70	0.20 - 0.30	0.70 - 0.80	0.20 - 0.25	0.80 - 0.85	0.65 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017
			SDG Ref	170413-49	170413-49	170413-49	170413-49	170413-49	170413-49
			Lab Sample No.(s)	15336902	15336884	15336892	15336948	15336879	15336911
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		24	17	21	6.3	20	14
Soil Organic Matter (SOM)	<0.35 %	TM132		0.379 #					
pH	1 pH Units	TM133		8.97 #	8.53 M	8.01 M	9.12 M	8.04 M	8.46 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		2.04 #	13.4 M	20.5 M	8.81 M	18.5 M	13.1 M
Cadmium	<0.02 mg/kg	TM181		0.256 #	1.5 M	0.256 M	0.622 M	1.88 M	0.969 M
Chromium	<0.9 mg/kg	TM181		3.79 #	24.3 M	15.4 M	7.66 M	34.8 M	36.2 M
Copper	<1.4 mg/kg	TM181		1.76 #	442 M	159 M	16.9 M	837 M	277 M
Lead	<0.7 mg/kg	TM181		1.1 #	755 M	>500 M	70.5 M	589 M	514 M
Mercury	<0.14 mg/kg	TM181		0.311 #	0.695 M	10.7 M	0.349 M	2.05 M	1.16 M
Nickel	<0.2 mg/kg	TM181		3.33 #	25.4 M	20.2 M	8.02 M	32.8 M	35.4 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181		<0.24 #	11.1 #			71.1 #	25.2 #
Zinc	<1.9 mg/kg	TM181		14.6 #	379 M	259 M	173 M	1270 M	527 M
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304			<0.001 #			1.23 #	0.118 #
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304			<0.001 #			0.0955 #	0.0063 #
Additional Asbestos Components (Using TM048)	-	TM304			None #			None #	Chrysotile (ACM #
Analysts Comments	-	TM304			N/C			N/C	N/C
Asbestos Quantification - Total - %	<0.001 %	TM304			<0.001 #			1.32 #	0.125 #

CERTIFICATE OF ANALYSIS

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W3WS304
Depth (m)	2.50 - 2.60
Sample Type	Soil/Solid (S)
Date Sampled	11/04/2017
Sampled Time	.
Date Received	13/04/2017
SDG Ref	170413-49
Lab Sample No.(s)	15336938
AGS Reference	ES

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	20
pH	1 pH Units	TM133	7.8 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #
Arsenic	<0.6 mg/kg	TM181	13.8 M
Cadmium	<0.02 mg/kg	TM181	<0.02 M
Chromium	<0.9 mg/kg	TM181	27.1 M
Copper	<1.4 mg/kg	TM181	13.4 M
Lead	<0.7 mg/kg	TM181	26.6 M
Mercury	<0.14 mg/kg	TM181	<0.14 M
Nickel	<0.2 mg/kg	TM181	23.6 M
Selenium	<1 mg/kg	TM181	<1 #
Zinc	<1.9 mg/kg	TM181	56.6 M

CERTIFICATE OF ANALYSIS

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Organotins on soils*

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3WS302				
			Depth (m)	6.50 - 6.70	0.80 - 0.85				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	11/04/2017	11/04/2017				
			Sampled Time	.	.				
			Date Received	13/04/2017	13/04/2017				
			SDG Ref	170413-49	170413-49				
			Lab Sample No.(s)	15336902	15336879				
			AGS Reference	ES	ES				
Dibutyl Tin*	<0.02 mg/kg	SUB		<0.02	<0.02				
Tributyl Tin*	<0.02 mg/kg	SUB		<0.02	0.03				
Triphenyl Tin*	<0.05 mg/kg	SUB		<0.05	<0.052				
Tetrabutyl Tin*	<0.02 mg/kg	SUB		<0.02	<0.02				
Monobutyl Tin*	<0.1 mg/kg	SUB		<0.1	<0.1				
Monophenyl Tin*	<0.02 mg/kg	SUB		<0.02	<0.02				
Diphenyl Tin*	<0.02 mg/kg	SUB		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG: 170413-49 Client Reference: 70015362 Report Number: 406995
Location: City Deal Tipner West Order Number: 70015362 Superseded Report:

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W3BH301	6.50 - 6.70	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336902	ES
			W3WS301	0.20 - 0.30	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336884	ES
			W3WS301	0.70 - 0.80	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336892	ES
			W3WS302	0.20 - 0.25	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336948	ES
			W3WS302	0.80 - 0.85	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336879	ES
			W3WS304	0.65 - 0.70	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336911	ES
Naphthalene-d8 % recovery**	%	TM218	105	102	111	103	105	105			
Acenaphthene-d10 % recovery**	%	TM218	106	97.6	107	105	103	99.6			
Phenanthrene-d10 % recovery**	%	TM218	104	95.9	106	105	102	99.2			
Chrysene-d12 % recovery**	%	TM218	90	89.3	106	91.8	90.9	95.1			
Perylene-d12 % recovery**	%	TM218	89.7	96.8	116	92.3	88.1	104			
Naphthalene	<0.009 mg/kg	TM218	<0.009 #	0.113 M	0.172 M	<0.009 M	0.142 M	0.229 M			
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 #	0.144 M	0.36 M	0.0448 M	0.0744 M	0.333 M			
Acenaphthene	<0.008 mg/kg	TM218	<0.008 #	0.0571 M	0.131 M	<0.008 M	0.133 M	1.12 M			
Fluorene	<0.01 mg/kg	TM218	<0.01 #	0.0645 M	0.212 M	<0.01 M	0.173 M	1.49 M			
Phenanthrene	<0.015 mg/kg	TM218	<0.015 #	1.15 M	4.2 M	0.0721 M	1.71 M	11.8 M			
Anthracene	<0.016 mg/kg	TM218	<0.016 #	0.31 M	1.12 M	0.0395 M	0.415 M	3.7 M			
Fluoranthene	<0.017 mg/kg	TM218	<0.017 #	2.93 M	11 M	0.381 M	3.33 M	22.2 M			
Pyrene	<0.015 mg/kg	TM218	<0.015 #	2.55 M	8.79 M	0.408 M	2.71 M	14.7 M			
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 #	1.29 M	6.22 M	0.254 M	1.5 M	9.55 M			
Chrysene	<0.01 mg/kg	TM218	<0.01 #	1.48 M	5.11 M	0.244 M	1.4 M	8.42 M			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 #	3.17 M	8.39 M	0.269 M	1.86 M	11.8 M			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 #	1.28 M	3.26 M	0.14 M	0.981 M	5.35 M			
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 #	2.05 M	6.93 M	0.288 M	1.73 M	9.3 M			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 #	2.25 M	3.55 M	0.142 M	1.07 M	5.58 M			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 #	0.579 M	1.08 M	0.0378 M	0.346 M	1.9 M			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 #	2.92 M	3.81 M	0.178 M	1.31 M	6.06 M			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118	22.3	64.3	2.5	18.9	113			

CERTIFICATE OF ANALYSIS

SDG: 170413-49 Client Reference: 70015362 Report Number: 406995
Location: City Deal Tipner West Order Number: 70015362 Superseded Report:

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W3WS304	2.50 - 2.60	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336938	ES
Naphthalene-d8 % recovery**	%	TM218	97.7								
Acenaphthene-d10 % recovery**	%	TM218	85.4								
Phenanthrene-d10 % recovery**	%	TM218	78.9								
Chrysene-d12 % recovery**	%	TM218	74.2								
Perylene-d12 % recovery**	%	TM218	72.4								
Naphthalene	<0.009 mg/kg	TM218	<0.009 M								
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M								
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M								
Fluorene	<0.01 mg/kg	TM218	<0.01 M								
Phenanthrene	<0.015 mg/kg	TM218	0.0239 M								
Anthracene	<0.016 mg/kg	TM218	<0.016 M								
Fluoranthene	<0.017 mg/kg	TM218	0.0307 M								
Pyrene	<0.015 mg/kg	TM218	0.0236 M								
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M								
Chrysene	<0.01 mg/kg	TM218	<0.01 M								
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M								
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M								
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M								
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M								
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M								
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M								
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118								

CERTIFICATE OF ANALYSIS

SDG: 170413-49 Client Reference: 70015362 Report Number: 406995
Location: City Deal Tipner West Order Number: 70015362 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3WS302				
			Depth (m)	6.50 - 6.70	0.20 - 0.25				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	11/04/2017	11/04/2017				
			Sampled Time	.	.				
			Date Received	13/04/2017	13/04/2017				
			SDG Ref	170413-49	170413-49				
			Lab Sample No.(s)	15336902	15336948				
			AGS Reference	ES	ES				
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1				
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1				
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1				
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1				
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1				
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1				
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG: 170413-49 Client Reference: 70015362 Report Number: 406995
Location: City Deal Tipner West Order Number: 70015362 Superseded Report:

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3WS302				
			Depth (m)	6.50 - 6.70	0.20 - 0.25				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	11/04/2017	11/04/2017				
			Sampled Time	.	.				
			Date Received	13/04/2017	13/04/2017				
			SDG Ref	170413-49	170413-49				
			Lab Sample No.(s)	15336902	15336948				
			AGS Reference	ES	ES				
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	0.121				
Chrysene	<0.1 mg/kg	TM157		<0.1	0.151				
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG: 170413-49 Client Reference: 70015362 Report Number: 406995
Location: City Deal Tipner West Order Number: 70015362 Superseded Report:

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3WS301	W3WS301	W3WS302	W3WS302	W3WS304
			Depth (m)	6.50 - 6.70	0.20 - 0.30	0.70 - 0.80	0.20 - 0.25	0.80 - 0.85	0.65 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017
			SDG Ref	170413-49	170413-49	170413-49	170413-49	170413-49	170413-49
			Lab Sample No.(s)	15336902	15336884	15336892	15336948	15336879	15336911
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		118	50	59	115	63	71 &
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		1.41 #	0.06 M	<0.044 M	<0.044 M	0.139 M	0.253 & M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	0.0144	<0.01	<0.01	0.0188	0.0152 &
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0144	<0.01	<0.01	<0.01	0.0363	0.0281 &
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.139	<0.01	<0.01	<0.01	0.0238	0.0491 &
Aliphatics >C10-C12	<0.01 mg/kg	TM089		0.694	0.0108	<0.01	<0.01	0.0188	0.0725 &
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.495	6.21	1.66	0.306	4.75	5.35
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	54	4.2	0.675	33	34.9
Aliphatics >C21-C35	<0.1 mg/kg	TM173		2.18	220	22.8	6.27	188	87.1
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	61.4	4.78	1.11	68.5	27.8
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		2.68	341	33.4	8.36	294	155
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.093	<0.01	<0.01	0.0117	0.0225	0.0386 &
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		0.464	<0.01	<0.01	<0.01	0.0125	0.048 &
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	3.67	7.58	0.174	4.58	13.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.449	34.2	101	0.873	39.7	99.9
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		2.64	214	281	6.52	246	302
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		1.1	123	78.8	1.42	127	96.9
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		0.572	45.5	26.9	<0.1	49.4	37.3
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		4.19	375	468	8.99	417	511
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		8.28	717	502	17.4	712	667
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		3.09	248	382	7.4	286	401

CERTIFICATE OF ANALYSIS

SDG: 170413-49 Client Reference: 70015362 Report Number: 406995
Location: City Deal Tipner West Order Number: 70015362 Superseded Report:

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W3WS304	2.50 - 2.60	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336938	ES
GRO Surrogate % recovery**	%	TM089	108								
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089	0.418 M								
Aliphatics >C5-C6	<0.01 mg/kg	TM089	0.0113								
Aliphatics >C6-C8	<0.01 mg/kg	TM089	0.0113								
Aliphatics >C8-C10	<0.01 mg/kg	TM089	0.12								
Aliphatics >C10-C12	<0.01 mg/kg	TM089	0.118								
Aliphatics >C12-C16	<0.1 mg/kg	TM173	<0.1								
Aliphatics >C16-C21	<0.1 mg/kg	TM173	<0.1								
Aliphatics >C21-C35	<0.1 mg/kg	TM173	4.72								
Aliphatics >C35-C44	<0.1 mg/kg	TM173	<0.1								
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	4.72								
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.08								
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	0.0788								
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	<0.1								
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	0.683								
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	6.05								
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	5.87								
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	2.99								
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	12.6								
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	17.7								
Aromatics >EC16-EC35	<0.1 mg/kg	TM173	6.73								

CERTIFICATE OF ANALYSIS

SDG: 170413-49 Client Reference: 70015362 Report Number: 406995
Location: City Deal Tipner West Order Number: 70015362 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3WS301	W3WS301	W3WS302	W3WS302	W3WS304
			Depth (m)	6.50 - 6.70	0.20 - 0.30	0.70 - 0.80	0.20 - 0.25	0.80 - 0.85	0.65 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017
			SDG Ref	170413-49	170413-49	170413-49	170413-49	170413-49	170413-49
			Lab Sample No.(s)	15336902	15336884	15336892	15336948	15336879	15336911
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116		106 &			95.6		
Toluene-d8**	%	TM116		97.5 &			97.4		
4-Bromofluorobenzene**	%	TM116		104 &			106		
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.06 & #			<0.06 M		
Chloromethane	<0.007 mg/kg	TM116		<0.07 & #			<0.07 #		
Vinyl Chloride	<0.006 mg/kg	TM116		<0.06 & #			<0.06 M		
Bromomethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Chloroethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.06 & #			<0.06 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 #		
Carbon Disulphide	<0.007 mg/kg	TM116		<0.07 & #			<0.07 M		
Dichloromethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 & M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.08 & #			<0.08 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.06 & #			<0.06 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1 &			<0.1		
Bromochloromethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Chloroform	<0.008 mg/kg	TM116		<0.08 & #			<0.08 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.07 & #			<0.07 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Carbontetrachloride	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.05 & #			<0.05 M		
Benzene	<0.009 mg/kg	TM116		<0.09 #	<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 & M
Trichloroethene	<0.009 mg/kg	TM116		<0.09 & #			<0.09 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Dibromomethane	<0.009 mg/kg	TM116		<0.09 & #			<0.09 M		
Bromodichloromethane	<0.007 mg/kg	TM116		<0.07 & #			<0.07 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Toluene	<0.007 mg/kg	TM116		<0.07 #	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 & M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1 &			<0.1		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		

CERTIFICATE OF ANALYSIS

SDG: 170413-49 Client Reference: 70015362 Report Number: 406995
Location: City Deal Tipner West Order Number: 70015362 Superseded Report:

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3WS301	W3WS301	W3WS302	W3WS302	W3WS304
			Depth (m)	6.50 - 6.70	0.20 - 0.30	0.70 - 0.80	0.20 - 0.25	0.80 - 0.85	0.65 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017	11/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017	13/04/2017
			SDG Ref	170413-49	170413-49	170413-49	170413-49	170413-49	170413-49
			Lab Sample No.(s)	15336902	15336884	15336892	15336948	15336879	15336911
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.07 & #			<0.07 M		
Tetrachloroethene	<0.005 mg/kg	TM116		<0.05 & #			<0.05 M		
Dibromochloromethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Chlorobenzene	<0.005 mg/kg	TM116		<0.05 & #			<0.05 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 #	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 & M
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 & #
o-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 & M
Styrene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 #		
Bromoform	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Isopropylbenzene	<0.005 mg/kg	TM116		<0.05 & #			<0.05 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.16 & #			<0.16 M		
Bromobenzene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
Propylbenzene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.09 & #			<0.09 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.08 & #			<0.08 M		
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.14 & #			<0.14 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.09 & #			<0.09 #		
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.1 &			<0.1		
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.08 & #			<0.08 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.05 & #			<0.05 M		
n-Butylbenzene	<0.011 mg/kg	TM116		<0.11 &			<0.11		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.1 & #			<0.1 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.14 & #			<0.14 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 & #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2 &			<0.2		
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.2 &			<0.2		
Naphthalene	<0.013 mg/kg	TM116		<0.13 & #			<0.13 M		

CERTIFICATE OF ANALYSIS

SDG: 170413-49 **Client Reference:** 70015362 **Report Number:** 406995
Location: City Deal Tipner West **Order Number:** 70015362 **Superseded Report:**

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W3BH301	6.50 - 6.70	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336902	ES
			W3WS301	0.20 - 0.30	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336884	ES
			W3WS301	0.70 - 0.80	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336892	ES
			W3WS302	0.20 - 0.25	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336948	ES
			W3WS302	0.80 - 0.85	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336879	ES
			W3WS304	0.65 - 0.70	Soil/Solid (S)	11/04/2017	.	13/04/2017	170413-49	15336911	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2 & #								
								<0.2 #			

CERTIFICATE OF ANALYSIS

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W3WS304
Depth (m)	2.50 - 2.60
Sample Type	Soil/Solid (S)
Date Sampled	11/04/2017
Sampled Time	.
Date Received	13/04/2017
SDG Ref	170413-49
Lab Sample No.(s)	15336938
AGS Reference	ES

Component	LOD/Units	Method	
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.09 M
Toluene	<0.007 mg/kg	TM116	<0.07 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #
o-Xylene	<0.01 mg/kg	TM116	<0.1 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS301 ES 0.20 - 0.30 SOLID 11/04/2017 00:00:00 13/04/2017 12:08:21 170413-49 15336884 TM048	20/4/17	Neville Mann	Loose fibres in soil	Trace (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS301 ES 0.70 - 0.80 SOLID 11/04/2017 00:00:00 13/04/2017 12:06:45 170413-49 15336892 TM048	20/4/17	Neville Mann	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	**Detected**
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS302 ES 0.20 - 0.25 SOLID 11/04/2017 00:00:00 14/04/2017 10:30:52 170413-49 15336948 TM048	19/4/17	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS302 ES 0.80 - 0.85 SOLID 11/04/2017 00:00:00 13/04/2017 12:10:41 170413-49 15336879 TM048	19/4/17	Kevin Bowron	Soil containing loose fibres and debris typical of asbestos insulation	**Detected (#)**	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS304 ES 0.65 - 0.70 SOLID 11/04/2017 00:00:00 13/04/2017 12:03:34 170413-49 15336911 TM048	20/4/17	Neville Mann	Soil containing debris typical of asbestos lagging	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

CERTIFICATE OF ANALYSIS

SDG: 170413-49 **Client Reference:** 70015362 **Report Number:** 406995
Location: City Deal Tipner West **Order Number:** 70015362 **Superseded Report:**

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS301 ES 0.20 - 0.30 SOLID 11/04/2017 00:00:00 25/04/2017 11:42:10 170413-49 15336884 TM304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS302 ES 0.80 - 0.85 SOLID 11/04/2017 00:00:00 25/04/2017 11:36:41 170413-49 15336879 TM304	None (#)	N/C	1.2274 (#)	0.0955 (#)	1.3229 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS304 ES 0.65 - 0.70 SOLID 11/04/2017 00:00:00 27/04/2017 13:00:10 170413-49 15336911 TM304	Chrysotile (ACM debris) (#)	N/C	0.1182 (#)	0.0063 (#)	0.1245 (#)

CERTIFICATE OF ANALYSIS

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.119	**Natural Moisture Content (%)**	31.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	76
Particle Size <4mm	>95%		

Case	
SDG	170413-49
Lab Sample Number(s)	15336902
Sampled Date	11-Apr-2017
Customer Sample Ref.	W3BH301 ESZ
Depth (m)	6.50 - 6.70

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	0.000572	<0.00036	0.00572	<0.0036	-	-	-
Arsenic	0.000696	<0.00051	0.00696	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	0.000021	<0.000017	0.00021	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	0.0000366	<0.000013	0.000366	<0.00013	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Pyrene (diss.filt)	0.0000225	<0.000015	0.000225	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	0.0000415	<0.000017	0.000415	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	0.0000343	<0.000023	0.000343	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	0.0000281	<0.000027	0.000281	<0.00027	-	-	-
Copper	<0.00085	<0.00085	<0.0085	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	0.0000112	<0.000009	0.000112	<0.00009	-	-	-
Lead	0.000246	<0.0001	0.00246	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	0.0000303	<0.000016	0.000303	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	0.0000372	<0.000016	0.000372	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000313	<0.000014	0.000313	<0.00014	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	<0.0013	<0.0013	<0.013	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Apr-2017
pH (pH Units)	8.75
Conductivity (µS/cm)	538.00
Temperature (°C)	18.00
Volume Leachant (Litres)	0.872

Mcerts Certification does not apply to leachates

03/05/2017 12:29:38

CERTIFICATE OF ANALYSIS

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.119	**Natural Moisture Content (%)**	31.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	76
Particle Size <4mm	>95%		

Case	
SDG	170413-49
Lab Sample Number(s)	15336902
Sampled Date	11-Apr-2017
Customer Sample Ref.	W3BH301 ESZ
Depth (m)	6.50 - 6.70

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	19-Apr-2017
pH (pH Units)	8.75
Conductivity (µS/cm)	538.00
Temperature (°C)	18.00
Volume Leachant (Litres)	0.872

Mcerts Certification does not apply to leachates

03/05/2017 12:29:38

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
SUB		Subcontracted Test		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM283		Determination of Dissolved Niobium, Tungsten, and Zirconium in Water Matrices by ICP-MS		
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only		
TM328				

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Test Completion Dates

Lab Sample No(s)	15336902	15336884	15336892	15336879	15336948	15336911	15336938
Customer Sample Ref.	W3BH301	W3WS301	W3WS301	W3WS302	W3WS302	W3WS304	W3WS304
AGS Ref.	ES	ES	ES	ES	ES	ES	ES
Depth	6.50 - 6.70	0.20 - 0.30	0.70 - 0.80	0.80 - 0.85	0.20 - 0.25	0.65 - 0.70	2.50 - 2.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Asbestos ID in Solid Samples		20-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017	
Asbestos Quantification - Full		02-May-2017		02-May-2017		02-May-2017	
CEN 10:1 Leachate (1 Stage)	25-Apr-2017						
CEN Readings	26-Apr-2017						
Dissolved Metals by ICP-MS	21-Apr-2017						
Dissolved Tin by ICPMS	24-Apr-2017						
EPH CWG (Aliphatic) Aqueous GC (W)	21-Apr-2017						
EPH CWG (Aliphatic) GC (S)	18-Apr-2017	18-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	01-May-2017	18-Apr-2017
EPH CWG (Aromatic) Aqueous GC (W)	21-Apr-2017						
EPH CWG (Aromatic) GC (S)	18-Apr-2017	18-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	01-May-2017	18-Apr-2017
GRO by GC-FID (S)	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	02-May-2017	21-Apr-2017
GRO by GC-FID (W)	21-Apr-2017						
Hexavalent Chromium (s)	20-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	20-Apr-2017	20-Apr-2017
Mercury Dissolved	21-Apr-2017						
Metals in solid samples by OES	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017
Organotins in Aqueous Samples	27-Apr-2017						
Organotins on soils*	28-Apr-2017			28-Apr-2017			
PAH by GCMS	19-Apr-2017	18-Apr-2017	20-Apr-2017	19-Apr-2017	19-Apr-2017	18-Apr-2017	25-Apr-2017
PAH in waters by GC-MS (diss.filt)	21-Apr-2017						
pH	18-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017	19-Apr-2017
Sample description	13-Apr-2017	13-Apr-2017	14-Apr-2017	14-Apr-2017	14-Apr-2017	13-Apr-2017	13-Apr-2017
Semi Volatile Organic Compounds	20-Apr-2017				02-May-2017		
Total Organic Carbon	21-Apr-2017						
TPH CWG (W)	21-Apr-2017						
TPH CWG GC (S)	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	02-May-2017	21-Apr-2017
VOC MS (S)	28-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	28-Apr-2017	21-Apr-2017
VOC MS (W)	20-Apr-2017						

CERTIFICATE OF ANALYSIS

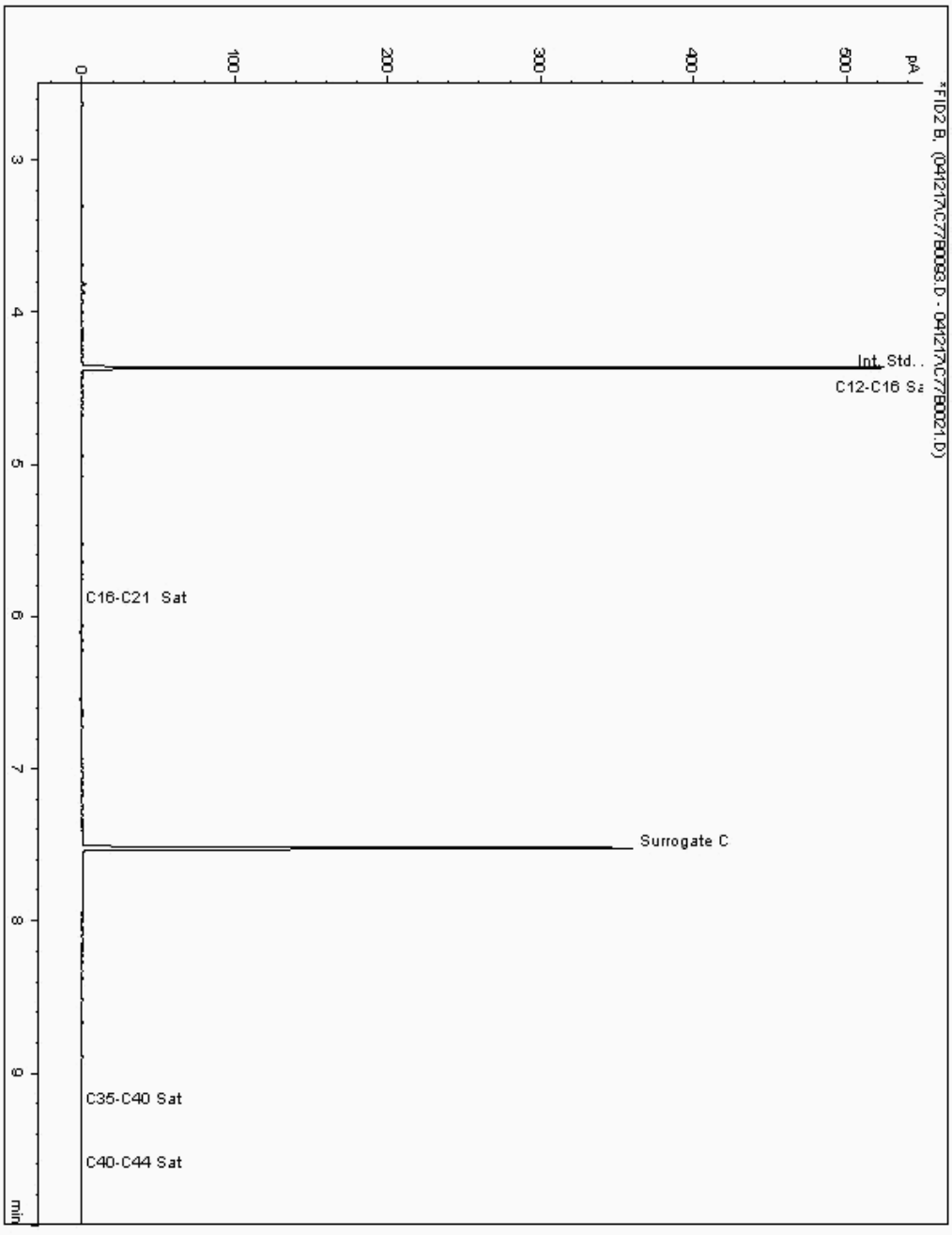
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15337780 **Sample ID :** W3BH301 **Depth :** 6.50 - 6.70

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14368224-
Date Acquired : 4/14/2017 8:50:09 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

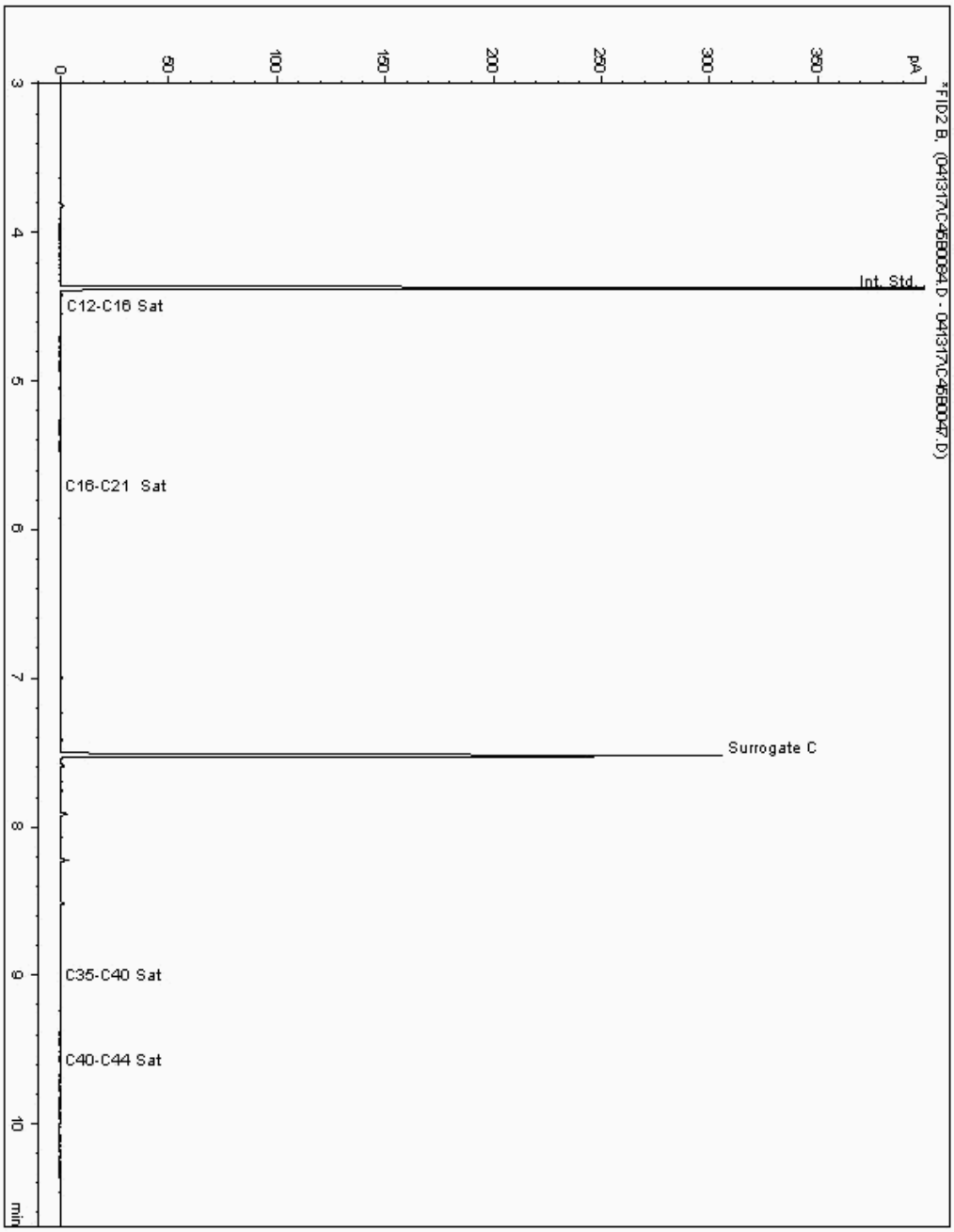
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15337923 **Sample ID :** W3WS304 **Depth :** 2.50 - 2.60

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368193-
Date Acquired : 15/04/2017 00:15:45 PM
Units : ppb
Dilution: W3WS304[2.50 - 2.60] ->



CERTIFICATE OF ANALYSIS

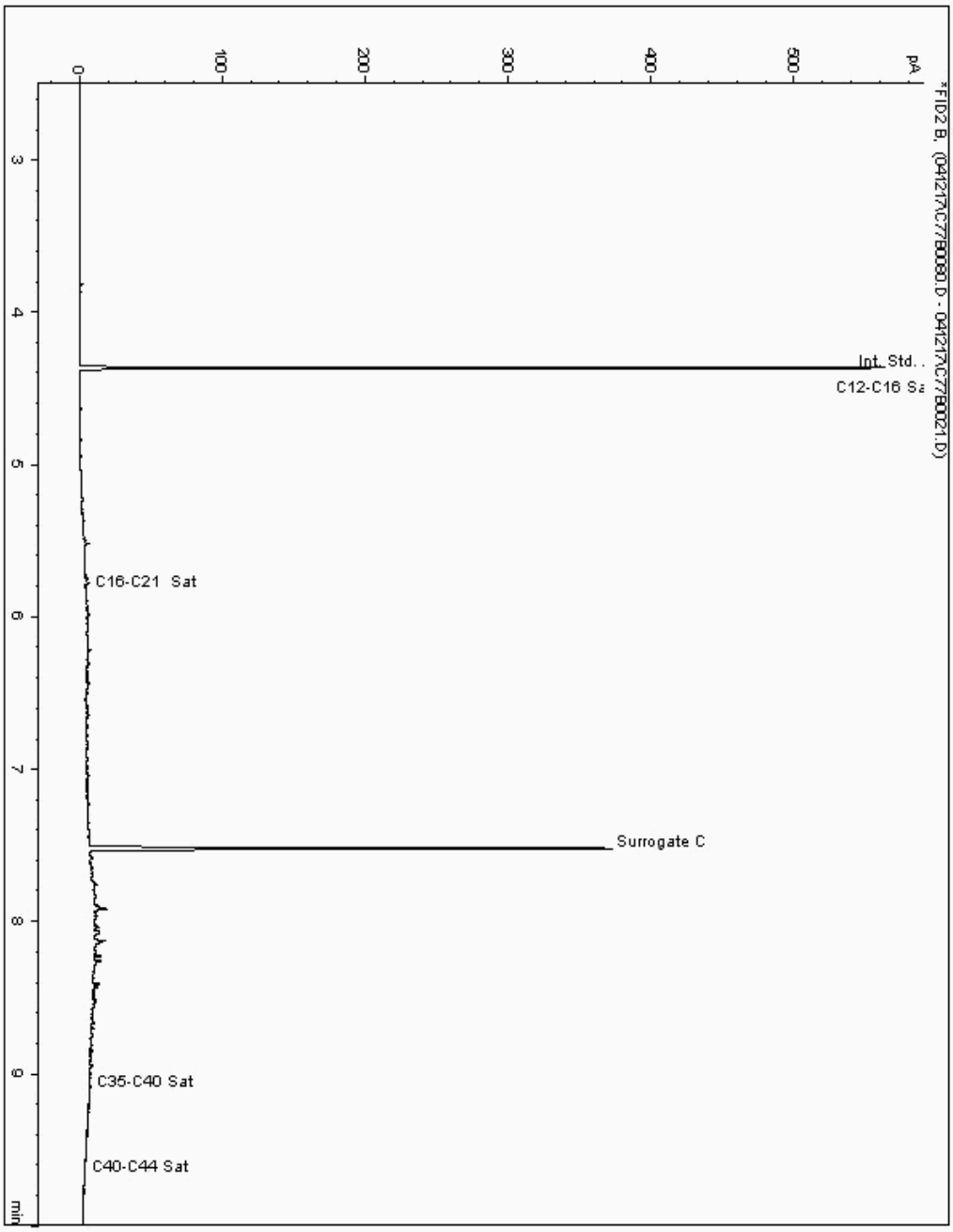
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15339749 **Sample ID :** W3WS301 **Depth :** 0.20 - 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14368151-
Date Acquired : 4/14/2017 5:27:54 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.050



CERTIFICATE OF ANALYSIS

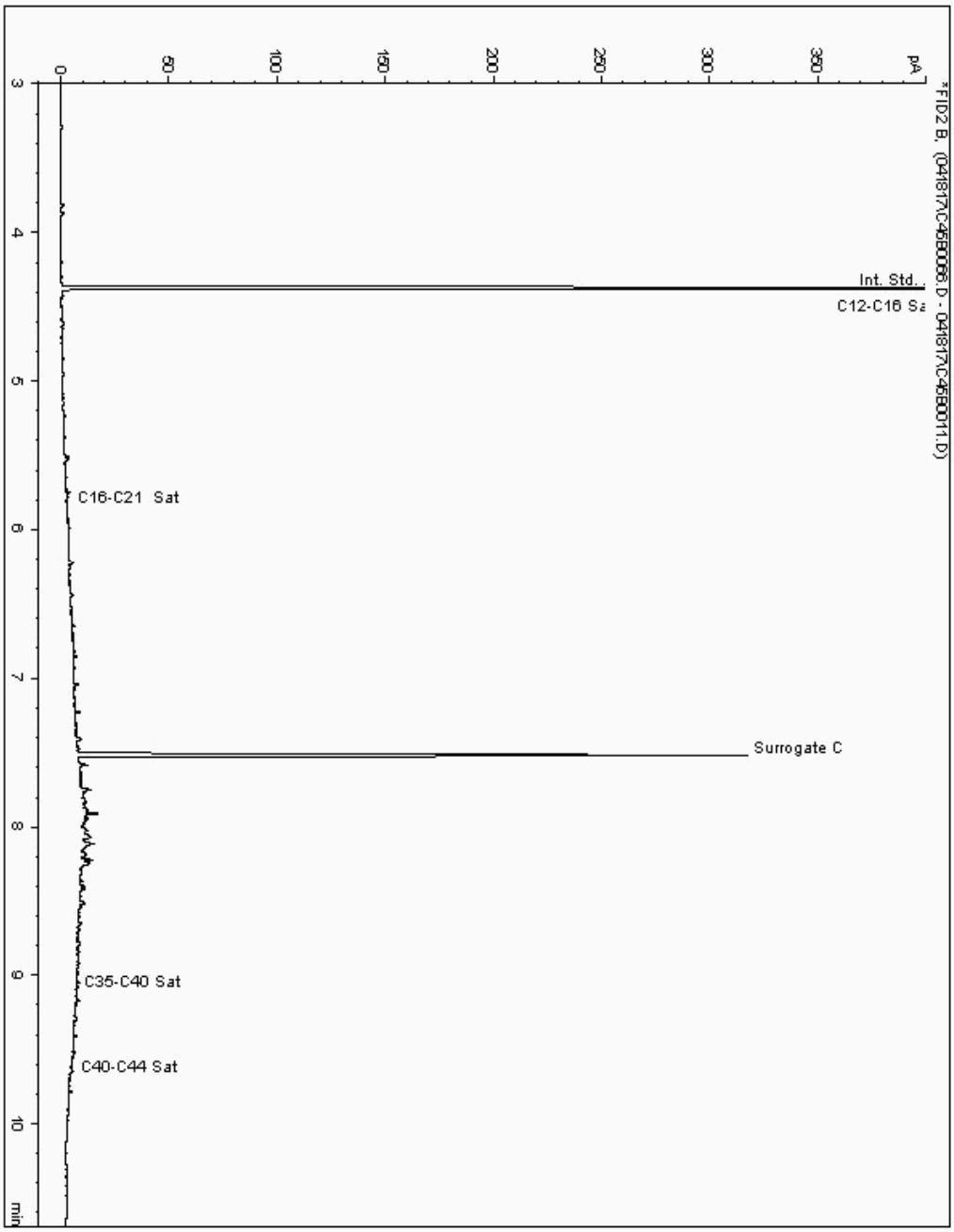
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15345459 **Sample ID :** W3WS302 **Depth :** 0.80 - 0.85

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368134-
Date Acquired : 19/04/2017 07:34:04 PM
Units : ppb
Dilution: W3WS302[0.80 - 0.85] ->



CERTIFICATE OF ANALYSIS

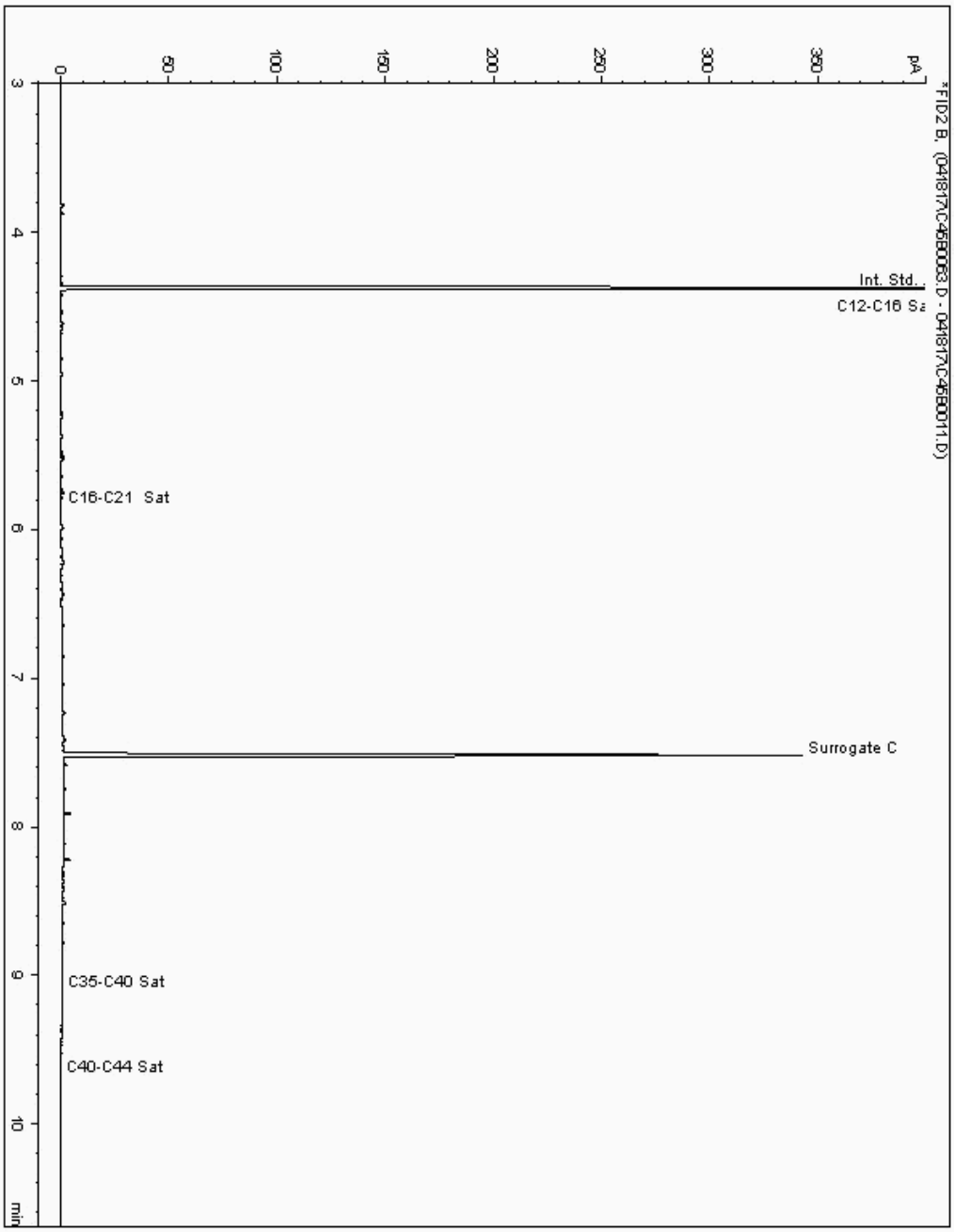
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15345549 **Sample ID :** W3WS301 **Depth :** 0.70 - 0.80

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368167-
Date Acquired : 19/04/2017 06:50:01 PM
Units : ppb
Dilution: W3WS301[0.70 - 0.80] ->



CERTIFICATE OF ANALYSIS

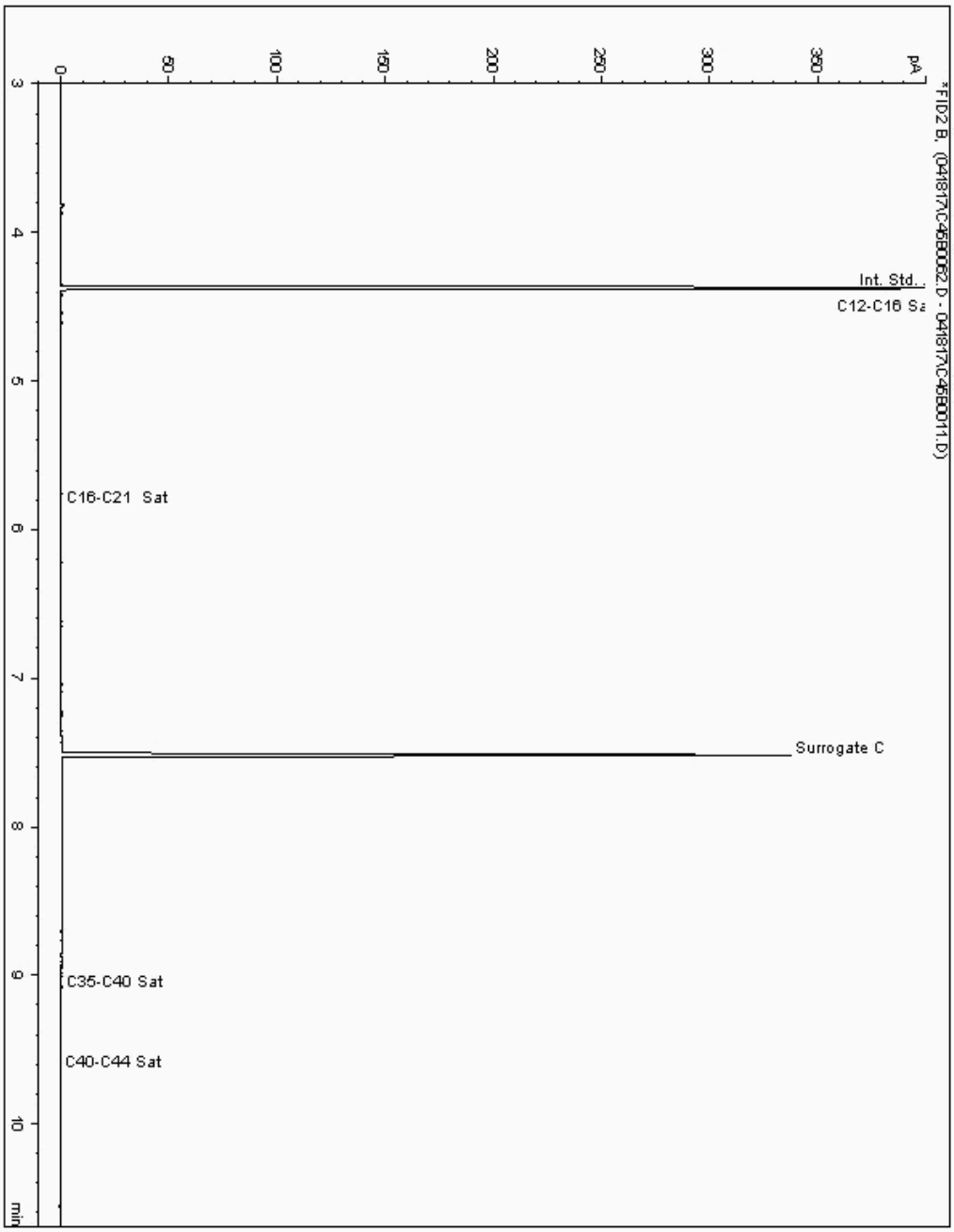
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15345654 **Sample ID :** W3WS302 **Depth :** 0.20 - 0.25

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368207-
Date Acquired : 19/04/2017 06:30:05 PM
Units : ppb
Dilution: W3WS302[0.20 - 0.25] ->



CERTIFICATE OF ANALYSIS

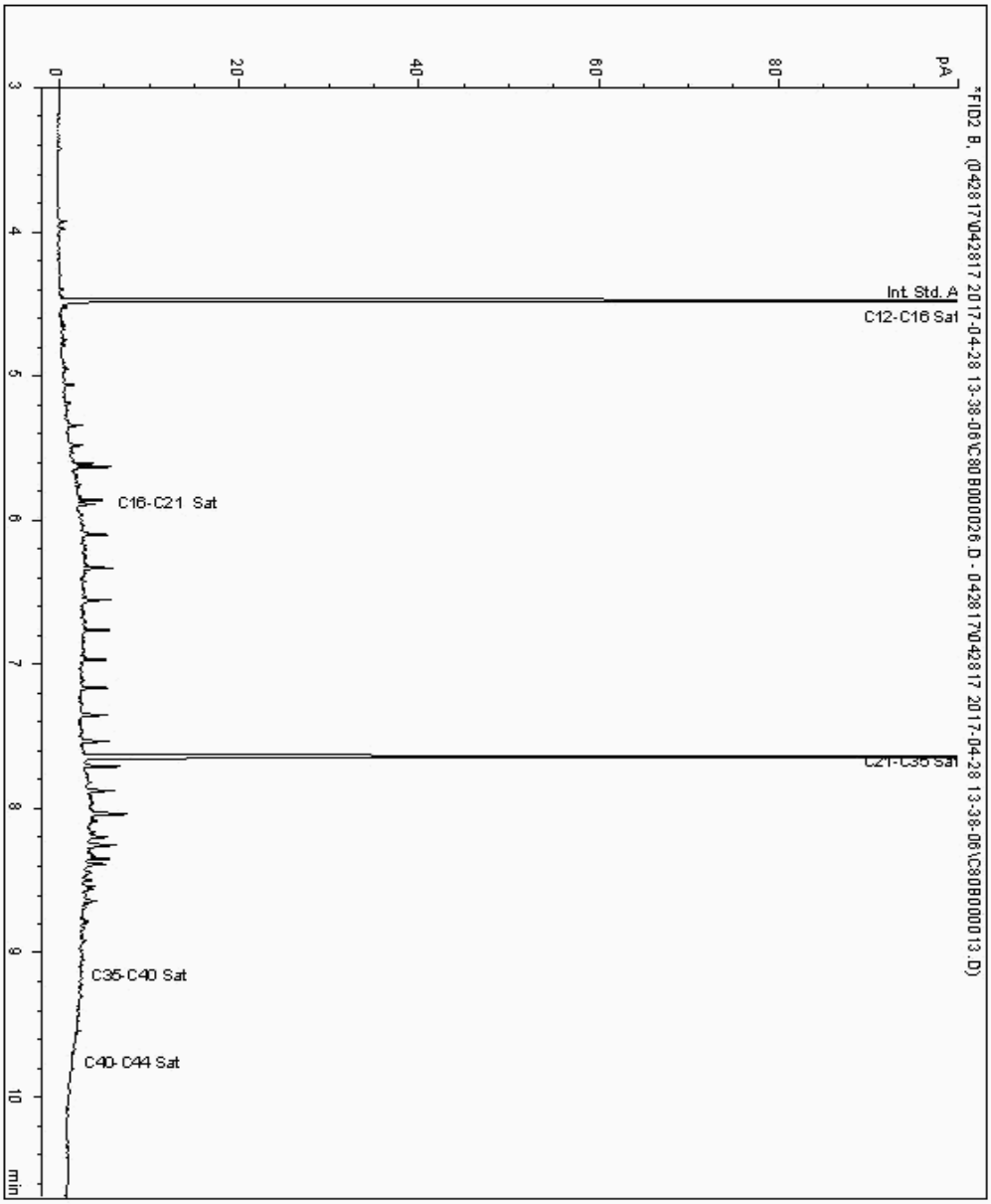
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15409068 **Sample ID :** W3WS304 **Depth :** 0.65 - 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14416214-
Date Acquired : 28/04/17 18:25:18
Units : ppb
Dilution :
CF : 1
Multiplier : 0.970



CERTIFICATE OF ANALYSIS

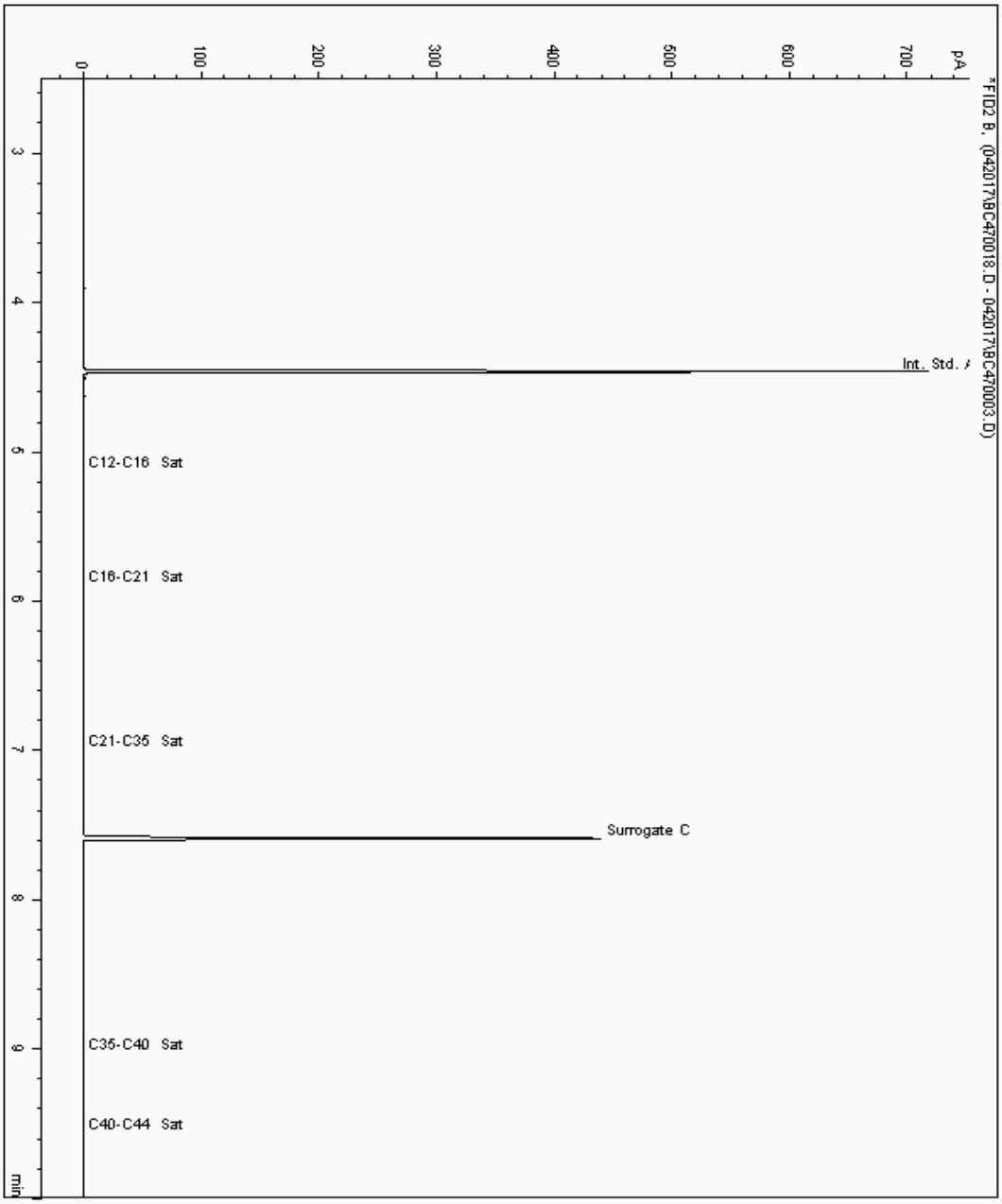
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15368336 **Sample ID :** W3BH301 **Depth :** 6.50 - 6.70

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14368245-
Date Acquired : 21/04/17 11:29:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

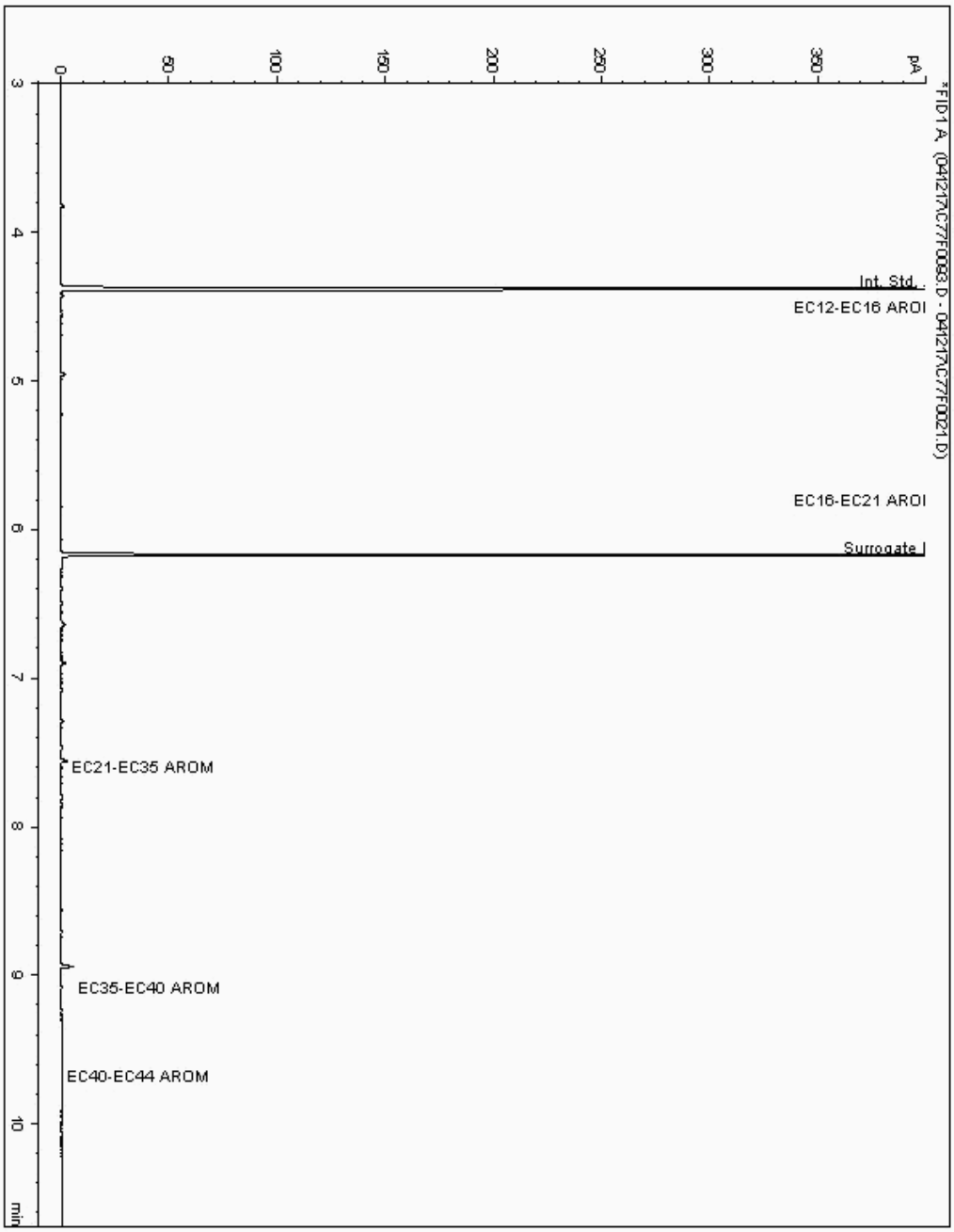
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15337780 **Sample ID :** W3BH301 **Depth :** 6.50 - 6.70

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368225-
Date Acquired : 4/14/2017 8:50:09 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

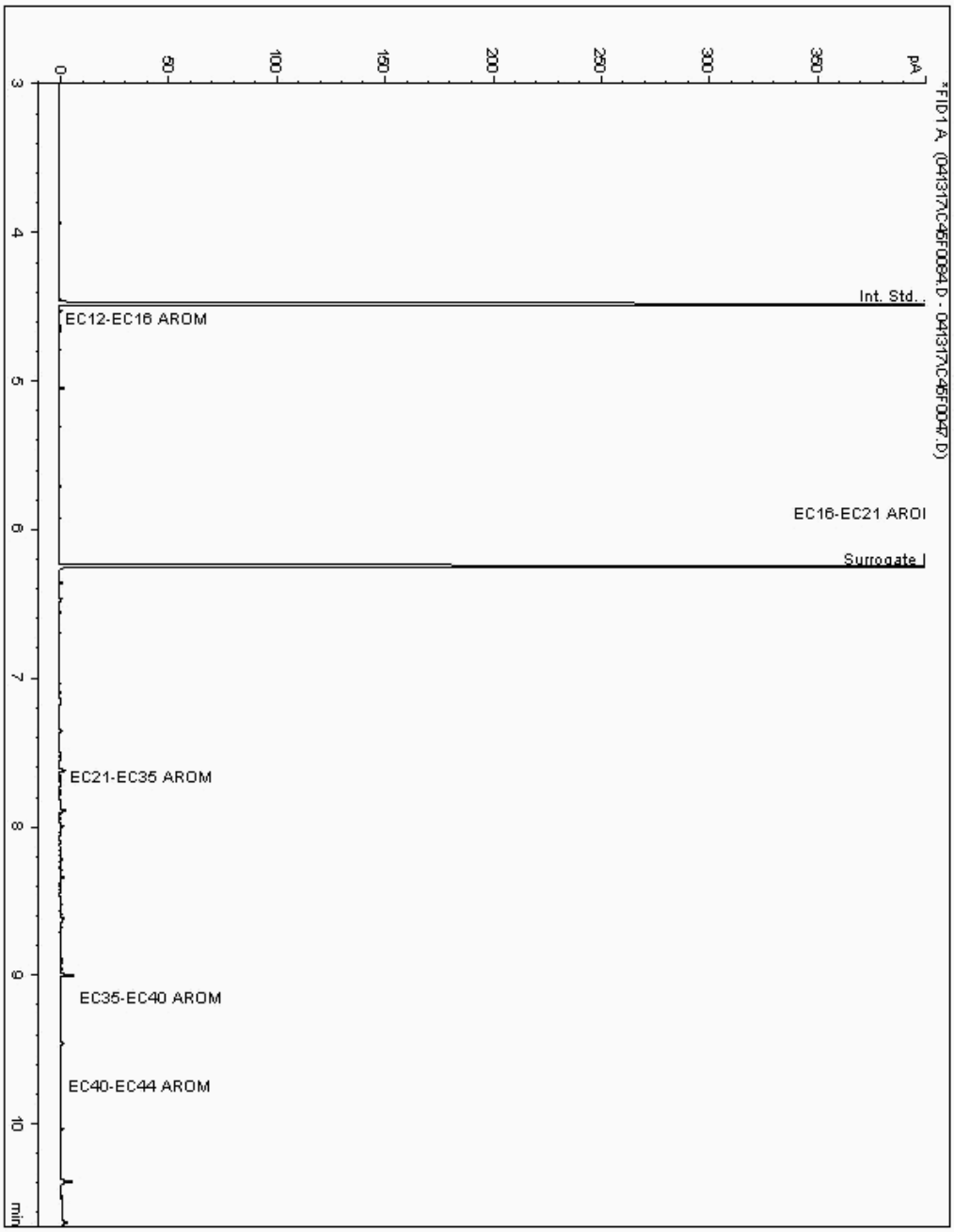
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15337923 **Sample ID :** W3WS304 **Depth :** 2.50 - 2.60

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368194-
Date Acquired : 15/04/2017 00:15:44 PM
Units : ppb
Dilution: W3WS304[2.50 - 2.60] ->



CERTIFICATE OF ANALYSIS

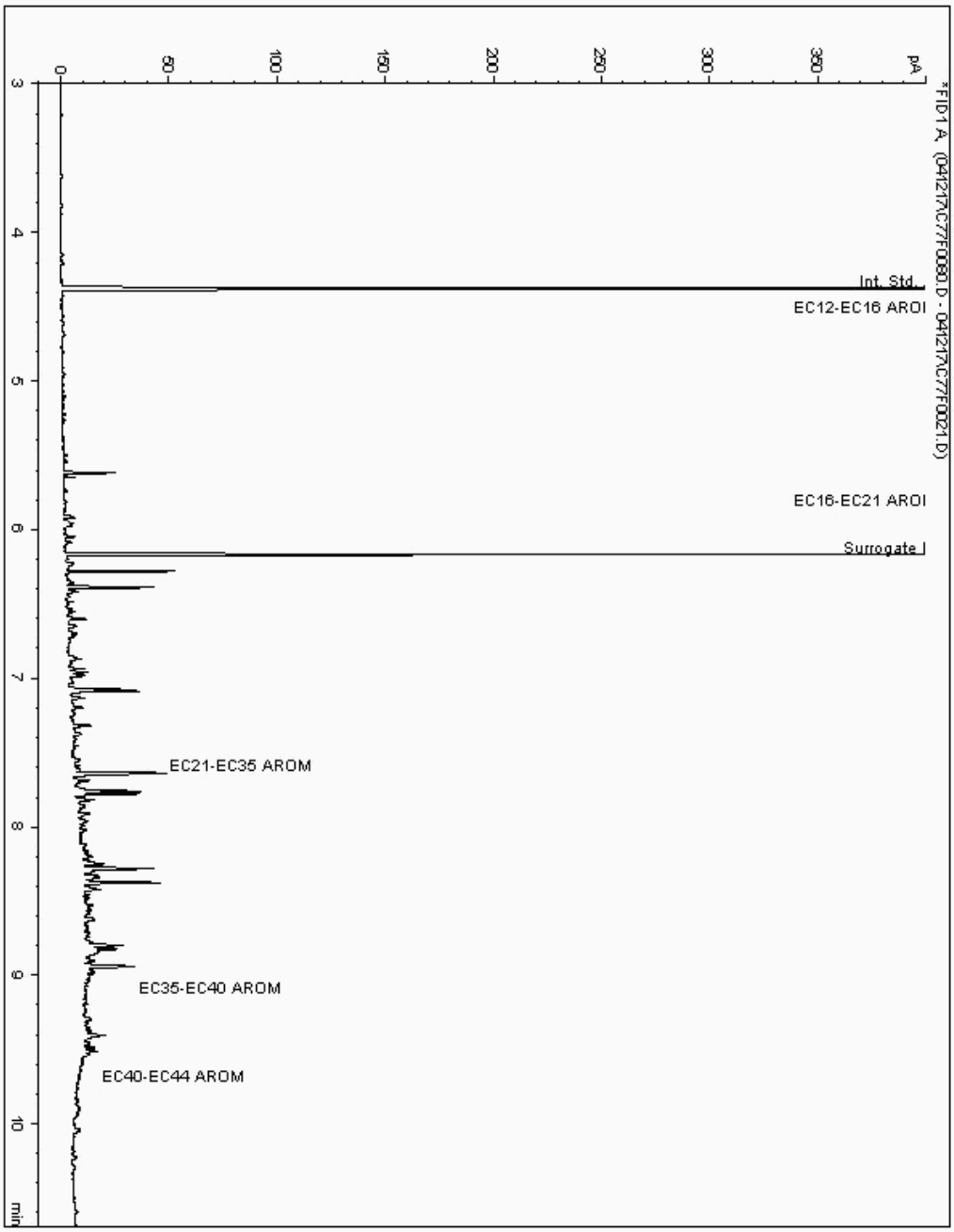
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15339749 **Sample ID :** W3WS301 **Depth :** 0.20 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368152-
Date Acquired : 4/14/2017 5:27:54 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

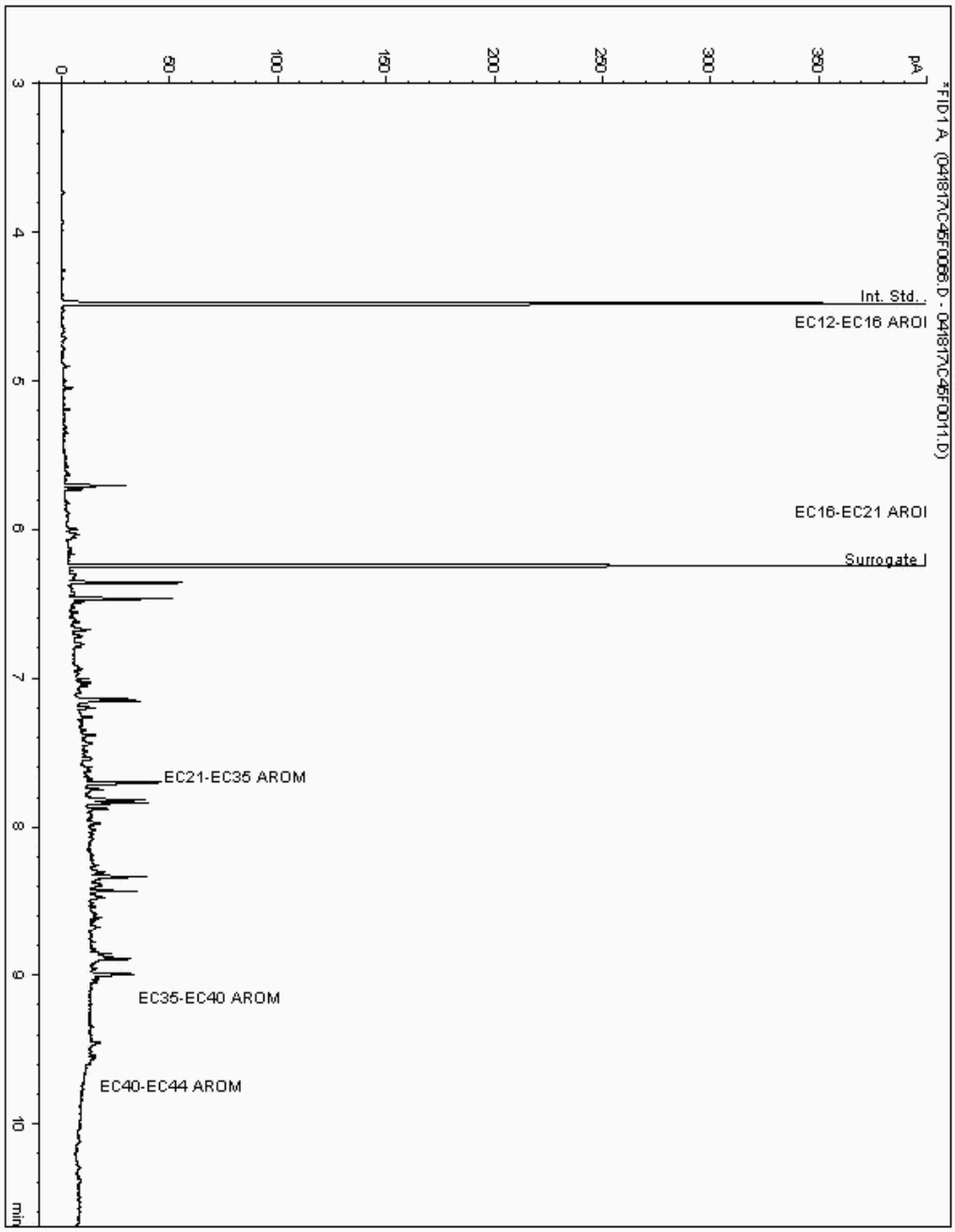
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15345459 **Sample ID :** W3WS302 **Depth :** 0.80 - 0.85

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368135-
Date Acquired : 19/04/2017 07:34:04 PM
Units : ppb
Dilution: W3WS302[0.80 - 0.85] ->



CERTIFICATE OF ANALYSIS

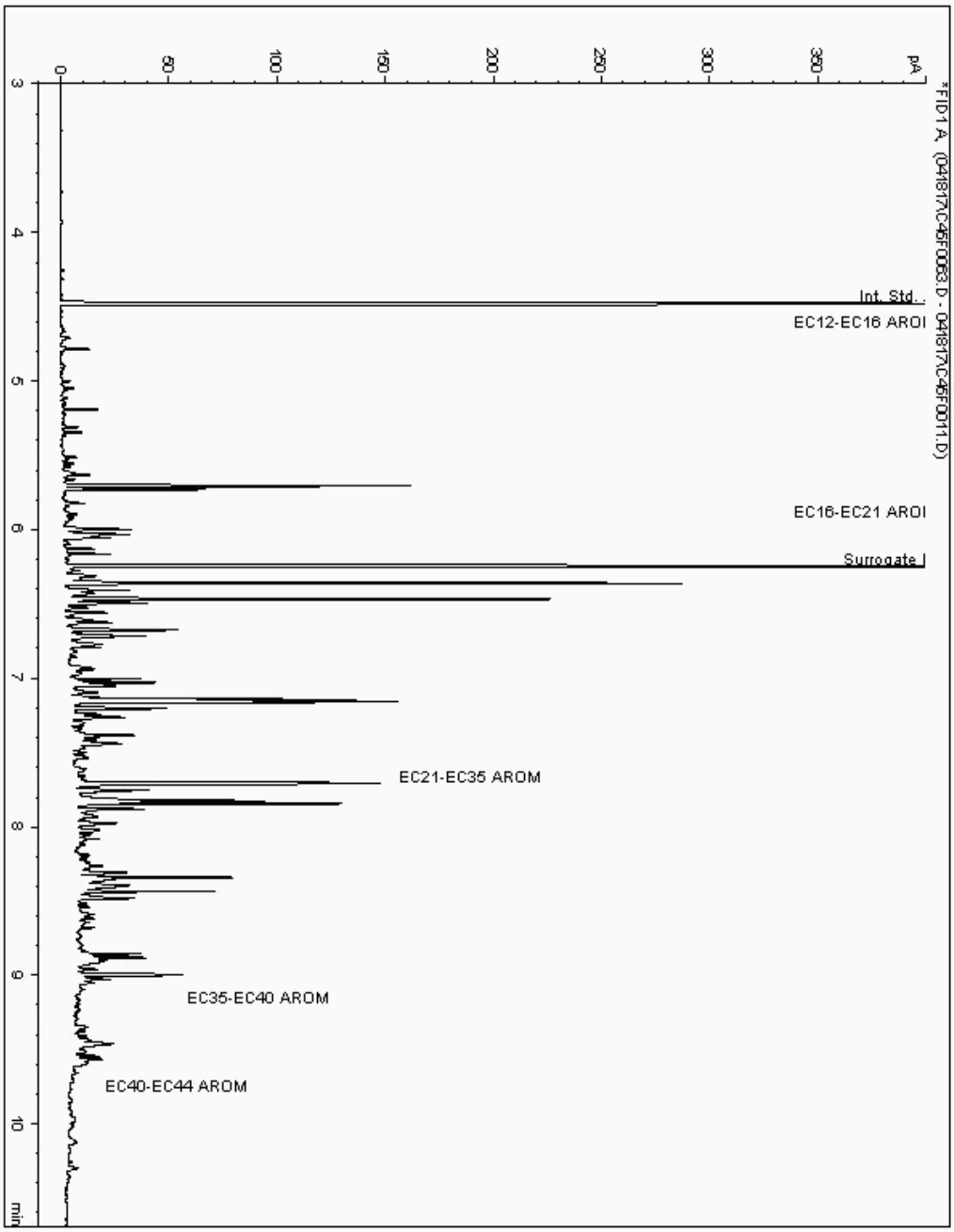
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15345549 **Sample ID :** W3WS301 **Depth :** 0.70 - 0.80

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368168-
Date Acquired : 19/04/2017 06:50:01 PM
Units : ppb
Dilution: W3WS301[0.70 - 0.80] ->



CERTIFICATE OF ANALYSIS

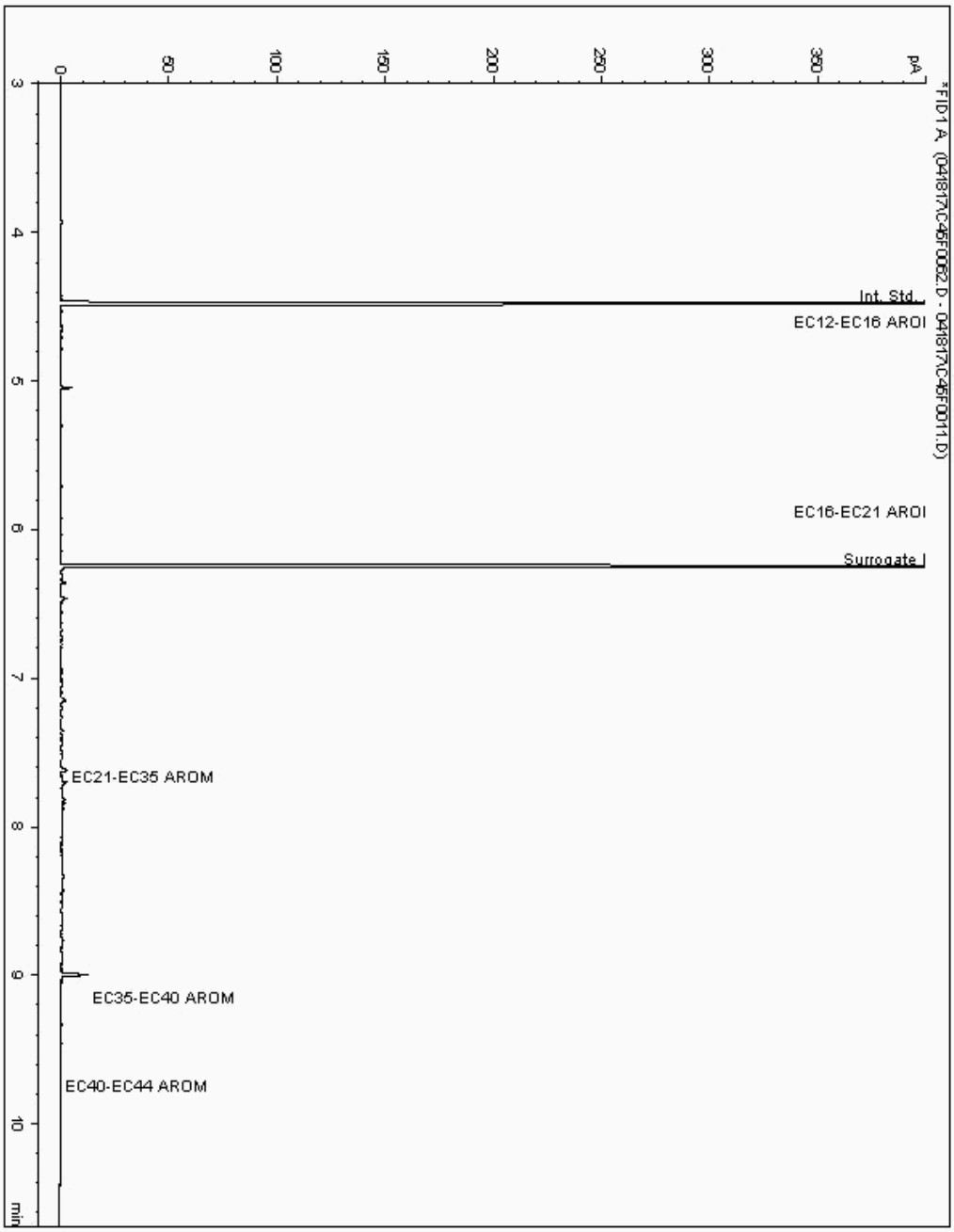
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15345654 **Sample ID :** W3WS302 **Depth :** 0.20 - 0.25

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14368208-
Date Acquired : 19/04/2017 06:30:05 PM
Units : ppb
Dilution: W3WS302[0.20 - 0.25] ->



CERTIFICATE OF ANALYSIS

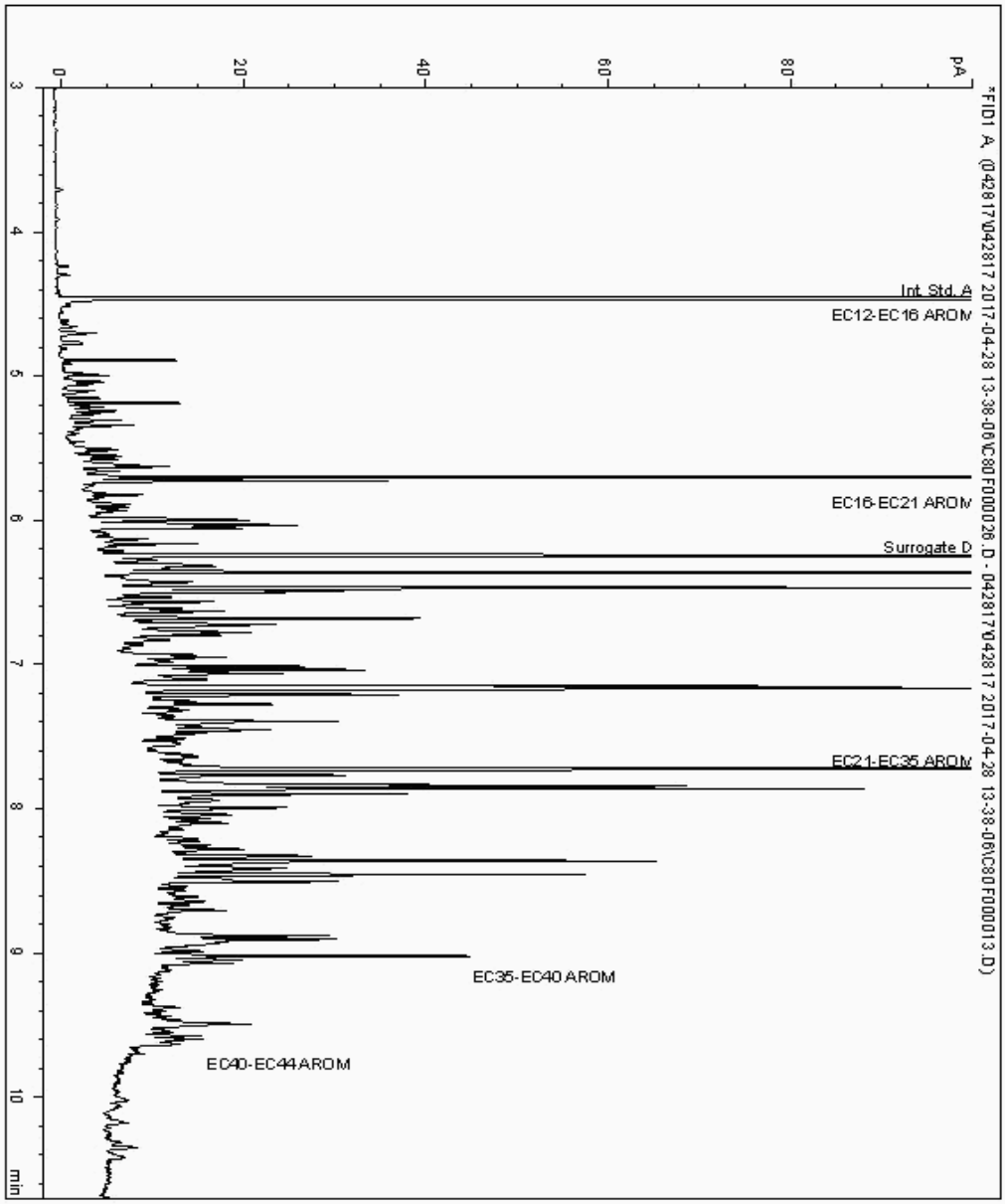
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15409068 **Sample ID :** W3WS304 **Depth :** 0.65 - 0.70

Speciated TPH - AROMS (C12 - C44)

Sample Identity: 14416215-
Date Acquired : 28/04/17 18:25:18
Units : ppb
Dilution :
CF : 1
Multiplier : 0.970

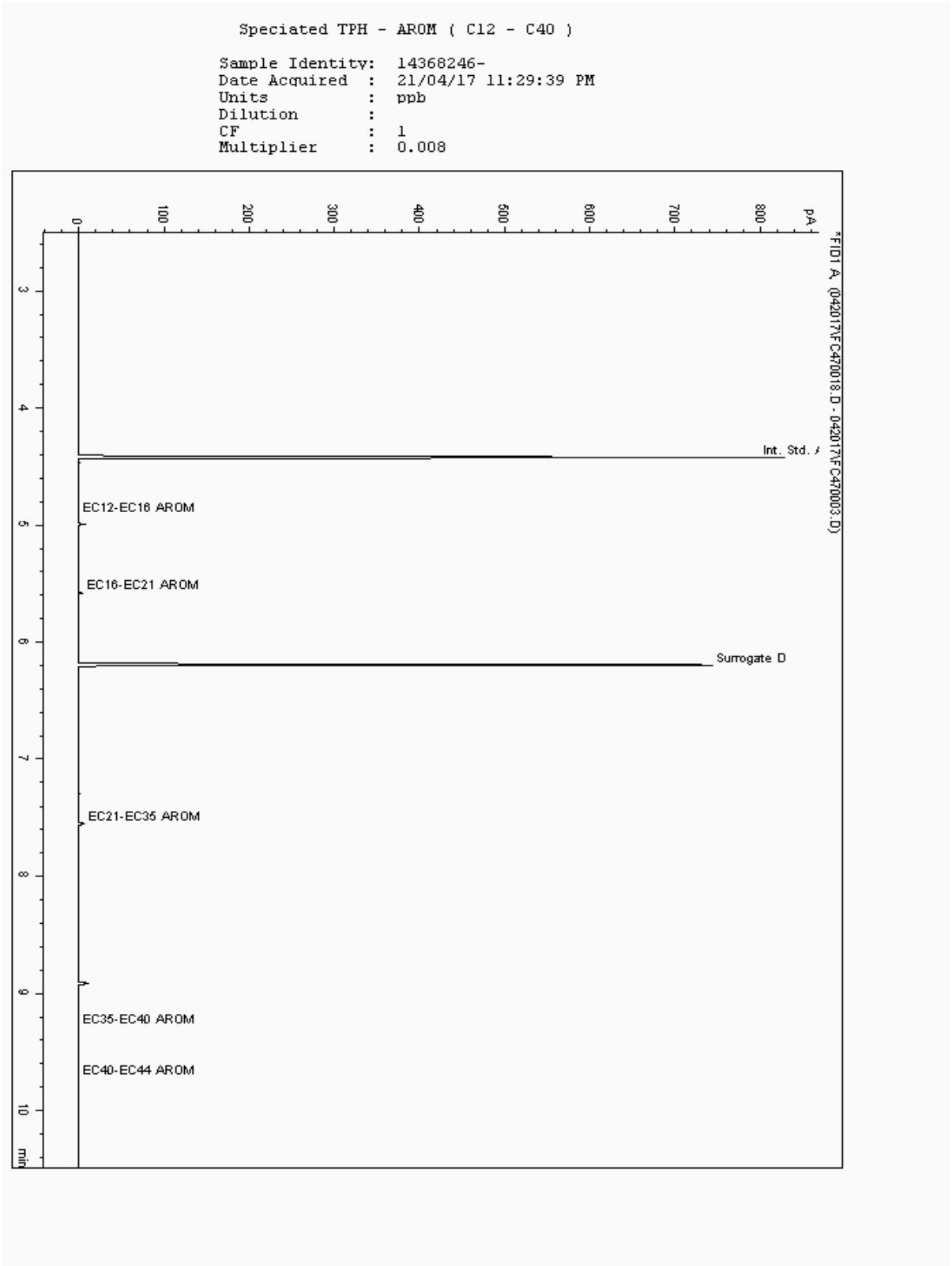


CERTIFICATE OF ANALYSIS

SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15368336 **Sample ID :** W3BH301 **Depth :** 6.50 - 6.70



CERTIFICATE OF ANALYSIS

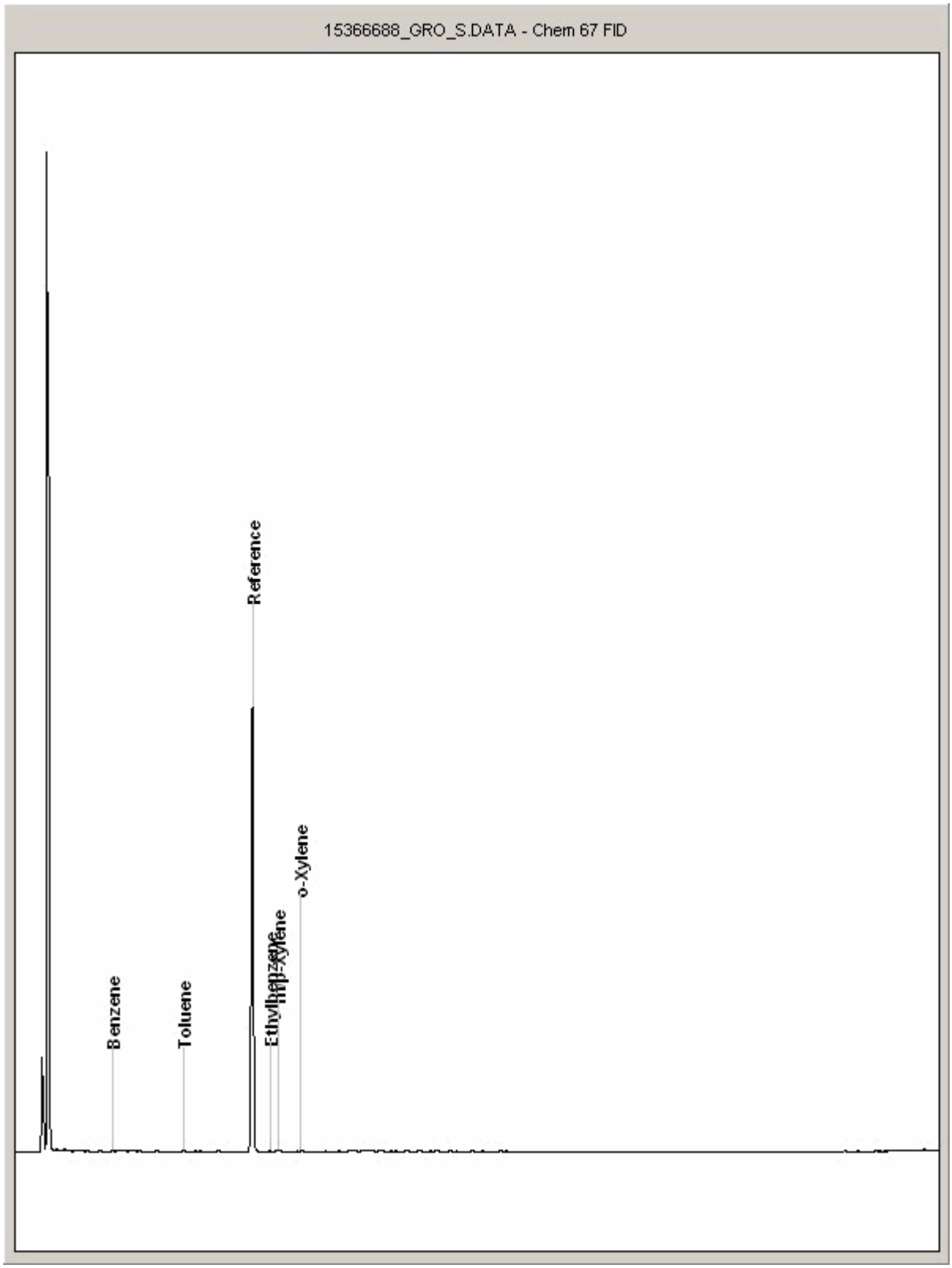
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15366688
Sample ID : W3WS302

Depth : 0.80 - 0.85



CERTIFICATE OF ANALYSIS

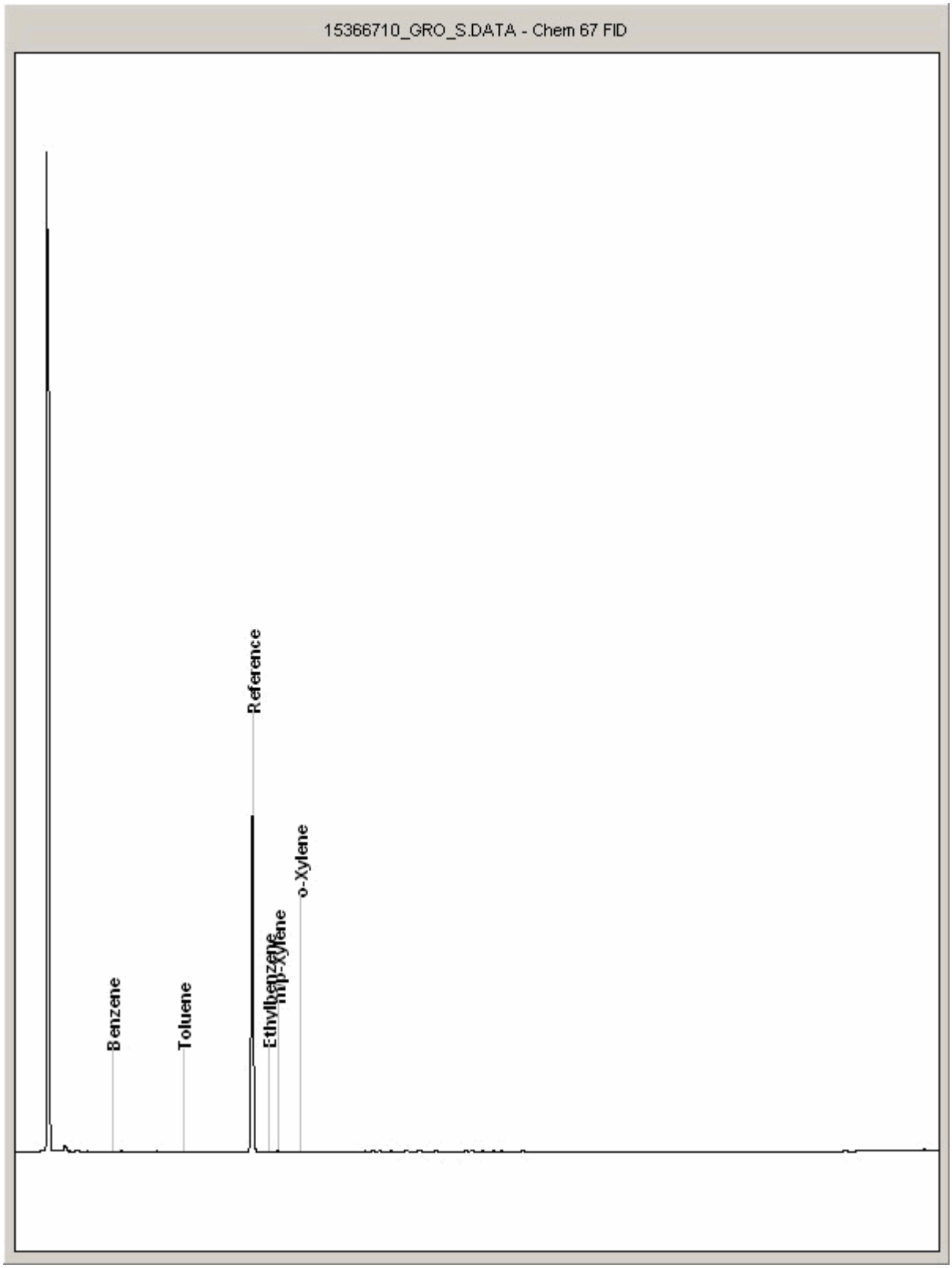
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15366710
Sample ID : W3WS301

Depth : 0.20 - 0.30



CERTIFICATE OF ANALYSIS

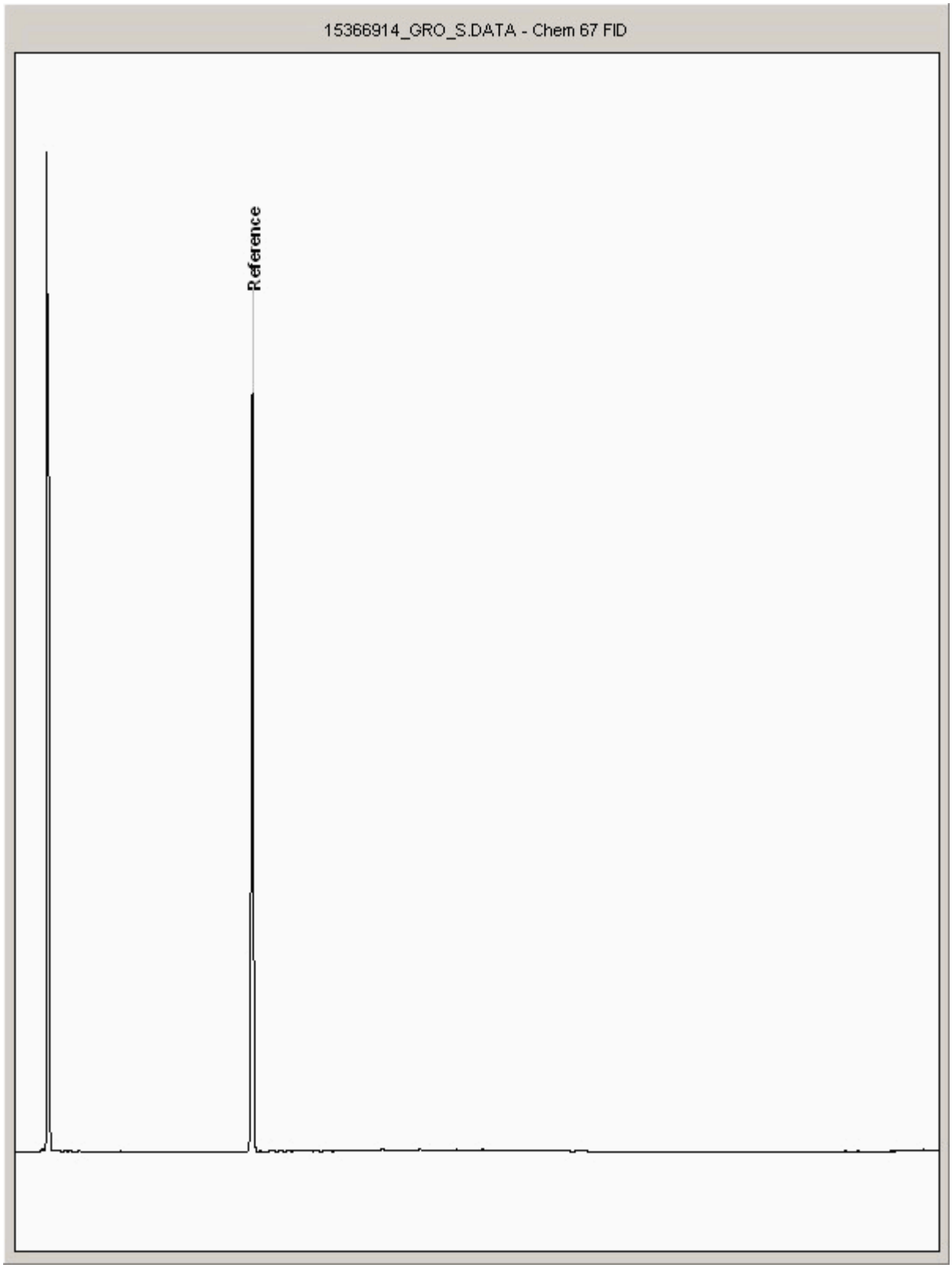
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15366914
Sample ID : W3WS304

Depth : 2.50 - 2.60



CERTIFICATE OF ANALYSIS

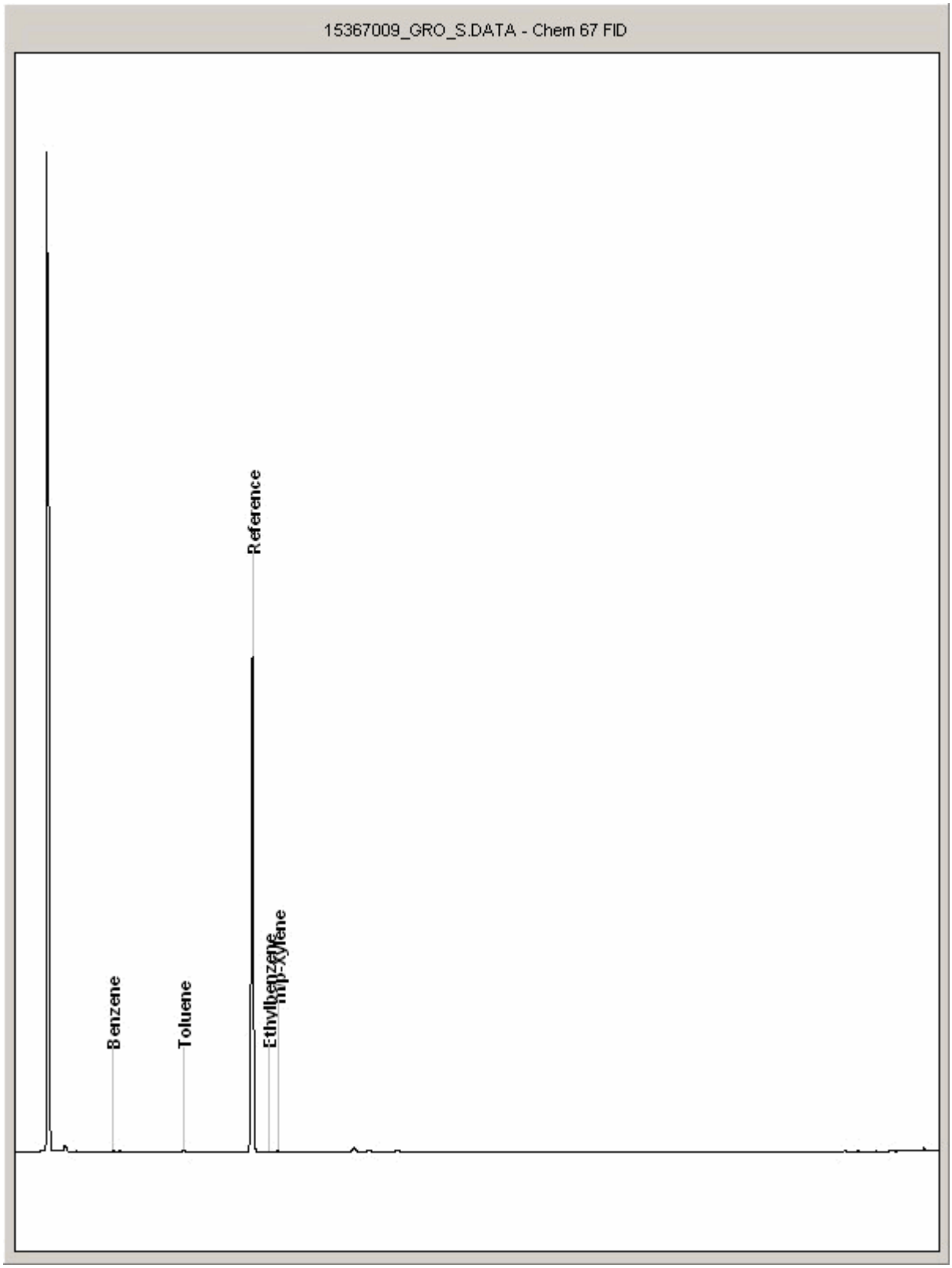
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15367009
Sample ID : W3WS301

Depth : 0.70 - 0.80



CERTIFICATE OF ANALYSIS

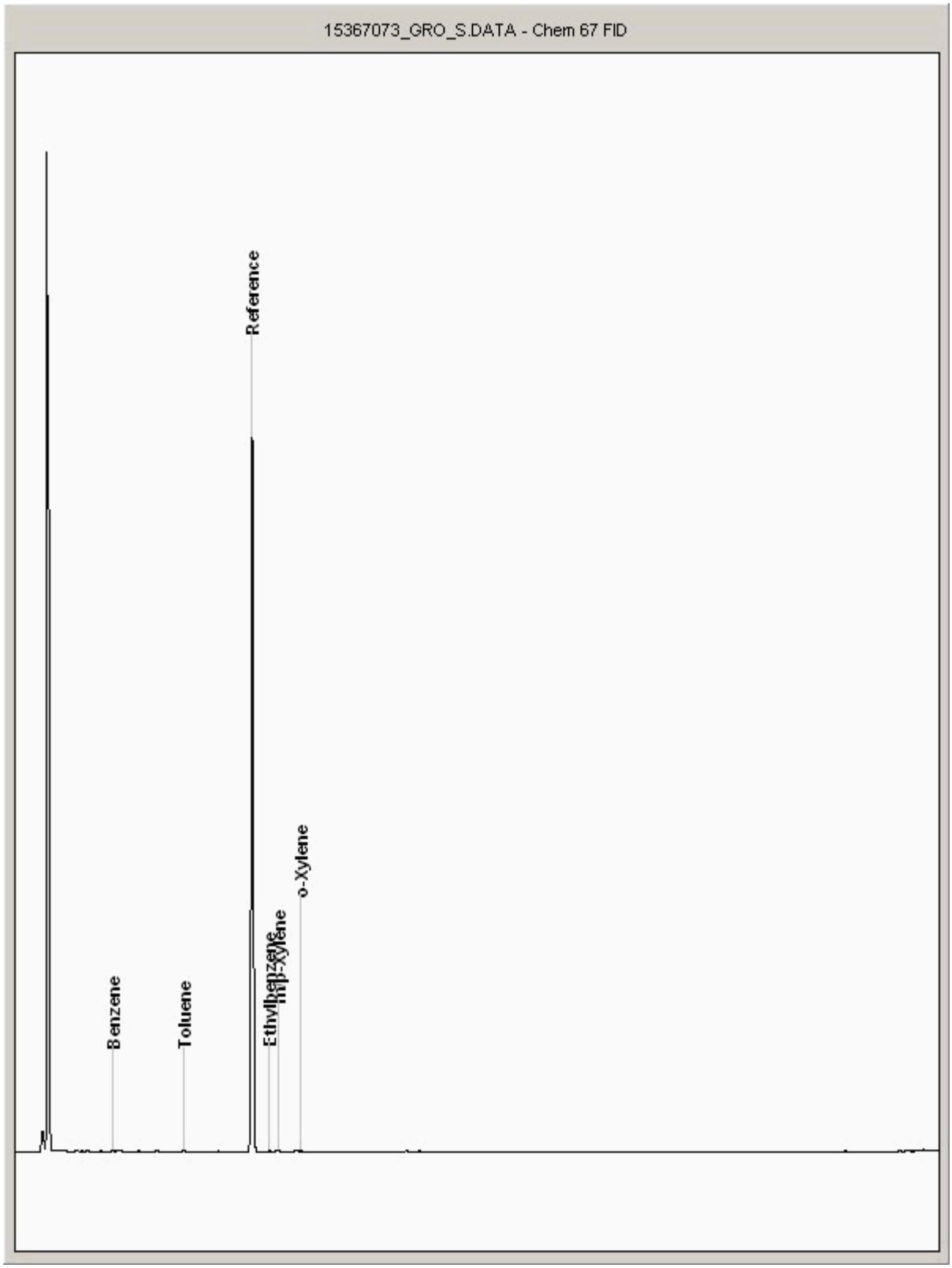
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15367073
Sample ID : W3WS302

Depth : 0.20 - 0.25



CERTIFICATE OF ANALYSIS

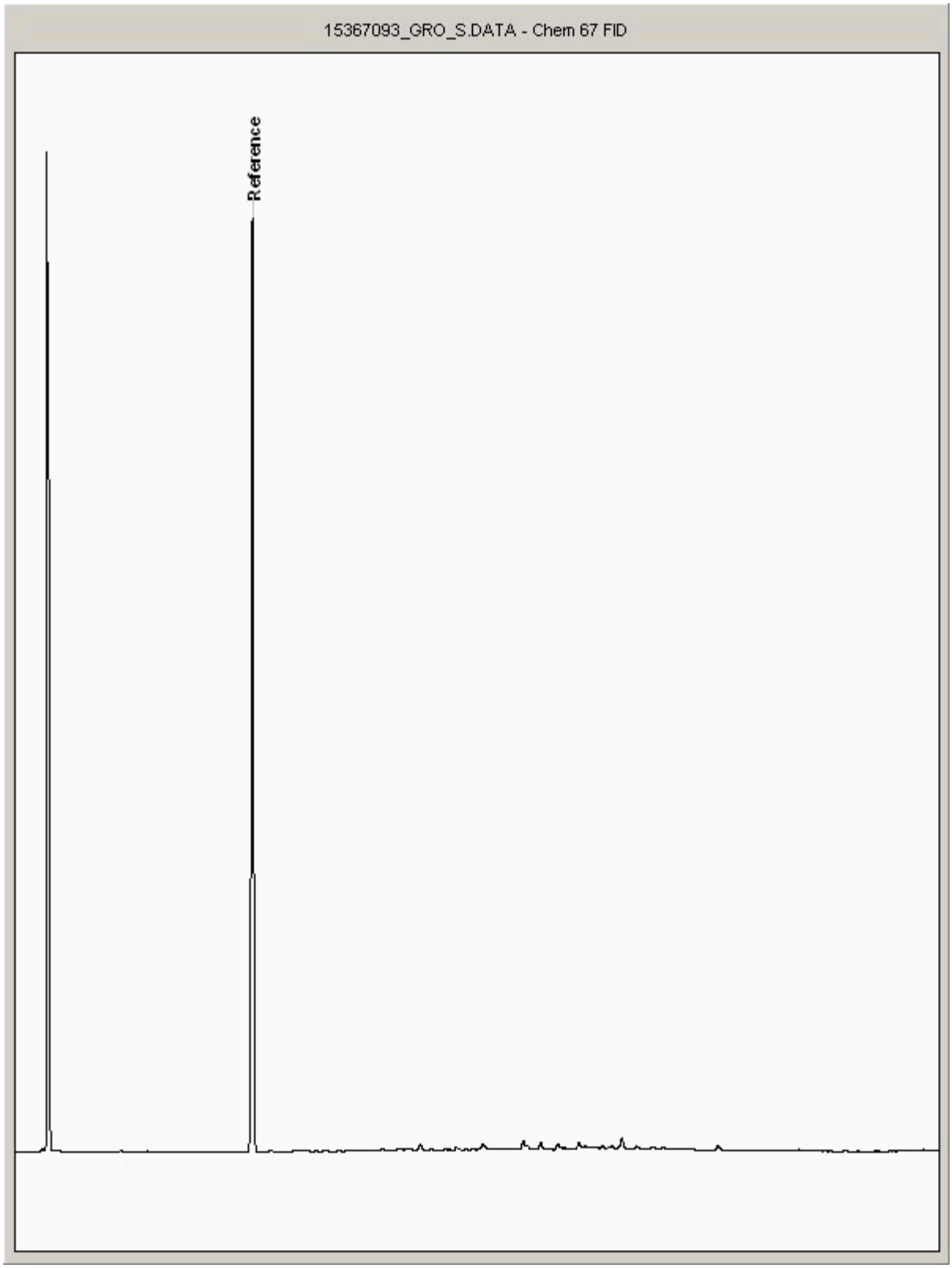
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15367093
Sample ID : W3BH301

Depth : 6.50 - 6.70



CERTIFICATE OF ANALYSIS

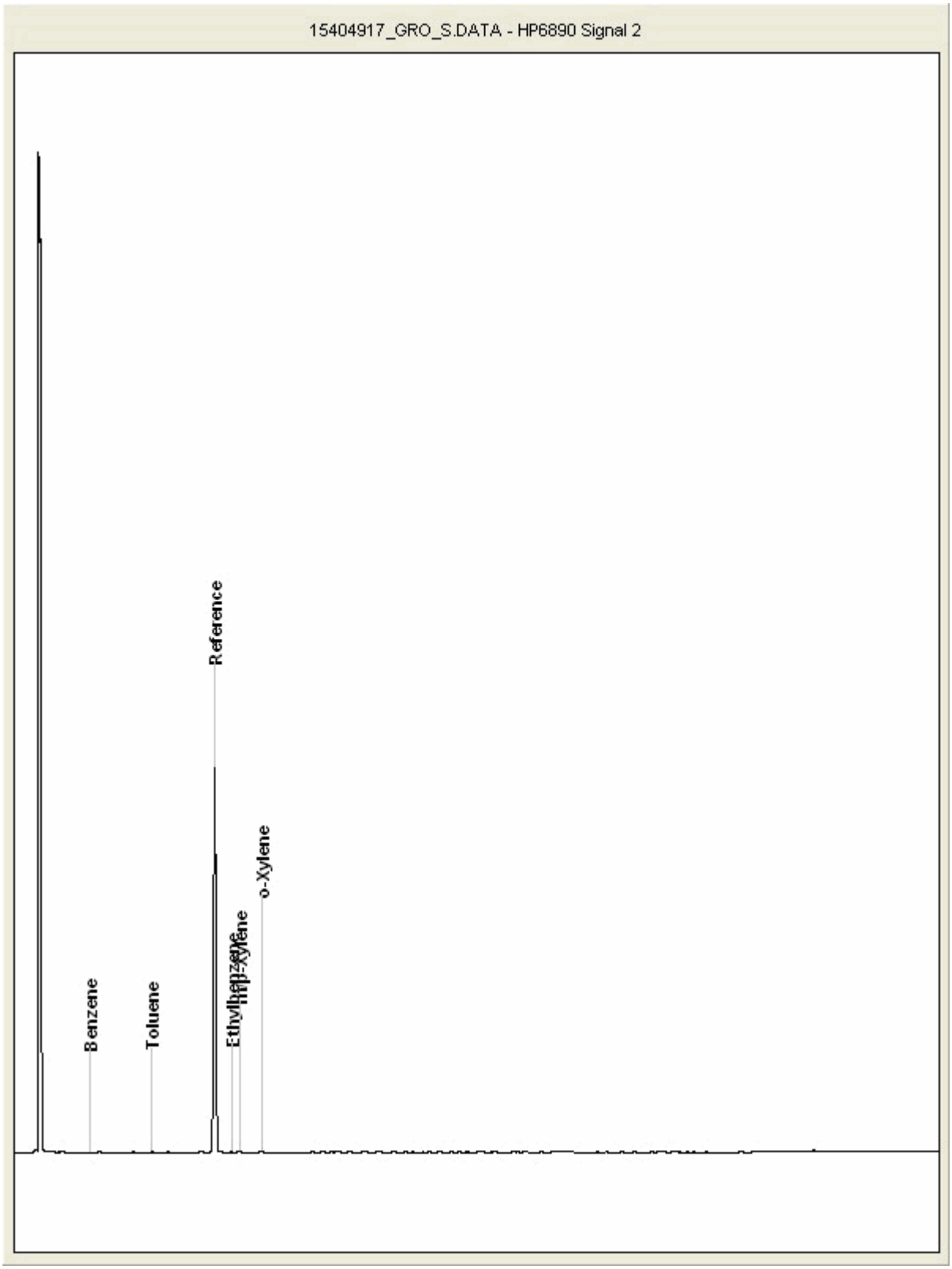
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15404917
Sample ID : W3WS304

Depth : 0.65 - 0.70



CERTIFICATE OF ANALYSIS

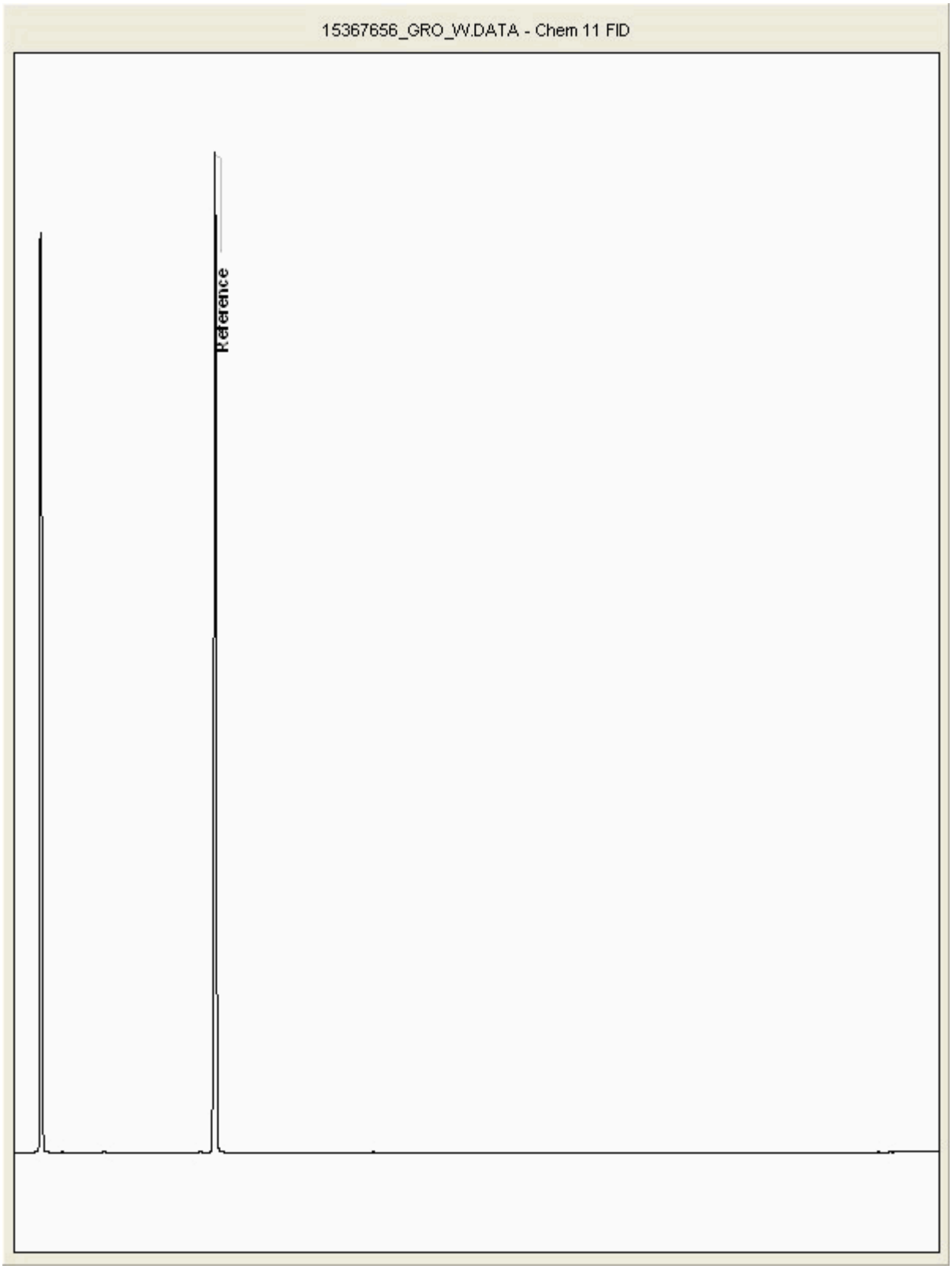
SDG:	170413-49	**Client Reference:**	70015362	**Report Number:**	406995
Location:	City Deal Tipner West	**Order Number:**	70015362	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15367656
Sample ID : W3BH301

Depth : 6.50 - 6.70



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
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Certificate of Analysis

Report No.: 17-61199-1

Issue No.: 1
Date of Issue 27/04/2017

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	P53622
Customer Reference:	170413-49
Quotation Reference:	161220/03
Description:	2 soil samples
Date Received:	19/04/2017
Date Started:	24/04/2017
Date Completed:	27/04/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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A member of the RPS Group plc. Terms and conditions apply - copy on request

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Results Summary

Report No.: 17-61199-1

Customer Reference: 170413-49

Customer Order No: P53622

Customer Sample No	**15337865**	**15345533**
Customer Sample ID	W3BH301	W3WS302
RPS Sample No	326904	326905
Sample Type	**SOIL**	**SOIL**
Sample Depth (m)	6.50-6.70m	0.80-0.85m
Sampling Date	11/04/2017	11/04/2017

Determinand	CAS No	Codes	SOP	Units	RL		
dry solids (at 105øC)		N	208	% w/w		79.2	
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation DW	0.02	< 0.02	
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation DW	0.02	< 0.02	
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.10	< 0.10
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation DW	0.1	< 0.10	
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
monophenyltin (MPT)		N	in house	mg/kg as cation DW	0.02	< 0.02	
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02	0.03
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation DW	0.02	< 0.02	
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05	< 0.05
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation DW	0.05	< 0.05	
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation DW	0.02	< 0.02	

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
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BS2 0HQ

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	09 May 2017
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	170419-19
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	407713

We received 39 samples on Wednesday April 19, 2017 and 20 of these samples were scheduled for analysis which was completed on Tuesday May 09, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan

Operations Manager

ALS Environmental is part of ALS Life Sciences Limited. ALS Life Sciences Limited registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15356809	W5BH302	ES	0.10 - 0.30	12/04/2017
15356815	W5BH302	ES	0.90 - 1.00	12/04/2017
15356820	W5BH302	ES	2.00 - 2.20	12/04/2017
15356825	W5BH302	ES	3.80 - 4.00	12/04/2017
15356838	W5BH302	ES	5.80 - 6.00	12/04/2017
15356910	W5BH303	ES	1.50	13/04/2017
15356915	W5BH303	ES	2.10	13/04/2017
15356920	W5BH303	ES	2.80	13/04/2017
15356933	W5BH303	ES	3.70	13/04/2017
15356939	W5BH303	ES	5.50	13/04/2017
15356944	W5BH303	ES	6.50	13/04/2017
15356830	W5BH302 (duplicate)	ES	3.80 - 4.00	12/04/2017
15356884	W5TP302	ES	0.30	12/04/2017
15356890	W5TP302	ES	1.00	12/04/2017
15356899	W5TP302	ES	2.00	12/04/2017
15356905	W5TP302	ES	2.80	12/04/2017
15356855	W5TP303	ES	0.30	12/04/2017
15356865	W5TP303	ES	0.70	12/04/2017
15356870	W5TP303	ES	1.50	12/04/2017
15356877	W5TP303	ES	2.20	12/04/2017
15356845	W5TP305	ES	0.30	12/04/2017
15356850	W5TP305	ES	0.80	12/04/2017
15356799	W3WS301	ES	1.30 - 1.45	12/04/2017
15356860	W3WS301	ES	2.55 - 2.65	12/04/2017
15356925	W3WS301	ES	4.50 - 4.60	12/04/2017
15356988	W3WS303	ES	0.15 - 0.30	12/04/2017
15357001	W3WS303	ES	0.30 - 0.50	12/04/2017
15357007	W5WS306	ES	0.00 - 0.30	12/04/2017
15357013	W5WS306	ES	0.90 - 1.10	12/04/2017
15356804	W5WS306	ES	1.30 - 1.45	12/04/2017
15356949	W5WS307a	ES	0.10 - 0.30	13/04/2017
15356955	W5WS307b	ES	0.80 - 0.90	13/04/2017
15356960	W5WS307c	ES	0.00 - 0.20	13/04/2017
15356966	W5WS307c	ES	0.80 - 0.90	13/04/2017
15356973	W5WS307c	ES	1.20 - 1.30	13/04/2017
15356978	W5WS307c	ES	2.00 - 2.10	13/04/2017
15356983	W5WS307c	ES	2.50 - 2.70	13/04/2017
15356993	W3WS303 (duplicate)	ES	0.15 - 0.30	12/04/2017
15357018	W5WS306 (duplicate)	ES	0.90 - 1.10	12/04/2017

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15356809			15356815			15356838			15356933			15356944		15356884			15356890		
Customer Sample Reference			W5BH302			W5BH302			W5BH302			W5BH303			W5BH303		W5TP302			W5TP302		
AGS Reference			ES			ES			ES			ES			ES		ES			ES		
Depth (m)			0.10 - 0.30			0.90 - 1.00			5.80 - 6.00			3.70			6.50		0.30			1.00		
Container			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	1kg TUB	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 16		X		X							X					X			X	
Asbestos Quantification - Full	All	NDPs: 0 Tests: 2		X																		
CEN Readings	All	NDPs: 0 Tests: 3				X				X			X									
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3				X				X			X									
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 3				X				X			X									
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 20	X				X		X			X			X		X			X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 3				X				X			X									
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 20	X				X		X			X			X		X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 20			X			X			X			X		X			X			X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 3				X				X			X									
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 20	X				X		X			X			X		X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 3				X				X			X									
Metals in solid samples by OES	All	NDPs: 0 Tests: 20	X				X		X			X			X		X			X		
PAH by GCMS	All	NDPs: 0 Tests: 20	X				X		X			X			X		X			X		
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 3				X				X			X									

15356988	W3WS303	ES	0.15 - 0.30	60g VOC (ALE215)	S										X							
				400g Tub (ALE214)	S		X															
				250g Amber Jar (ALE210)	S							X		X				X		X	X	
15356799	W3WS301	ES	1.30 - 1.45	60g VOC (ALE215)	S										X							
				250g Amber Jar (ALE210)	S							X		X				X		X	X	
				1kg TUB	S		X															
15356850	W5TP305	ES	0.80	60g VOC (ALE215)	S										X							
				400g Tub (ALE214)	S		X															
				250g Amber Jar (ALE210)	S							X		X				X		X	X	
15356845	W5TP305	ES	0.30	60g VOC (ALE215)	S										X							
				400g Tub (ALE214)	S		X															
				250g Amber Jar (ALE210)	S							X		X				X		X	X	
15356870	W5TP303	ES	1.50	60g VOC (ALE215)	S										X							
				400g Tub (ALE214)	S		X	X														
				250g Amber Jar (ALE210)	S							X		X				X		X	X	
15356865	W5TP303	ES	0.70	60g VOC (ALE215)	S										X							
				400g Tub (ALE214)	S		X															
				250g Amber Jar (ALE210)	S							X		X				X		X	X	
15356905	W5TP302	ES	2.80	60g VOC (ALE215)	S										X							
				250g Amber Jar (ALE210)	S							X		X				X		X	X	

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			15356809	W5BH302	ES	0.10 - 0.30	250g Amber Jar (ALE210)	S
							400g Tub (ALE214)	S
							60g VOC (ALE215)	S
			15356815	W5BH302	ES	0.90 - 1.00	1kg TUB	S
							250g Amber Jar (ALE210)	S
							60g VOC (ALE215)	S
			15356838	W5BH302	ES	5.80 - 6.00	250g Amber Jar (ALE210)	S
							400g Tub (ALE214)	S
							60g VOC (ALE215)	S
			15356933	W5BH303	ES	3.70	250g Amber Jar (ALE210)	S
							400g Tub (ALE214)	S
							60g VOC (ALE215)	S
			15356944	W5BH303	ES	6.50	250g Amber Jar (ALE210)	S
							60g VOC (ALE215)	S
			15356884	W5TP302	ES	0.30	250g Amber Jar (ALE210)	S
							400g Tub (ALE214)	S
							60g VOC (ALE215)	S
			15356890	W5TP302	ES	1.00	250g Amber Jar (ALE210)	S
							400g Tub (ALE214)	S
							60g VOC (ALE215)	S
pH	All	NDPs: 0 Tests: 20	X				X	
							X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
							X	
Sample description	All	NDPs: 0 Tests: 20	X				X	
							X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 4						
							X	
							X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 1						
							X	
Total Organic Carbon	All	NDPs: 0 Tests: 9	X				X	
							X	
							X	
							X	
TPH CWG (W)	All	NDPs: 0 Tests: 3						
				X				
							X	
							X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 20	X				X	
							X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
							X	
			X				X	
							X	
VOC MS (S)	All	NDPs: 0 Tests: 20						
				X				
							X	
							X	
							X	
							X	
							X	
VOC MS (W)	All	NDPs: 0 Tests: 3						
				X				
							X	
							X	

| 15356988 | W3WS303 | ES | 0.15 - 0.30 | 60g VOC (ALE215) | S | | |

Validated

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15357001			15357007			15357013			15356960			15356966			15356978	
			Customer Sample Reference	W3WS303			W5WS306			W5WS306			W5WS307c			W5WS307c			W5WS307c	
			AGS Reference	ES			ES			ES			ES			ES			ES	
			Depth (m)	0.30 - 0.50			0.00 - 0.30			0.90 - 1.10			0.00 - 0.20			0.80 - 0.90			2.00 - 2.10	
			Container	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 16			X			X			X			X			X			
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 20			X			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 20		X			X			X			X			X			X	
Organotins on soils*	All	NDPs: 0 Tests: 1		X																
PAH by GCMS	All	NDPs: 0 Tests: 20		X			X			X			X			X			X	
pH	All	NDPs: 0 Tests: 20		X			X			X			X			X			X	
Sample description	All	NDPs: 0 Tests: 20		X			X			X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 4								X										
Total Organic Carbon	All	NDPs: 0 Tests: 9		X						X			X							
TPH CWG GC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 20			X			X			X			X			X			X

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15356809	W5BH302	0.10 - 0.30	Dark Brown	Sandy Clay Loam	Vegetation	Stones
15356815	W5BH302	0.90 - 1.00	Dark Brown	Sandy Clay Loam	Vegetation	Stones
15356838	W5BH302	5.80 - 6.00	Black	Chalk	None	None
15356933	W5BH303	3.70	Light Brown	Clay	None	None
15356944	W5BH303	6.50	Dark Brown	Sandy Clay	Stones	None
15356884	W5TP302	0.30	Dark Brown	Sandy Clay Loam	Stones	Vegetation
15356890	W5TP302	1.00	Dark Brown	Loamy Sand	Vegetation	Concrete/Aggregate
15356905	W5TP302	2.80	Light Brown	Silty Clay Loam	Stones	None
15356865	W5TP303	0.70	Dark Brown	Loamy Sand	Concrete/Aggregate	Vegetation
15356870	W5TP303	1.50	Dark Brown	Sandy Clay Loam	Stones	Plastic
15356845	W5TP305	0.30	Dark Brown	Sandy Clay Loam	Crushed Brick	Vegetation
15356850	W5TP305	0.80	Dark Brown	Sandy Clay Loam	Stones	Vegetation
15356799	W3WS301	1.30 - 1.45	Dark Brown	Sandy Clay Loam	Stones	Vegetation
15356988	W3WS303	0.15 - 0.30	Dark Brown	Loamy Sand	Crushed Brick	Stones
15357001	W3WS303	0.30 - 0.50	Dark Brown	Loamy Sand	Brick	Stones
15357007	W5WS306	0.00 - 0.30	Dark Brown	Loamy Sand	Vegetation	Stones
15357013	W5WS306	0.90 - 1.10	Dark Brown	Loamy Sand	Stones	Vegetation
15356960	W5WS307c	0.00 - 0.20	Dark Brown	Loamy Sand	Vegetation	Stones
15356966	W5WS307c	0.80 - 0.90	Dark Brown	Sandy Clay Loam	Vegetation	Stones
15356978	W5WS307c	2.00 - 2.10	Dark Brown	Silt Loam	Brick	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5BH302	W5BH302	W5BH302	W5BH303	W5BH303	W5TP302
			Depth (m)	0.10 - 0.30	0.90 - 1.00	5.80 - 6.00	3.70	6.50	0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017	12/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356809	15356815	15356838	15356933	15356944	15356884
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		17	15	15	16	16	11
Soil Organic Matter (SOM)	<0.35 %	TM132		1.78 #		<0.35 #	<0.35 #	<0.35 #	
pH	1 pH Units	TM133		8.3 M	8.14 M	9.59 #	8.16 M	8.5 M	8.11 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		8.84 M	11.7 M	1.11 #	7.88 M	21.9 M	6.7 M
Cadmium	<0.02 mg/kg	TM181		0.0331 M	0.242 M	0.751 #	<0.02 M	<0.02 M	0.0994 M
Chromium	<0.9 mg/kg	TM181		21.3 M	21.8 M	1.89 #	30.3 M	24.6 M	11.8 M
Copper	<1.4 mg/kg	TM181		30.1 M	16.9 M	1.88 #	19.4 M	5.56 M	28.9 M
Lead	<0.7 mg/kg	TM181		28.9 M	62.7 M	1.41 #	19 M	15.7 M	74.7 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	0.314 #	<0.14 M	<0.14 M	0.156 M
Nickel	<0.2 mg/kg	TM181		17.3 M	17 M	1.81 #	58.7 M	61.1 M	8.72 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		65.2 M	105 M	19.2 #	63.3 M	32.4 M	64.8 M
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304		<0.001 #					
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304		<0.001 #					
Additional Asbestos Components (Using TM048)	-	TM304		None #					
Analysts Comments	-	TM304		N/C					
Asbestos Quantification - Total - %	<0.001 %	TM304		<0.001 #					

Validated

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W5TP302	1.00	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356890	ES
			W5TP302	2.80	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356905	ES
			W5TP303	0.70	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356865	ES
			W5TP303	1.50	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356870	ES
			W5TP305	0.30	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356845	ES
			W5TP305	0.80	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356850	ES
Moisture Content Ratio (% of as received sample)	%	PM024	10		21			14			14			12			12		
Soil Organic Matter (SOM)	<0.35 %	TM132			1.1	#		19.7	#										
pH	1 pH Units	TM133	7.98	M	8.14	M		8.46	M		8.67	M		8.69	M		8.64	M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#	<0.6	#		<0.6	#		<0.6	#		<0.6	#		<0.6	#	
Arsenic	<0.6 mg/kg	TM181	9	M	10.9	M		13.8	M		10	M		9.86	M		7.96	M	
Cadmium	<0.02 mg/kg	TM181	0.0392	M	<0.02	M		1.52	M		0.091	M		0.159	M		0.22	M	
Chromium	<0.9 mg/kg	TM181	10.7	M	61.6	M		43.7	M		19.3	M		16	M		13.7	M	
Copper	<1.4 mg/kg	TM181	49.2	M	51	M		553	M		46.1	M		20.9	M		25.2	M	
Lead	<0.7 mg/kg	TM181	166	M	36.7	M		344	M		80.5	M		94	M		96.3	M	
Mercury	<0.14 mg/kg	TM181	0.788	M	<0.14	M		<0.14	M		<0.14	M		0.245	M		0.339	M	
Nickel	<0.2 mg/kg	TM181	10.6	M	85.8	M		45.6	M		14.5	M		13.2	M		12.2	M	
Selenium	<1 mg/kg	TM181	<1	#	2.13	#		<1	#		<1	#		<1	#		<1	#	
Zinc	<1.9 mg/kg	TM181	66.6	M	606	M		1300	M		124	M		85.6	M		107	M	
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304									<0.001	#							
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304									<0.001	#							
Additional Asbestos Components (Using TM048)	-	TM304									None	#							
Analysts Comments	-	TM304									N/C								
Asbestos Quantification - Total - %	<0.001 %	TM304									<0.001	#							

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3WS301	W3WS303	W3WS303	W5WS306	W5WS306	W5WS307c
			Depth (m)	1.30 - 1.45	0.15 - 0.30	0.30 - 0.50	0.00 - 0.30	0.90 - 1.10	0.00 - 0.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	13/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356799	15356988	15357001	15357007	15357013	15356960
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		19	14	9	11	11	9
Soil Organic Matter (SOM)	<0.35 %	TM132				5.34 #		2.88 #	2.38 #
pH	1 pH Units	TM133		7.25 M	8.99 M	8.67 M	8.23 M	8.59 M	8.6 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		17.8 M	4.39 M	5.77 M	2.33 M	7.56 M	7.98 M
Cadmium	<0.02 mg/kg	TM181		<0.02 M	<0.02 M	0.0569 M	0.0616 M	0.727 M	0.34 M
Chromium	<0.9 mg/kg	TM181		24.8 M	13.3 M	7.32 M	5.13 M	19.3 M	10.3 M
Copper	<1.4 mg/kg	TM181		19.6 M	53.3 M	45.3 M	7.2 M	147 M	21.3 M
Lead	<0.7 mg/kg	TM181		72 M	10 M	59.5 M	25.1 M	125 M	78.4 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	0.284 M	<0.14 M	0.289 M	0.236 M
Nickel	<0.2 mg/kg	TM181		17.3 M	26.5 M	15.6 M	2.57 M	14.5 M	8.87 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181				4.31 #			
Zinc	<1.9 mg/kg	TM181		60.9 M	26.4 M	46.7 M	26 M	425 M	95.4 M

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W5WS307c	0.80 - 0.90	Soil/Solid (S)	13/04/2017	.	19/04/2017	170419-19	15356966	ES
			W5WS307c	2.00 - 2.10	Soil/Solid (S)	13/04/2017	.	19/04/2017	170419-19	15356978	ES
Moisture Content Ratio (% of as received sample)	%	PM024	10								
pH	1 pH Units	TM133	8.63 M								
			8.33 M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #								
			<0.6 #								
Arsenic	<0.6 mg/kg	TM181	7.93 M								
			19.5 M								
Cadmium	<0.02 mg/kg	TM181	0.219 M								
			0.243 M								
Chromium	<0.9 mg/kg	TM181	13.3 M								
			19.2 M								
Copper	<1.4 mg/kg	TM181	9.01 M								
			57.9 M								
Lead	<0.7 mg/kg	TM181	34.1 M								
			341 M								
Mercury	<0.14 mg/kg	TM181	0.163 M								
			0.469 M								
Nickel	<0.2 mg/kg	TM181	11.9 M								
			23 M								
Selenium	<1 mg/kg	TM181	<1 #								
			<1 #								
Zinc	<1.9 mg/kg	TM181	70.3 M								
			182 M								

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W3WS303							
Depth (m)	0.30 - 0.50							
Sample Type	Soil/Solid (S)							
Date Sampled	12/04/2017							
Sampled Time	.							
Date Received	19/04/2017							
SDG Ref	170419-19							
Lab Sample No.(s)	15357001							
AGS Reference	ES							
Component	**LOD/Units**	**Method**						
Dibutyl Tin*	<0.02 mg/kg	SUB	<0.02					
Tributyl Tin*	<0.02 mg/kg	SUB	<0.02					
Triphenyl Tin*	<0.05 mg/kg	SUB	<0.05					
Tetrabutyl Tin*	<0.02 mg/kg	SUB	<0.02					
Monobutyl Tin*	<0.1 mg/kg	SUB	<0.1					
Monophenyl Tin*	<0.02 mg/kg	SUB	<0.02					
Diphenyl Tin*	<0.02 mg/kg	SUB	<0.02					

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5BH302	W5BH302	W5BH302	W5BH303	W5BH303	W5TP302
			Depth (m)	0.10 - 0.30	0.90 - 1.00	5.80 - 6.00	3.70	6.50	0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017	12/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356809	15356815	15356838	15356933	15356944	15356884
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		97.2	98.2	102	101	94.8	102
Acenaphthene-d10 % recovery**	%	TM218		91.4	93.3	99.1	95.6	92.4	98.5
Phenanthrene-d10 % recovery**	%	TM218		90.7	93.6	95.1	93.5	86.4	97.3
Chrysene-d12 % recovery**	%	TM218		89.3	94.6	86.7	88	77.5	96.2
Perylene-d12 % recovery**	%	TM218		96.2	101	86.5	95.6	80.1	106
Naphthalene	<0.009 mg/kg	TM218		0.0458 M	0.124 M	<0.009 #	<0.009 M	<0.009 M	0.047 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0535 M	0.0581 M	<0.012 #	<0.012 M	<0.012 M	0.155 M
Acenaphthene	<0.008 mg/kg	TM218		0.182 M	0.194 M	<0.008 #	<0.008 M	<0.008 M	0.0247 M
Fluorene	<0.01 mg/kg	TM218		0.153 M	0.14 M	<0.01 #	<0.01 M	<0.01 M	0.0279 M
Phenanthrene	<0.015 mg/kg	TM218		2.26 M	1.59 M	<0.015 #	<0.015 M	<0.015 M	0.327 M
Anthracene	<0.016 mg/kg	TM218		0.66 M	0.562 M	<0.016 #	<0.016 M	<0.016 M	0.137 M
Fluoranthene	<0.017 mg/kg	TM218		4.45 M	4.7 M	<0.017 #	<0.017 M	<0.017 M	0.929 M
Pyrene	<0.015 mg/kg	TM218		3.68 M	3.9 M	<0.015 #	<0.015 M	<0.015 M	0.928 M
Benz(a)anthracene	<0.014 mg/kg	TM218		1.95 M	2.14 M	<0.014 #	<0.014 M	<0.014 M	0.711 M
Chrysene	<0.01 mg/kg	TM218		1.54 M	1.83 M	<0.01 #	<0.01 M	<0.01 M	0.604 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		1.91 M	2.34 M	<0.015 #	<0.015 M	<0.015 M	1.24 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.968 M	0.959 M	<0.014 #	<0.014 M	<0.014 M	0.502 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		1.91 M	2.15 M	<0.015 #	<0.015 M	<0.015 M	1.09 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.921 M	1 M	<0.018 #	<0.018 M	<0.018 M	0.741 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.264 M	0.3 M	<0.023 #	<0.023 M	<0.023 M	0.218 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		1.11 M	1.21 M	<0.024 #	<0.024 M	<0.024 M	0.906 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		22.1	23.2	<0.118	<0.118	<0.118	8.59

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5TP302	W5TP302	W5TP303	W5TP303	W5TP305	W5TP305
			Depth (m)	1.00	2.80	0.70	1.50	0.30	0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356890	15356905	15356865	15356870	15356845	15356850
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		102	95.4	103	100	102	104
Acenaphthene-d10 % recovery**	%	TM218		98.3	90.4	99.4	97.3	98.7	101
Phenanthrene-d10 % recovery**	%	TM218		96.5	82.9	98.6	95.7	98.5	99.5
Chrysene-d12 % recovery**	%	TM218		94.7	71.2	95.8	96.2	97.7	101
Perylene-d12 % recovery**	%	TM218		102	69.8	105	108	107	112
Naphthalene	<0.009 mg/kg	TM218		0.0242 M	<0.009 M	0.03 M	0.0107 M	0.15 M	0.206 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0355 M	<0.012 M	0.0647 M	<0.012 M	0.245 M	0.218 M
Acenaphthene	<0.008 mg/kg	TM218		0.0168 M	<0.008 M	<0.008 M	<0.008 M	0.0601 M	0.115 M
Fluorene	<0.01 mg/kg	TM218		0.0151 M	<0.01 M	0.0119 M	<0.01 M	0.119 M	0.111 M
Phenanthrene	<0.015 mg/kg	TM218		0.301 M	<0.015 M	0.211 M	0.0839 M	1.61 M	1.72 M
Anthracene	<0.016 mg/kg	TM218		0.089 M	<0.016 M	0.0649 M	0.0219 M	0.46 M	0.537 M
Fluoranthene	<0.017 mg/kg	TM218		0.939 M	<0.017 M	0.658 M	0.234 M	3.2 M	4.02 M
Pyrene	<0.015 mg/kg	TM218		0.812 M	<0.015 M	0.596 M	0.209 M	2.73 M	3.38 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.507 M	<0.014 M	0.424 M	0.154 M	1.87 M	2.44 M
Chrysene	<0.01 mg/kg	TM218		0.412 M	<0.01 M	0.373 M	0.113 M	1.56 M	2.02 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.57 M	<0.015 M	0.591 M	0.164 M	2.26 M	3.25 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.308 M	<0.014 M	0.262 M	0.0911 M	1.06 M	1.54 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.601 M	<0.015 M	0.507 M	0.204 M	2.38 M	3.93 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.318 M	<0.018 M	0.294 M	0.112 M	1.31 M	2.5 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0938 M	<0.023 M	0.087 M	0.0303 M	0.358 M	0.697 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.369 M	<0.024 M	0.362 M	0.143 M	1.59 M	3.02 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		5.41	<0.118	4.54	1.57	20.9	29.7

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3WS301	W3WS303	W3WS303	W5WS306	W5WS306	W5WS307c
			Depth (m)	1.30 - 1.45	0.15 - 0.30	0.30 - 0.50	0.00 - 0.30	0.90 - 1.10	0.00 - 0.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	13/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356799	15356988	15357001	15357007	15357013	15356960
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		95	105	96.4	96	101	101
Acenaphthene-d10 % recovery**	%	TM218		88.6	102	95.8	93.4	99.1	99
Phenanthrene-d10 % recovery**	%	TM218		83.8	99.6	92.4	92	97	93.9
Chrysene-d12 % recovery**	%	TM218		76.8	90.8	88.9	85.1	92.7	87.6
Perylene-d12 % recovery**	%	TM218		82	95.4	102	93	103	91.8
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	0.0509 M	0.0174 M	<0.009 M	0.0546 M	0.0124 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M	0.0133 M	<0.012 M	0.0531 M	0.0262 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	<0.008 M	<0.008 M	0.0236 M	0.0156 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M	<0.01 M	0.0303 M	0.0173 M
Phenanthrene	<0.015 mg/kg	TM218		0.0729 M	0.138 M	0.0699 M	0.051 M	0.403 M	0.222 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	0.0202 M	<0.016 M	0.105 M	0.0709 M
Fluoranthene	<0.017 mg/kg	TM218		0.157 M	0.124 M	0.123 M	0.0872 M	0.896 M	0.529 M
Pyrene	<0.015 mg/kg	TM218		0.124 M	0.115 M	0.12 M	0.0712 M	0.81 M	0.472 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0786 M	0.116 M	0.111 M	0.0577 M	0.547 M	0.267 M
Chrysene	<0.01 mg/kg	TM218		0.0777 M	0.129 M	0.082 M	0.0564 M	0.604 M	0.316 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.11 M	0.186 M	0.141 M	0.0815 M	1 M	0.456 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0493 M	0.0659 M	0.0687 M	0.0294 M	0.363 M	0.162 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0886 M	0.119 M	0.133 M	0.0594 M	0.792 M	0.338 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0499 M	0.0706 M	0.0822 M	0.0433 M	0.517 M	0.237 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	0.0285 M	<0.023 M	0.12 M	0.066 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0555 M	0.0949 M	0.103 M	0.0558 M	0.629 M	0.317 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.863	1.21	1.11	0.593	6.95	3.53

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5WS307c	W5WS307c				
			Depth (m)	0.80 - 0.90	2.00 - 2.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	13/04/2017	13/04/2017				
			Sampled Time	.	.				
			Date Received	19/04/2017	19/04/2017				
			SDG Ref	170419-19	170419-19				
			Lab Sample No.(s)	15356966	15356978				
			AGS Reference	ES	ES				
Naphthalene-d8 % recovery**	%	TM218		99.6	95.9				
Acenaphthene-d10 % recovery**	%	TM218		96.4	91.9				
Phenanthrene-d10 % recovery**	%	TM218		93.6	87.3				
Chrysene-d12 % recovery**	%	TM218		91.2	78.9				
Perylene-d12 % recovery**	%	TM218		98	78.5				
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	0.0257 M				
Acenaphthylene	<0.012 mg/kg	TM218		0.0351 M	0.018 M				
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	0.0173 M				
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M				
Phenanthrene	<0.015 mg/kg	TM218		0.164 M	0.228 M				
Anthracene	<0.016 mg/kg	TM218		0.0226 M	0.0512 M				
Fluoranthene	<0.017 mg/kg	TM218		0.3 M	0.497 M				
Pyrene	<0.015 mg/kg	TM218		0.235 M	0.417 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.108 M	0.255 M				
Chrysene	<0.01 mg/kg	TM218		0.111 M	0.306 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.127 M	0.488 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0722 M	0.198 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.123 M	0.252 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0572 M	0.218 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	0.0682 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0609 M	0.288 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		1.42	3.33				

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5BH303	W5BH303	W3WS303	W5WS306		
			Depth (m)	3.70	6.50	0.15 - 0.30	0.90 - 1.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	13/04/2017	13/04/2017	12/04/2017	12/04/2017		
			Sampled Time	.	.	.	.		
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017		
			SDG Ref	170419-19	170419-19	170419-19	170419-19		
			Lab Sample No.(s)	15356933	15356944	15356988	15357013		
			AGS Reference	ES	ES	ES	ES		
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5BH303	W5BH303	W3WS303	W5WS306		
			Depth (m)	3.70	6.50	0.15 - 0.30	0.90 - 1.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	13/04/2017	13/04/2017	12/04/2017	12/04/2017		
			Sampled Time	-	-	-	-		
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017		
			SDG Ref	170419-19	170419-19	170419-19	170419-19		
			Lab Sample No.(s)	15356933	15356944	15356988	15357013		
			AGS Reference	ES	ES	ES	ES		
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	0.406		
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	0.459		
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5BH302	W5BH302	W5BH302	W5BH303	W5BH303	W5TP302
			Depth (m)	0.10 - 0.30	0.90 - 1.00	5.80 - 6.00	3.70	6.50	0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017	12/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356809	15356815	15356838	15356933	15356944	15356884
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		86	84	106	102	111	56
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	0.236 M	0.0555 #	0.321 M	0.0928 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	0.0189	<0.01	0.0202	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	0.117	0.0248	0.168	0.0464	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.89	12.2	<0.1	<0.1	<0.1	0.605
Aliphatics >C16-C21	<0.1 mg/kg	TM173		4.33	15.1	1.05	<0.1	<0.1	2.64
Aliphatics >C21-C35	<0.1 mg/kg	TM173		15.2	30	2.98	2.06	0.558	19.7
Aliphatics >C35-C44	<0.1 mg/kg	TM173		3.74	2.08	<0.1	<0.1	<0.1	7.47
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		24.1	59.4	4.02	2.06	0.558	30.4
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	0.013	<0.01	0.0143	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	0.0779	0.0165	0.112	0.0309	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		1.51	17.6	<0.1	<0.1	<0.1	1.19
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		9.8	112	<0.1	<0.1	<0.1	9.47
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		36.4	258	0.813	1.67	<0.1	61.6
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		18.1	73.3	<0.1	<0.1	<0.1	33.7
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		7.56	27.6	<0.1	<0.1	<0.1	14.6
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		65.8	460	0.813	1.67	<0.1	106
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		89.9	520	4.89	4.05	0.616	136
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		46.2	369	0.813	1.67	<0.1	71.1

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5TP302	W5TP302	W5TP303	W5TP303	W5TP305	W5TP305
			Depth (m)	1.00	2.80	0.70	1.50	0.30	0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356890	15356905	15356865	15356870	15356845	15356850
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		74	102	58	90	71	71
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.317	<0.1	0.276	<0.1	1.66	0.886
Aliphatics >C16-C21	<0.1 mg/kg	TM173		1.47	<0.1	0.97	0.789	2.62	3.07
Aliphatics >C21-C35	<0.1 mg/kg	TM173		7.51	1.25	11.2	9.19	13	17.6
Aliphatics >C35-C44	<0.1 mg/kg	TM173		1.09	<0.1	3.56	1.51	4.45	7.42
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		10.4	1.25	16	11.5	21.7	29
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		0.733	<0.1	0.322	0.372	10.2	1.11
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		3.12	<0.1	2.61	3.19	55.2	5.33
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		20.7	1.93	20.2	11.9	112	34.4
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		11.5	<0.1	10.1	4.89	39.8	22
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		4.83	<0.1	4.73	2.54	16	10.4
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		36.1	1.93	33.2	20.4	218	62.8
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		46.5	3.18	49.2	31.9	239	91.7
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		23.9	1.93	22.8	15.1	168	39.7

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3WS301	W3WS303	W3WS303	W5WS306	W5WS306	W5WS307c
			Depth (m)	1.30 - 1.45	0.15 - 0.30	0.30 - 0.50	0.00 - 0.30	0.90 - 1.10	0.00 - 0.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	13/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356799	15356988	15357001	15357007	15357013	15356960
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		90	54	87	75	81	77
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		0.764 M	0.0742 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		0.0198	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0211	0.0104	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.13	0.0128	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		0.303	0.0186	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	0.807	0.4	<0.1	0.748	0.306
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	0.313	0.641	<0.1	3.38	1.96
Aliphatics >C21-C35	<0.1 mg/kg	TM173		2.49	3.4	6.88	8.99	42.8	61.8
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	7.04	<0.1	21.7	48.6
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		2.49	4.52	15	8.99	68.6	113
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0868	0.0104	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		0.202	0.0128	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	0.876	<0.1	<0.1	1.7	0.925
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.791	1.86	1.1	1.38	77	7.1
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		5.42	6.14	9.45	20.1	78.6	124
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		2.92	3.35	10.2	10.1	70.5	159
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		1.2	1.61	4.96	2.51	31.9	66.5
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		9.12	12.2	20.7	31.6	228	291
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		12.4	16.8	35.7	40.6	296	404
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		6.21	8	10.6	21.5	156	131

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5WS307c	W5WS307c
			Depth (m)	0.80 - 0.90	2.00 - 2.10
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	13/04/2017	13/04/2017
			Sampled Time	.	.
			Date Received	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19
			Lab Sample No.(s)	15356966	15356978
			AGS Reference	ES	ES
GRO Surrogate % recovery**	%	TM089		101	88
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	5.5 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	0.0456
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	1.41
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	1.85
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	0.602
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	0.908
Aliphatics >C21-C35	<0.1 mg/kg	TM173		3.68	11.5
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	0.684
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		3.68	13.7
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	0.943
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	1.24
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	0.898
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.654	5.19
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		3.42	34.9
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		1.05	18
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		<0.1	7.49
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		5.13	58.9
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		8.81	78.2
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		4.08	40.1

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5BH302	W5BH302	W5BH302	W5BH303	W5BH303	W5TP302
			Depth (m)	0.10 - 0.30	0.90 - 1.00	5.80 - 6.00	3.70	6.50	0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017	12/04/2017
			Sampled Time	.	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356809	15356815	15356838	15356933	15356944	15356884
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116					96.1	99.2	
Toluene-d8**	%	TM116					97.1	97.2	
4-Bromofluorobenzene**	%	TM116					103	102	
Dichlorodifluoromethane	<0.006 mg/kg	TM116					<0.06 M	<0.06 M	
Chloromethane	<0.007 mg/kg	TM116					<0.07 #	<0.07 #	
Vinyl Chloride	<0.006 mg/kg	TM116					<0.06 M	<0.06 M	
Bromomethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
Chloroethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
Trichlorofluorormethane	<0.006 mg/kg	TM116					<0.06 M	<0.06 M	
1,1-Dichloroethene	<0.01 mg/kg	TM116					<0.1 #	<0.1 #	
Carbon Disulphide	<0.007 mg/kg	TM116					<0.07 M	<0.07 M	
Dichloromethane	<0.01 mg/kg	TM116					<0.1 #	<0.1 #	
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M	<0.1 M	<0.1 #	<0.1 M	<0.1 M	<0.1 M	
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
1,1-Dichloroethane	<0.008 mg/kg	TM116					<0.08 M	<0.08 M	
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116					<0.06 M	<0.06 M	
2,2-Dichloropropane	<0.01 mg/kg	TM116					<0.1	<0.1	
Bromochloromethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
Chloroform	<0.008 mg/kg	TM116					<0.08 M	<0.08 M	
1,1,1-Trichloroethane	<0.007 mg/kg	TM116					<0.07 M	<0.07 M	
1,1-Dichloropropene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
Carbontetrachloride	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
1,2-Dichloroethane	<0.005 mg/kg	TM116					<0.05 M	<0.05 M	
Benzene	<0.009 mg/kg	TM116	<0.09 M	<0.09 M	<0.09 #	<0.09 M	<0.09 M	<0.09 M	
Trichloroethene	<0.009 mg/kg	TM116					<0.09 #	<0.09 #	
1,2-Dichloropropane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
Dibromomethane	<0.009 mg/kg	TM116					<0.09 M	<0.09 M	
Bromodichloromethane	<0.007 mg/kg	TM116					<0.07 M	<0.07 M	
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
Toluene	<0.007 mg/kg	TM116	<0.07 M	<0.07 M	<0.07 #	<0.07 M	<0.07 M	<0.07 M	
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.1	<0.1	
1,1,2-Trichloroethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W5BH302	W5BH302	W5BH302	W5BH303	W5BH303	W5TP302
			Depth (m)	0.10 - 0.30	0.90 - 1.00	5.80 - 6.00	3.70	6.50	0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	13/04/2017	13/04/2017	12/04/2017
			Sampled Time	-	-	-	-	-	-
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356809	15356815	15356838	15356933	15356944	15356884
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116					<0.07 M	<0.07 M	
Tetrachloroethene	<0.005 mg/kg	TM116					<0.05 M	<0.05 M	
Dibromochloromethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
1,2-Dibromoethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
Chlorobenzene	<0.005 mg/kg	TM116					<0.05 M	<0.05 M	
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M	<0.04 M	<0.04 #	<0.04 M	<0.04 M	<0.04 M	
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	
o-Xylene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M	<0.1 #	<0.1 M	<0.1 M	<0.1 M	
Styrene	<0.01 mg/kg	TM116				<0.1 #	<0.1 #		
Bromoform	<0.01 mg/kg	TM116				<0.1 M	<0.1 M		
Isopropylbenzene	<0.005 mg/kg	TM116				<0.05 #	<0.05 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.1 M	<0.1 M		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116				<0.16 M	<0.16 M		
Bromobenzene	<0.01 mg/kg	TM116				<0.1 M	<0.1 M		
Propylbenzene	<0.01 mg/kg	TM116				<0.1 M	<0.1 M		
2-Chlorotoluene	<0.009 mg/kg	TM116				<0.09 M	<0.09 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116				<0.08 M	<0.08 M		
4-Chlorotoluene	<0.01 mg/kg	TM116				<0.1 M	<0.1 M		
tert-Butylbenzene	<0.014 mg/kg	TM116				<0.14 M	<0.14 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116				<0.09 #	<0.09 #		
sec-Butylbenzene	<0.01 mg/kg	TM116				<0.1	<0.1		
4-Isopropyltoluene	<0.01 mg/kg	TM116				<0.1 M	<0.1 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116				<0.08 M	<0.08 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116				<0.05 M	<0.05 M		
n-Butylbenzene	<0.011 mg/kg	TM116				<0.11	<0.11		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116				<0.1 M	<0.1 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116				<0.14 M	<0.14 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116				<0.2	<0.2		
Hexachlorobutadiene	<0.02 mg/kg	TM116				<0.2	<0.2		
Naphthalene	<0.013 mg/kg	TM116				<0.13 M	<0.13 M		

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W5BH302	0.10 - 0.30	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356809	ES
			W5BH302	0.90 - 1.00	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356815	ES
			W5BH302	5.80 - 6.00	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356838	ES
			W5BH303	3.70	Soil/Solid (S)	13/04/2017	.	19/04/2017	170419-19	15356933	ES
			W5BH303	6.50	Soil/Solid (S)	13/04/2017	.	19/04/2017	170419-19	15356944	ES
			W5TP302	0.30	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356884	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116						<0.2 #		<0.2 #	

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W5TP302	1.00	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356890	ES
			W5TP302	2.80	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356905	ES
			W5TP303	0.70	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356865	ES
			W5TP303	1.50	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356870	ES
			W5TP305	0.30	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356845	ES
			W5TP305	0.80	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356850	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M			
Benzene	<0.009 mg/kg	TM116	<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M			
Toluene	<0.007 mg/kg	TM116	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M			
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M			
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #			
o-Xylene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #			

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W3WS301	1.30 - 1.45	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356799	ES
			W3WS303	0.15 - 0.30	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15356988	ES
			W3WS303	0.30 - 0.50	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15357001	ES
			W5WS306	0.00 - 0.30	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15357007	ES
			W5WS306	0.90 - 1.10	Soil/Solid (S)	12/04/2017	.	19/04/2017	170419-19	15357013	ES
			W5WS307c	0.00 - 0.20	Soil/Solid (S)	13/04/2017	.	19/04/2017	170419-19	15356960	ES
Dibromofluoromethane**	%	TM116		106				105			
Toluene-d8**	%	TM116		95.3				98.2			
4-Bromofluorobenzene**	%	TM116		90.5				96			
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.06 M				<0.06 M			
Chloromethane	<0.007 mg/kg	TM116		<0.07 #				<0.07 #			
Vinyl Chloride	<0.006 mg/kg	TM116		<0.06 M				<0.06 M			
Bromomethane	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			
Chloroethane	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.06 M				<0.06 M			
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.1 #				<0.1 #			
Carbon Disulphide	<0.007 mg/kg	TM116		<0.07 M				<0.07 M			
Dichloromethane	<0.01 mg/kg	TM116		0.177 #				<0.1 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M	<0.1 M	<0.1 M	<0.1 M		<0.1 M	<0.1 M		
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.08 M				<0.08 M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.06 M				<0.06 M			
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1				<0.1			
Bromochloromethane	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			
Chloroform	<0.008 mg/kg	TM116		<0.08 M				<0.08 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.07 M				<0.07 M			
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			
Carbontetrachloride	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.05 M				<0.05 M			
Benzene	<0.009 mg/kg	TM116	<0.09 M	<0.09 M	<0.09 M	<0.09 M		<0.09 M	<0.09 M		
Trichloroethene	<0.009 mg/kg	TM116		<0.09 #				<0.09 #			
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			
Dibromomethane	<0.009 mg/kg	TM116		<0.09 M				<0.09 M			
Bromodichloromethane	<0.007 mg/kg	TM116		<0.07 M				<0.07 M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			
Toluene	<0.007 mg/kg	TM116	<0.07 M	<0.07 M	<0.07 M	<0.07 M		<0.07 M	<0.07 M		
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1				<0.1			
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.1 M				<0.1 M			

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3WS301	W3WS303	W3WS303	W5WS306	W5WS306	W5WS307c
			Depth (m)	1.30 - 1.45	0.15 - 0.30	0.30 - 0.50	0.00 - 0.30	0.90 - 1.10	0.00 - 0.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2017	12/04/2017	12/04/2017	12/04/2017	12/04/2017	13/04/2017
			Sampled Time	-	-	-	-	-	-
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-19	170419-19	170419-19	170419-19	170419-19	170419-19
			Lab Sample No.(s)	15356799	15356988	15357001	15357007	15357013	15356960
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116			<0.07 M			<0.07 M	
Tetrachloroethene	<0.005 mg/kg	TM116			<0.05 M			<0.05 M	
Dibromochloromethane	<0.01 mg/kg	TM116			<0.1 M			<0.1 M	
1,2-Dibromoethane	<0.01 mg/kg	TM116			<0.1 M			<0.1 M	
Chlorobenzene	<0.005 mg/kg	TM116			<0.05 M			<0.05 M	
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.1 M			<0.1 M	
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	
o-Xylene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Styrene	<0.01 mg/kg	TM116		<0.1 #			<0.1 #		
Bromoform	<0.01 mg/kg	TM116		<0.1 M			<0.1 M		
Isopropylbenzene	<0.005 mg/kg	TM116		<0.05 #			<0.05 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 M			<0.1 M		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.16 M			<0.16 M		
Bromobenzene	<0.01 mg/kg	TM116		<0.1 M			<0.1 M		
Propylbenzene	<0.01 mg/kg	TM116		<0.1 M			<0.1 M		
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.09 M			<0.09 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.08 M			<0.08 M		
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.1 M			<0.1 M		
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.14 M			<0.14 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.09 #			<0.09 #		
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.1			<0.1		
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.1 M			<0.1 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.08 M			<0.08 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.05 M			<0.05 M		
n-Butylbenzene	<0.011 mg/kg	TM116		<0.11			<0.11		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.1 M			<0.1 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.14 M			<0.14 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2			<0.2		
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.2			<0.2		
Naphthalene	<0.013 mg/kg	TM116		<0.13 M			<0.13 M		

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W3WS301	1.30 - 1.45	Soil/Solid (S)	12/04/2017	-	19/04/2017	170419-19	15356799	ES
			W3WS303	0.15 - 0.30	Soil/Solid (S)	12/04/2017	-	19/04/2017	170419-19	15356988	ES
			W3WS303	0.30 - 0.50	Soil/Solid (S)	12/04/2017	-	19/04/2017	170419-19	15357001	ES
			W5WS306	0.00 - 0.30	Soil/Solid (S)	12/04/2017	-	19/04/2017	170419-19	15357007	ES
			W5WS306	0.90 - 1.10	Soil/Solid (S)	12/04/2017	-	19/04/2017	170419-19	15357013	ES
			W5WS307c	0.00 - 0.20	Soil/Solid (S)	13/04/2017	-	19/04/2017	170419-19	15356960	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2 #					<0.2 #		

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W5WS307c	0.80 - 0.90	Soil/Solid (S)	13/04/2017	.	19/04/2017	170419-19	15356966	ES
			W5WS307c	2.00 - 2.10	Soil/Solid (S)	13/04/2017	.	19/04/2017	170419-19	15356978	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M								
			<0.1 M								
Benzene	<0.009 mg/kg	TM116	<0.09 M								
			<0.09 M								
Toluene	<0.007 mg/kg	TM116	<0.07 M								
			<0.07 M								
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M								
			<0.04 M								
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #								
			<0.1 #								
o-Xylene	<0.01 mg/kg	TM116	<0.1 M								
			<0.1 M								
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #								
			<0.1 #								

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5BH302 ES 0.10 - 0.30 SOLID 12/04/2017 00:00:00 19/04/2017 11:07:47 170419-19 15356809 TM048	21/04/17	Kevin Bowron	Soil containing debris typical of Asbestos cement	Not Detected (#)	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5BH302 ES 0.90 - 1.00 SOLID 12/04/2017 00:00:00 19/04/2017 10:18:46 170419-19 15356815 TM048	21/04/17	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5BH303 ES 3.70 SOLID 13/04/2017 00:00:00 19/04/2017 09:55:49 170419-19 15356933 TM048	21/04/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP302 ES 0.30 SOLID 12/04/2017 00:00:00 19/04/2017 09:02:56 170419-19 15356884 TM048	21/04/17	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP302 ES 1.00 SOLID 12/04/2017 00:00:00 19/04/2017 09:01:31 170419-19 15356890 TM048	21/04/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP303 ES 0.70 SOLID 12/04/2017 00:00:00 19/04/2017 09:52:53 170419-19 15356865 TM048	21/04/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP303 ES 1.50 SOLID 12/04/2017 00:00:00 19/04/2017 09:54:02 170419-19 15356870 TM048	21/04/17	Kevin Bowron	Loose fibres in soil	Not Detected (#)	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP305 ES 0.30 SOLID 12/04/2017 00:00:00 19/04/2017 09:04:12 170419-19 15356845 TM048	21/04/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP305 ES 0.80 SOLID 12/04/2017 00:00:00 19/04/2017 09:51:27 170419-19 15356850 TM048	21/04/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS301 ES 1.30 - 1.45 SOLID 12/04/2017 00:00:00 19/04/2017 10:41:39 170419-19 15356799 TM048	21/04/17	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS303 ES 0.15 - 0.30 SOLID 12/04/2017 00:00:00 19/04/2017 10:39:46 170419-19 15356988 TM048	21/04/17	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS303 ES 0.30 - 0.50 SOLID 12/04/2017 00:00:00 25/04/2017 11:04:42 170419-19 15357001 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5WS306 ES 0.00 - 0.30 SOLID 12/04/2017 00:00:00 19/04/2017 14:30:50 170419-19 15357007 TM048	21/04/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5WS306 ES 0.90 - 1.10 SOLID 12/04/2017 00:00:00 19/04/2017 14:29:18 170419-19 15357013 TM048	21/04/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5WS307c ES 0.00 - 0.20 SOLID 13/04/2017 00:00:00 19/04/2017 13:34:16 170419-19 15356960 TM048	21/04/17	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5WS307c ES 0.80 - 0.90 SOLID 13/04/2017 00:00:00 19/04/2017 13:33:07 170419-19 15356966 TM048	21/04/17	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Asbestos Quantification - Full

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5BH302 ES 0.10 - 0.30 SOLID 12/04/2017 00:00:00 26/04/2017 14:45:20 170419-19 15356809 TM304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W5TP303 ES 1.50 SOLID 12/04/2017 00:00:00 27/04/2017 10:54:53 170419-19 15356870 TM304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356815
Sampled Date	12-Apr-2017
Customer Sample Ref.	W5BH302 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.00051	<0.00051	<0.0051	<0.0051	-	-	-
Naphthalene (diss.filt)	0.000569	<0.0001	0.00569	<0.001	-	-	-
Acenaphthene (diss.filt)	0.000225	<0.000015	0.00225	<0.00015	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene (diss.filt)	0.000176	<0.000017	0.00176	<0.00017	-	-	-
Anthracene (diss.filt)	0.0000897	<0.000015	0.000897	<0.00015	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.000555	<0.000022	0.00555	<0.00022	-	-	-
Fluorene (diss.filt)	0.000124	<0.000014	0.00124	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	0.00679	<0.0012	0.0679	<0.012	-	-	-
Pyrene (diss.filt)	0.00012	<0.000015	0.0012	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.00372	<0.00085	0.0372	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	0.000202	<0.0001	0.00202	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	0.000511	<0.00044	0.00511	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	0.00186	<0.000344	0.0186	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00293	<0.0013	0.0293	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	20-Apr-2017
pH (pH Units)	8.19
Conductivity (µS/cm)	197.00
Temperature (ºC)	18.40
Volume Leachant (Litres)	0.884

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356815
Sampled Date	12-Apr-2017
Customer Sample Ref.	W5BH302 ESZ
Depth (m)	0.90 - 1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	20-Apr-2017
pH (pH Units)	8.19
Conductivity (µS/cm)	197.00
Temperature (°C)	18.40
Volume Leachant (Litres)	0.884

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	16.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85.6
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356838
Sampled Date	12-Apr-2017
Customer Sample Ref.	W5BH302 ESZ
Depth (m)	5.80 - 6.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.00051	<0.00051	<0.0051	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene (diss.filt)	0.0000223	<0.000017	0.000223	<0.00017	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	0.000037	<0.000013	0.00037	<0.00013	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Pyrene (diss.filt)	0.0000211	<0.000015	0.000211	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	0.0000422	<0.000017	0.000422	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	0.0000577	<0.000023	0.000577	<0.00023	-	-	-
Benzo(k)fluoranthene (diss.filt)	0.000047	<0.000027	0.00047	<0.00027	-	-	-
Copper	<0.00085	<0.00085	<0.0085	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	0.0000191	<0.000009	0.000191	<0.00009	-	-	-
Lead	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	0.0000423	<0.000016	0.000423	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	0.000057	<0.000016	0.00057	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000327	<0.000014	0.000327	<0.00014	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	<0.0013	<0.0013	<0.013	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Apr-2017
pH (pH Units)	8.78
Conductivity (µS/cm)	173.00
Temperature (°C)	18.50
Volume Leachant (Litres)	0.885

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	16.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85.6
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356838
Sampled Date	12-Apr-2017
Customer Sample Ref.	W5BH302 ESZ
Depth (m)	5.80 - 6.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	19-Apr-2017
pH (pH Units)	8.78
Conductivity (µS/cm)	173.00
Temperature (°C)	18.50
Volume Leachant (Litres)	0.885

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356933
Sampled Date	13-Apr-2017
Customer Sample Ref.	W5BH303 ESZ
Depth (m)	3.70

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.00051	<0.00051	<0.0051	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Pyrene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	<0.00085	<0.00085	<0.0085	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	<0.0013	<0.0013	<0.013	<0.013	-	-	-
SVOC MS (W) - Aqueous							
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,5-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4,6-Trichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dichlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dimethylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2,4-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	20-Apr-2017
pH (pH Units)	8.33
Conductivity (µS/cm)	179.00
Temperature (°C)	18.40
Volume Leachant (Litres)	0.883

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356933
Sampled Date	13-Apr-2017
Customer Sample Ref.	W5BH303 ESZ
Depth (m)	3.70

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
SVOC MS (W) - Aqueous							
2,6-Dinitrotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chloronaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylnaphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
3-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Bromophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloro-3-methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chloroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorophenylphenylether	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Methylphenol	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Nitroaniline	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Nitrophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Azobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethyl)ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-chloroethoxy)methane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bis(2-ethylhexyl) phthalate	<0.002	<0.002	<0.02	<0.02	-	-	-
Butylbenzyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbazole	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibenzofuran	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-butyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Diethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Dimethyl phthalate	<0.001	<0.001	<0.01	<0.01	-	-	-
Di-n-Octyl phthalate	<0.005	<0.005	<0.05	<0.05	-	-	-
Hexachlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Pentachlorophenol	<0.001	<0.001	<0.01	<0.01	-	-	-
Phenol	<0.001	<0.001	<0.01	<0.01	-	-	-
N-nitrosodi-n-propylamine	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Nitrobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Isophorone	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorocyclopentadiene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	20-Apr-2017
pH (pH Units)	8.33
Conductivity (µS/cm)	179.00
Temperature (°C)	18.40
Volume Leachant (Litres)	0.883

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356933
Sampled Date	13-Apr-2017
Customer Sample Ref.	W5BH303 ESZ
Depth (m)	3.70

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Dibromofluoromethane	-	<0	-	<0	-	-	-
Toluene-d8	-	<0	-	<0	-	-	-
4-Bromofluorobenzene	-	<0	-	<0	-	-	-
Dichlorodifluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Vinyl Chloride	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichlorofluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbon Disulphide	<0.001	<0.001	<0.01	<0.01	-	-	-
Dichloromethane	<0.003	<0.003	<0.03	<0.03	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	20-Apr-2017
pH (pH Units)	8.33
Conductivity (µS/cm)	179.00
Temperature (°C)	18.40
Volume Leachant (Litres)	0.883

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356933
Sampled Date	13-Apr-2017
Customer Sample Ref.	W5BH303 ESZ
Depth (m)	3.70

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
Cis-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroform	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbontetrachloride	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromodichloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Tetrachloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromoethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Styrene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromoform	<0.001	<0.001	<0.01	<0.01	-	-	-
Isopropylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Propylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	20-Apr-2017
pH (pH Units)	8.33
Conductivity (µS/cm)	179.00
Temperature (°C)	18.40
Volume Leachant (Litres)	0.883

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	170419-19
Lab Sample Number(s)	15356933
Sampled Date	13-Apr-2017
Customer Sample Ref.	W5BH303 ESZ
Depth (m)	3.70

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
4-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Sec-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Isopropyltoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
n-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromo-3-Chloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Naphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	20-Apr-2017
pH (pH Units)	8.33
Conductivity (µS/cm)	179.00
Temperature (°C)	18.40
Volume Leachant (Litres)	0.883

Mcerts Certification does not apply to leachates

09/05/2017 09:33:06

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
SUB		Subcontracted Test		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	15356809	15356815	15356838	15356933	15356944	15356884	15356890	15356905	15356865	15356870
Customer Sample Ref.	W5BH302	W5BH302	W5BH302	W5BH303	W5BH303	W5TP302	W5TP302	W5TP302	W5TP303	W5TP303
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.10 - 0.30	0.90 - 1.00	5.80 - 6.00	3.70	6.50	0.30	1.00	2.80	0.70	1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Asbestos ID in Solid Samples	21-Apr-2017	21-Apr-2017		21-Apr-2017		21-Apr-2017	21-Apr-2017		21-Apr-2017	21-Apr-2017
Asbestos Quantification - Full	02-May-2017									02-May-2017
CEN 10:1 Leachate (1 Stage)		20-Apr-2017	19-Apr-2017	20-Apr-2017						
CEN Readings		22-Apr-2017	21-Apr-2017	22-Apr-2017						
Dissolved Metals by ICP-MS		24-Apr-2017	24-Apr-2017	24-Apr-2017						
EPH CWG (Aliphatic) Aqueous GC (W)		24-Apr-2017	24-Apr-2017	24-Apr-2017						
EPH CWG (Aliphatic) GC (S)	20-Apr-2017	20-Apr-2017	25-Apr-2017	20-Apr-2017	21-Apr-2017	20-Apr-2017	20-Apr-2017	25-Apr-2017	20-Apr-2017	20-Apr-2017
EPH CWG (Aromatic) Aqueous GC (W)		24-Apr-2017	24-Apr-2017	24-Apr-2017						
EPH CWG (Aromatic) GC (S)	20-Apr-2017	20-Apr-2017	25-Apr-2017	20-Apr-2017	21-Apr-2017	20-Apr-2017	20-Apr-2017	25-Apr-2017	20-Apr-2017	20-Apr-2017
GRO by GC-FID (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
GRO by GC-FID (W)		24-Apr-2017	25-Apr-2017	24-Apr-2017						
Hexavalent Chromium (s)	24-Apr-2017	24-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	24-Apr-2017	25-Apr-2017	25-Apr-2017	24-Apr-2017	25-Apr-2017
Mercury Dissolved		25-Apr-2017	25-Apr-2017	25-Apr-2017						
Metals in solid samples by OES	20-Apr-2017	20-Apr-2017	21-Apr-2017	20-Apr-2017	21-Apr-2017	20-Apr-2017	20-Apr-2017	24-Apr-2017	21-Apr-2017	20-Apr-2017
PAH by GCMS	20-Apr-2017	20-Apr-2017	21-Apr-2017	20-Apr-2017	21-Apr-2017	20-Apr-2017	20-Apr-2017	21-Apr-2017	20-Apr-2017	20-Apr-2017
PAH in waters by GC-MS (diss.filt)		24-Apr-2017	24-Apr-2017	24-Apr-2017						
pH	24-Apr-2017	24-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	24-Apr-2017	24-Apr-2017	21-Apr-2017	24-Apr-2017	24-Apr-2017
Sample description	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	20-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017
Semi Volatile Organic Compounds				25-Apr-2017	25-Apr-2017					
SVOC MS (W) - Aqueous				25-Apr-2017						
Total Organic Carbon	24-Apr-2017		24-Apr-2017	24-Apr-2017	24-Apr-2017			24-Apr-2017	24-Apr-2017	
TPH CWG (W)		24-Apr-2017	25-Apr-2017	24-Apr-2017						
TPH CWG GC (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
VOC MS (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
VOC MS (W)		24-Apr-2017	25-Apr-2017	24-Apr-2017						

Lab Sample No(s)	15356845	15356850	15356799	15356988	15357001	15357007	15357013	15356960	15356966	15356978
Customer Sample Ref.	W5TP305	W5TP305	W3WS301	W3WS303	W3WS303	W5WS306	W5WS306	W5WS307c	W5WS307c	W5WS307c
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.30	0.80	1.30 - 1.45	0.15 - 0.30	0.30 - 0.50	0.00 - 0.30	0.90 - 1.10	0.00 - 0.20	0.80 - 0.90	2.00 - 2.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Asbestos ID in Solid Samples	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	27-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	
EPH CWG (Aliphatic) GC (S)	20-Apr-2017	20-Apr-2017	20-Apr-2017	24-Apr-2017	26-Apr-2017	24-Apr-2017	24-Apr-2017	24-Apr-2017	20-Apr-2017	24-Apr-2017
EPH CWG (Aromatic) GC (S)	20-Apr-2017	20-Apr-2017	20-Apr-2017	24-Apr-2017	26-Apr-2017	24-Apr-2017	24-Apr-2017	24-Apr-2017	20-Apr-2017	24-Apr-2017
GRO by GC-FID (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
Hexavalent Chromium (s)	24-Apr-2017	24-Apr-2017	25-Apr-2017	24-Apr-2017	26-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	24-Apr-2017	24-Apr-2017
Metals in solid samples by OES	20-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017	26-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017
Organotins on soils*					09-May-2017					
PAH by GCMS	20-Apr-2017	20-Apr-2017	20-Apr-2017	21-Apr-2017	26-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	20-Apr-2017	21-Apr-2017
pH	24-Apr-2017	24-Apr-2017	24-Apr-2017	21-Apr-2017	26-Apr-2017	24-Apr-2017	21-Apr-2017	24-Apr-2017	24-Apr-2017	24-Apr-2017
Sample description	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	25-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017	19-Apr-2017
Semi Volatile Organic Compounds				25-Apr-2017			25-Apr-2017			
Total Organic Carbon					27-Apr-2017		24-Apr-2017	24-Apr-2017		
TPH CWG GC (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	26-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
VOC MS (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017

CERTIFICATE OF ANALYSIS

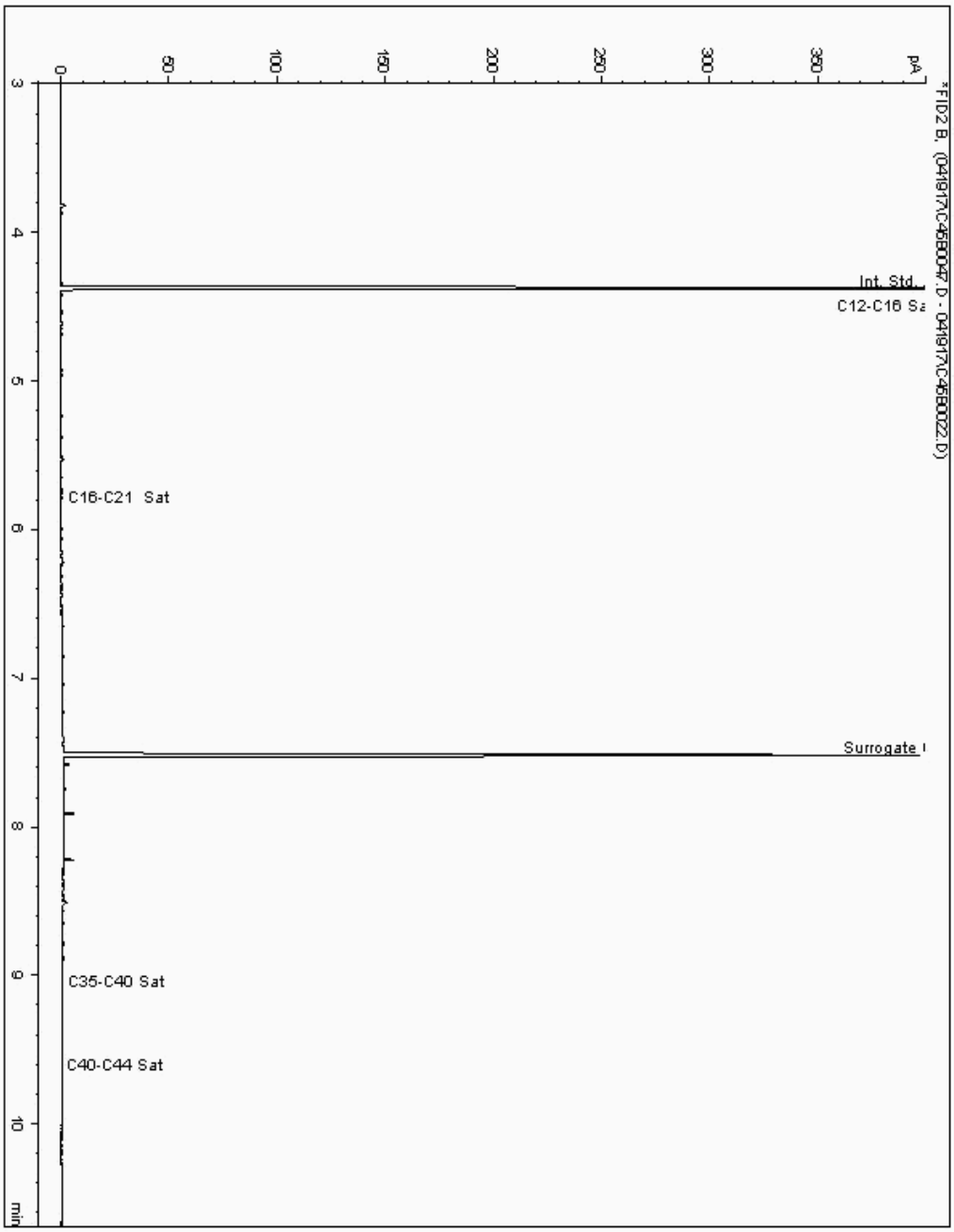
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15357736 **Depth :** 0.30
Sample ID : W5TP302

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384613-
Date Acquired : 20/04/2017 05:14:58 PM
Units : ppb
Dilution: W5TP302[0.30] ->



CERTIFICATE OF ANALYSIS

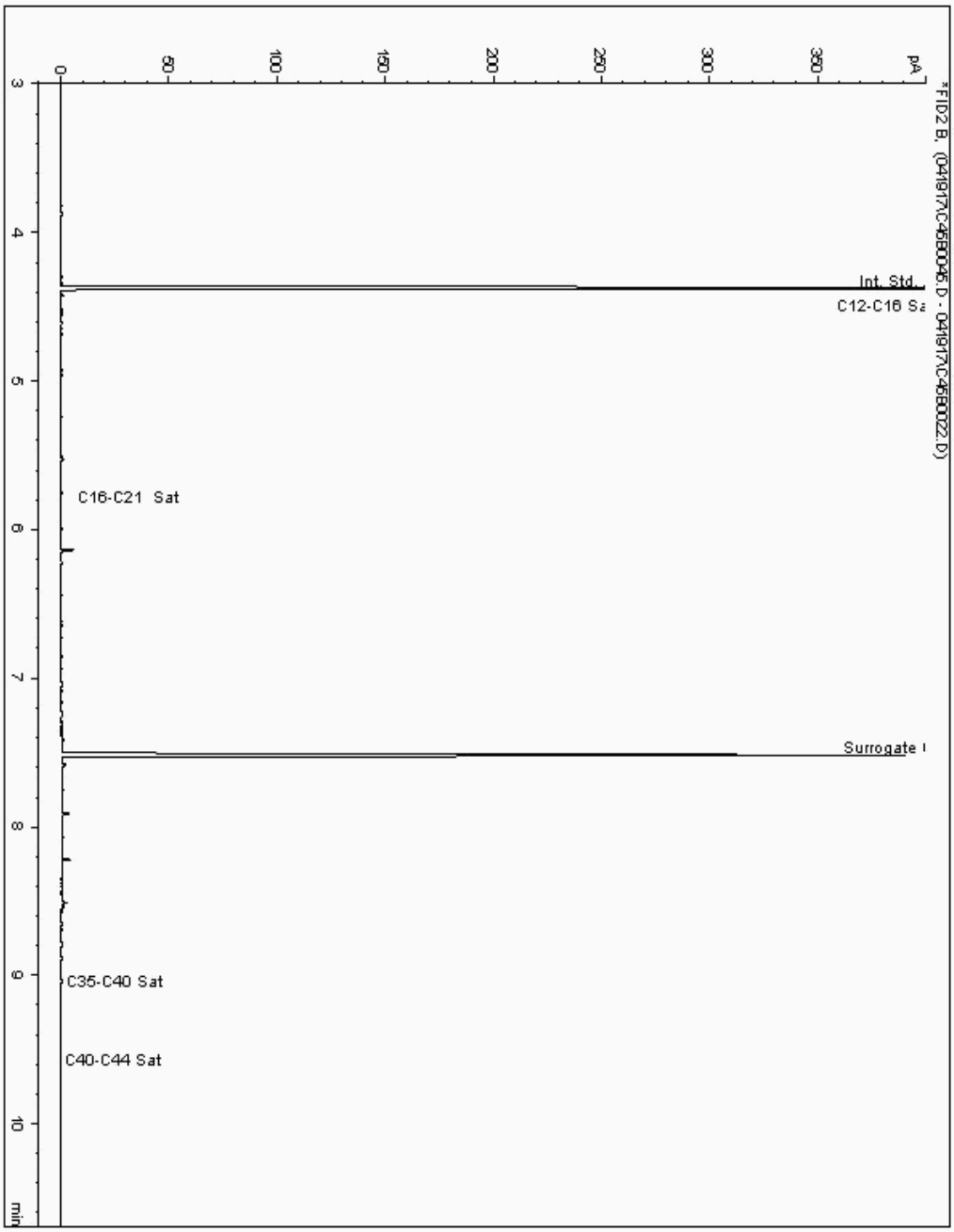
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15357924 **Sample ID :** W5TP302 **Depth :** 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384631-
Date Acquired : 20/04/2017 04:42:54 PM
Units : ppb
Dilution: W5TP302[1.00] ->



CERTIFICATE OF ANALYSIS

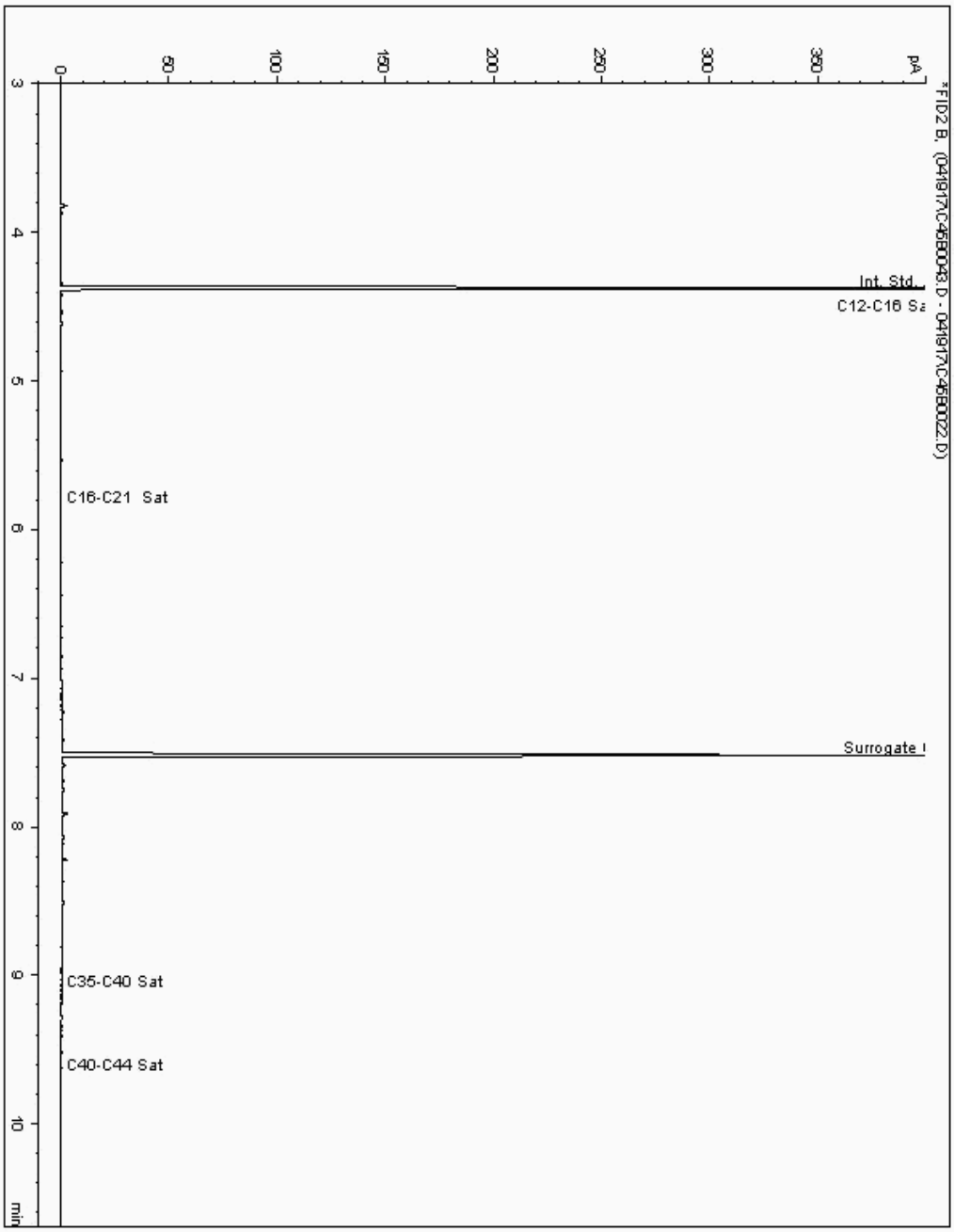
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15358037 **Depth :** 0.70
Sample ID : W5TP303

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384560-
Date Acquired : 20/04/2017 04:10:29 PM
Units : ppb
Dilution: W5TP303[0.70] ->



CERTIFICATE OF ANALYSIS

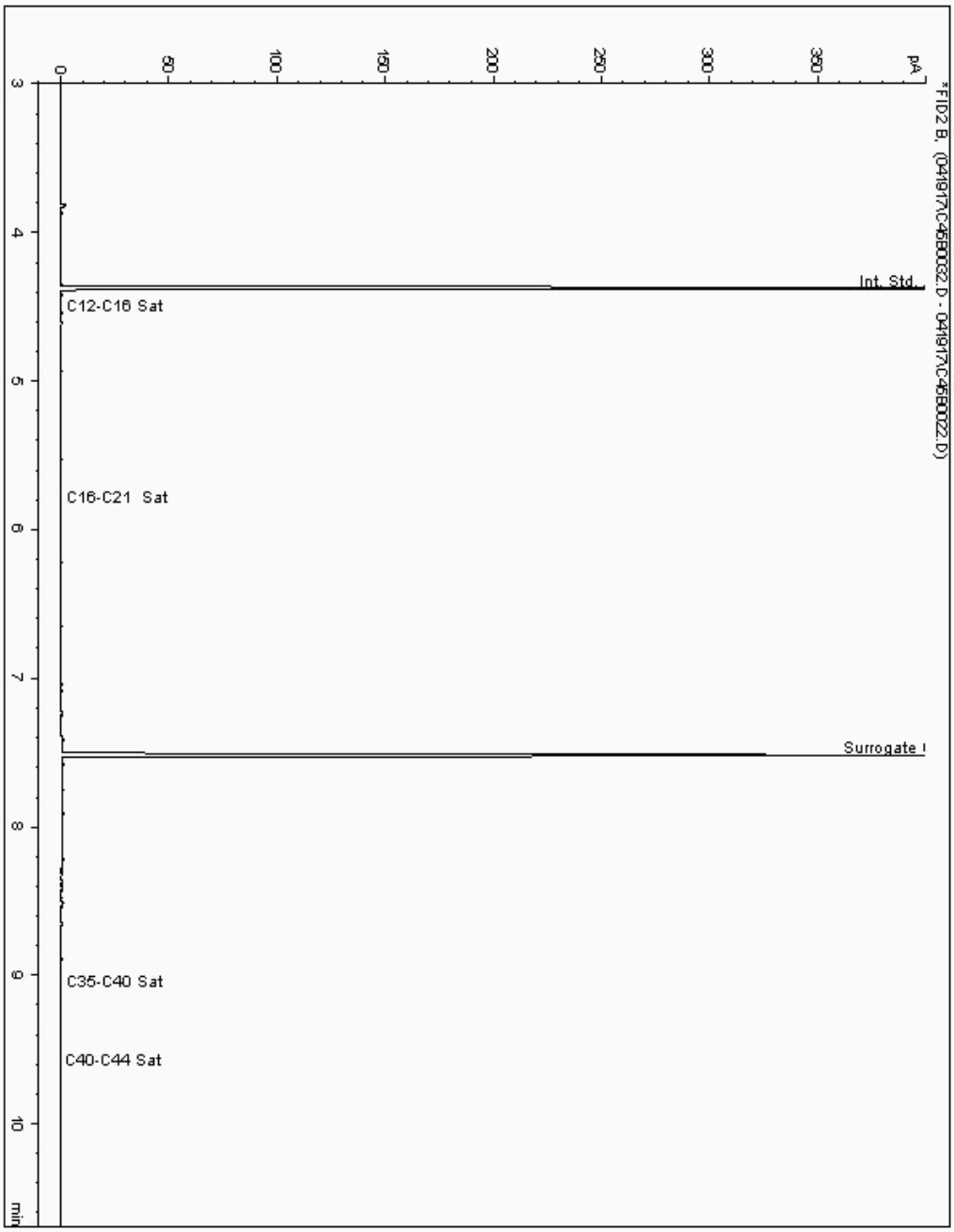
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15358280 **Sample ID :** W5TP303 **Depth :** 1.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384596-
Date Acquired : 20/04/2017 01:27:18 PM
Units : ppb
Dilution: W5TP303[1.50] ->



CERTIFICATE OF ANALYSIS

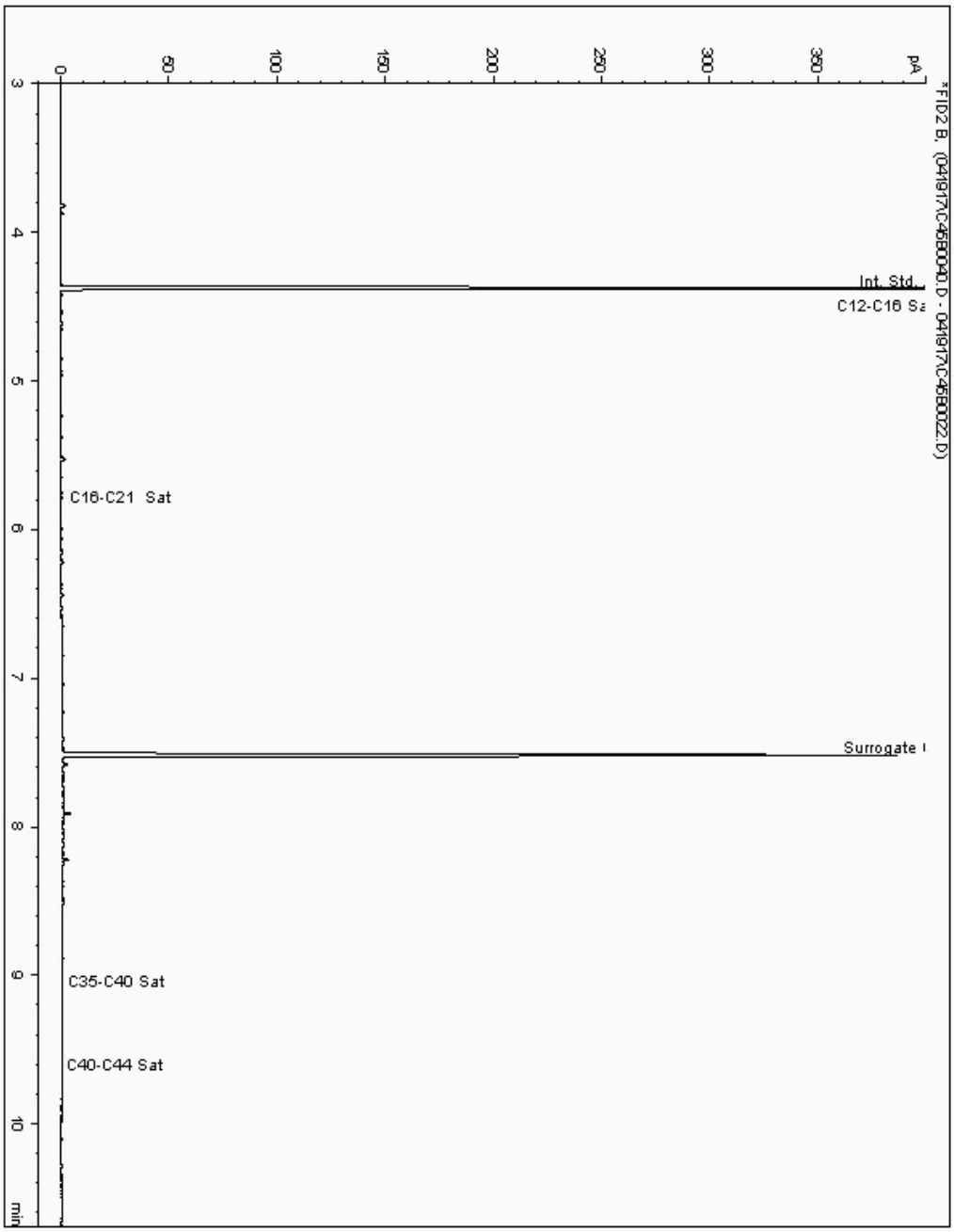
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15358441 **Depth :** 0.80
Sample ID : W5TP305

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384525-
Date Acquired : 20/04/2017 03:26:44 PM
Units : ppb
Dilution: W5TP305[0.80] ->



CERTIFICATE OF ANALYSIS

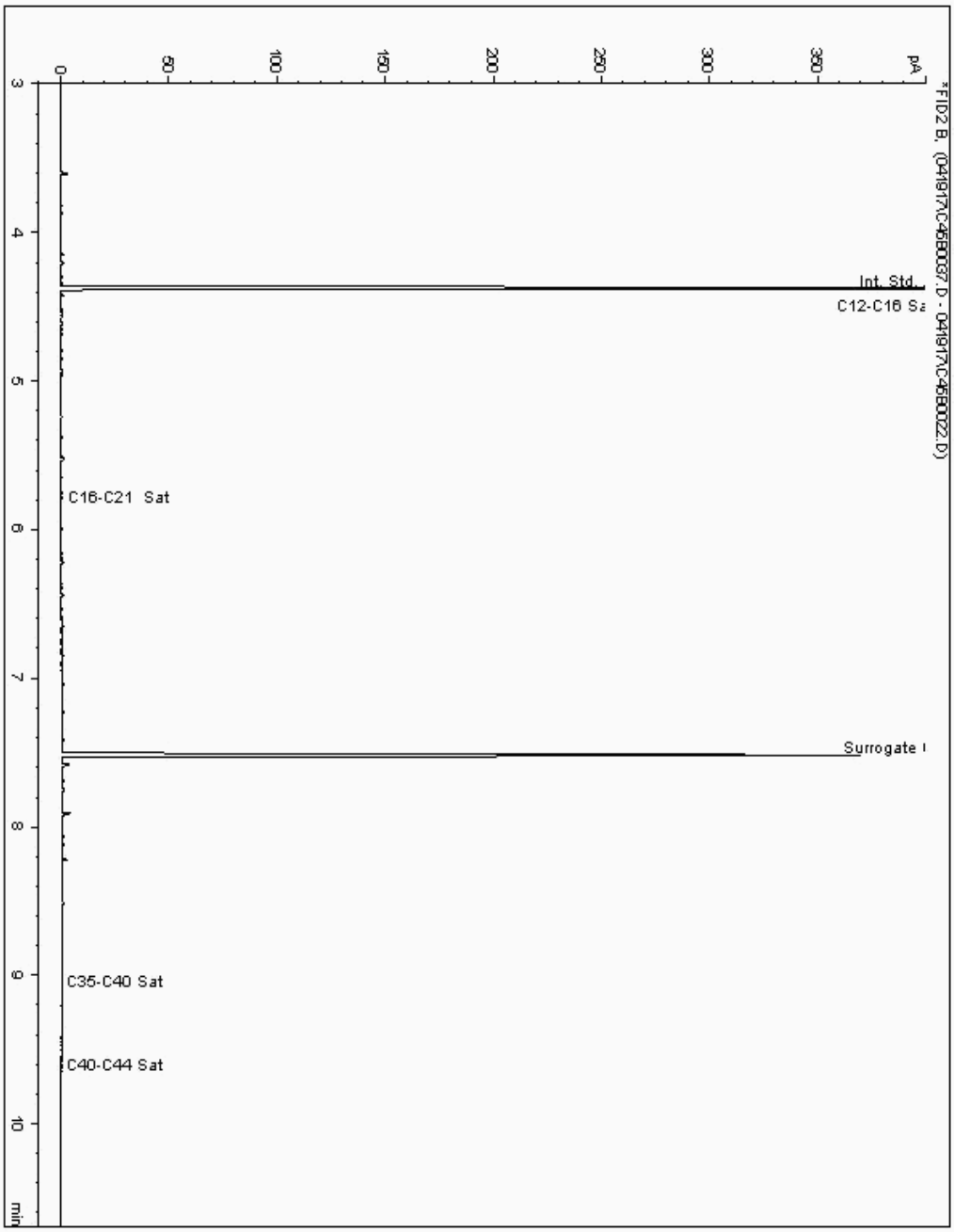
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15358487 **Depth :** 0.30
Sample ID : W5TP305

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384491-
Date Acquired : 20/04/2017 02:43:18 PM
Units : ppb
Dilution: W5TP305[0.30] ->



CERTIFICATE OF ANALYSIS

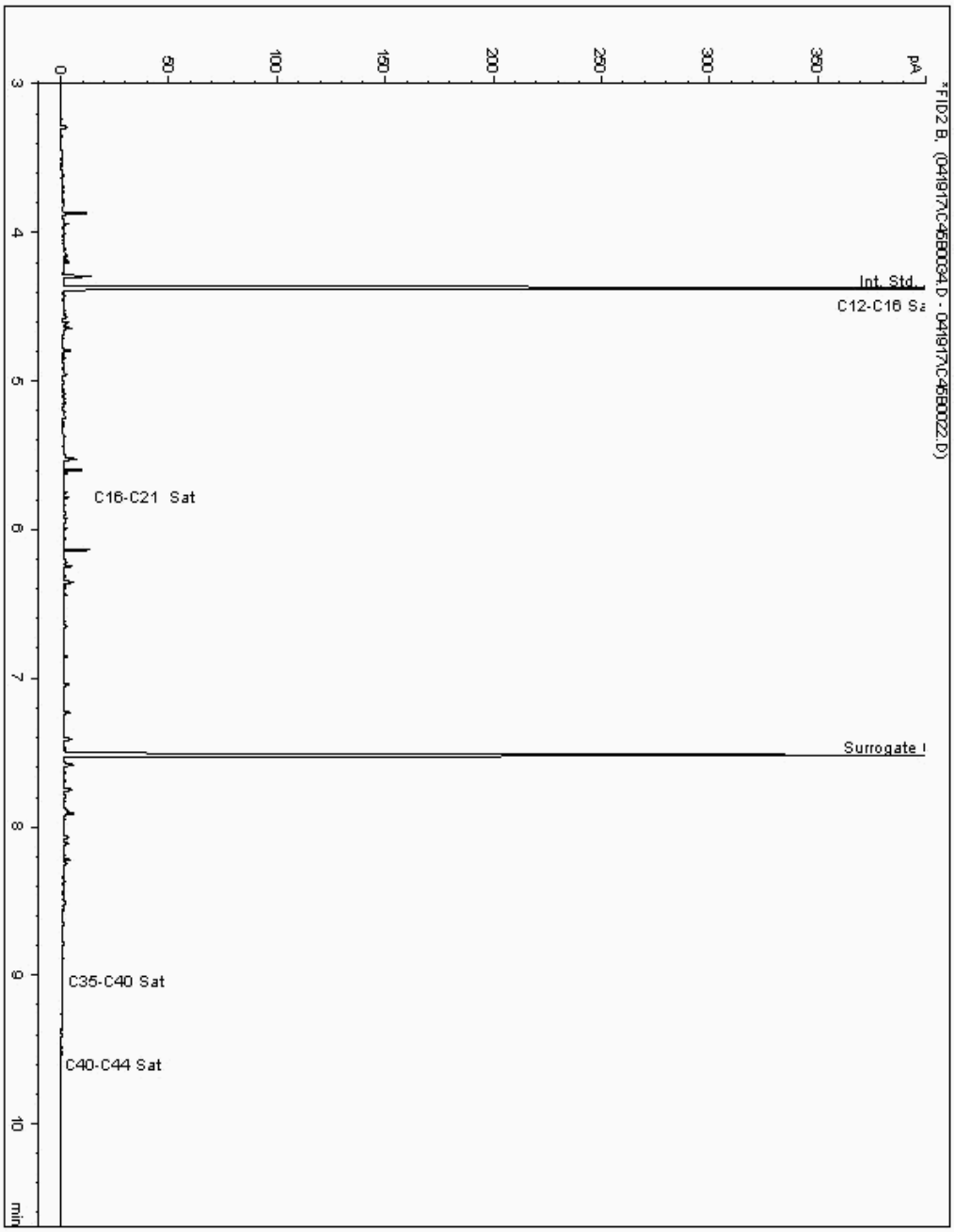
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15358678 **Sample ID :** W5BH302 **Depth :** 0.90 - 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384810-
Date Acquired : 20/04/2017 01:59:26 PM
Units : ppb
Dilution: W5BH302[0.90 - 1.00] ->



CERTIFICATE OF ANALYSIS

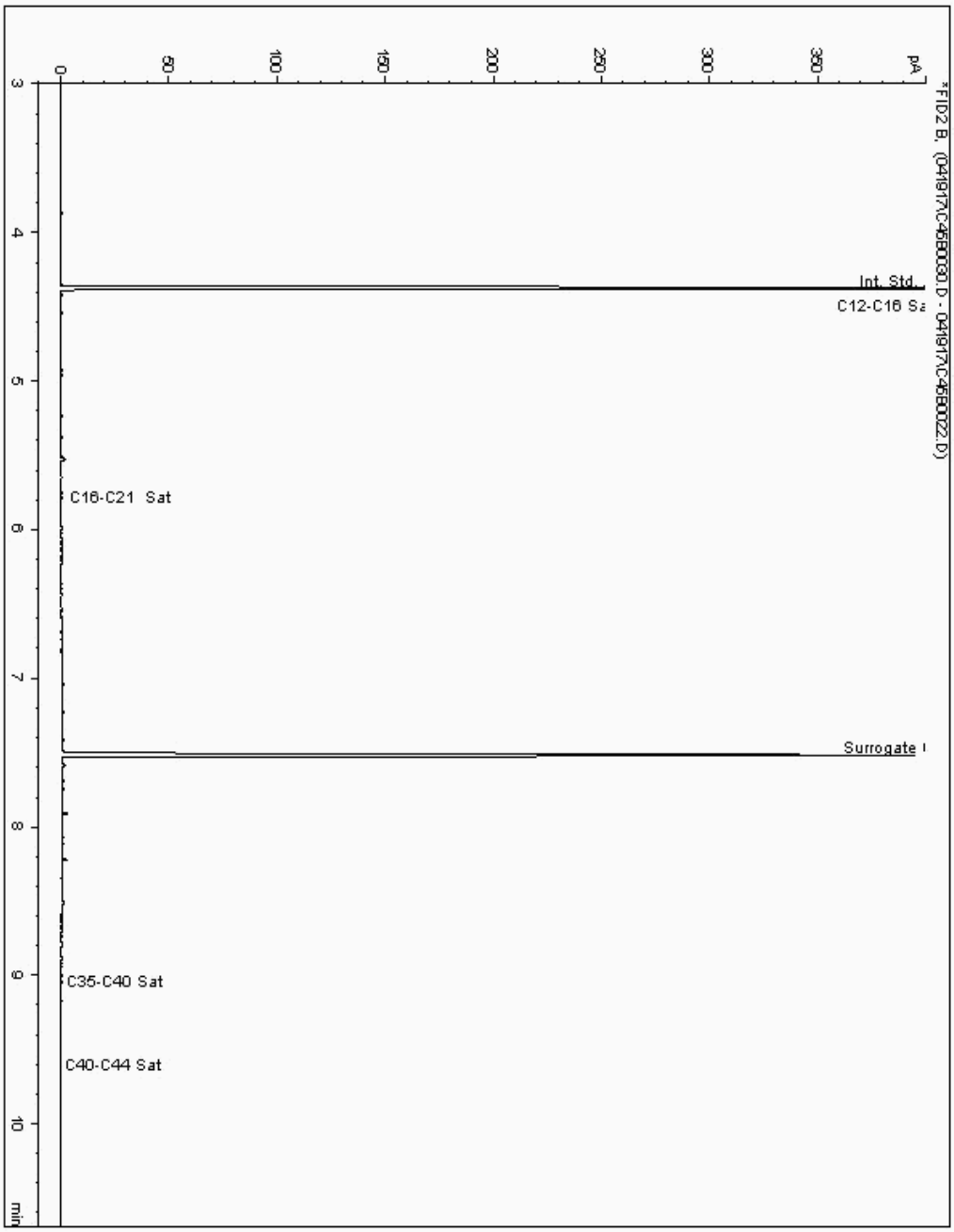
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15358741 **Sample ID :** W5BH302 **Depth :** 0.10 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384475-
Date Acquired : 20/04/2017 00:55:05 PM
Units : ppb
Dilution: W5BH302[0.10 - 0.30] ->



CERTIFICATE OF ANALYSIS

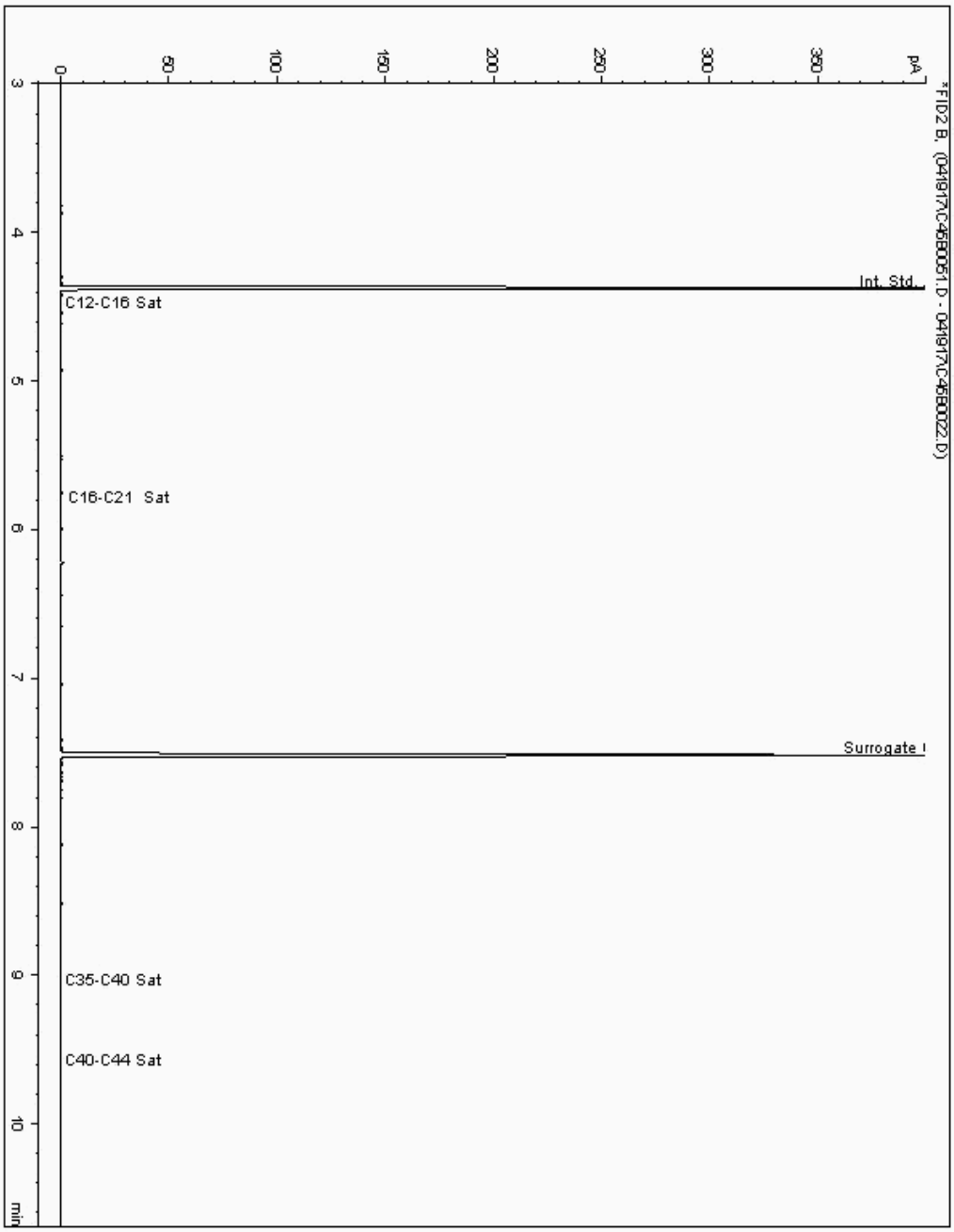
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15358934 **Sample ID :** W5BH302 **Depth :** 5.80 - 6.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384824-
Date Acquired : 20/04/2017 06:19:02 PM
Units : ppb
Dilution: W5BH302[5.80 - 6.00] ->



CERTIFICATE OF ANALYSIS

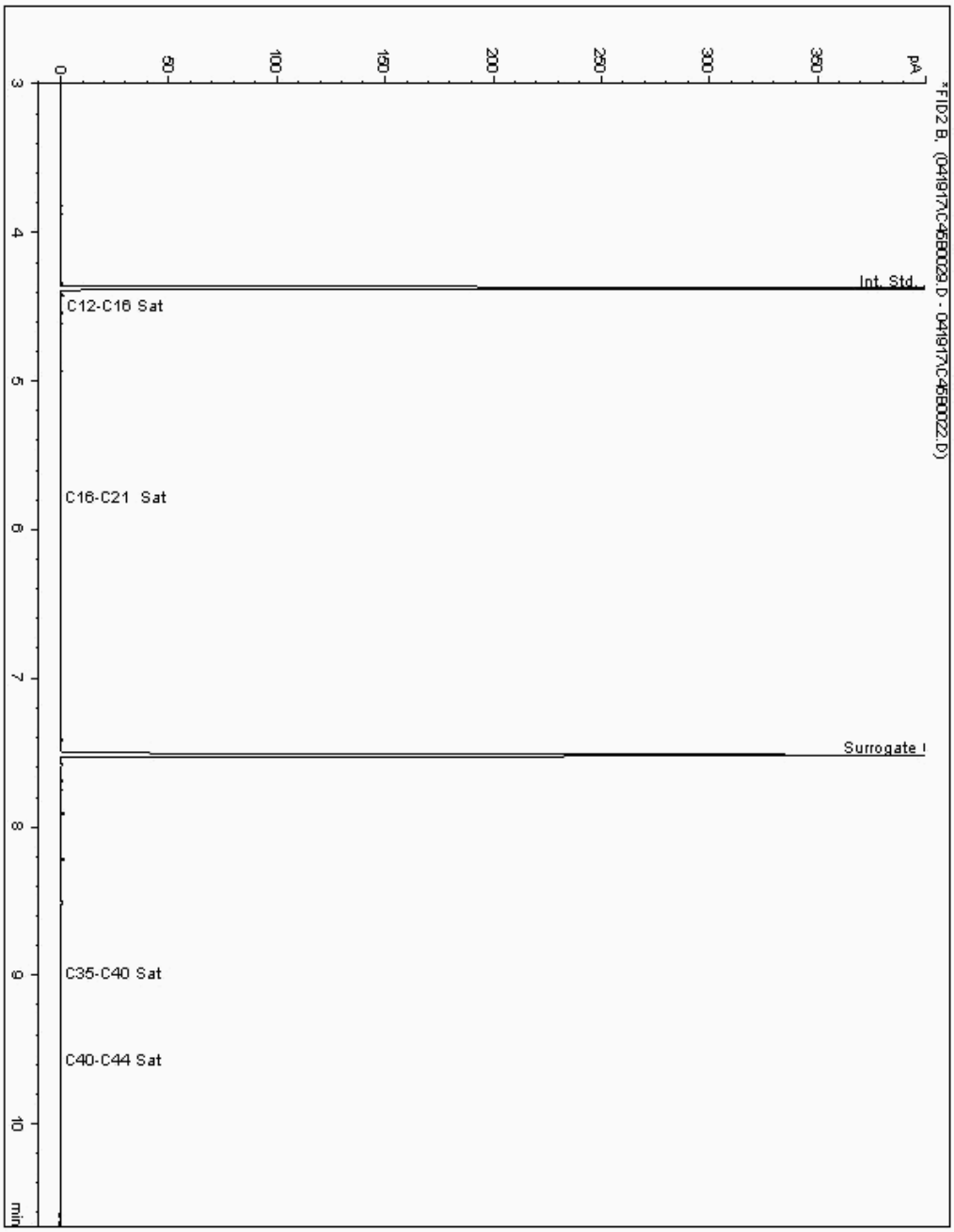
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15359007 **Depth :** 1.30 - 1.45
Sample ID : W3WS301

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384456-
Date Acquired : 20/04/2017 00:34:59 PM
Units : ppb
Dilution: W3WS301[1.30 - 1.45] ->



CERTIFICATE OF ANALYSIS

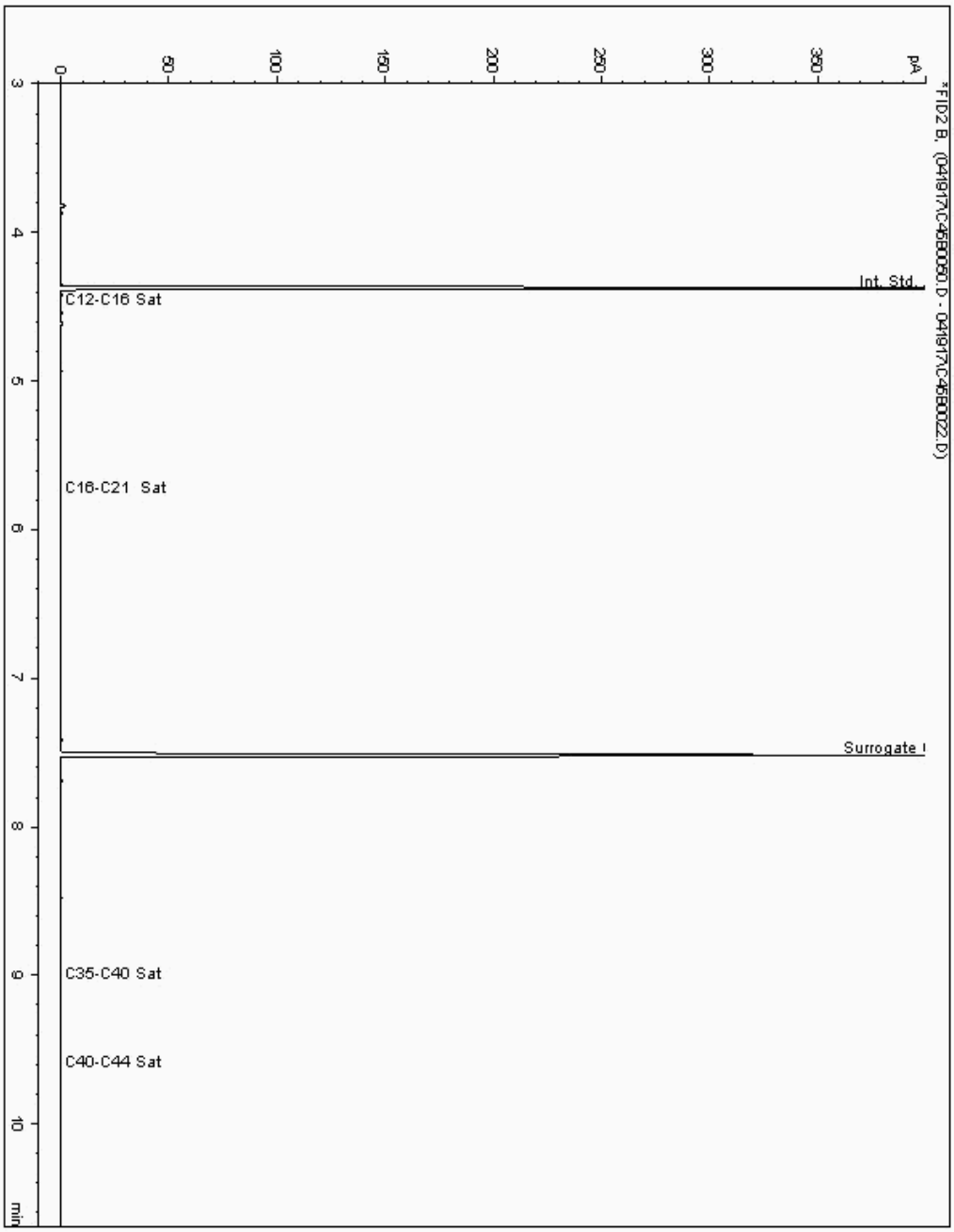
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15359027 **Depth :** 2.80
Sample ID : W5TP302

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384647-
Date Acquired : 20/04/2017 05:58:54 PM
Units : ppb
Dilution: W5TP302[2.80] ->



CERTIFICATE OF ANALYSIS

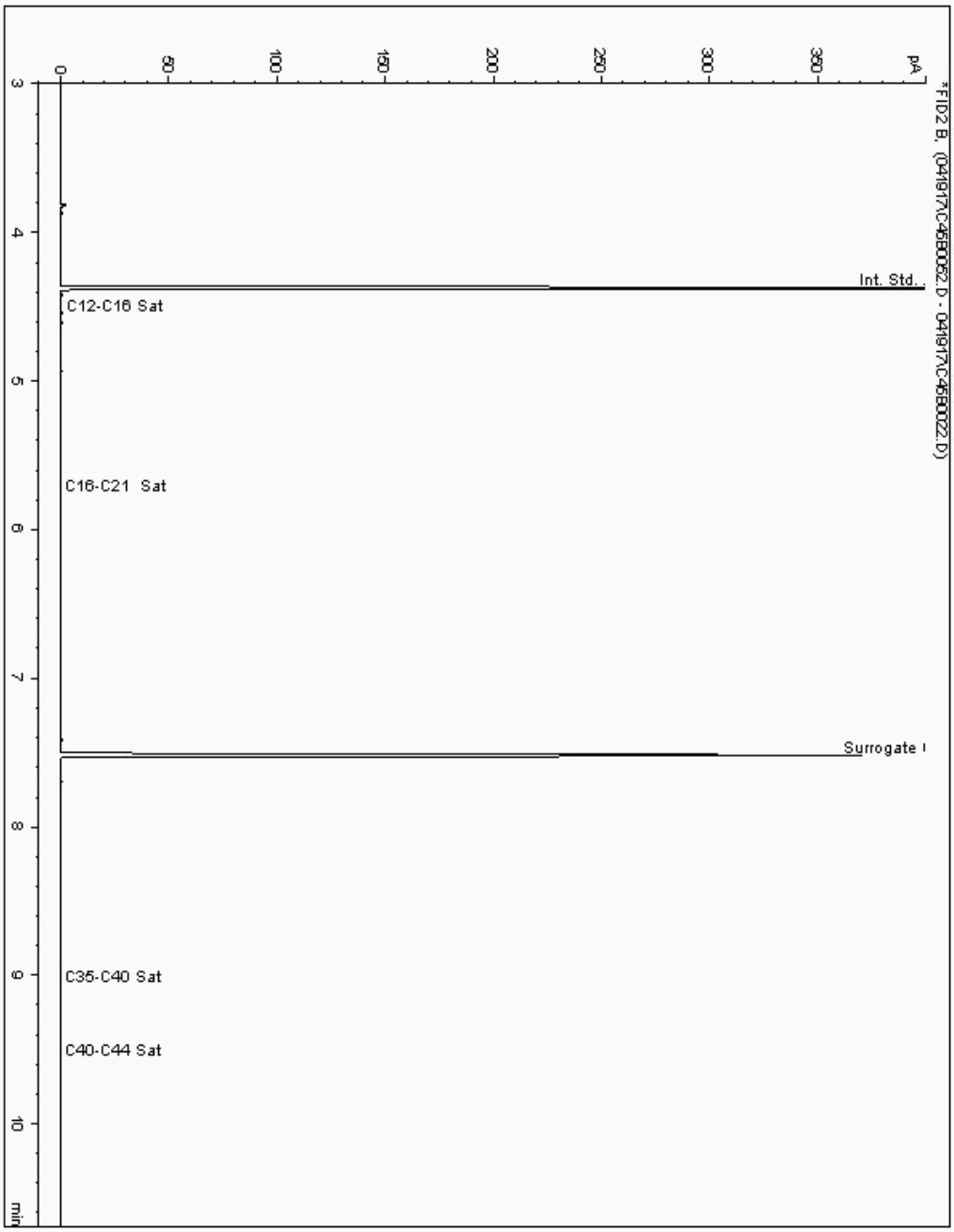
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15359062 **Sample ID :** W5BH303 **Depth :** 3.70

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384842-
Date Acquired : 20/04/2017 06:39:09 PM
Units : ppb
Dilution: W5BH303[3.70] ->



CERTIFICATE OF ANALYSIS

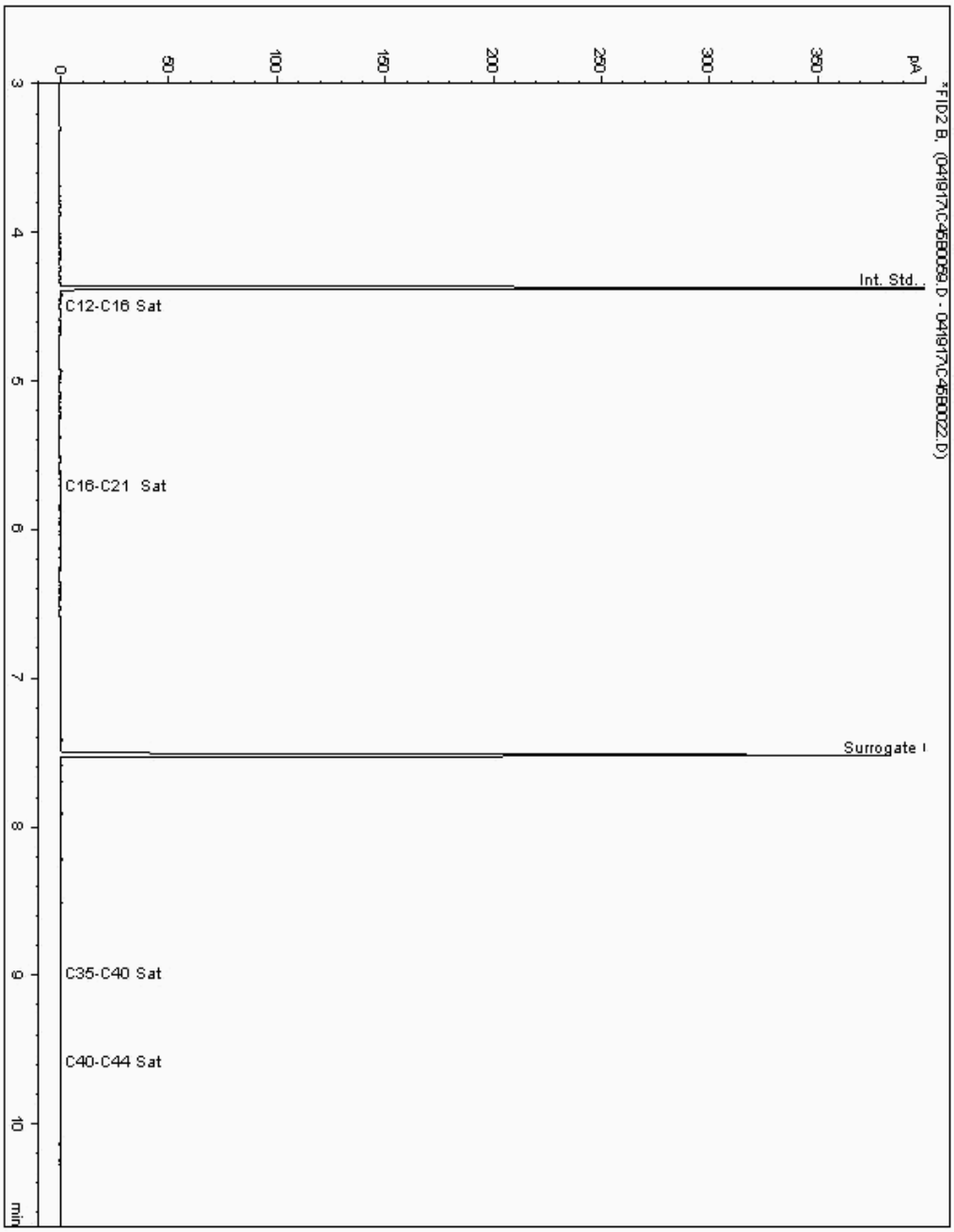
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15359384 **Depth :** 0.80 - 0.90
Sample ID : W5WS307c

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384725-
Date Acquired : 20/04/2017 08:27:42 PM
Units : ppb
Dilution: W5WS307C[0.80 - 0.90] ->



CERTIFICATE OF ANALYSIS

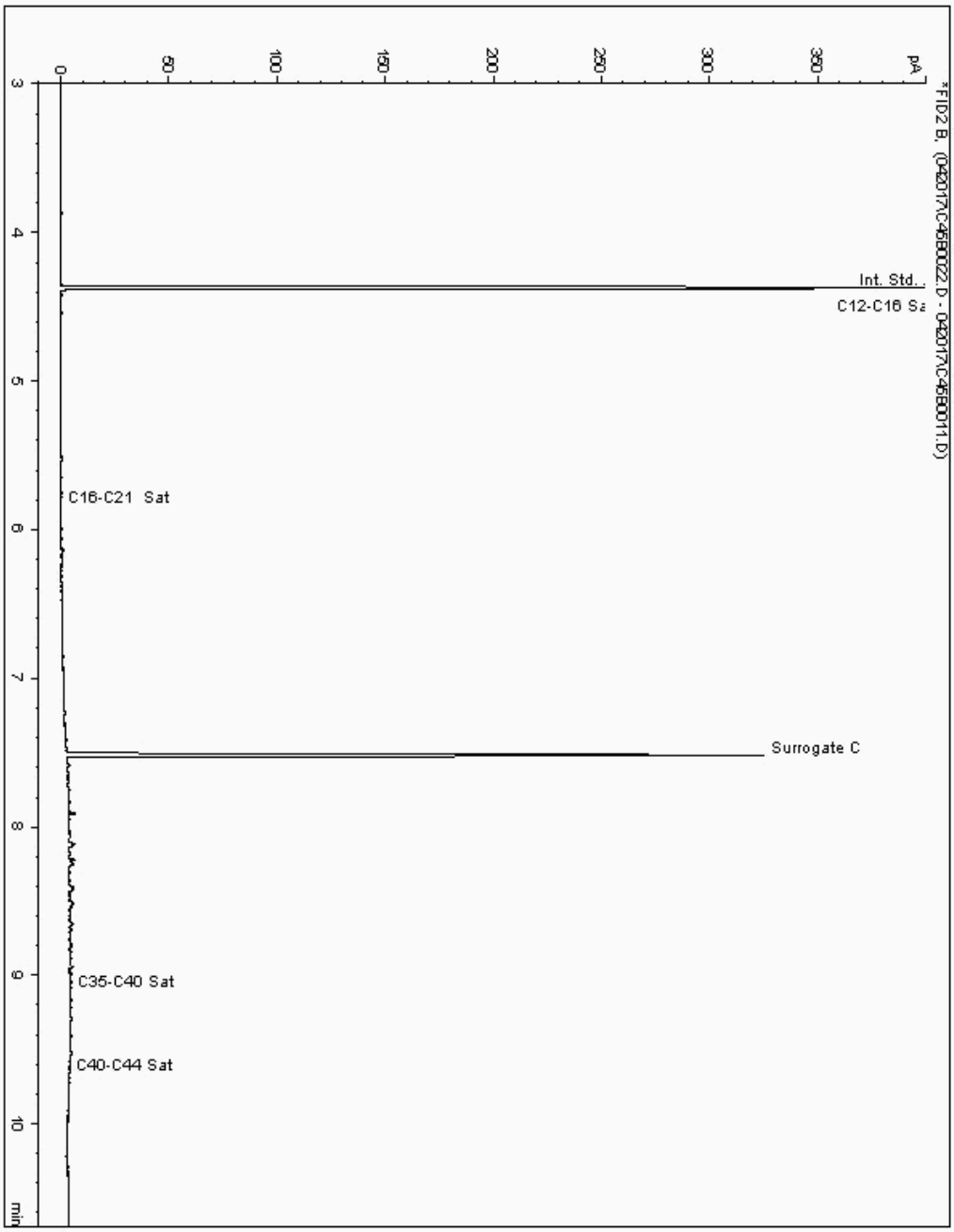
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15360797 **Depth :** 0.00 - 0.20
Sample ID : W5WS307c

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384679-
Date Acquired : 21/04/2017 08:29:00 PM
Units : ppb
Dilution: W5WS307C[0.00 - 0.20] ->



CERTIFICATE OF ANALYSIS

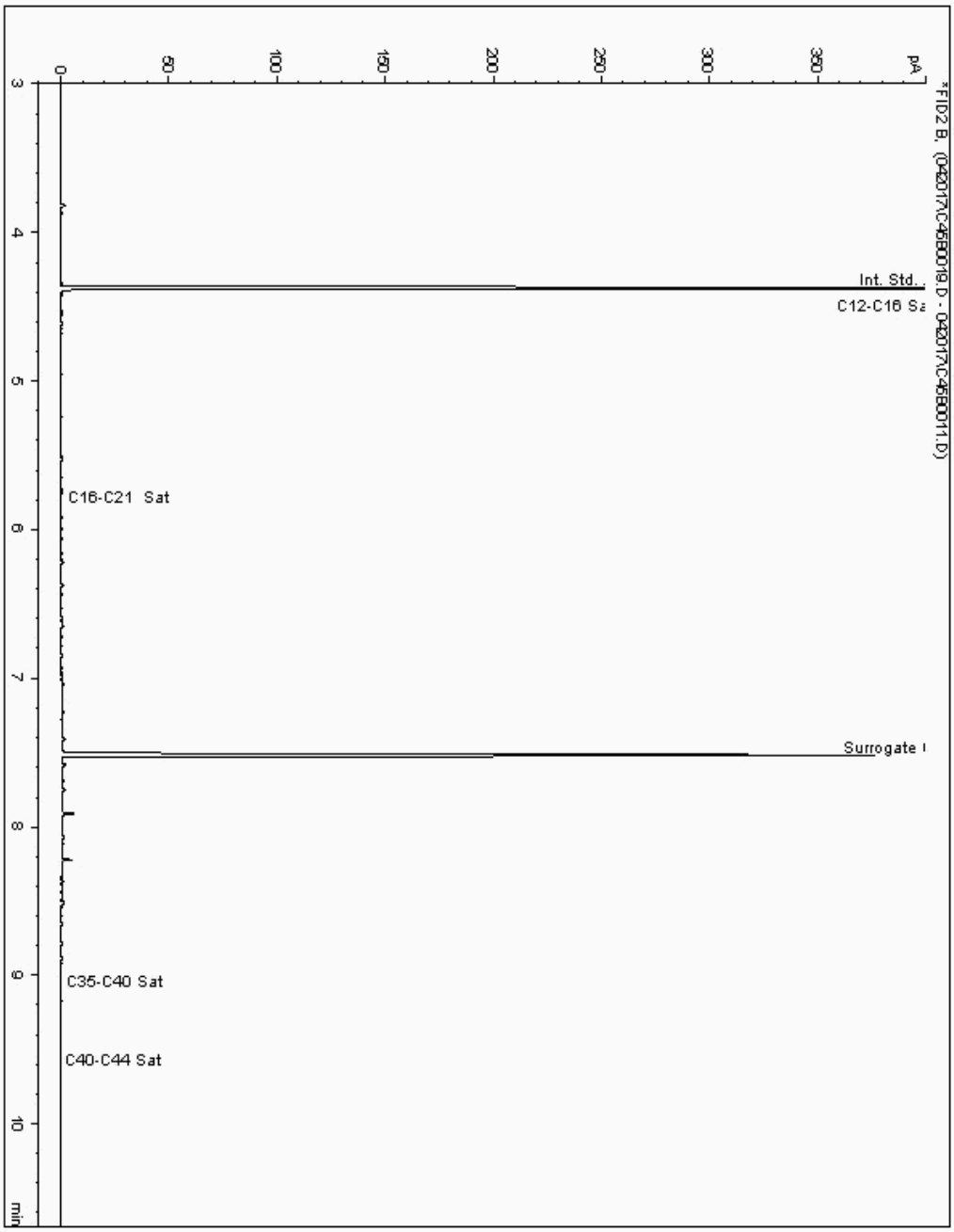
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15360966 **Sample ID :** W5WS307c **Depth :** 2.00 - 2.10

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384742-
Date Acquired : 21/04/2017 07:36:09 PM
Units : ppb
Dilution: W5WS307C[2.00 - 2.10] ->



CERTIFICATE OF ANALYSIS

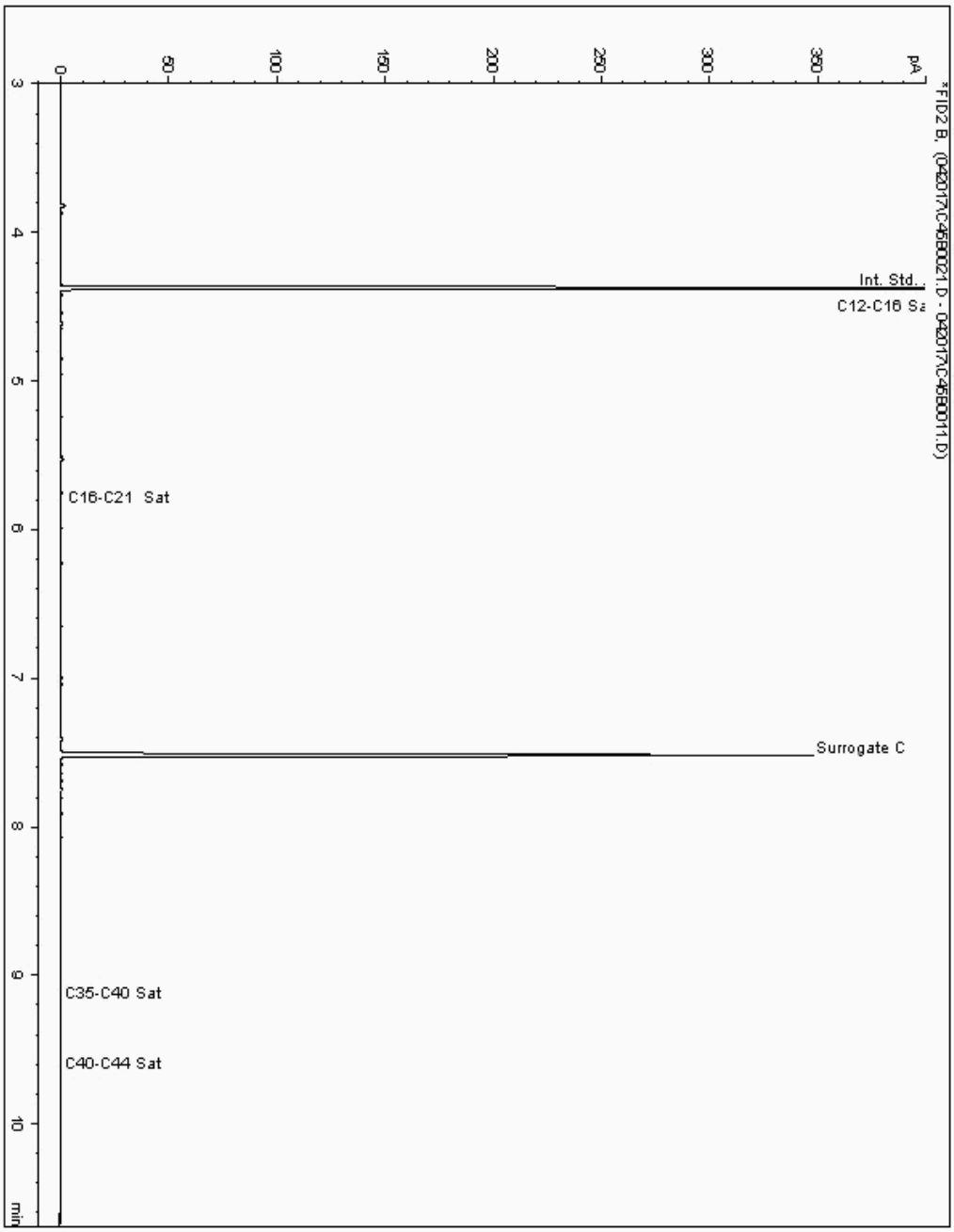
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15361593 **Sample ID :** W3WS303 **Depth :** 0.15 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384760-
Date Acquired : 21/04/2017 08:08:38 PM
Units : ppb
Dilution: W3WS303[0.15 - 0.30] ->



CERTIFICATE OF ANALYSIS

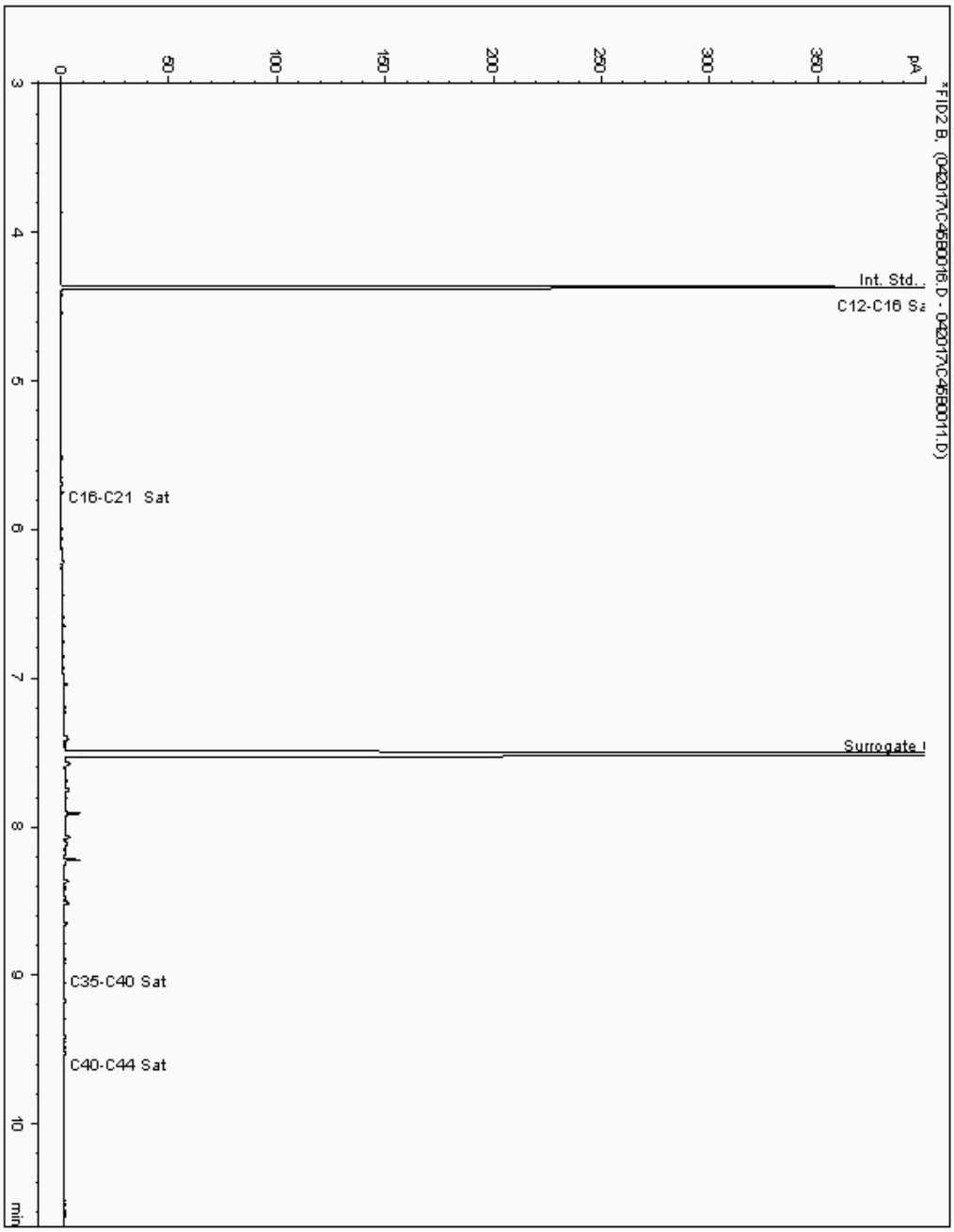
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15361712 **Sample ID :** W5WS306 **Depth :** 0.90 - 1.10

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384793-
Date Acquired : 21/04/2017 06:52:10 PM
Units : ppb
Dilution: W5WS306[0.90 - 1.10] ->



CERTIFICATE OF ANALYSIS

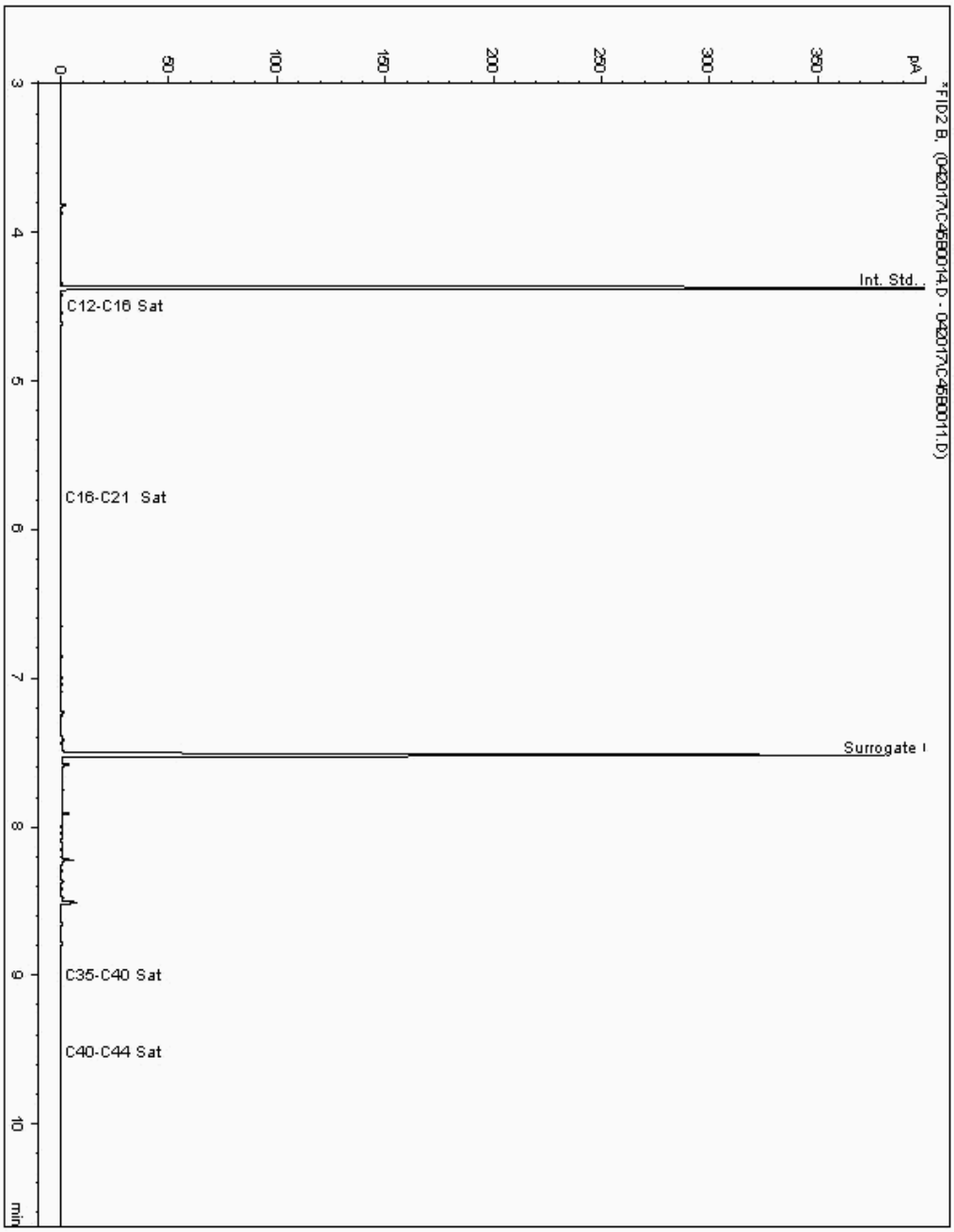
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15361839 **Depth :** 0.00 - 0.30
Sample ID : W5WS306

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384776-
Date Acquired : 20/04/2017 16:49:54 PM
Units : ppb
Dilution: W5WS306[0.00 - 0.30] ->



CERTIFICATE OF ANALYSIS

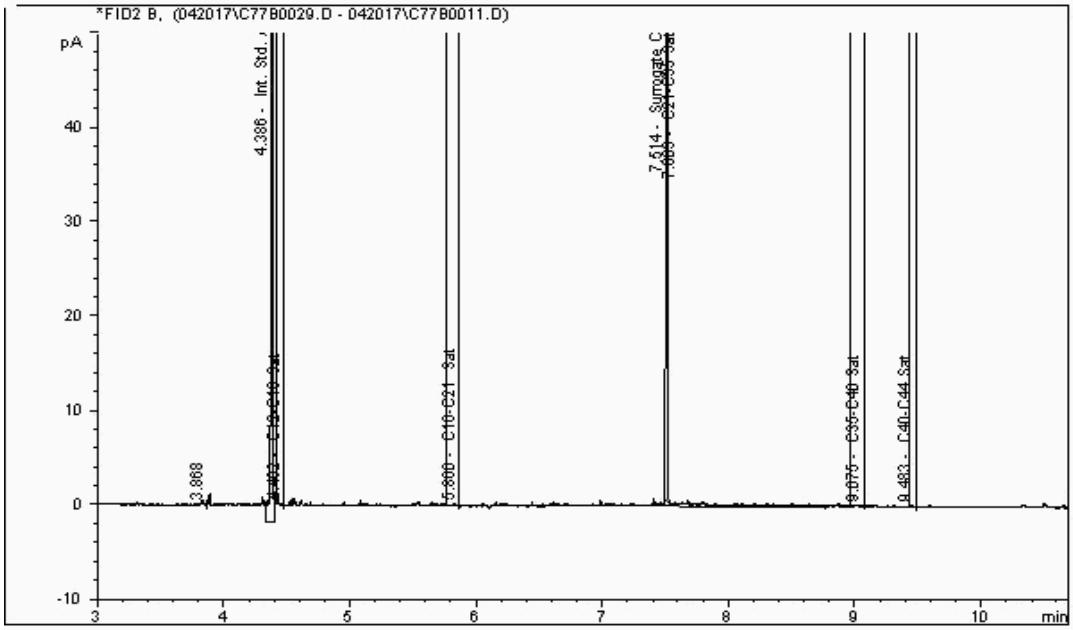
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15364075 **Depth :** 6.50
Sample ID : W5BH303

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14384664-
Date Acquired : 20/04/2017 20:38:10 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

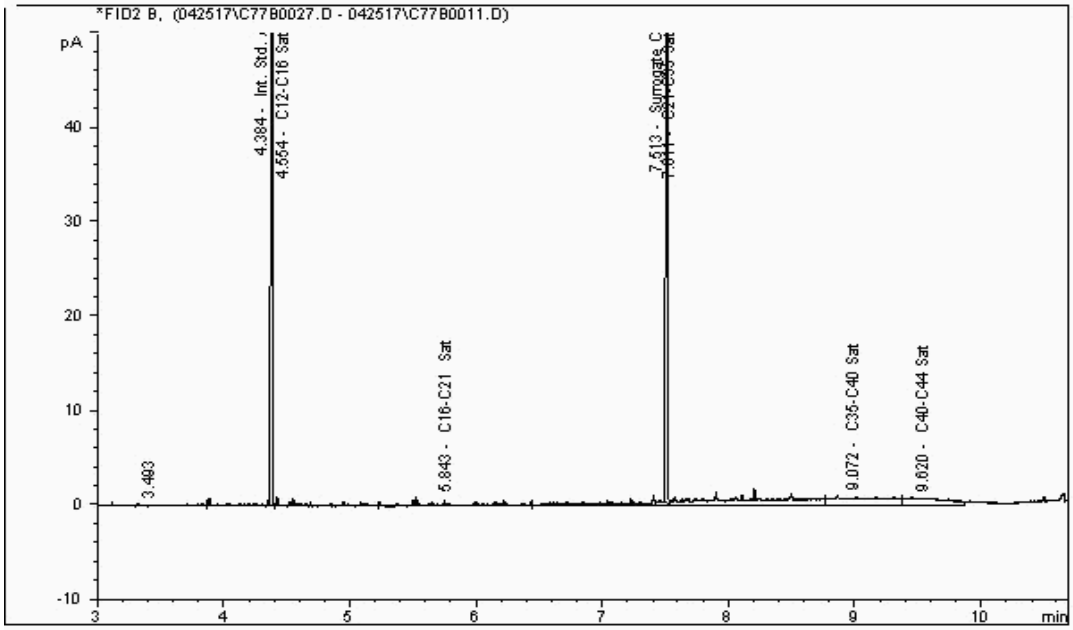
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15389642 **Sample ID :** W3WS303 **Depth :** 0.30 - 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412645-
Date Acquired : 25/04/2017 18:32:42 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

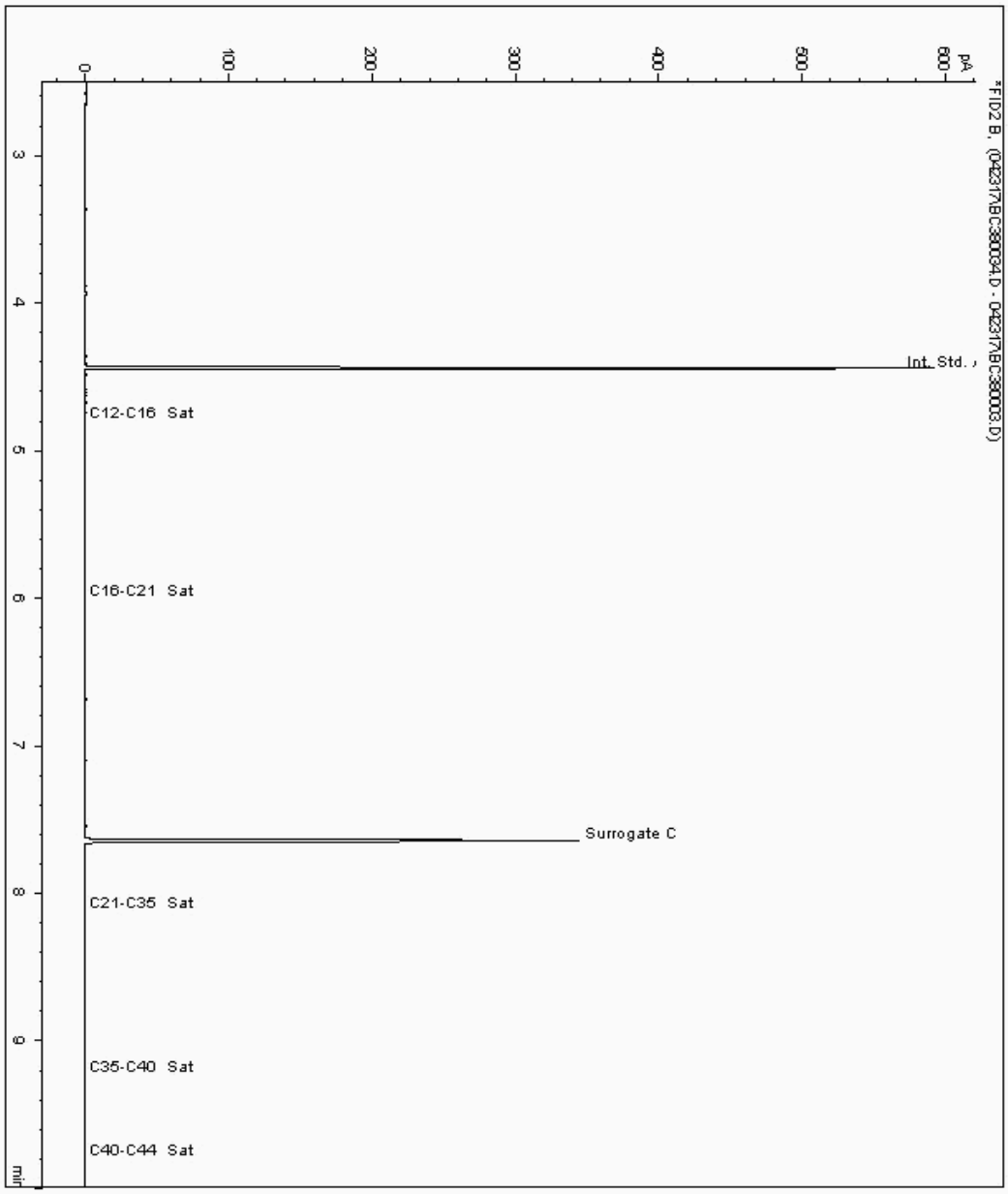
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15379411 **Sample ID :** W5BH302 **Depth :** 5.80 - 6.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14384878-
Date Acquired : 24/04/17 00:00:07 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

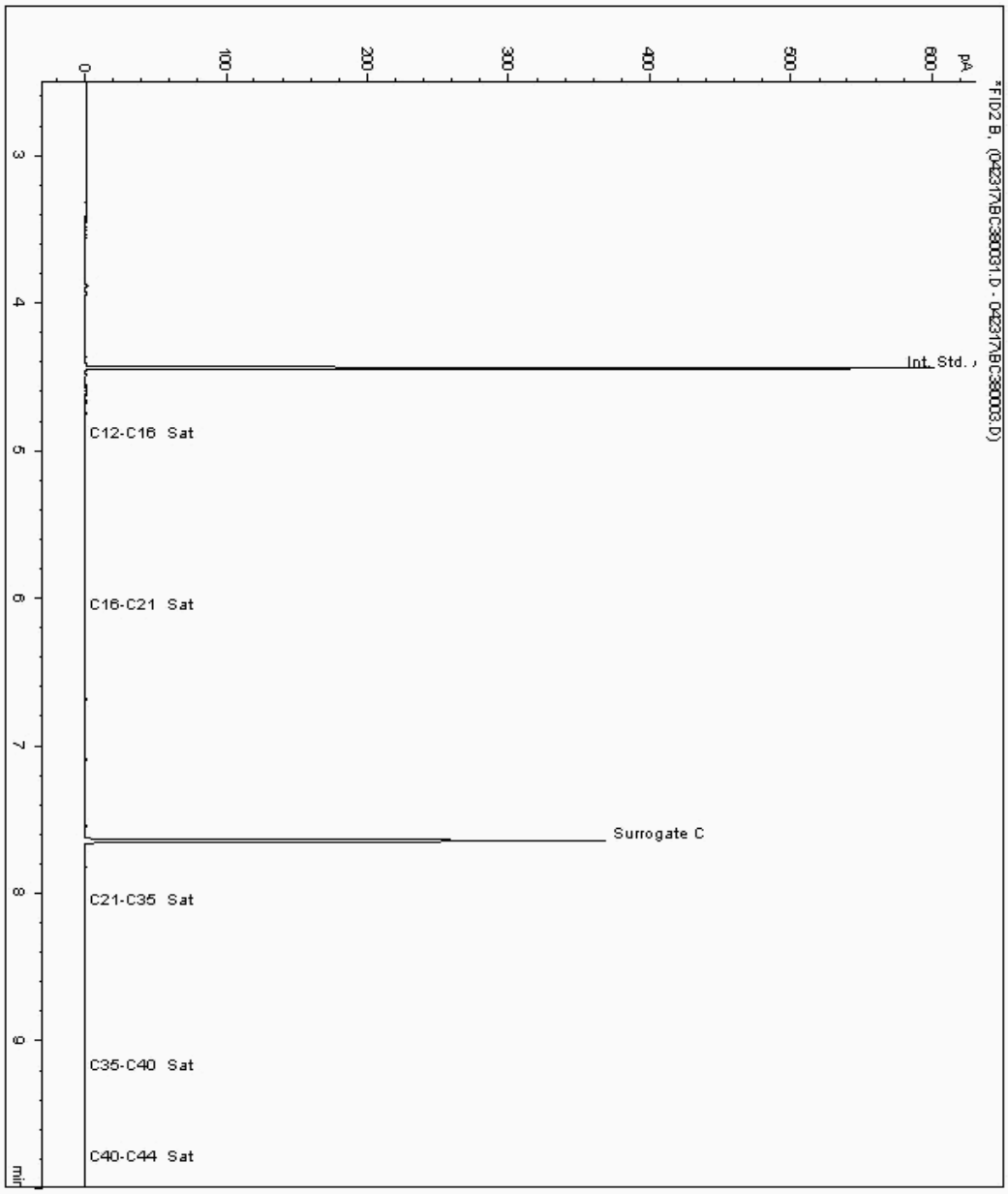
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15381292 **Sample ID :** W5BH302 **Depth :** 0.90 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14384868-
Date Acquired : 23/04/17 23:05:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

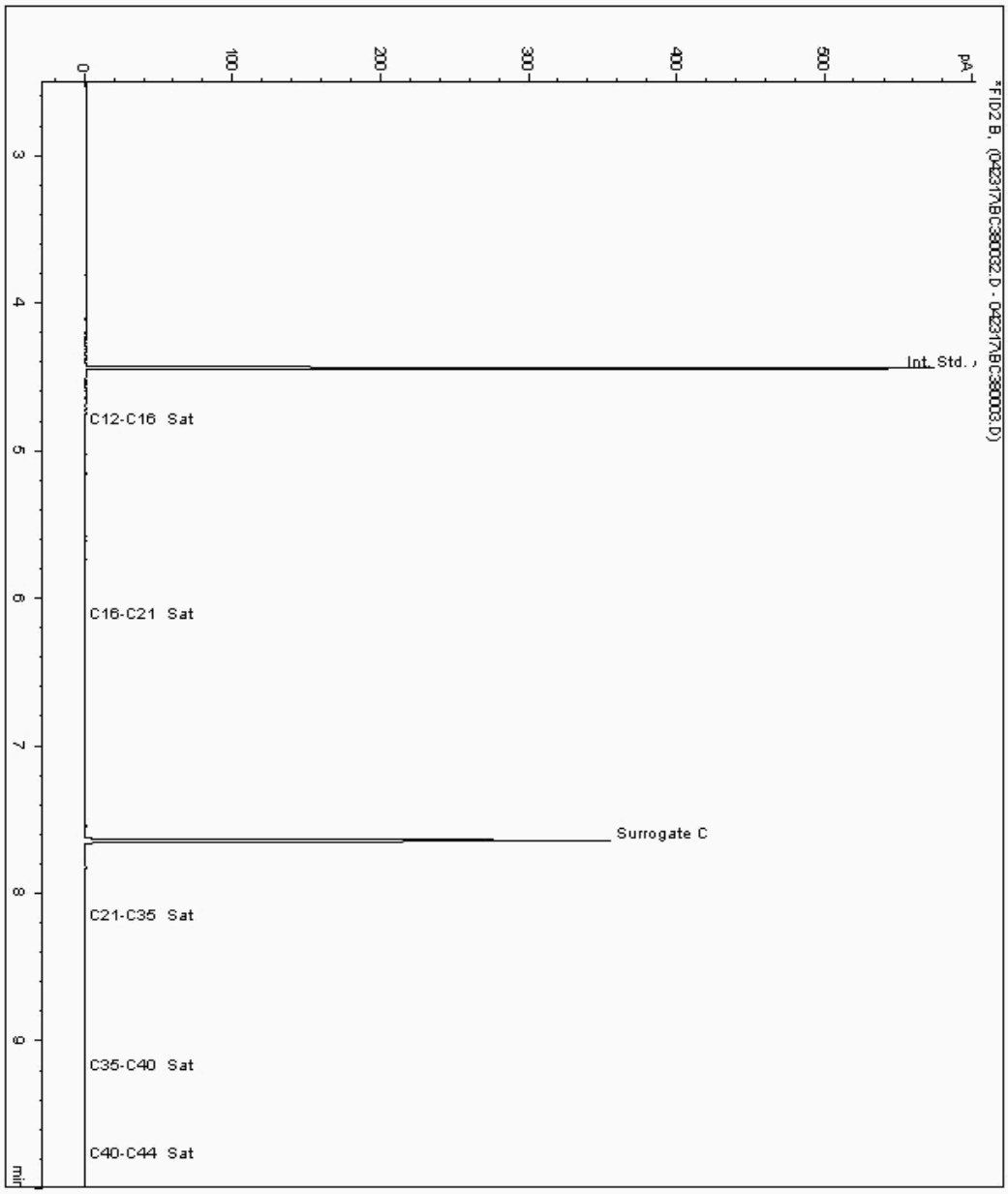
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15381346 **Sample ID :** W5BH303 **Depth :** 3.70

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14384858-
Date Acquired : 23/04/17 23:23:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

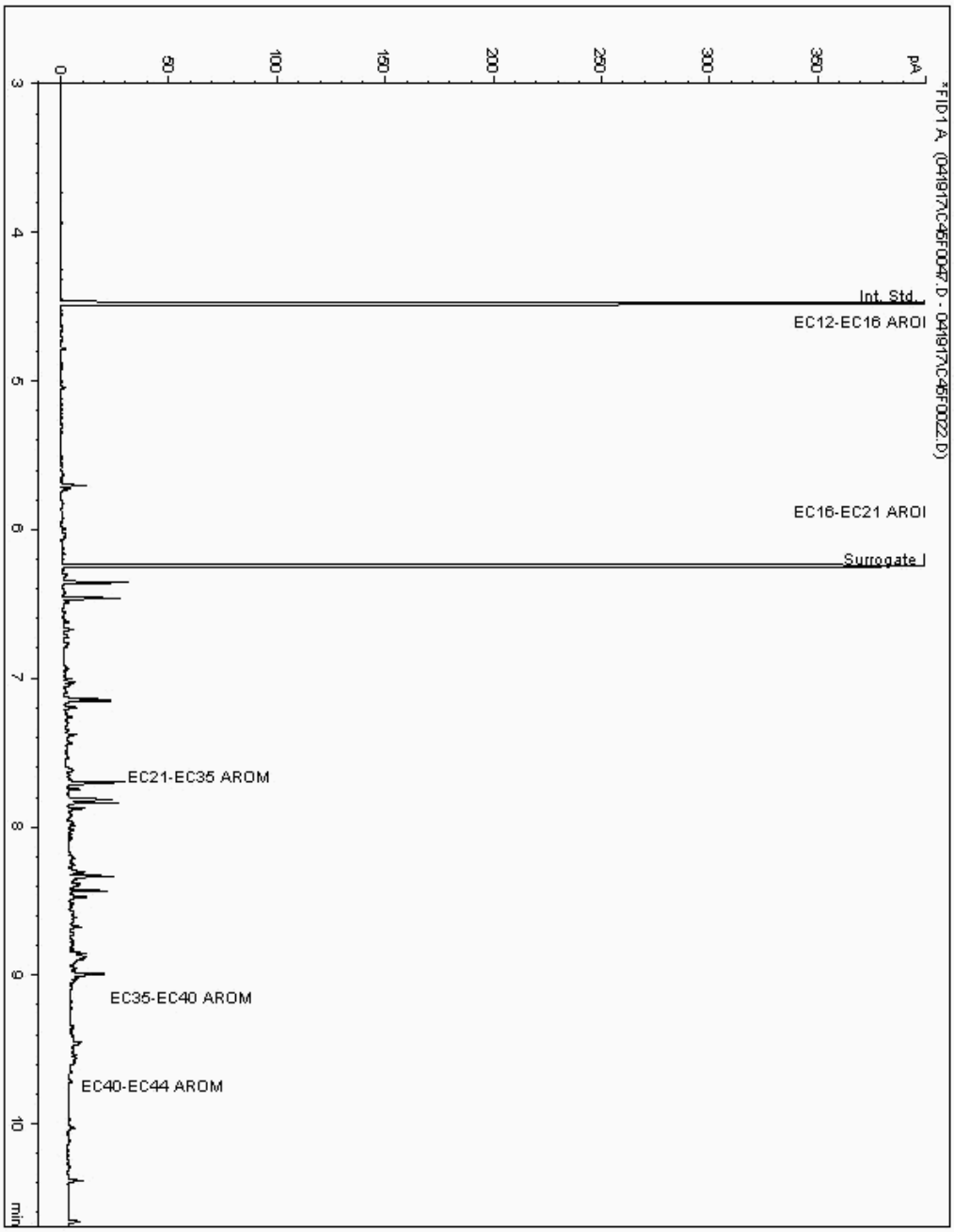
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15357736 **Sample ID :** W5TP302 **Depth :** 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384614-
Date Acquired : 20/04/2017 05:14:58 PM
Units : ppb
Dilution: W5TP302[0.30] ->



CERTIFICATE OF ANALYSIS

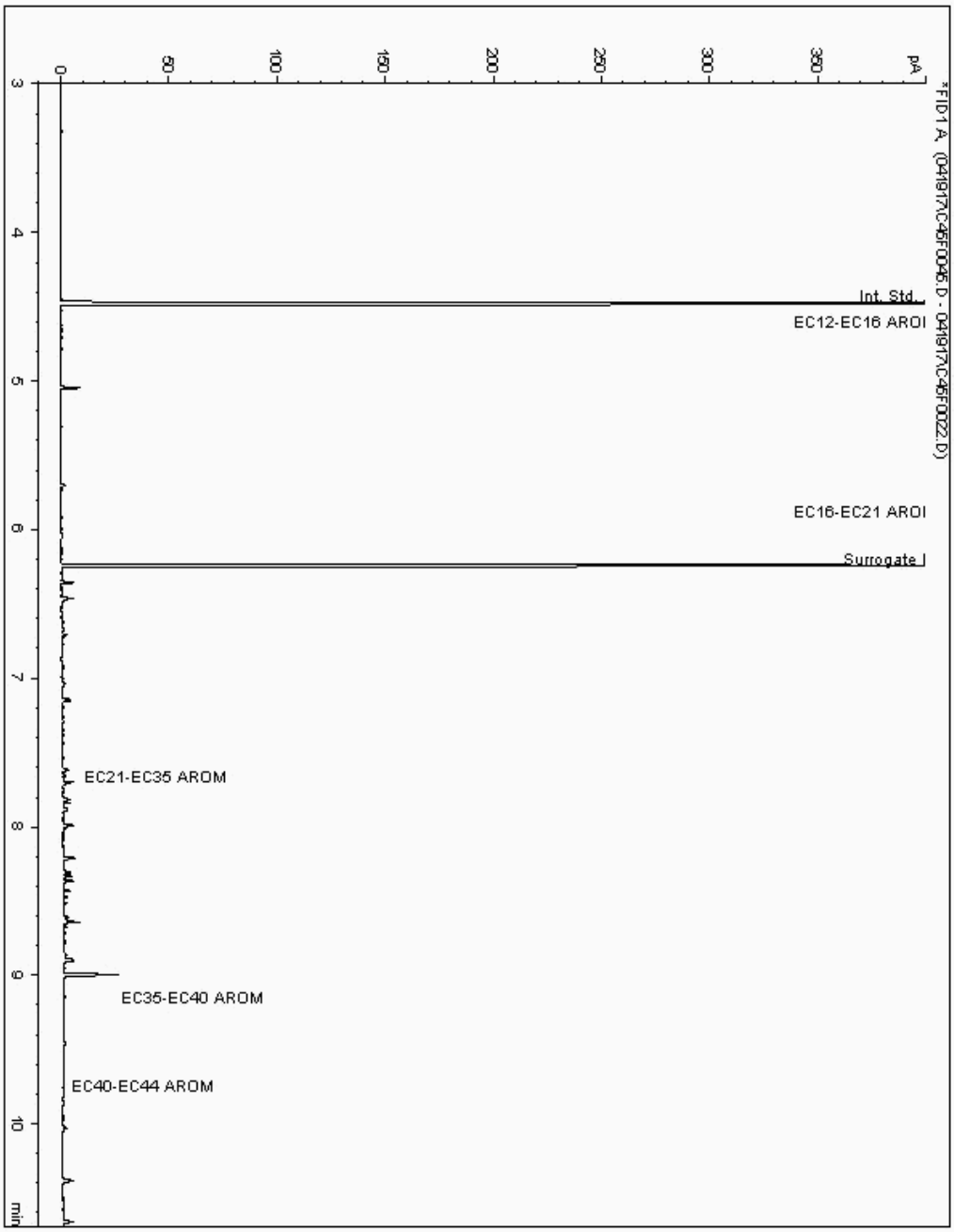
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15357924 **Sample ID :** W5TP302 **Depth :** 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384632-
Date Acquired : 20/04/2017 04:42:54 PM
Units : ppb
Dilution: W5TP302[1.00] ->



CERTIFICATE OF ANALYSIS

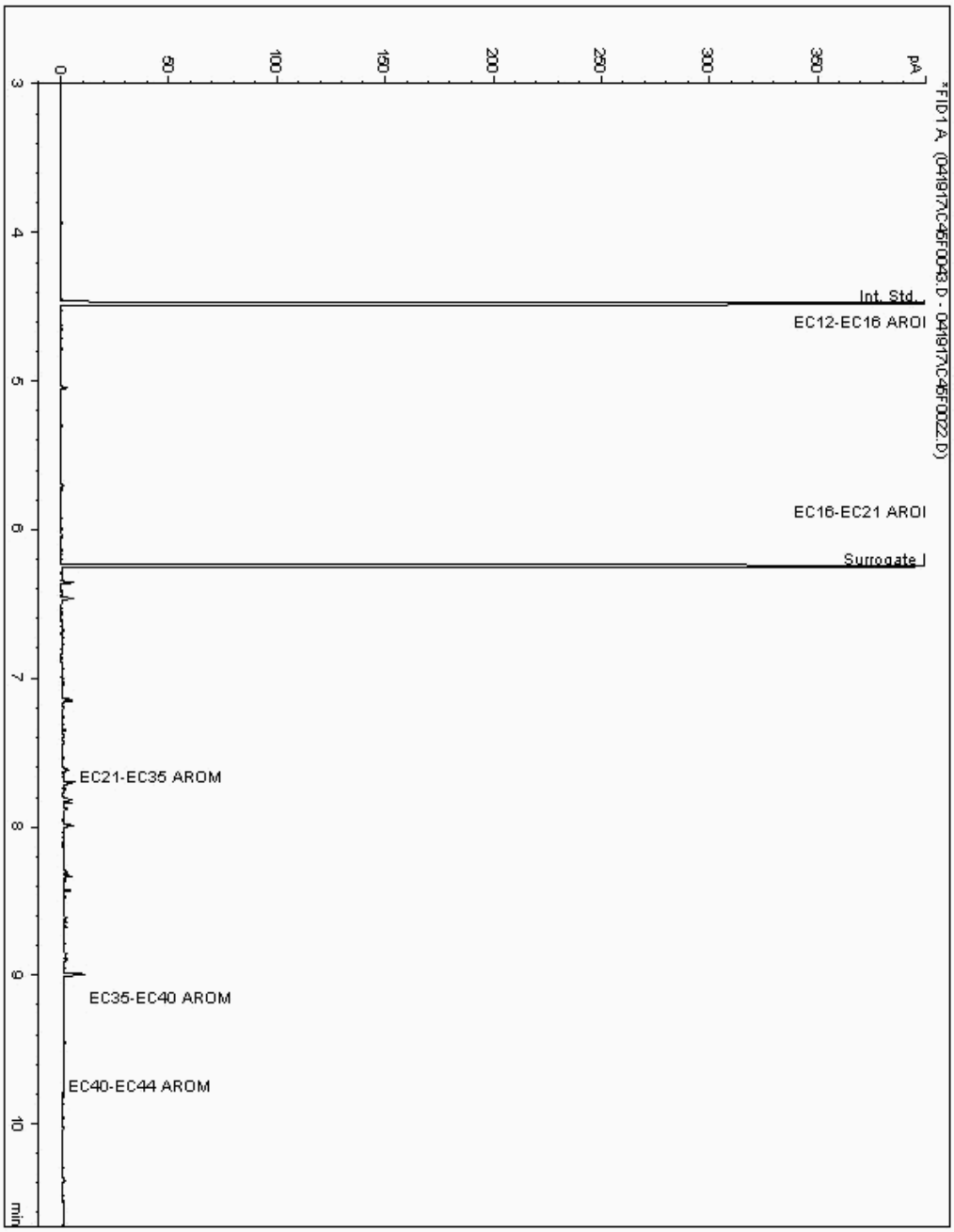
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15358037 **Depth :** 0.70
Sample ID : W5TP303

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384561-
Date Acquired : 20/04/2017 04:10:29 PM
Units : ppb
Dilution: W5TP303[0.70] ->



CERTIFICATE OF ANALYSIS

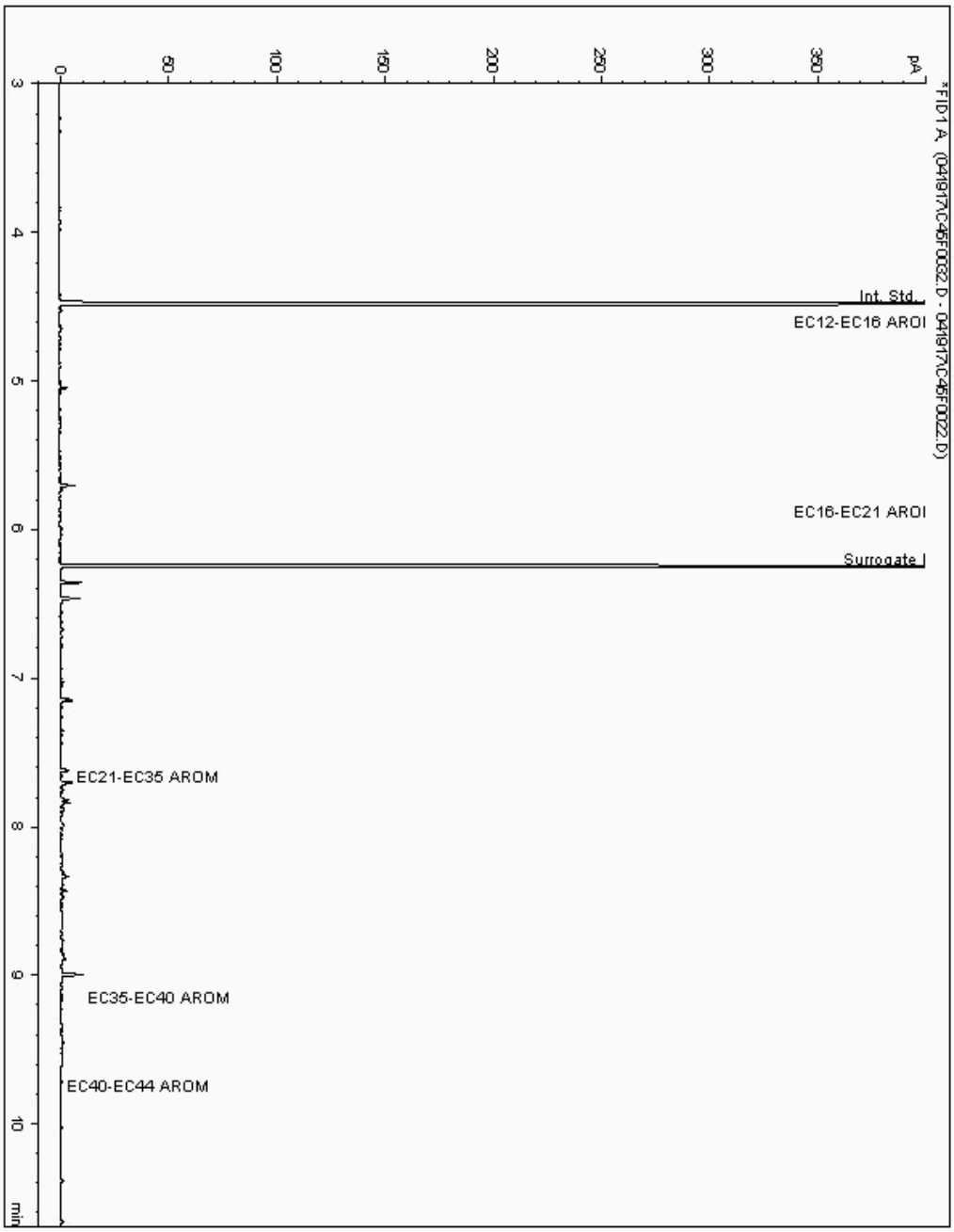
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15358280 **Sample ID :** W5TP303 **Depth :** 1.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384597-
Date Acquired : 20/04/2017 01:27:18 PM
Units : ppb
Dilution: W5TP303[1.50] ->



CERTIFICATE OF ANALYSIS

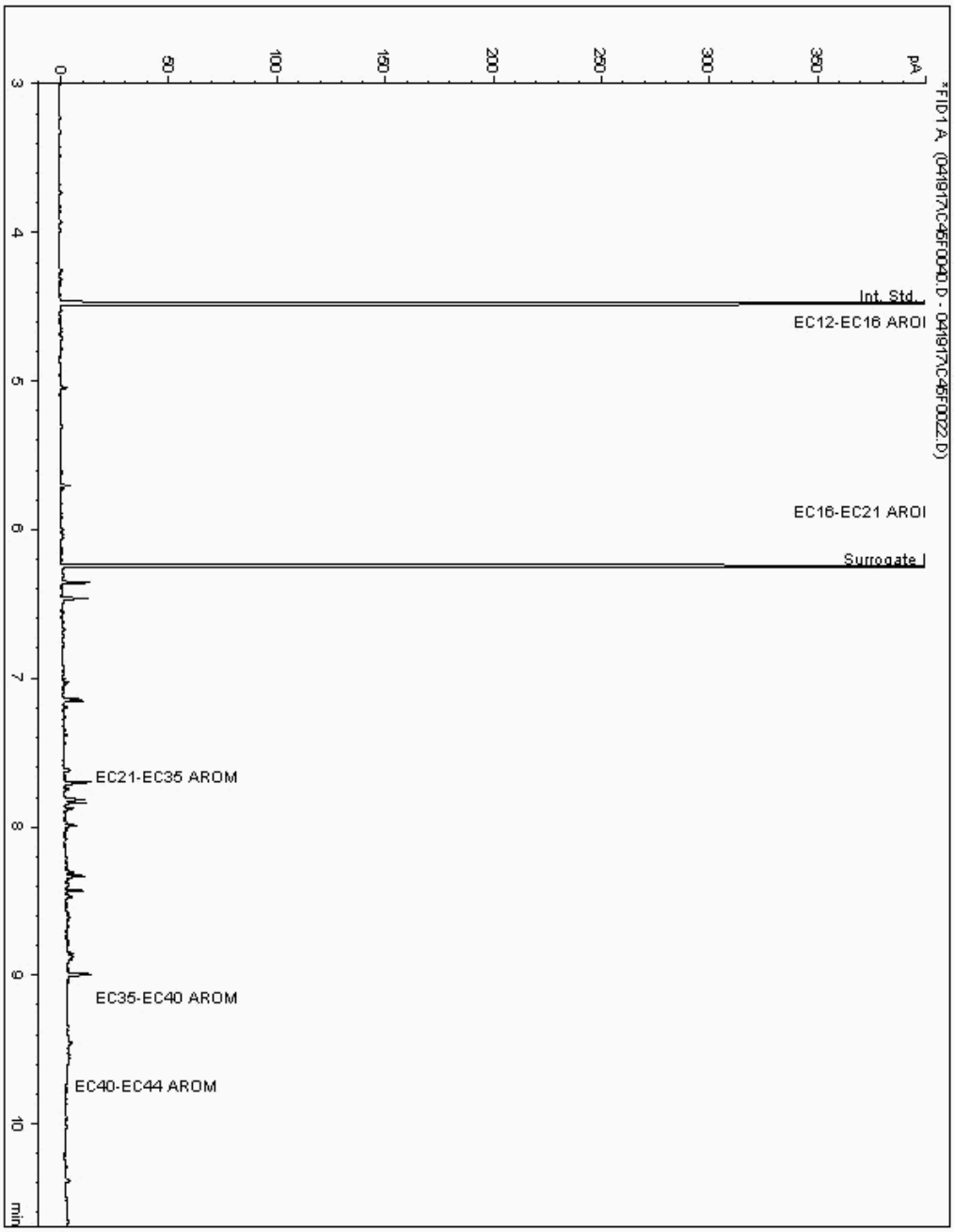
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15358441 **Depth :** 0.80
Sample ID : W5TP305

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384526-
Date Acquired : 20/04/2017 03:26:44 PM
Units : ppb
Dilution: W5TP305[0.80] ->



CERTIFICATE OF ANALYSIS

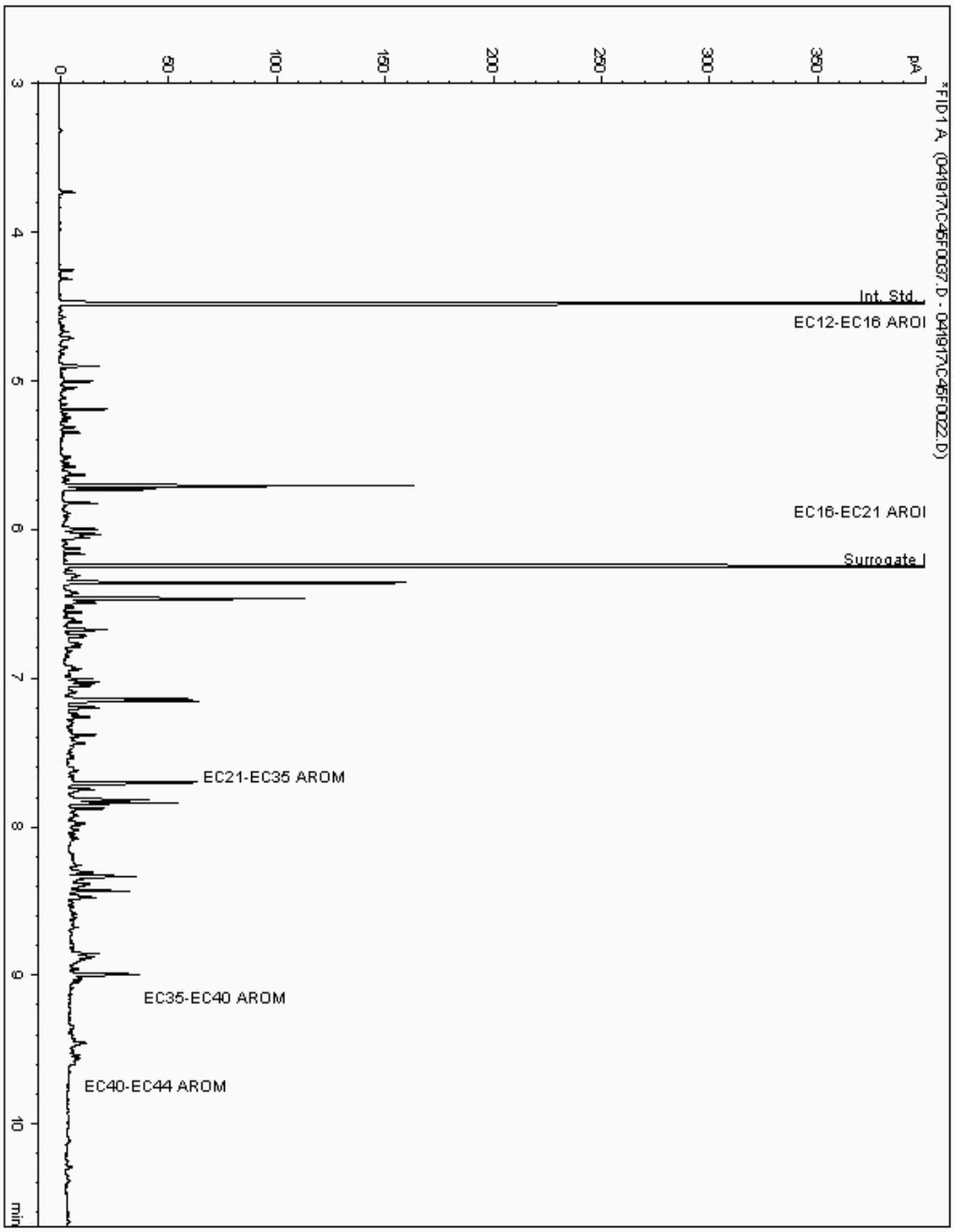
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15358487 **Depth :** 0.30
Sample ID : W5TP305

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384492-
Date Acquired : 20/04/2017 02:43:18 PM
Units : ppb
Dilution: W5TP305[0.30] ->



CERTIFICATE OF ANALYSIS

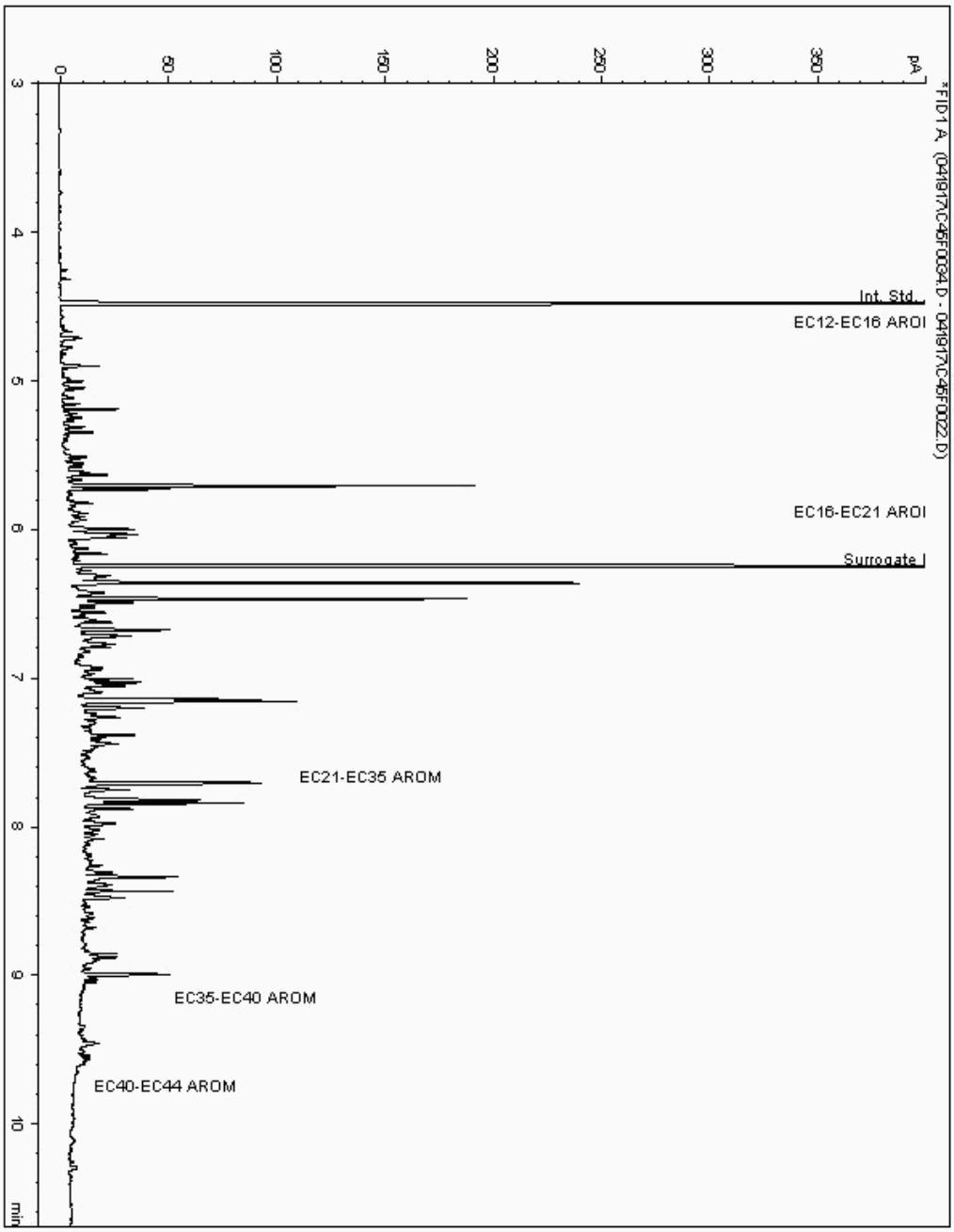
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15358678 **Depth :** 0.90 - 1.00
Sample ID : W5BH302

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384811-
Date Acquired : 20/04/2017 01:59:26 PM
Units : ppb
Dilution: W5BH302[0.90 - 1.00] ->



CERTIFICATE OF ANALYSIS

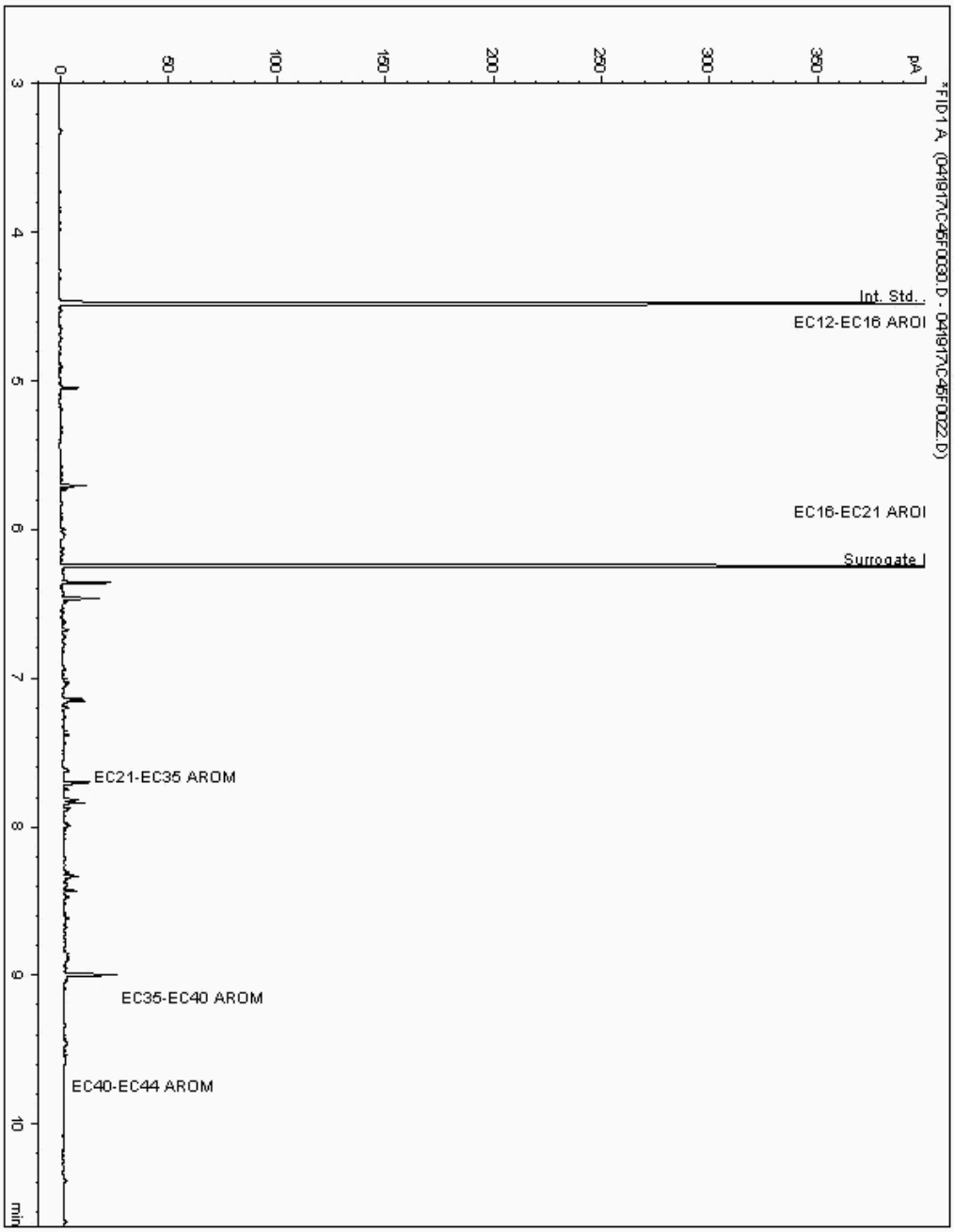
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15358741 **Sample ID :** W5BH302 **Depth :** 0.10 - 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384476-
Date Acquired : 20/04/2017 00:55:05 PM
Units : ppb
Dilution: W5BH302[0.10 - 0.30] ->



CERTIFICATE OF ANALYSIS

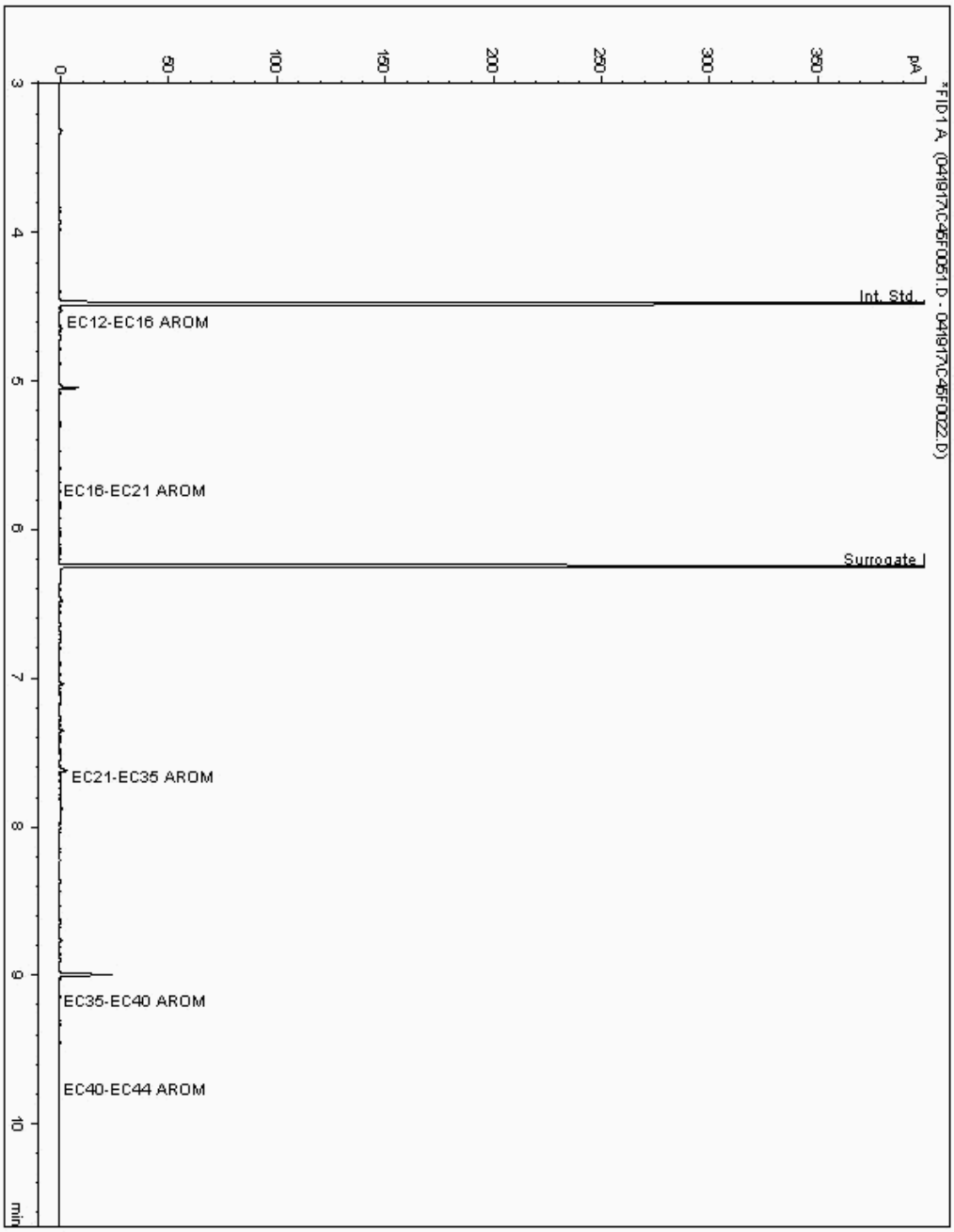
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15358934 **Sample ID :** W5BH302 **Depth :** 5.80 - 6.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384825-
Date Acquired : 20/04/2017 06:19:02 PM
Units : ppb
Dilution: W5BH302[5.80 - 6.00] ->



CERTIFICATE OF ANALYSIS

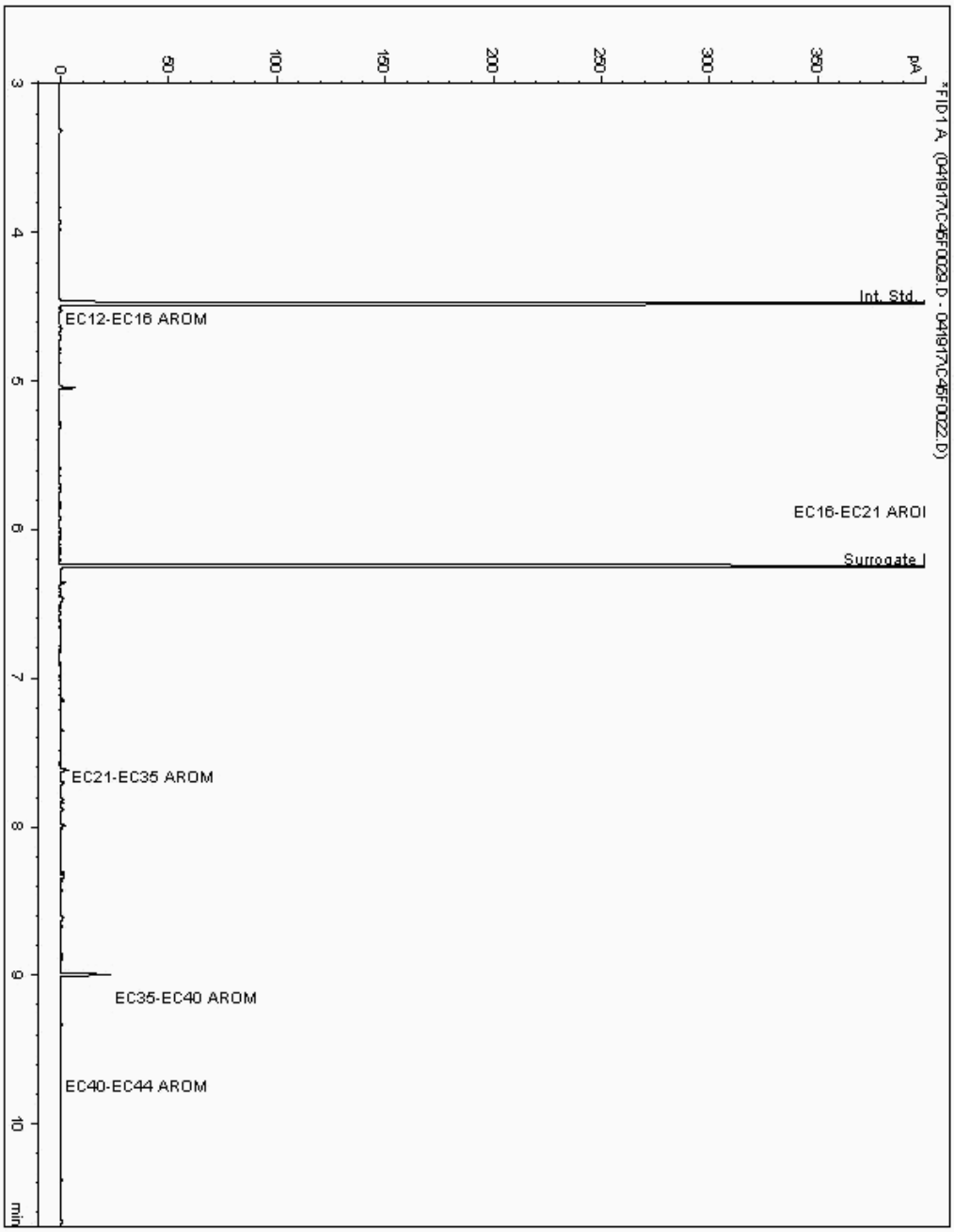
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15359007 **Depth :** 1.30 - 1.45
Sample ID : W3WS301

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384457-
Date Acquired : 20/04/2017 00:34:59 PM
Units : ppb
Dilution: W3WS301[1.30 - 1.45] ->



CERTIFICATE OF ANALYSIS

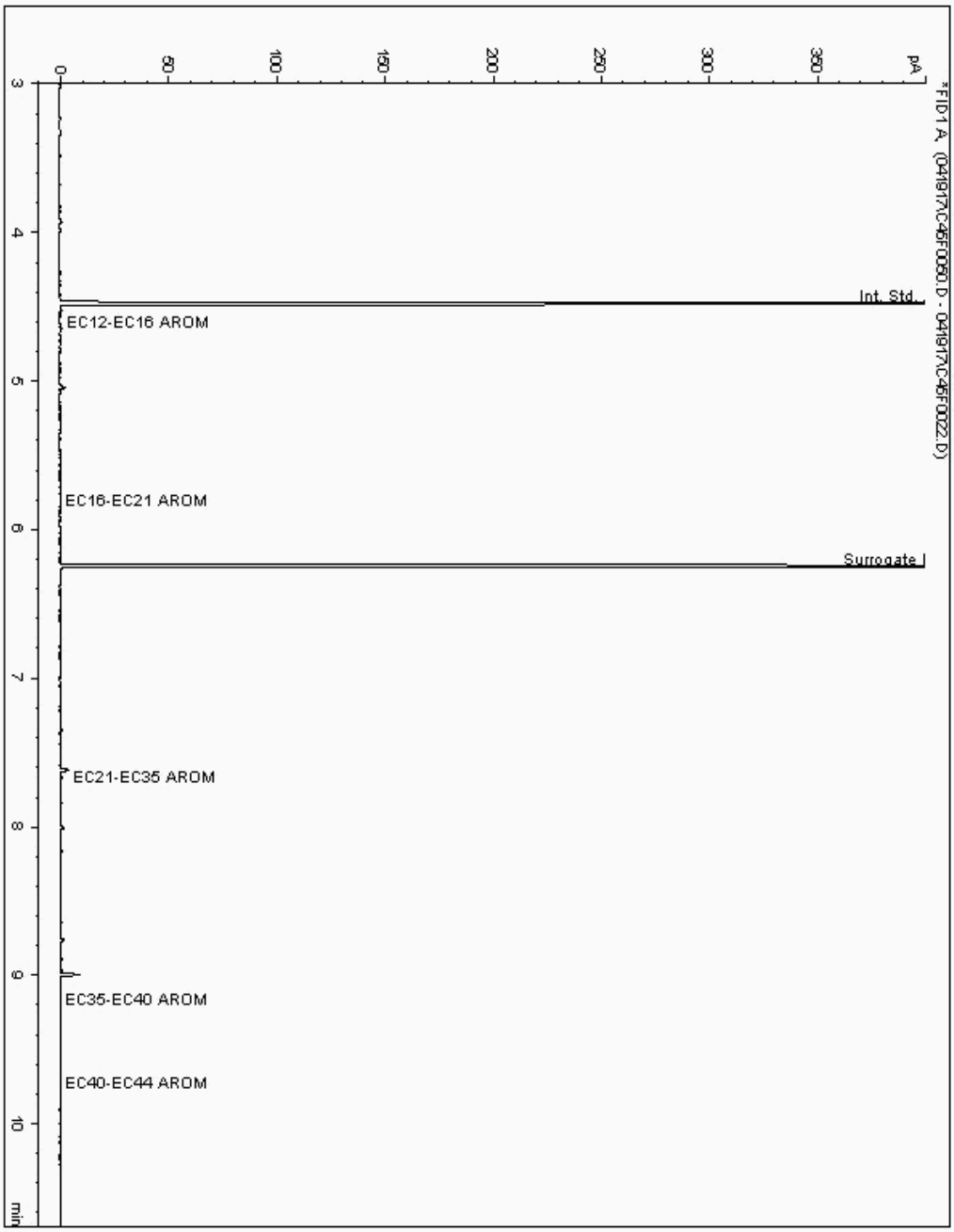
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15359027 **Depth :** 2.80
Sample ID : W5TP302

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384648-
Date Acquired : 20/04/2017 05:58:54 PM
Units : ppb
Dilution: W5TP302[2.80] ->



CERTIFICATE OF ANALYSIS

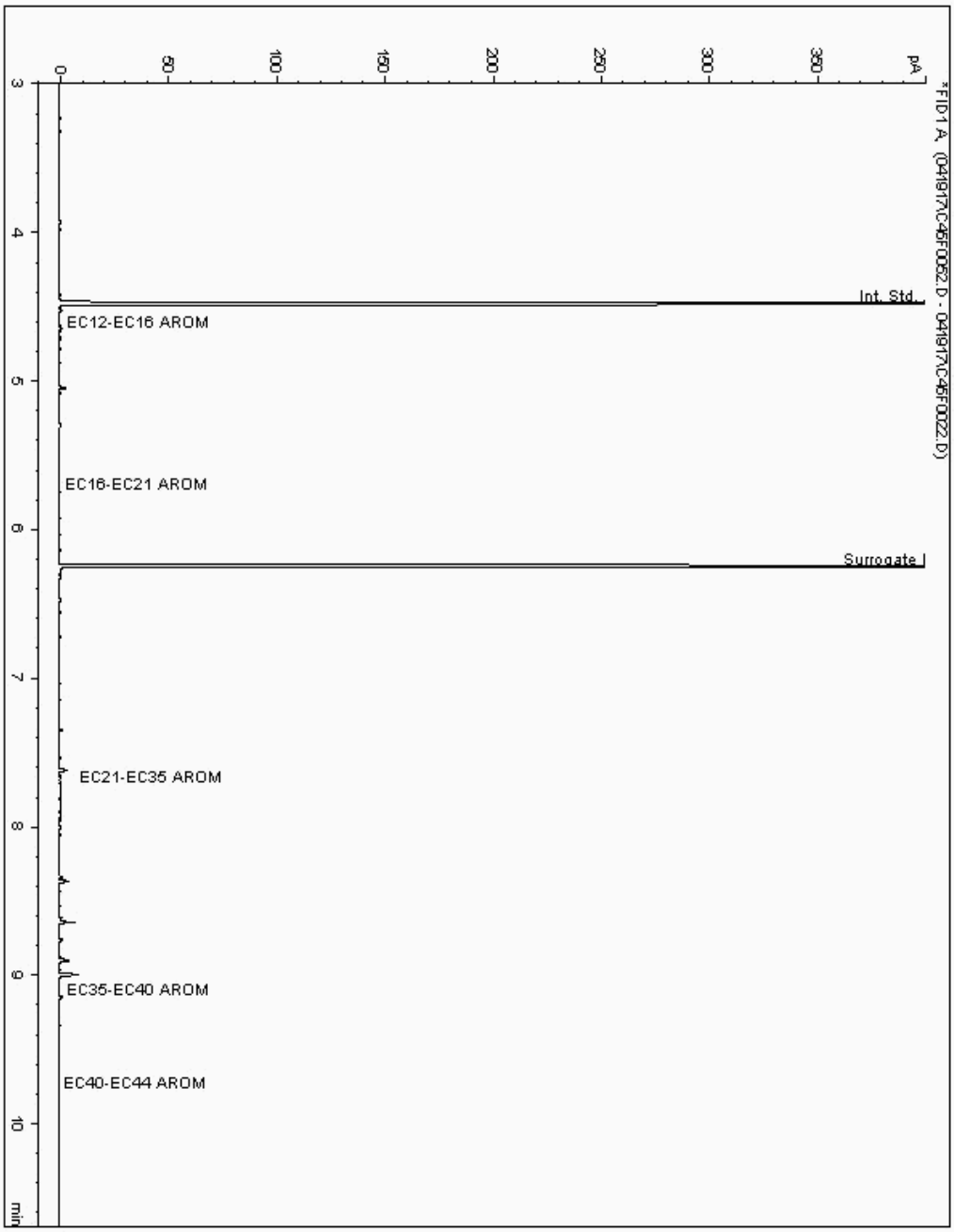
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15359062 **Depth :** 3.70
Sample ID : W5BH303

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384843-
Date Acquired : 20/04/2017 06:39:09 PM
Units : ppb
Dilution: W5BH303[3.70] ->



CERTIFICATE OF ANALYSIS

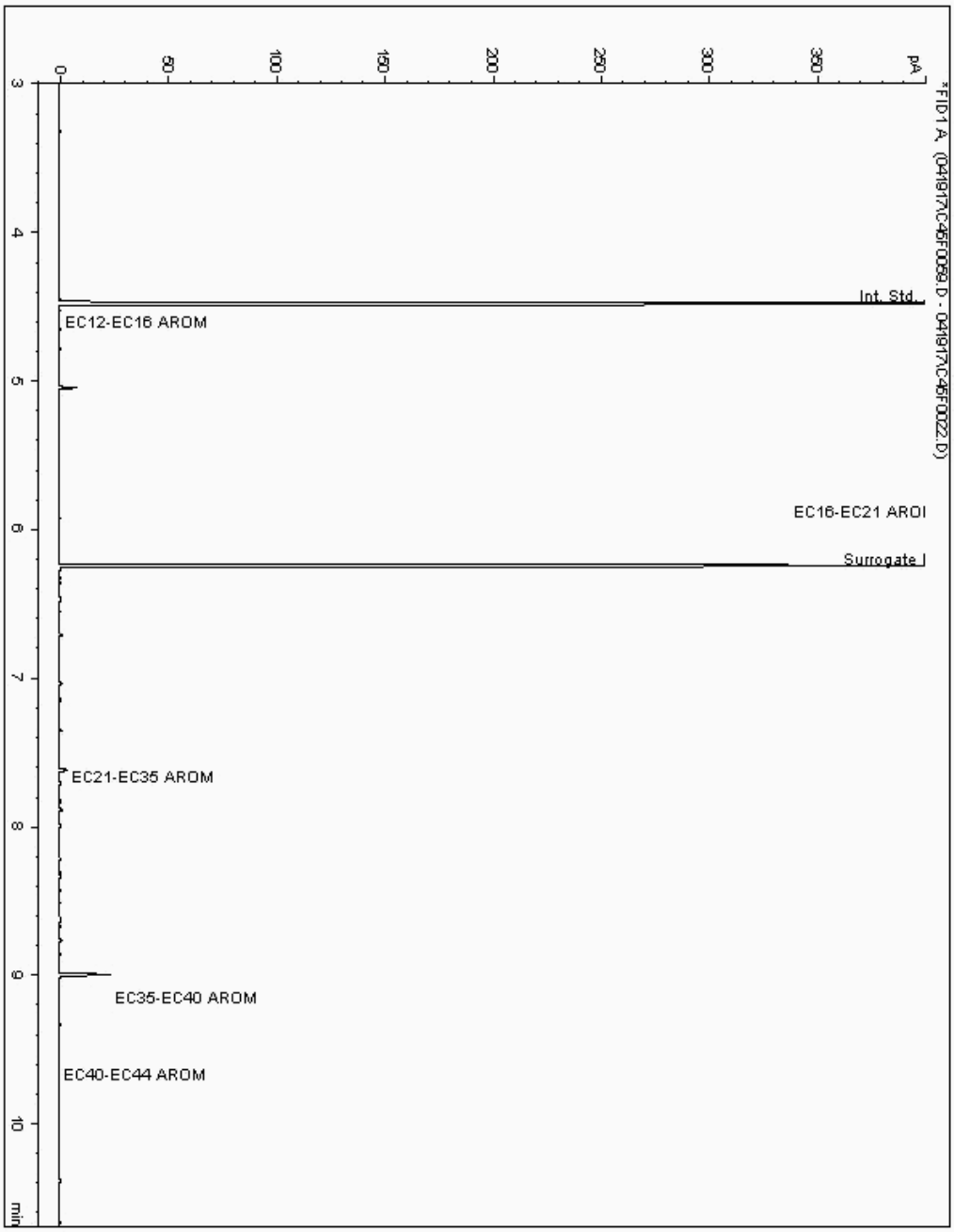
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15359384 **Depth :** 0.80 - 0.90
Sample ID : W5WS307c

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384726-
Date Acquired : 20/04/2017 08:27:42 PM
Units : ppb
Dilution: W5WS307C[0.80 - 0.90] ->



CERTIFICATE OF ANALYSIS

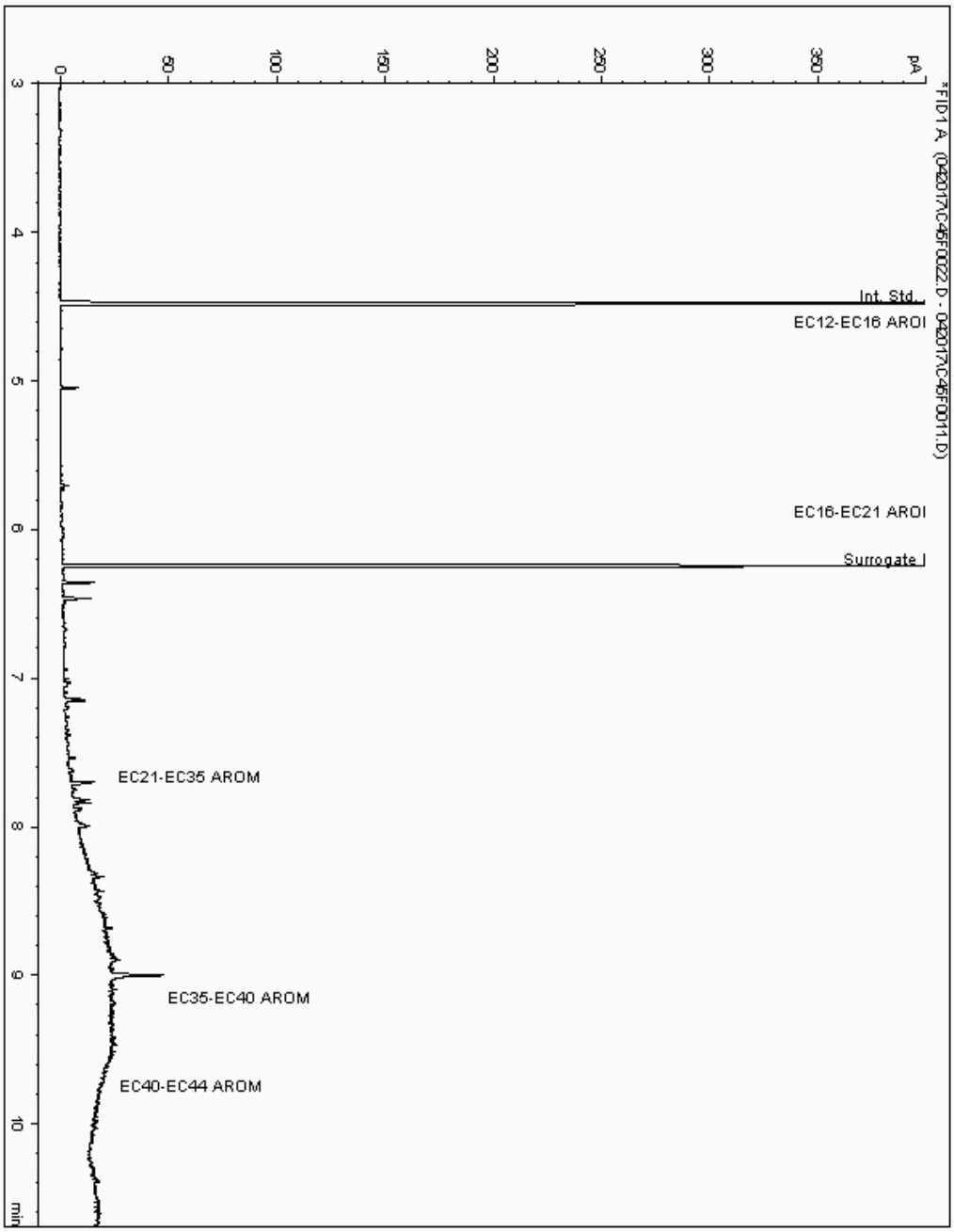
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15360797 **Depth :** 0.00 - 0.20
Sample ID : W5WS307c

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384680-
Date Acquired : 21/04/2017 08:29:00 PM
Units : ppb
Dilution: W5WS307C[0.00 - 0.20] ->



CERTIFICATE OF ANALYSIS

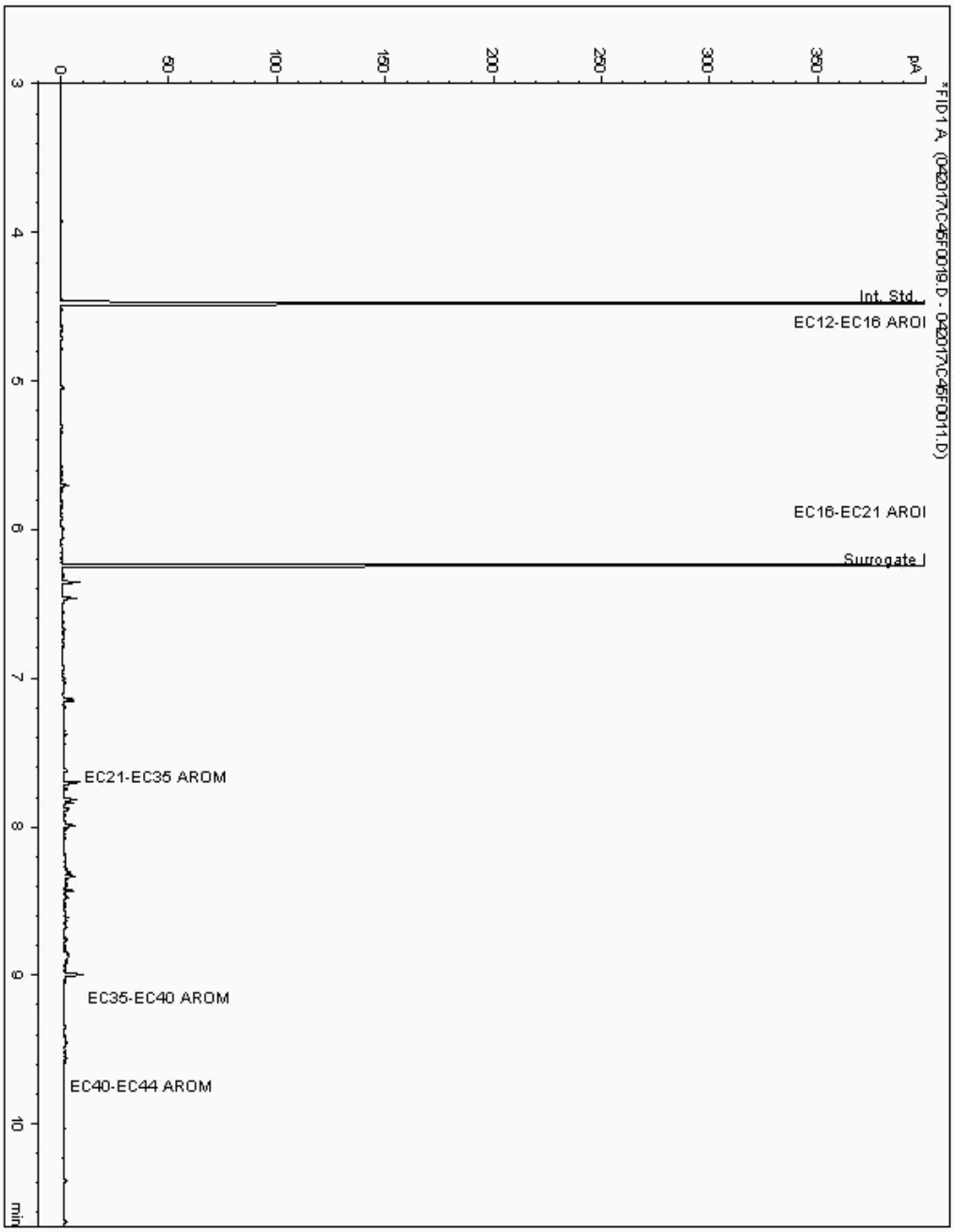
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15360966 **Sample ID :** W5WS307c **Depth :** 2.00 - 2.10

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384743-
Date Acquired : 21/04/2017 07:36:08 PM
Units : ppb
Dilution: W5WS307C[2.00 - 2.10] ->



CERTIFICATE OF ANALYSIS

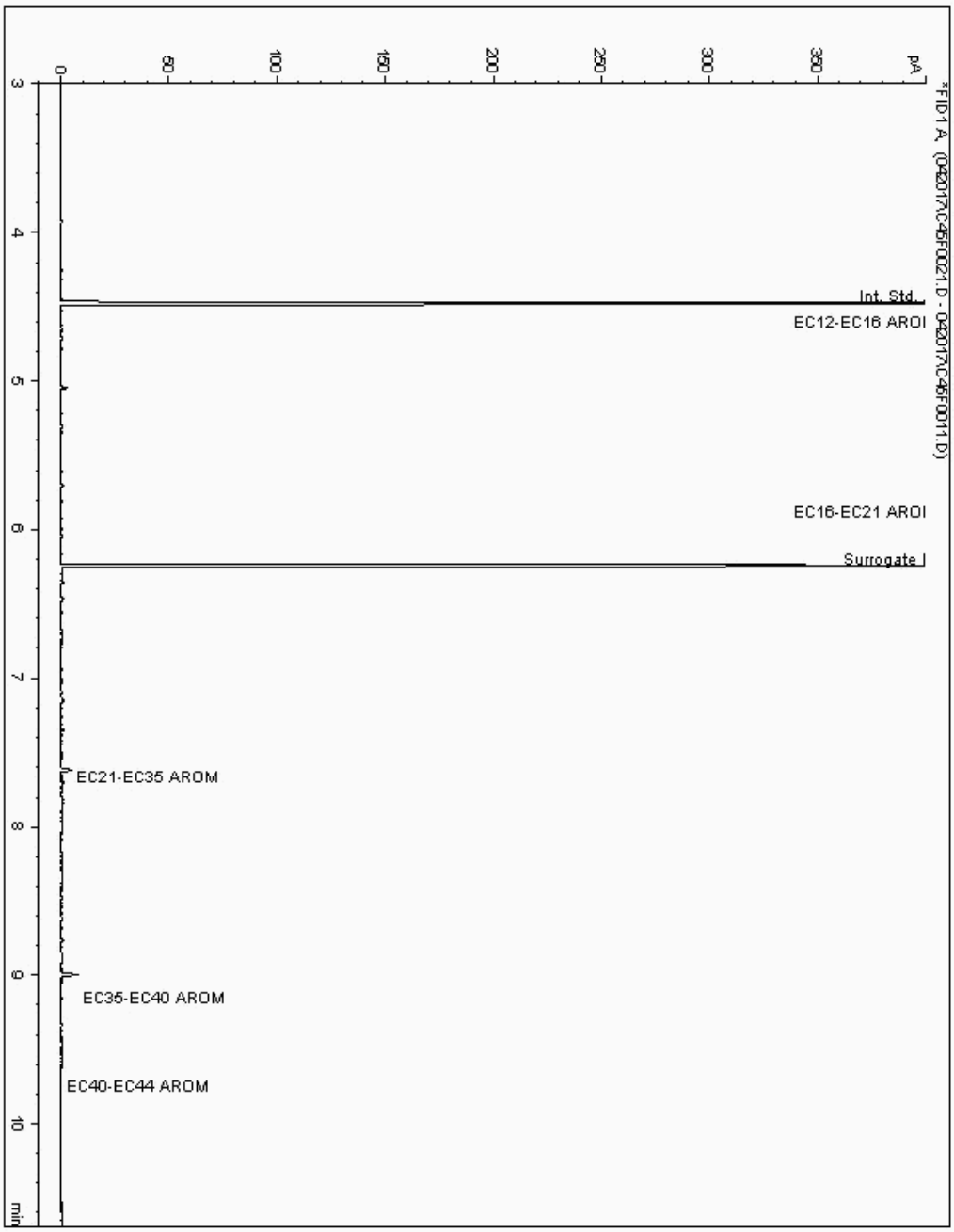
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15361593 **Depth :** 0.15 - 0.30
Sample ID : W3WS303

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384761-
Date Acquired : 21/04/2017 08:08:37 PM
Units : ppb
Dilution: W3WS303[0.15 - 0.30] ->



CERTIFICATE OF ANALYSIS

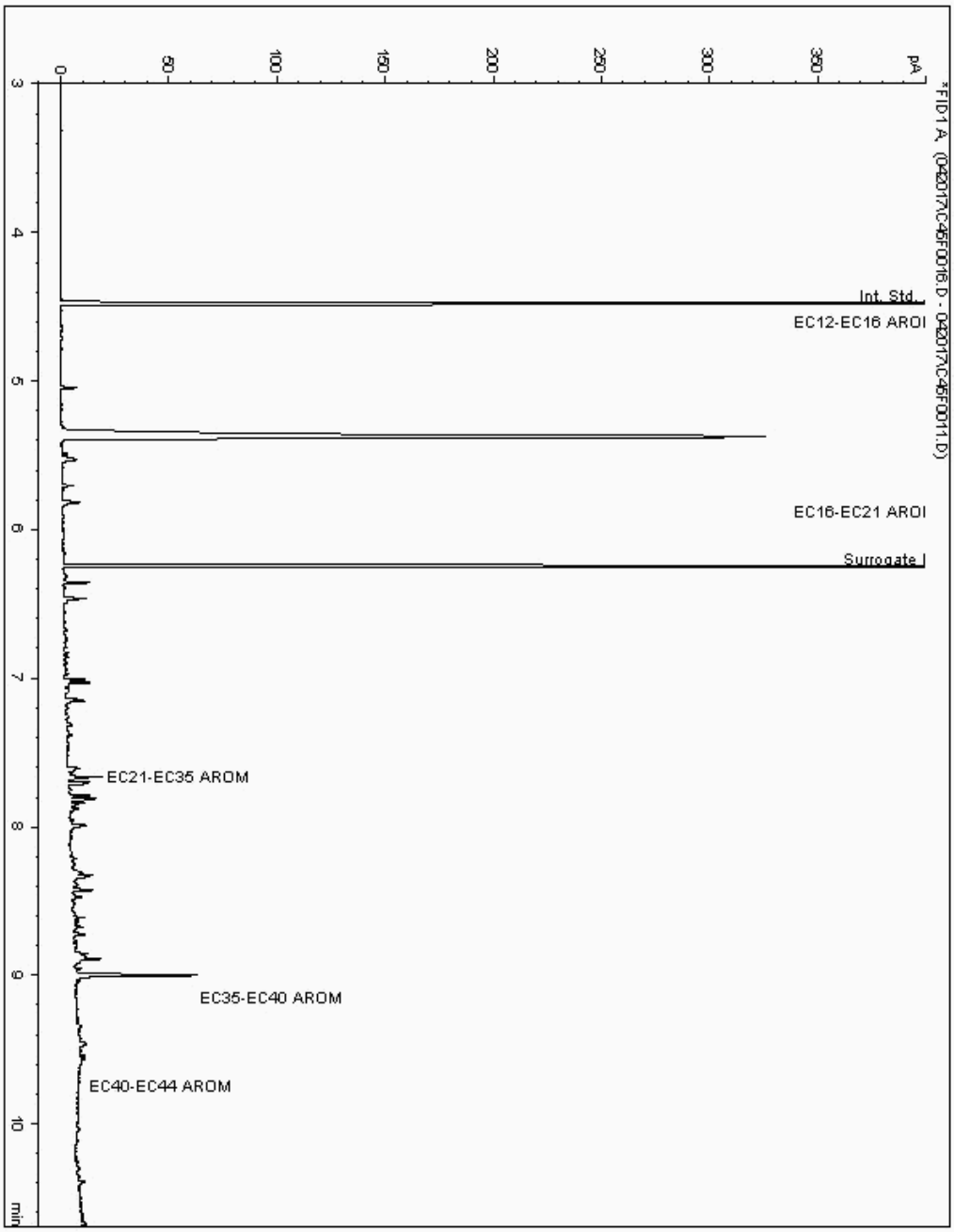
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15361712 **Sample ID :** W5WS306 **Depth :** 0.90 - 1.10

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384794-
Date Acquired : 21/04/2017 06:52:10 PM
Units : ppb
Dilution: W5WS306[0.90 - 1.10] ->



CERTIFICATE OF ANALYSIS

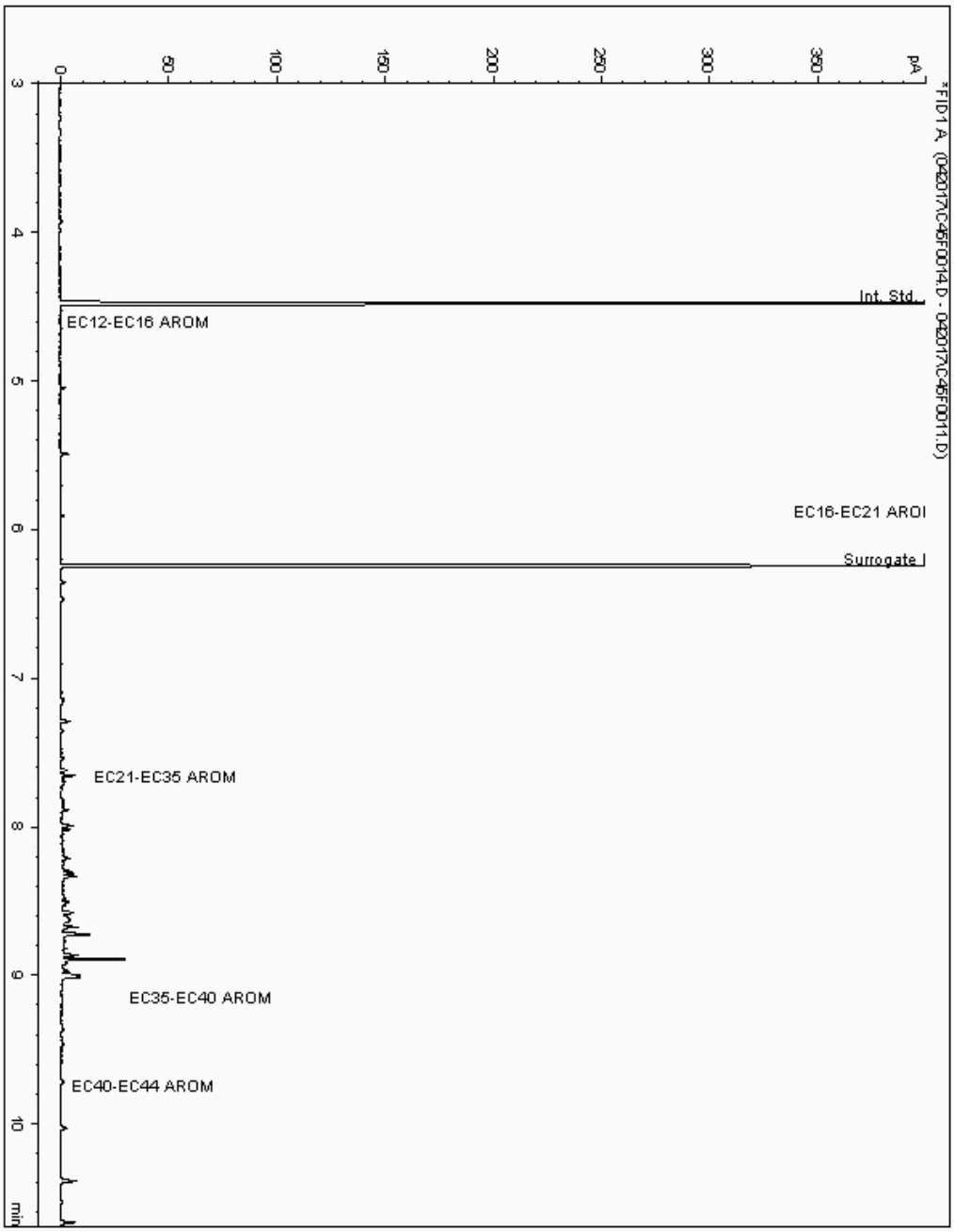
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15361839 **Depth :** 0.00 - 0.30
Sample ID : W5WS306

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384777-
Date Acquired : 20/04/2017 16:49:55 PM
Units : ppb
Dilution: W5WS306[0.00 - 0.30] ->



CERTIFICATE OF ANALYSIS

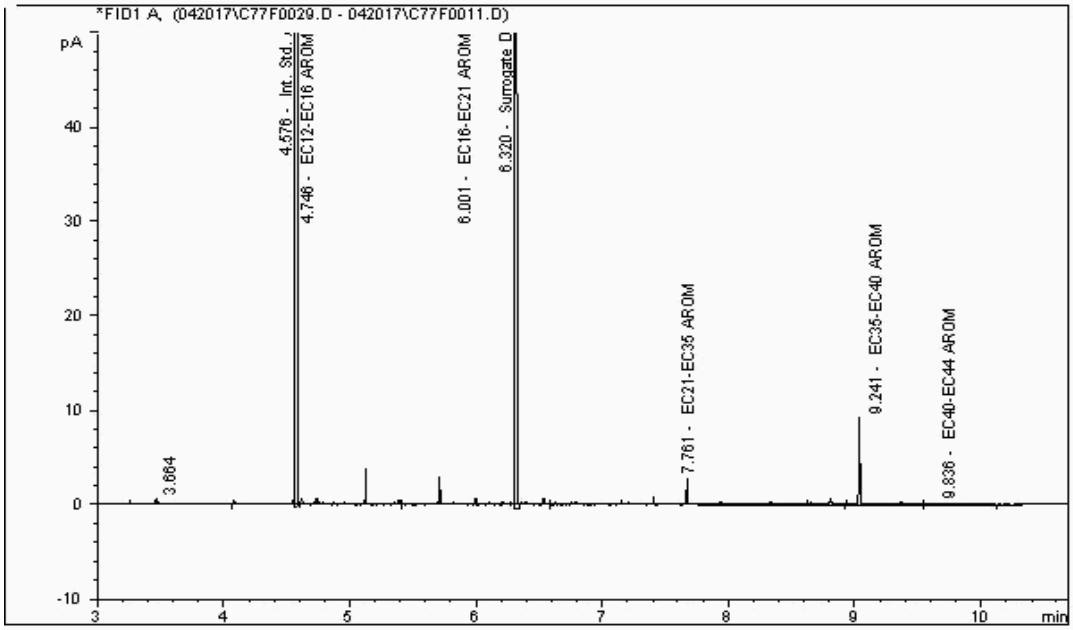
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15364075 **Depth :** 6.50
Sample ID : W5BH303

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14384665-
Date Acquired : 20/04/2017 20:38:10 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

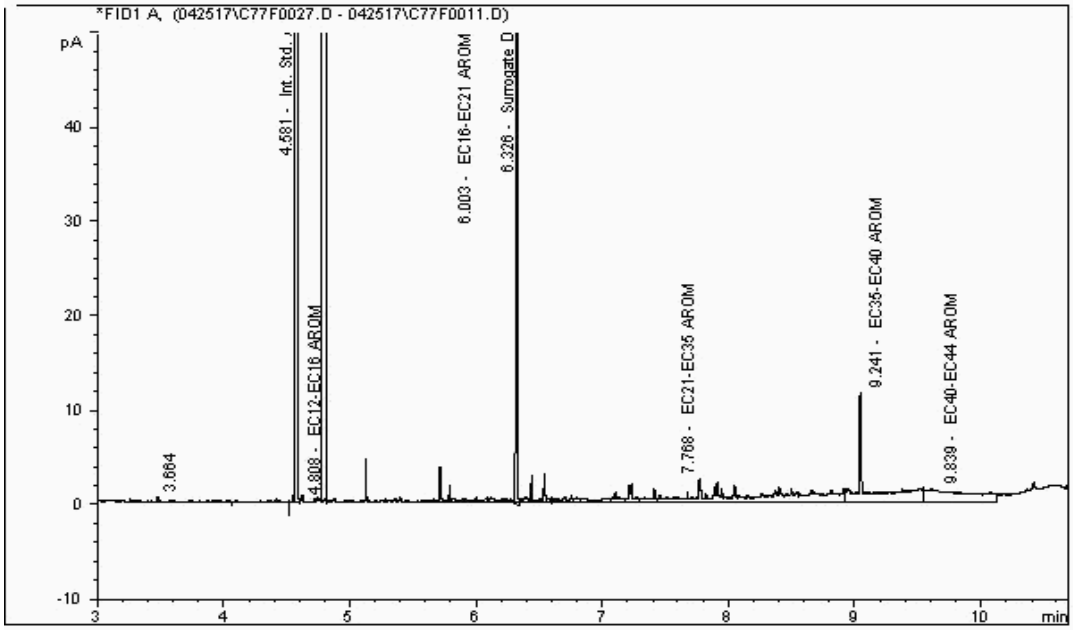
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15389642 **Depth :** 0.30 - 0.50
Sample ID : W3WS303

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14412646-
Date Acquired : 25/04/2017 18:32:42 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

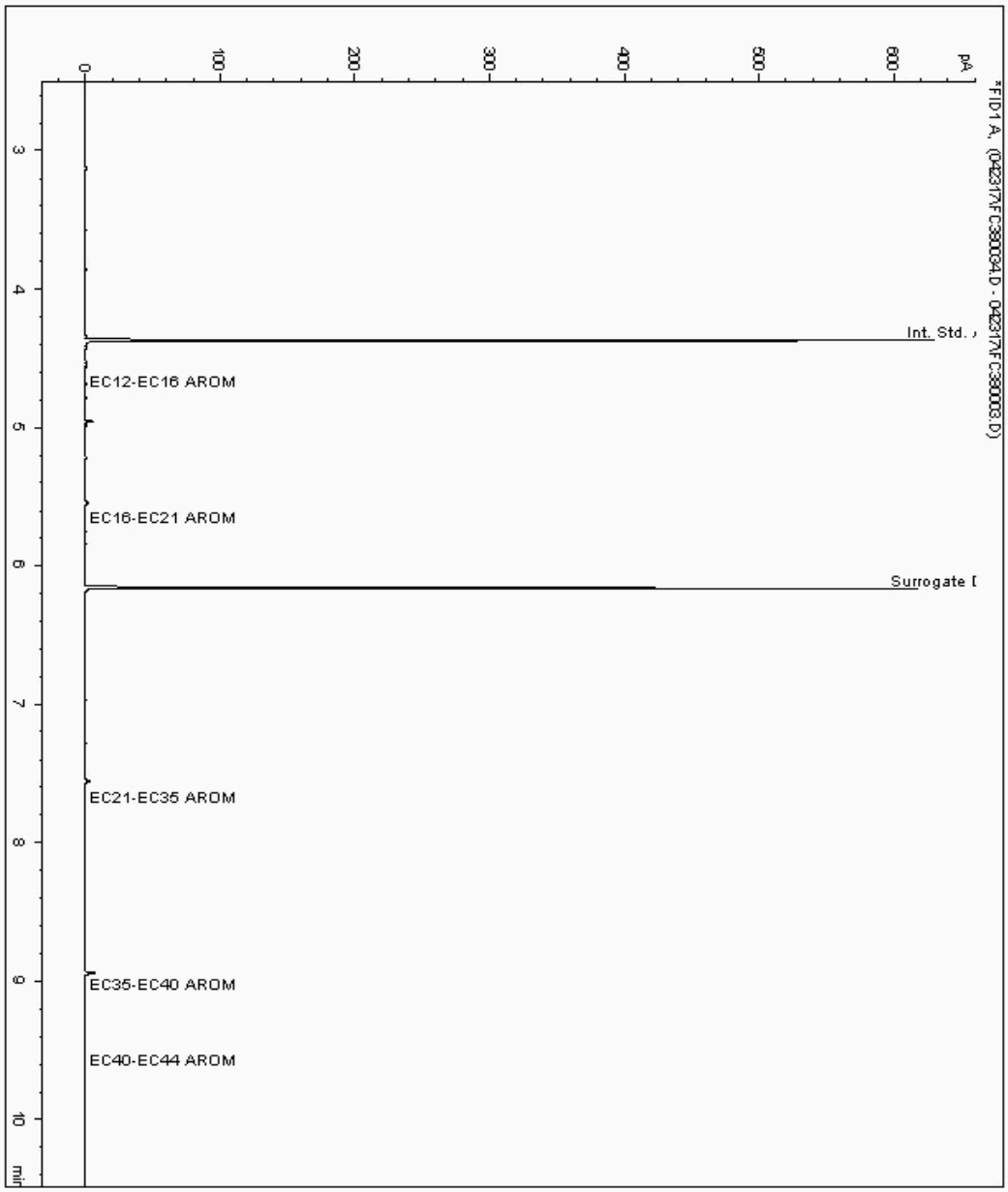
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15379411 **Sample ID :** W5BH302 **Depth :** 5.80 - 6.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384879-
Date Acquired : 24/04/17 00:00:07 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

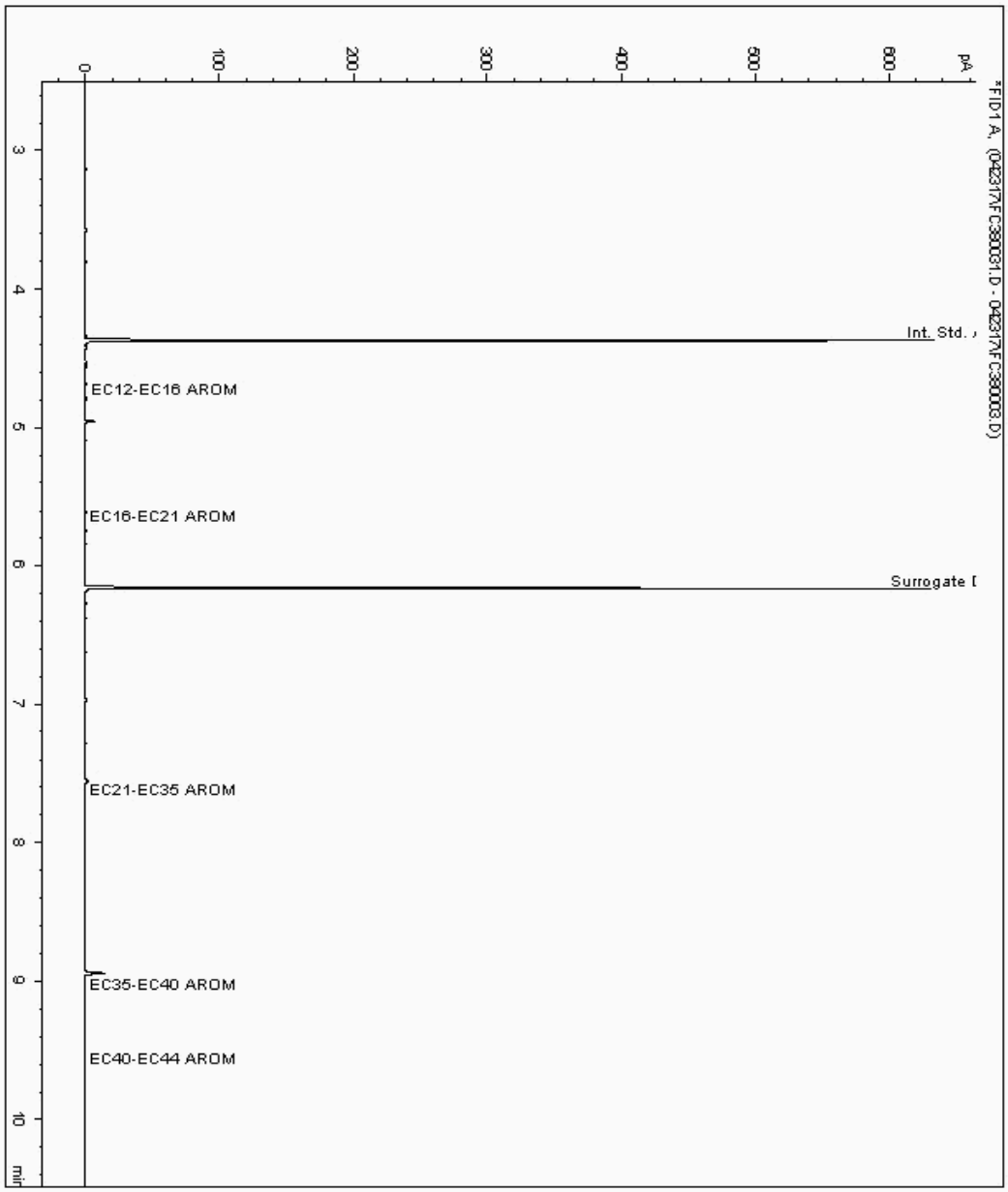
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15381292 **Sample ID :** W5BH302 **Depth :** 0.90 - 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384869-
Date Acquired : 23/04/17 23:05:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

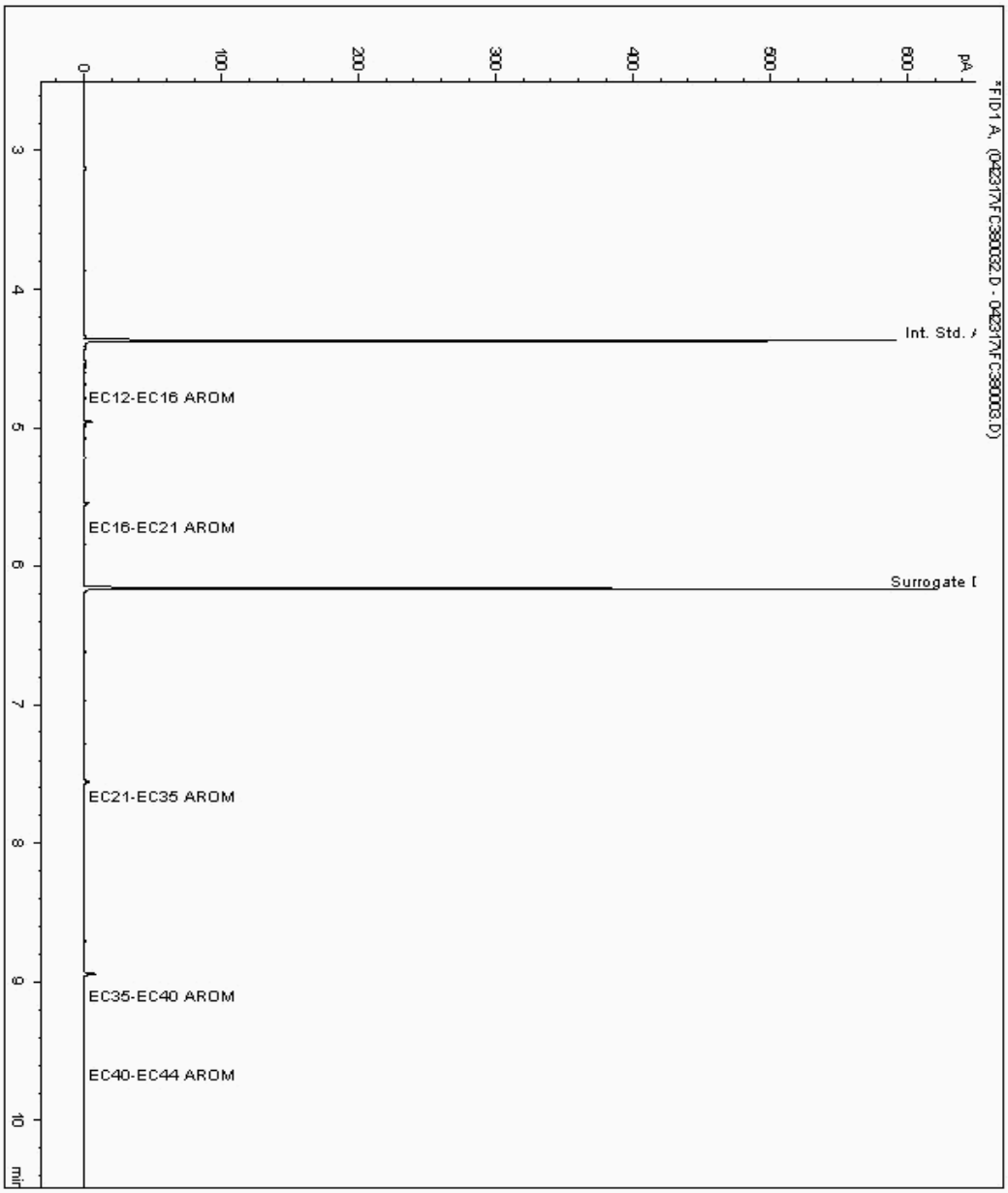
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15381346 **Sample ID :** W5BH303 **Depth :** 3.70

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14384859-
Date Acquired : 23/04/17 23:23:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

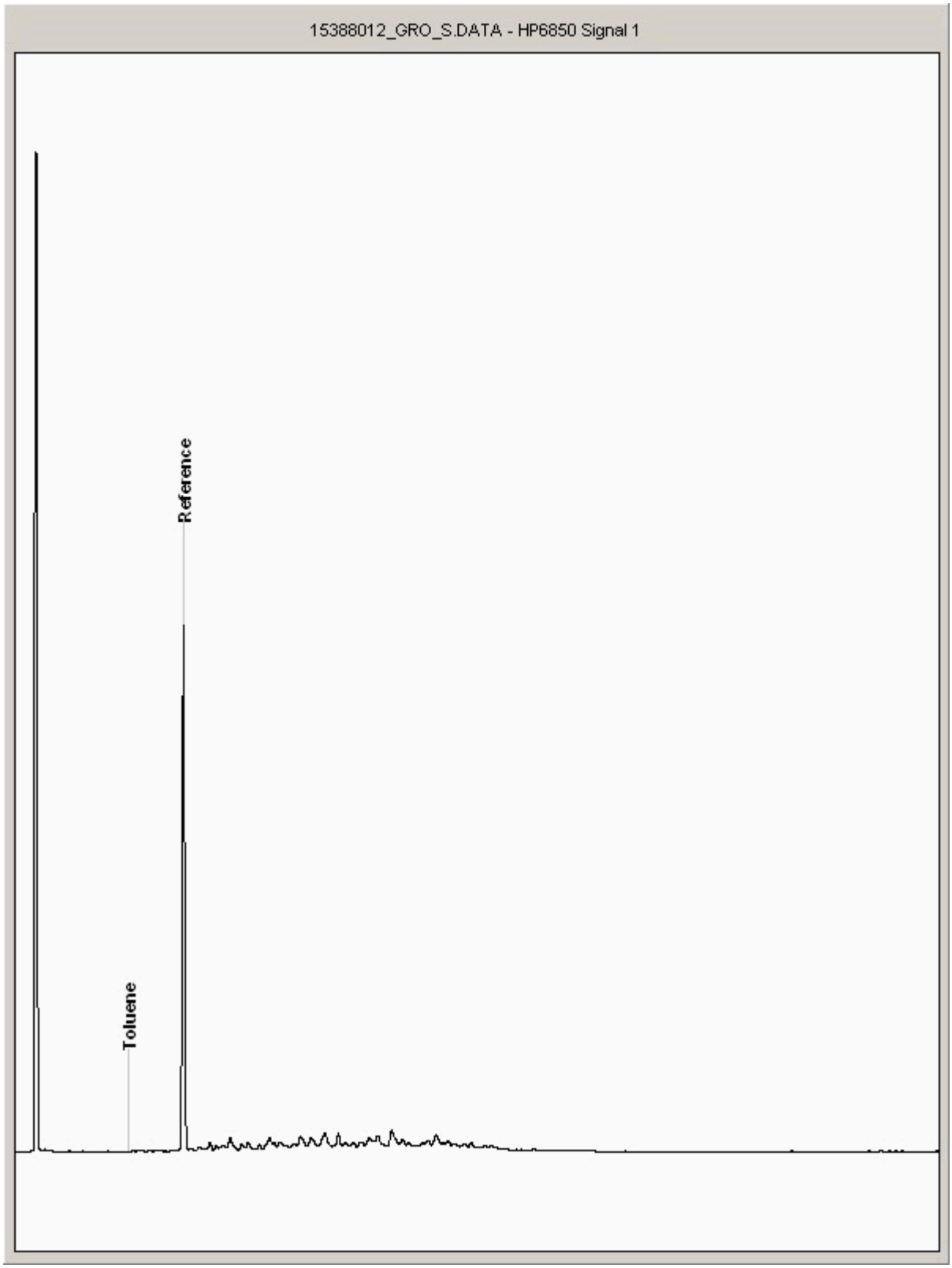


CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 15388012 **Depth :** 2.00 - 2.10
Sample ID : W5WS307c



CERTIFICATE OF ANALYSIS

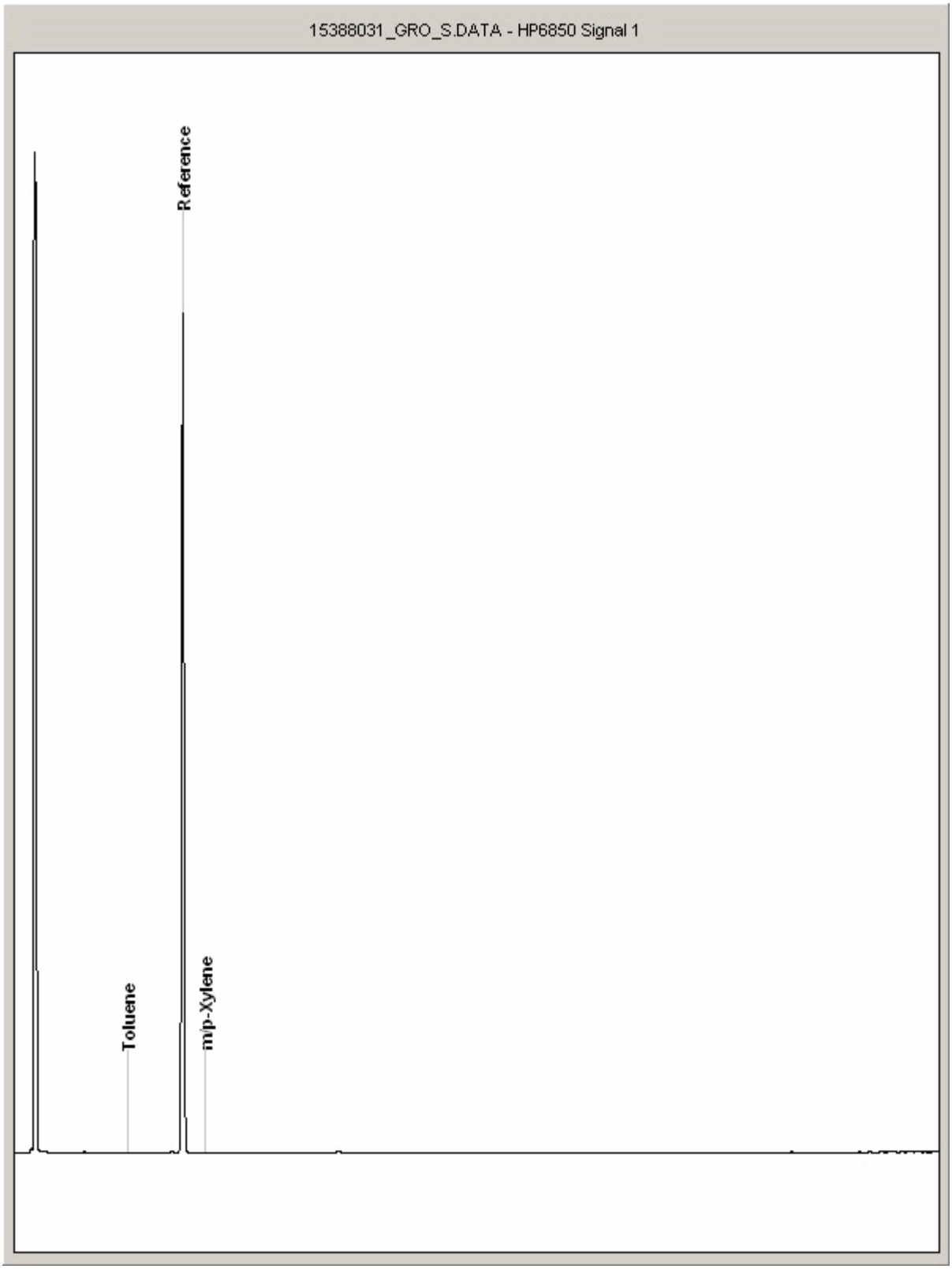
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388031
Sample ID : W5WS307c

Depth : 0.80 - 0.90



CERTIFICATE OF ANALYSIS

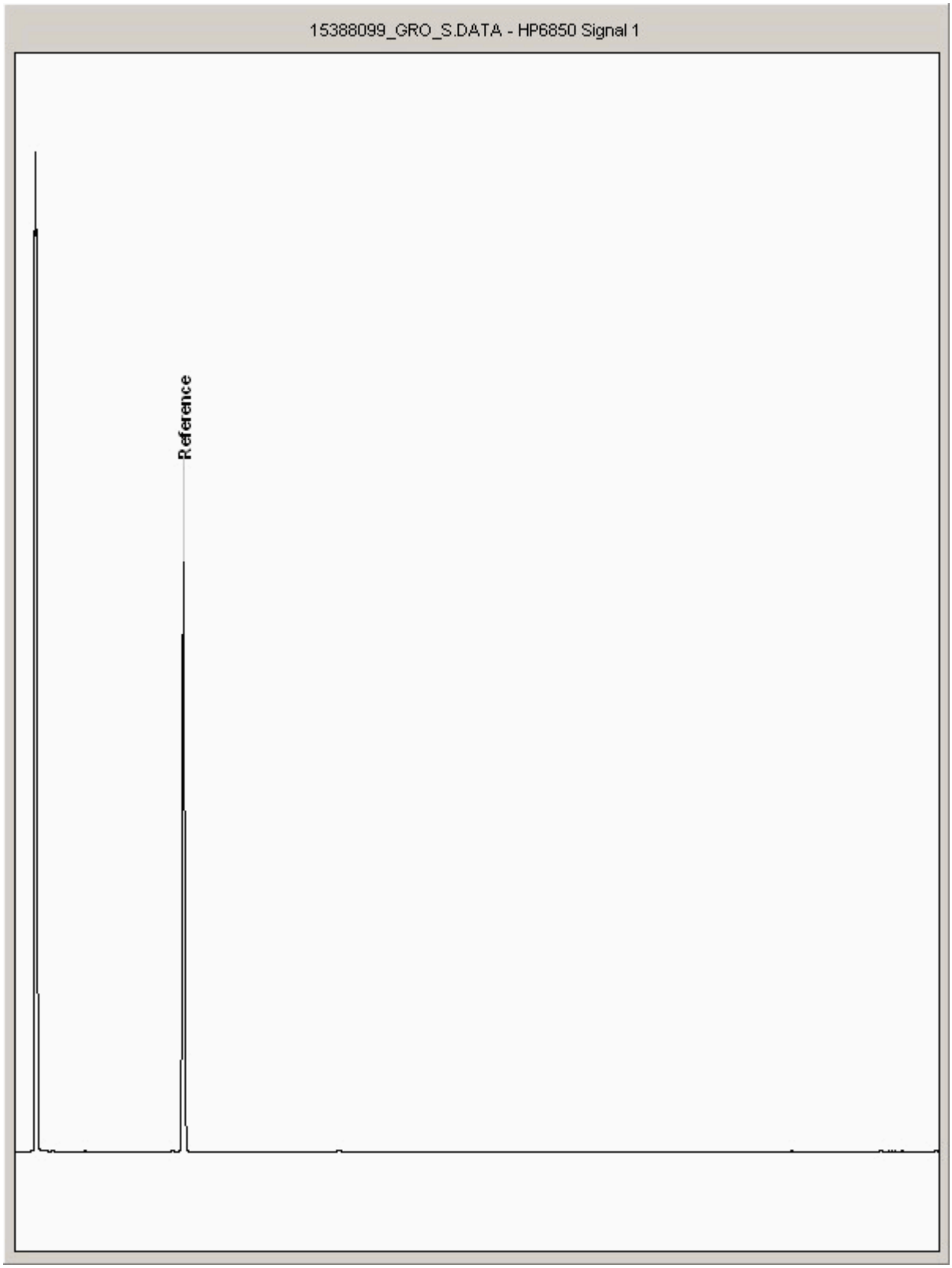
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388099
Sample ID : W5WS307c

Depth : 0.00 - 0.20

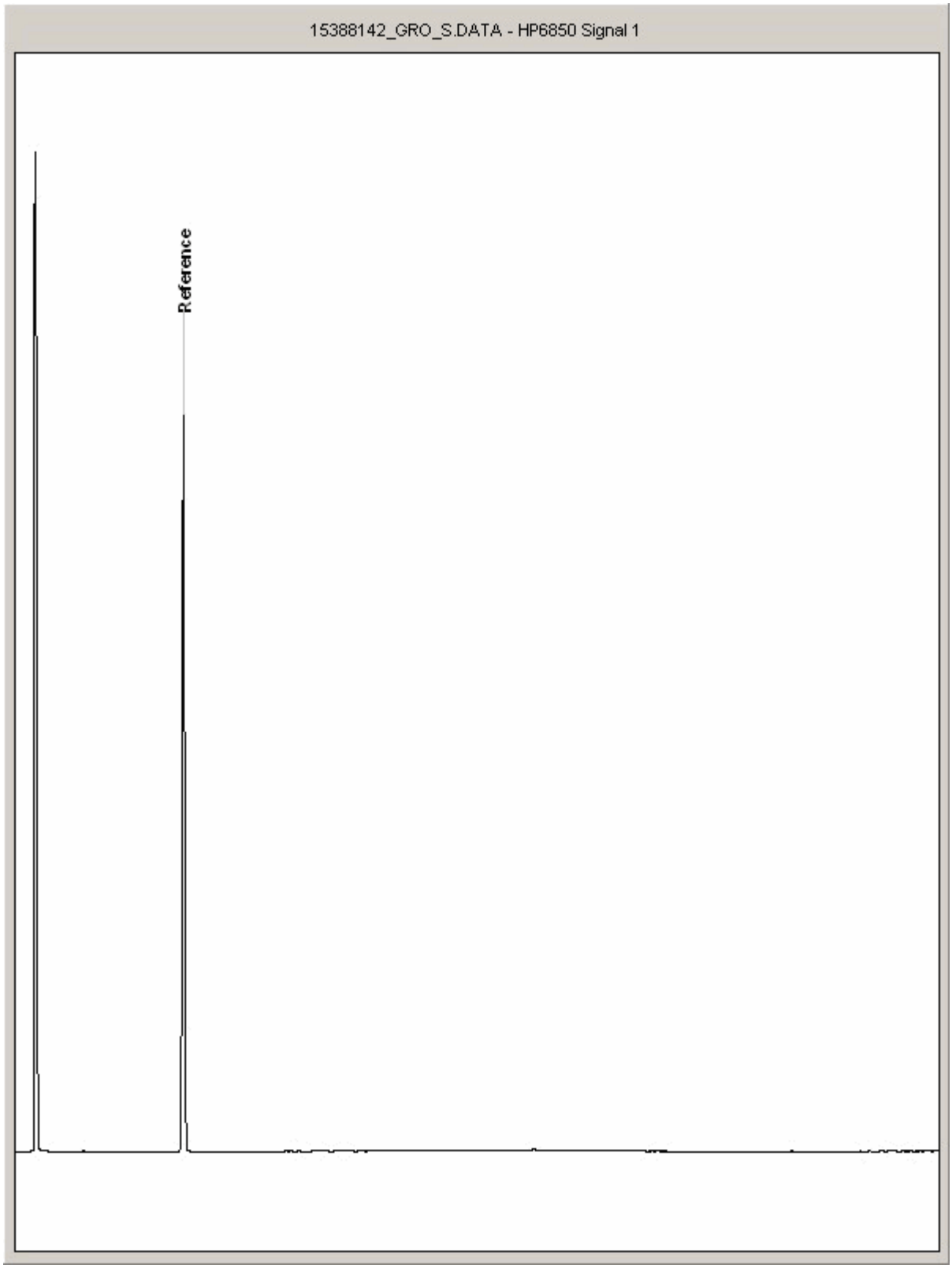


CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 15388142 **Depth :** 0.90 - 1.00
Sample ID : W5BH302



CERTIFICATE OF ANALYSIS

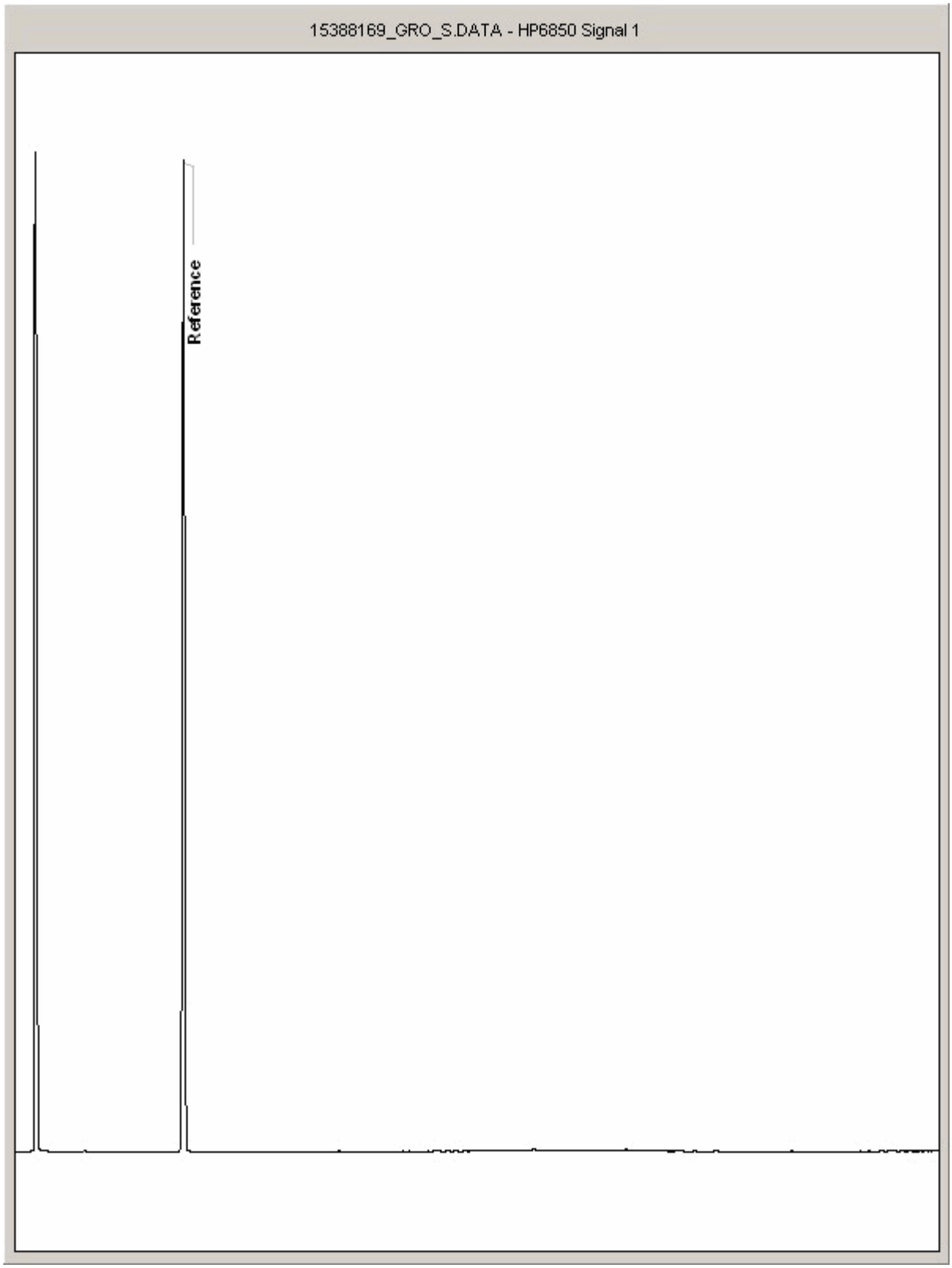
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388169
Sample ID : W5BH303

Depth : 6.50

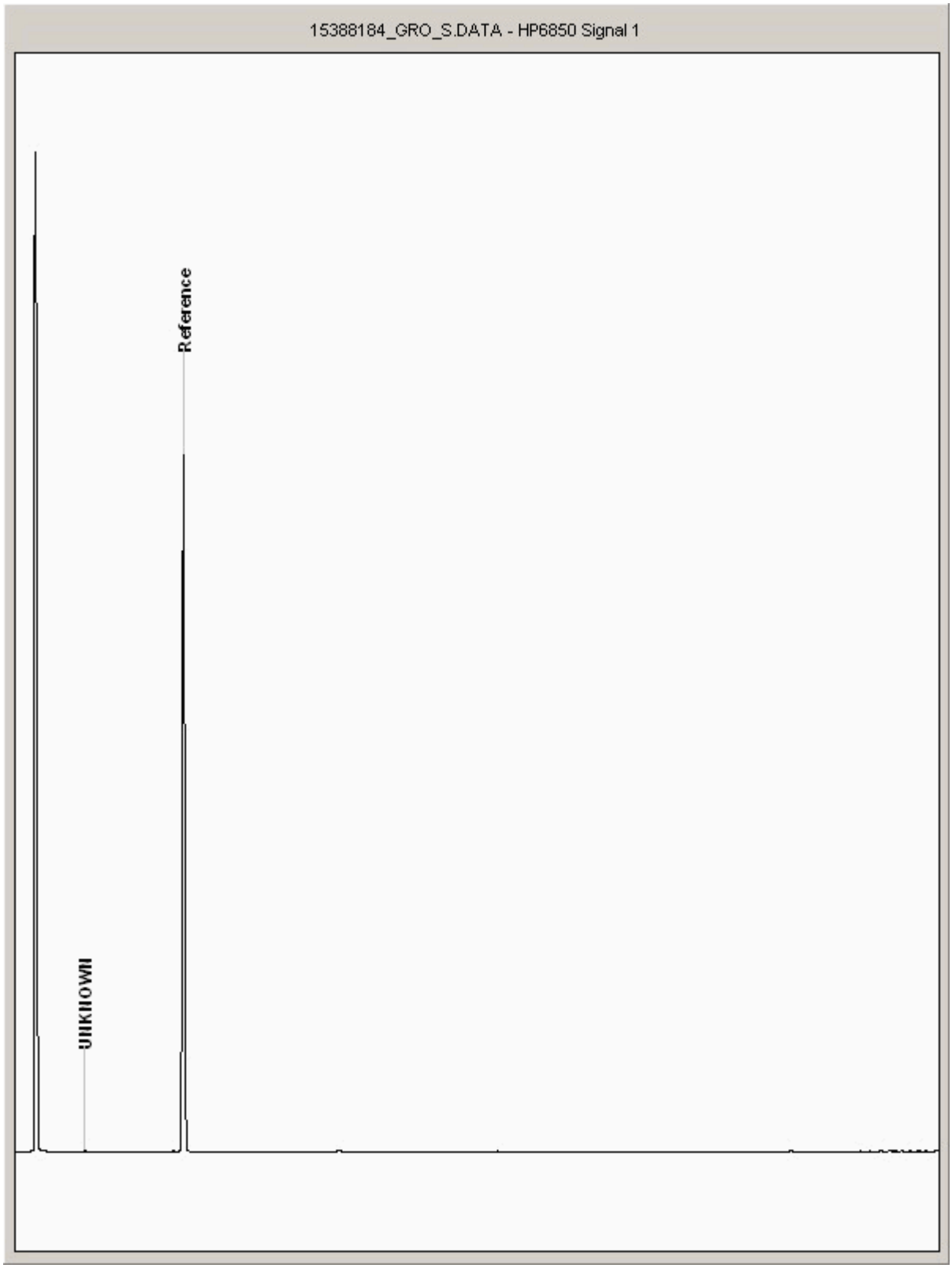


CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 15388184 **Depth :** 0.10 - 0.30
Sample ID : W5BH302



CERTIFICATE OF ANALYSIS

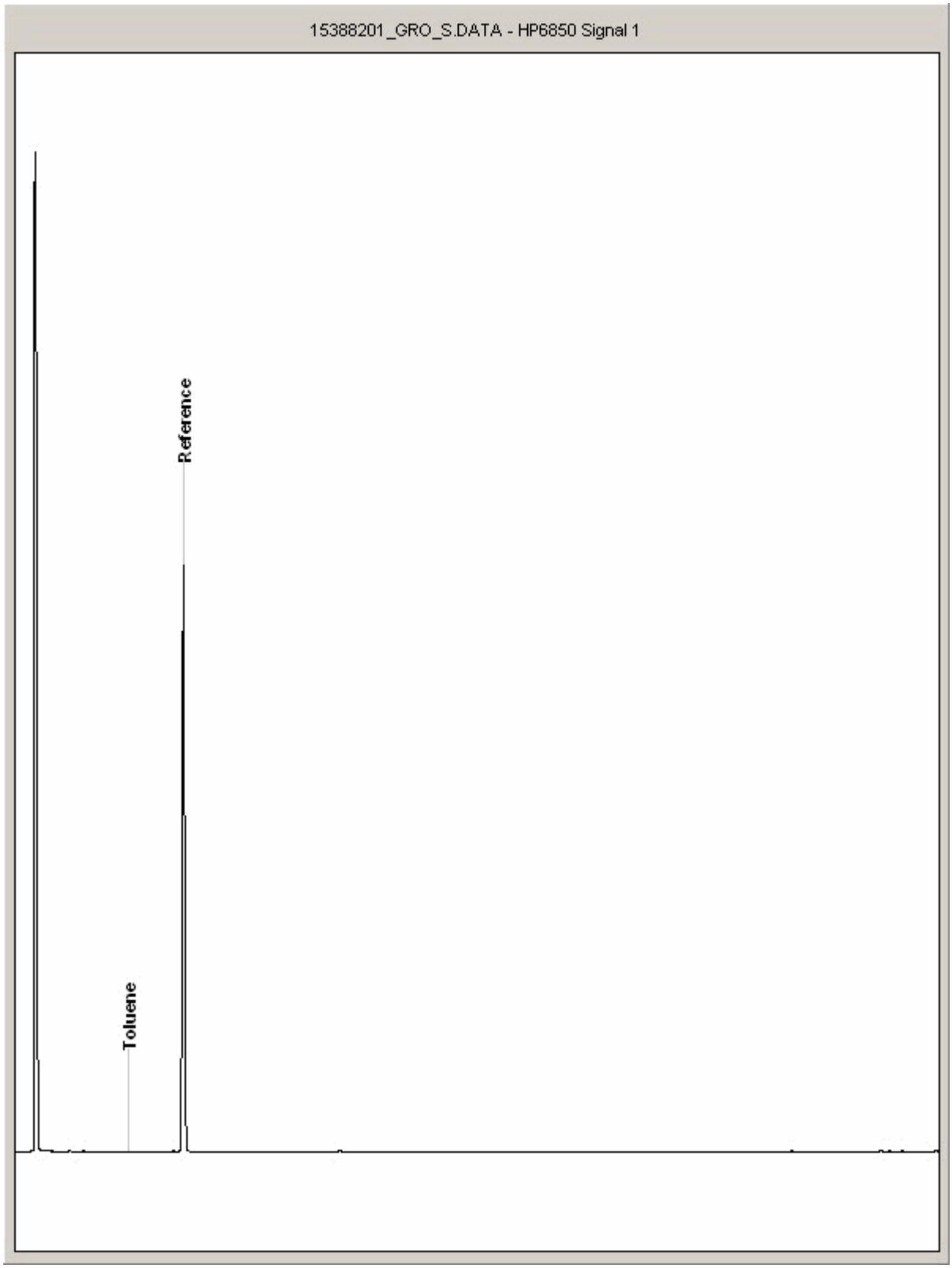
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388201
Sample ID : W5TP305

Depth : 0.30



CERTIFICATE OF ANALYSIS

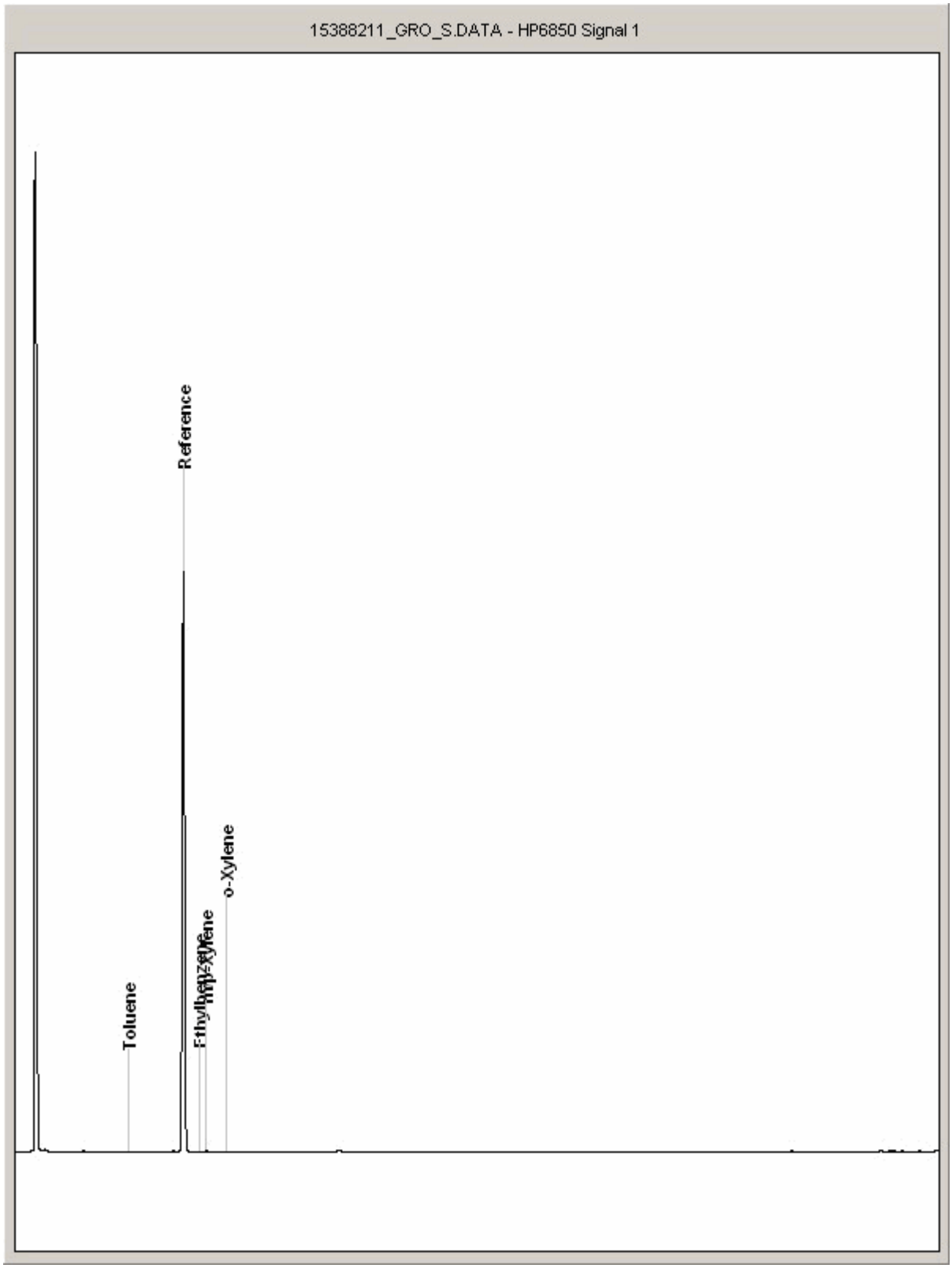
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388211
Sample ID : W5TP305

Depth : 0.80

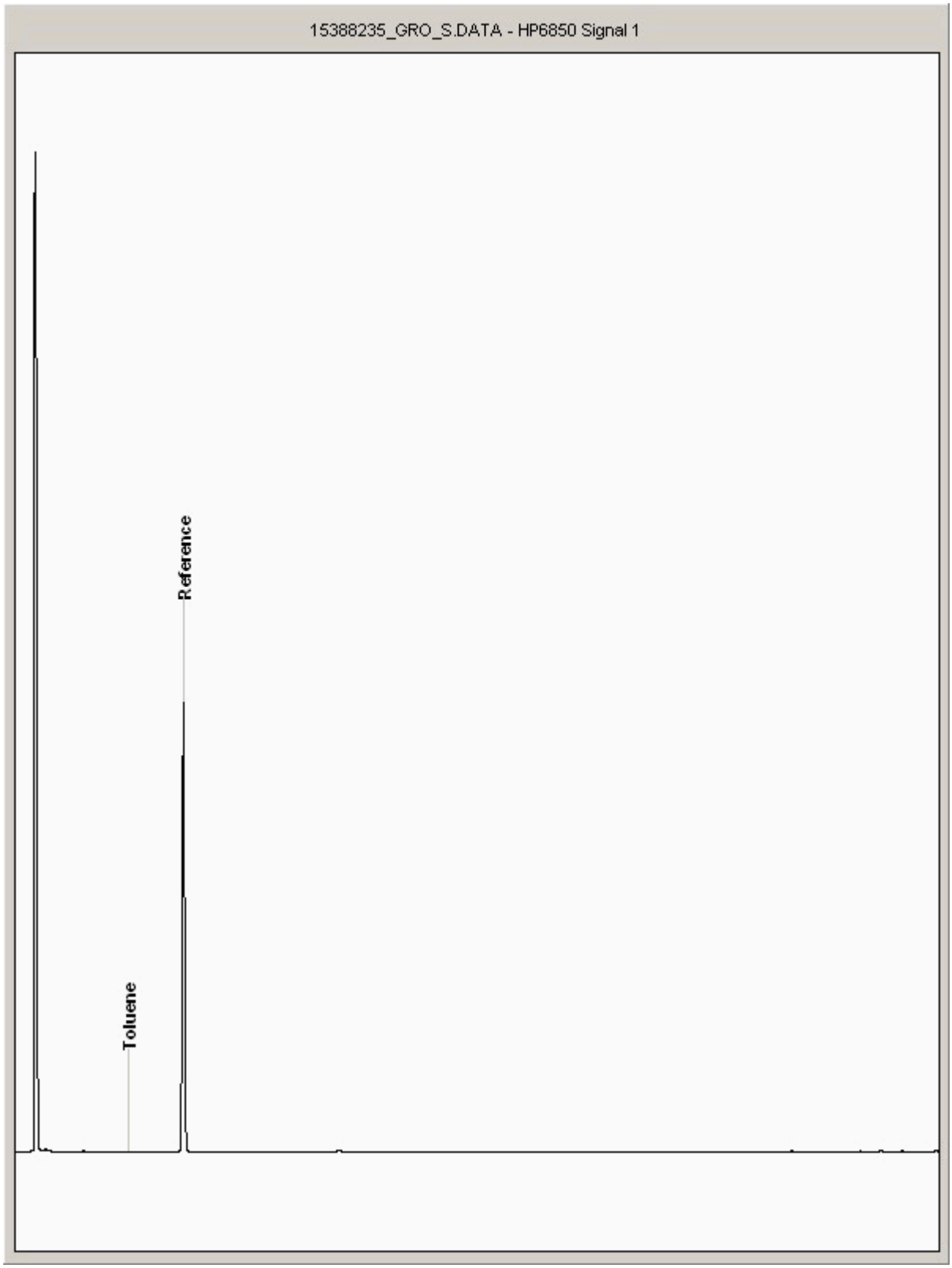


CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 15388235 **Sample ID :** W5TP302 **Depth :** 0.30

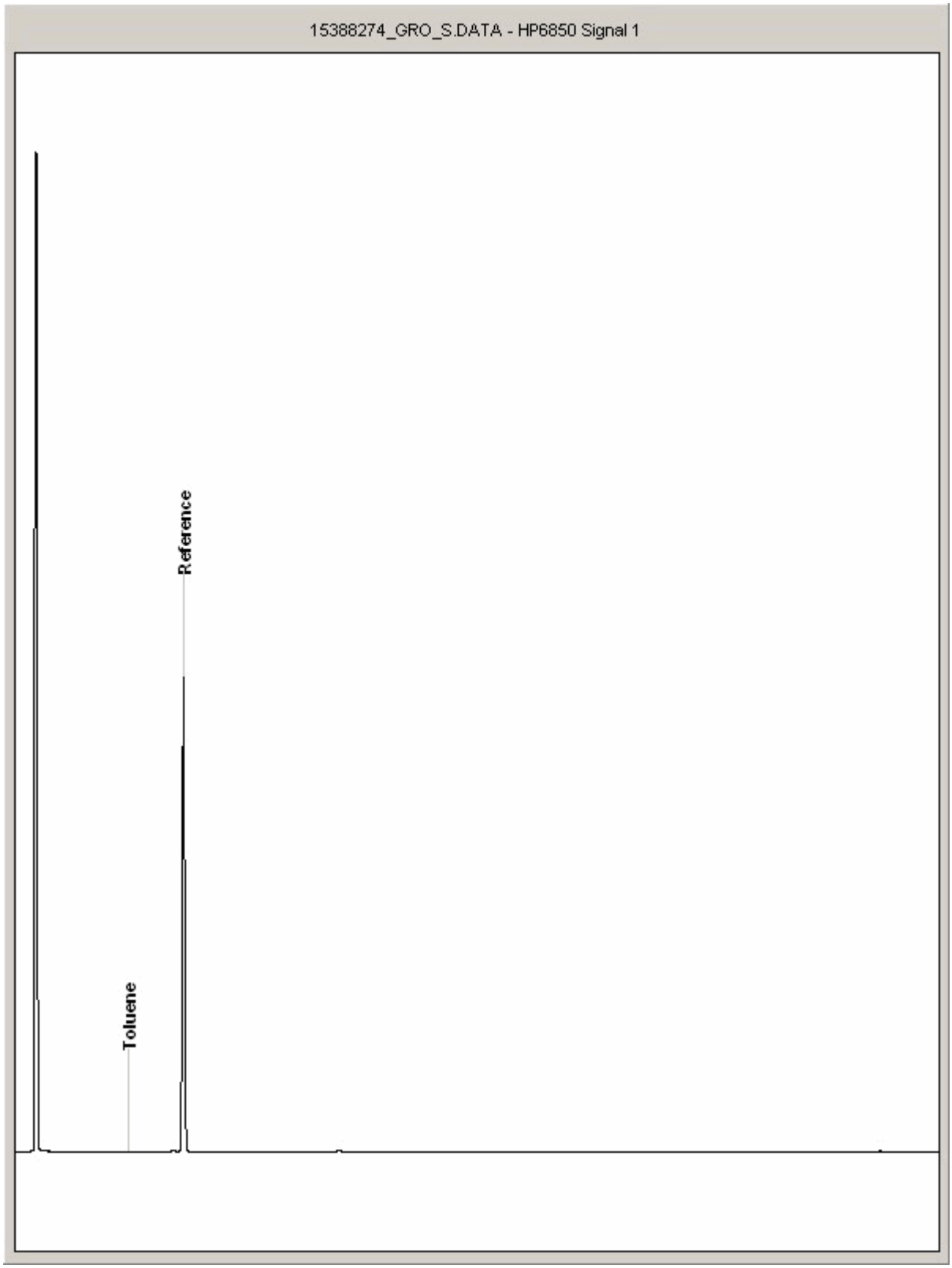


CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 15388274 **Depth :** 1.50
Sample ID : W5TP303



CERTIFICATE OF ANALYSIS

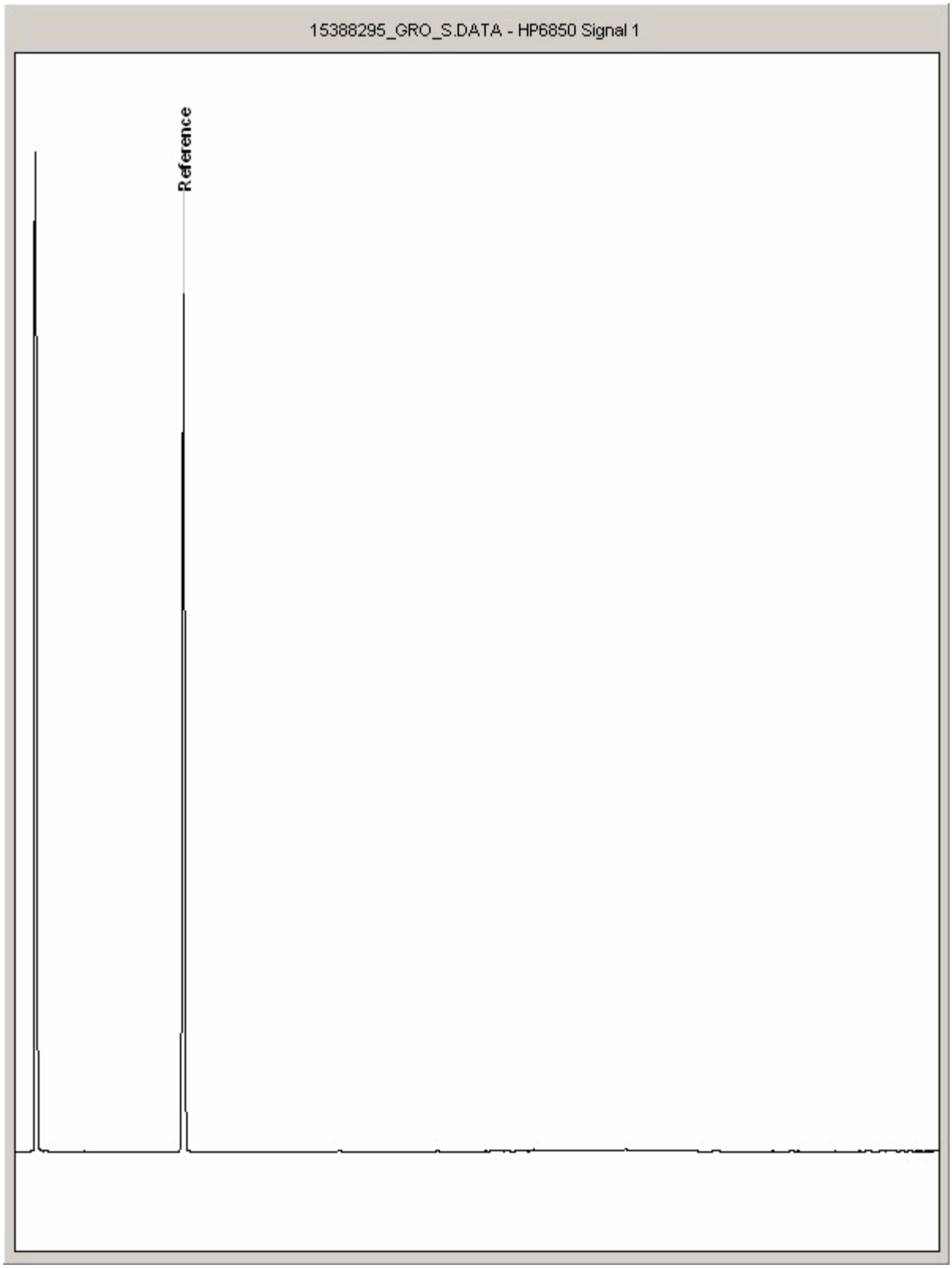
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388295
Sample ID : W5BH302

Depth : 5.80 - 6.00



CERTIFICATE OF ANALYSIS

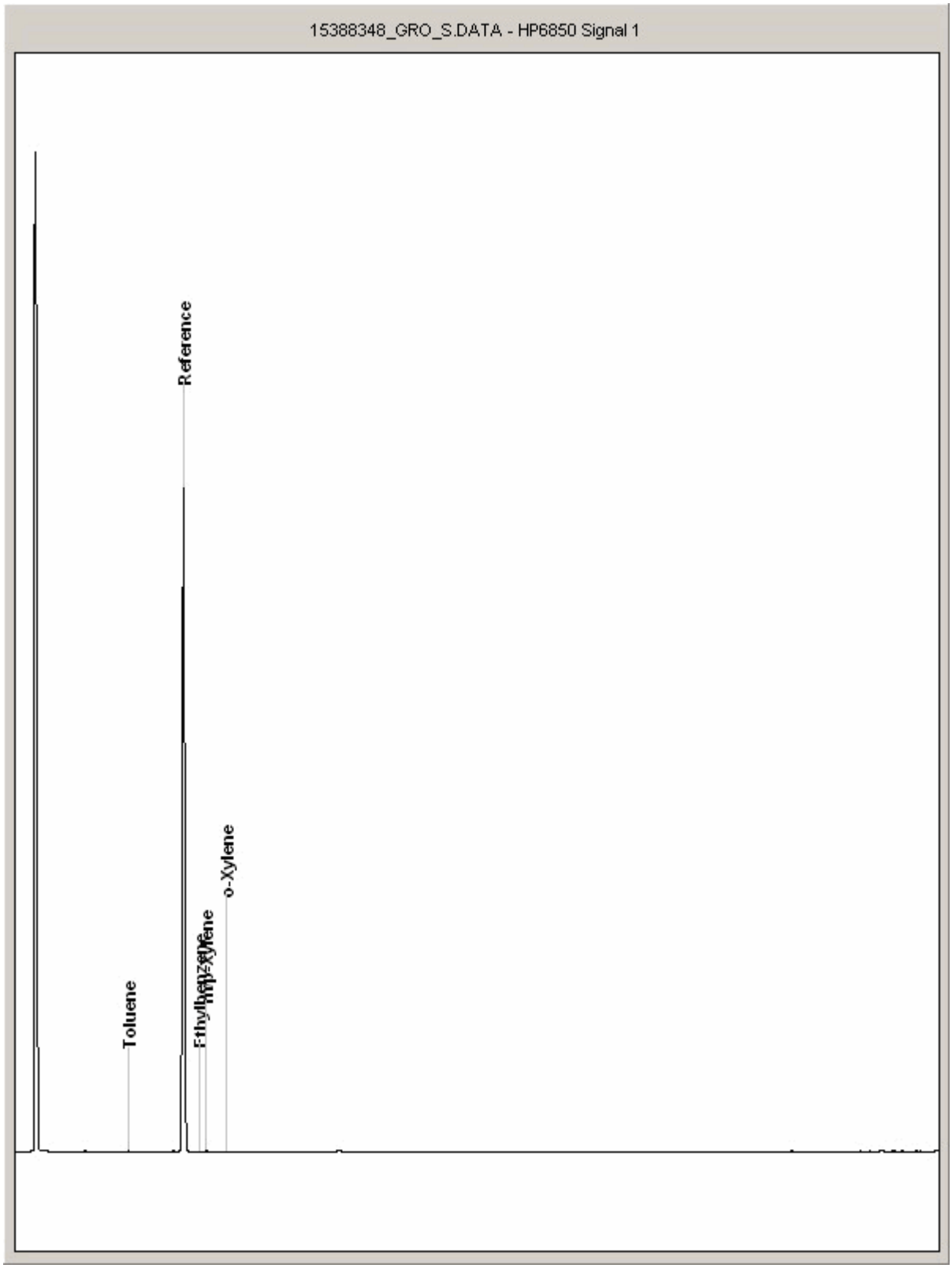
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388348
Sample ID : W3WS303

Depth : 0.30 - 0.50



CERTIFICATE OF ANALYSIS

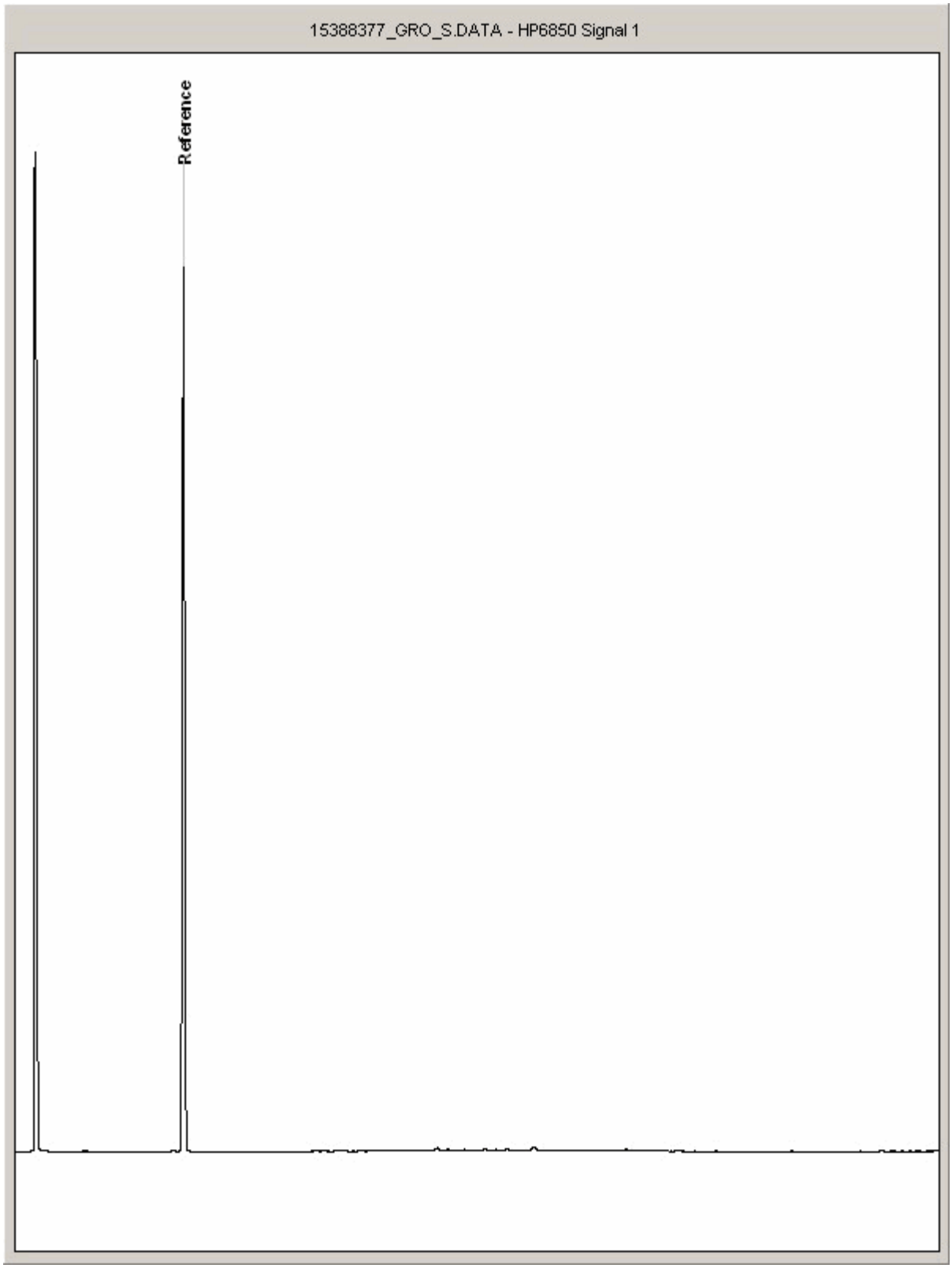
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388377
Sample ID : W5BH303

Depth : 3.70



CERTIFICATE OF ANALYSIS

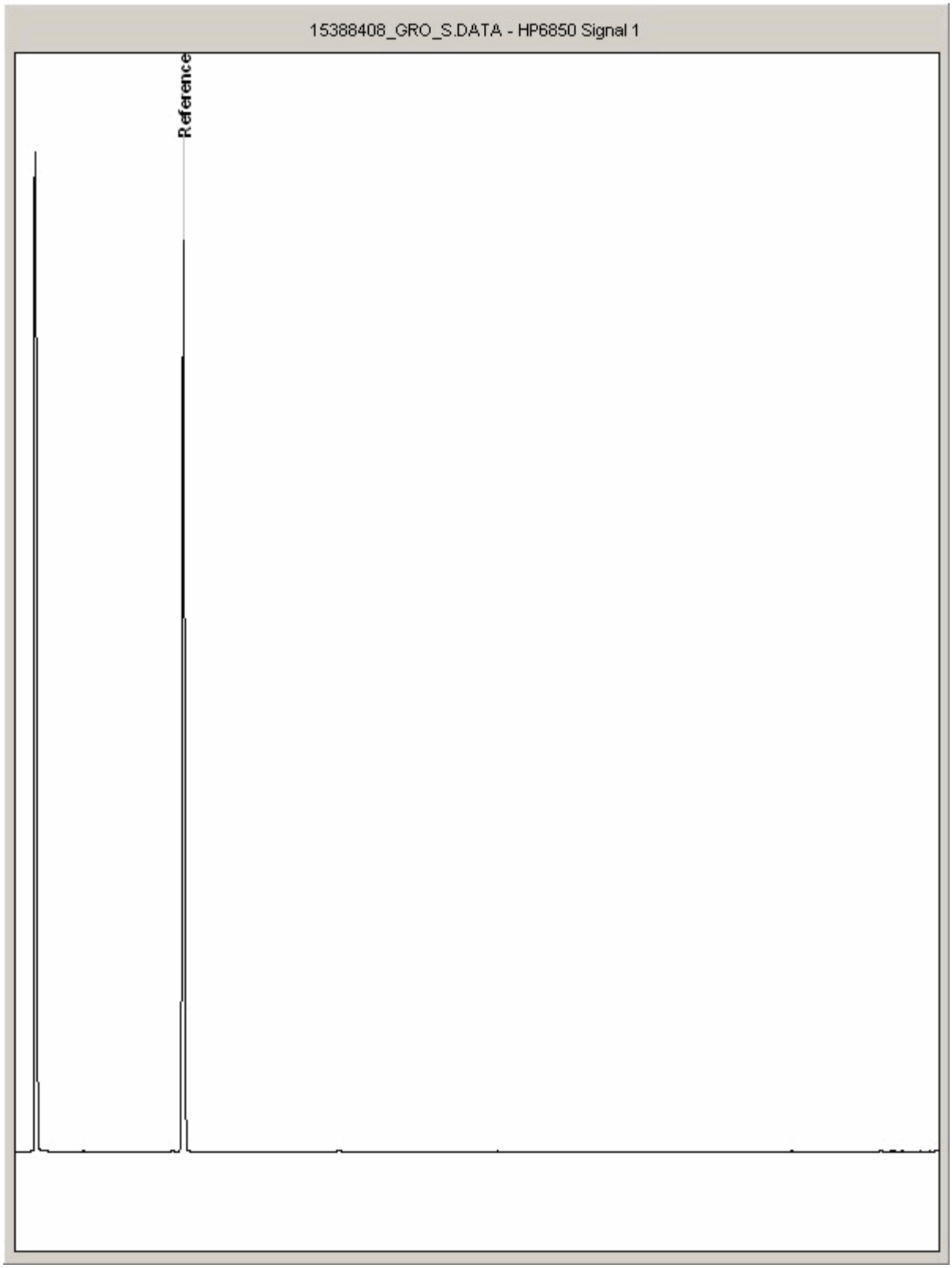
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388408
Sample ID : W5TP302

Depth : 2.80

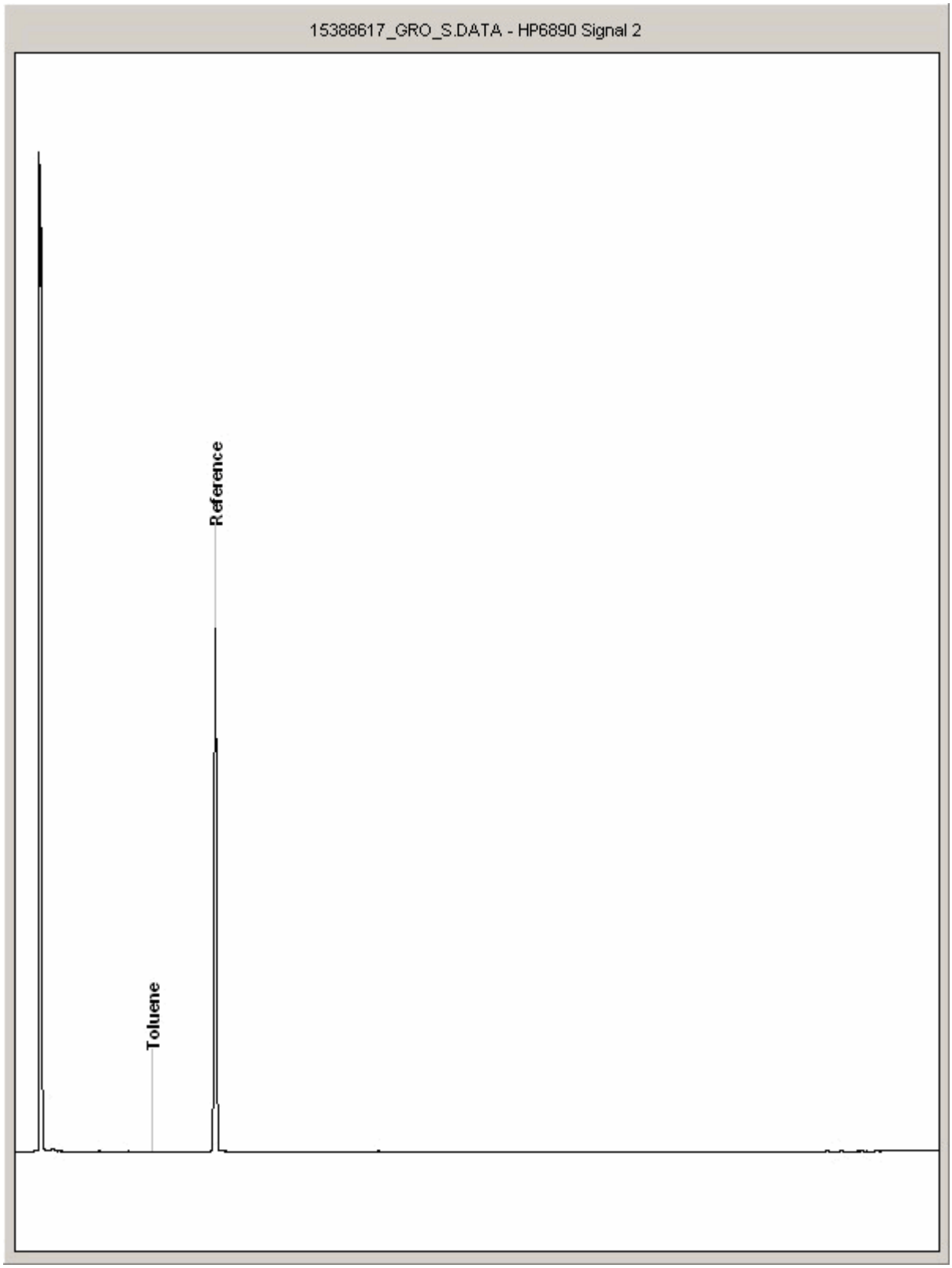


CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 15388617 **Depth :** 1.00
Sample ID : W5TP302

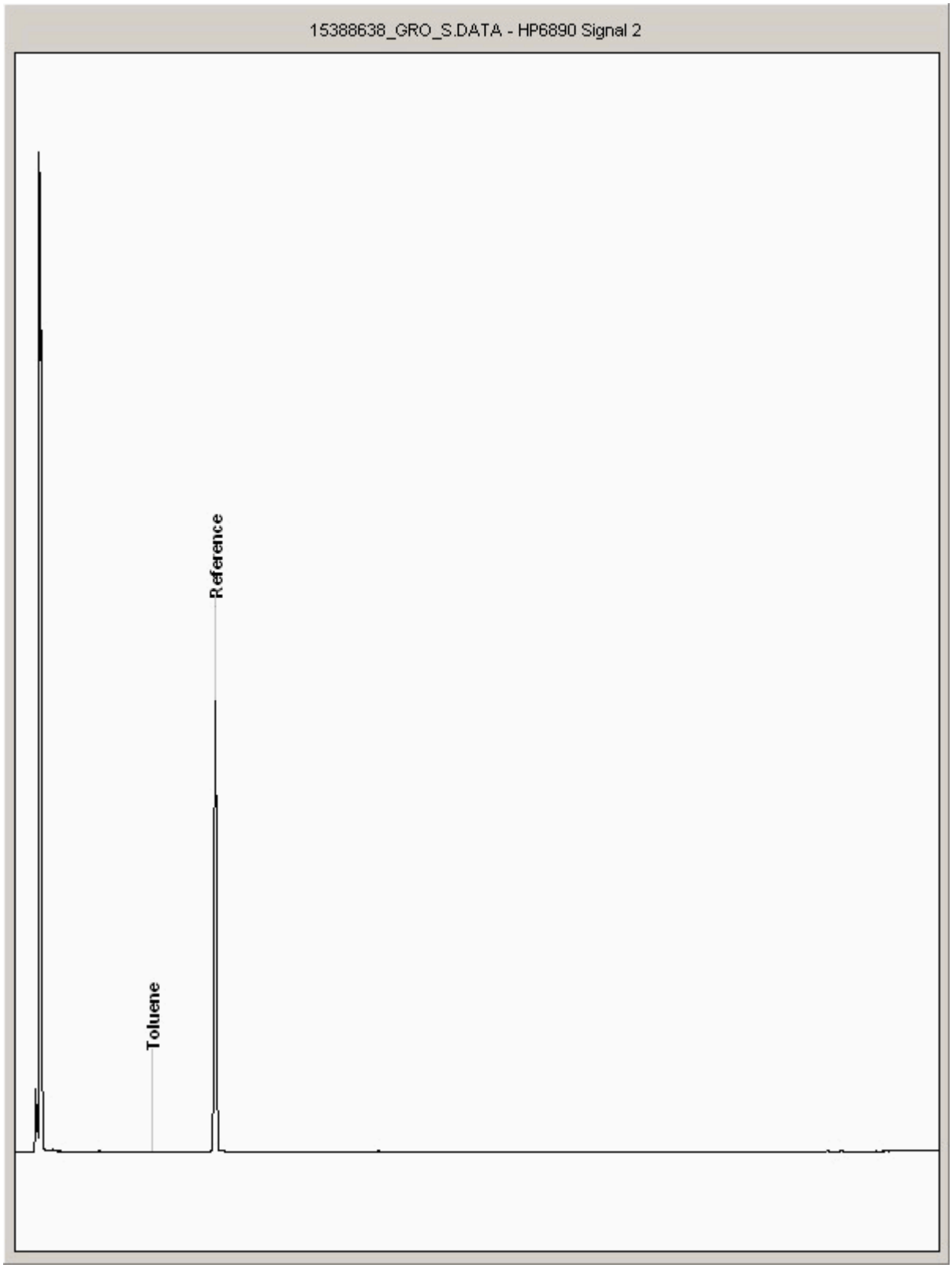


CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 15388638 **Sample ID :** W5TP303 **Depth :** 0.70



CERTIFICATE OF ANALYSIS

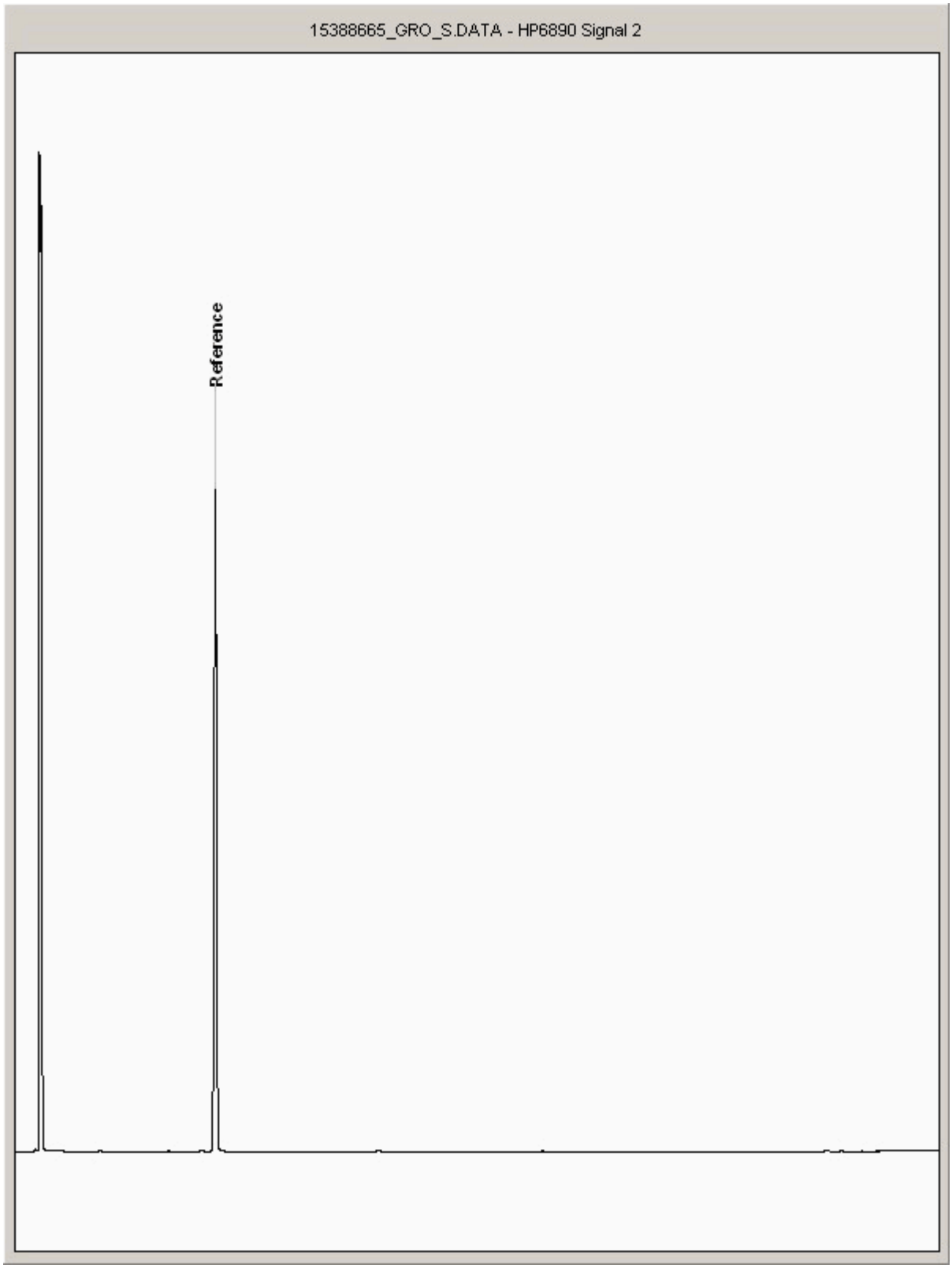
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388665
Sample ID : W5WS306

Depth : 0.90 - 1.10



CERTIFICATE OF ANALYSIS

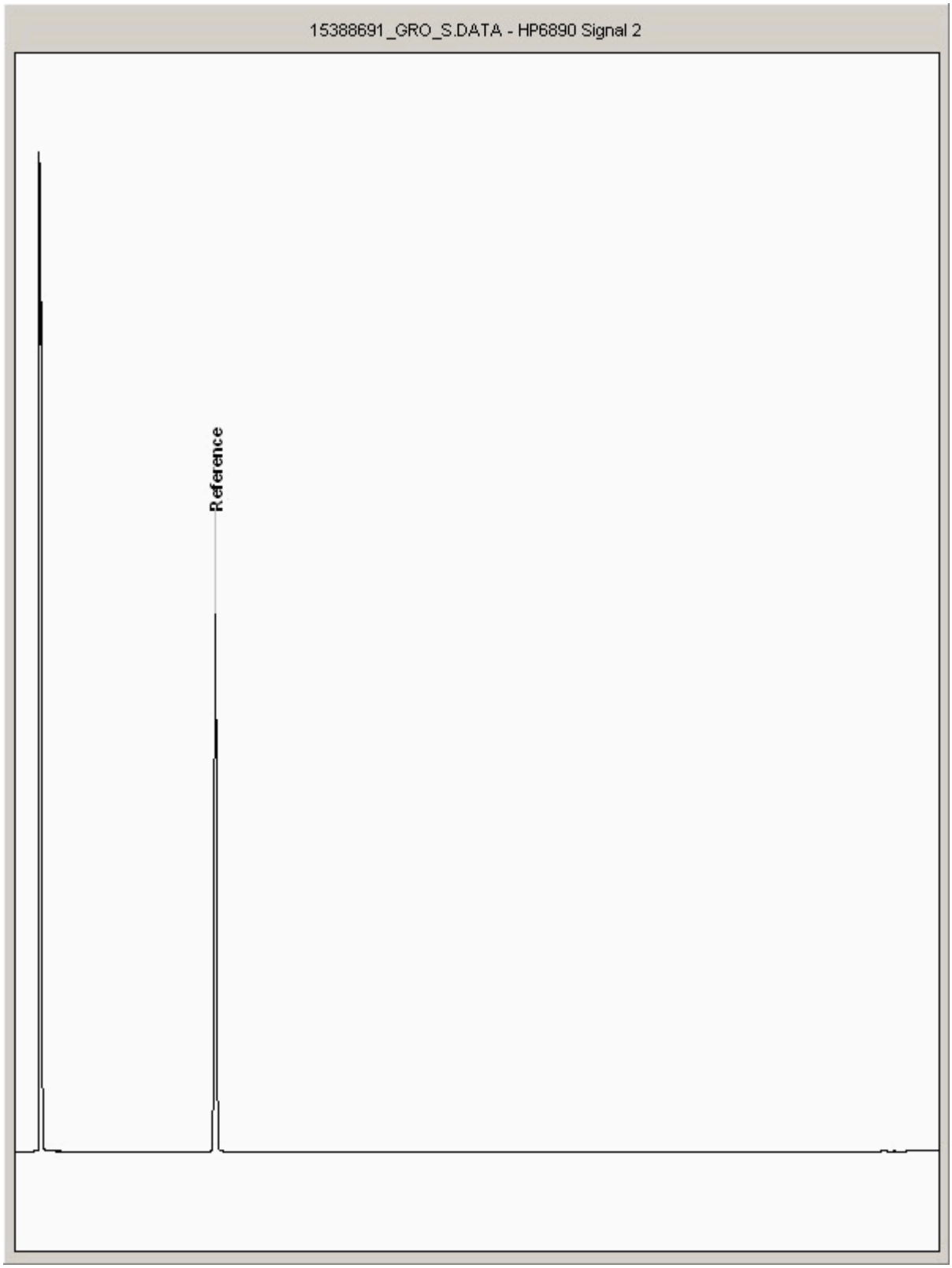
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388691
Sample ID : W5WS306

Depth : 0.00 - 0.30



CERTIFICATE OF ANALYSIS

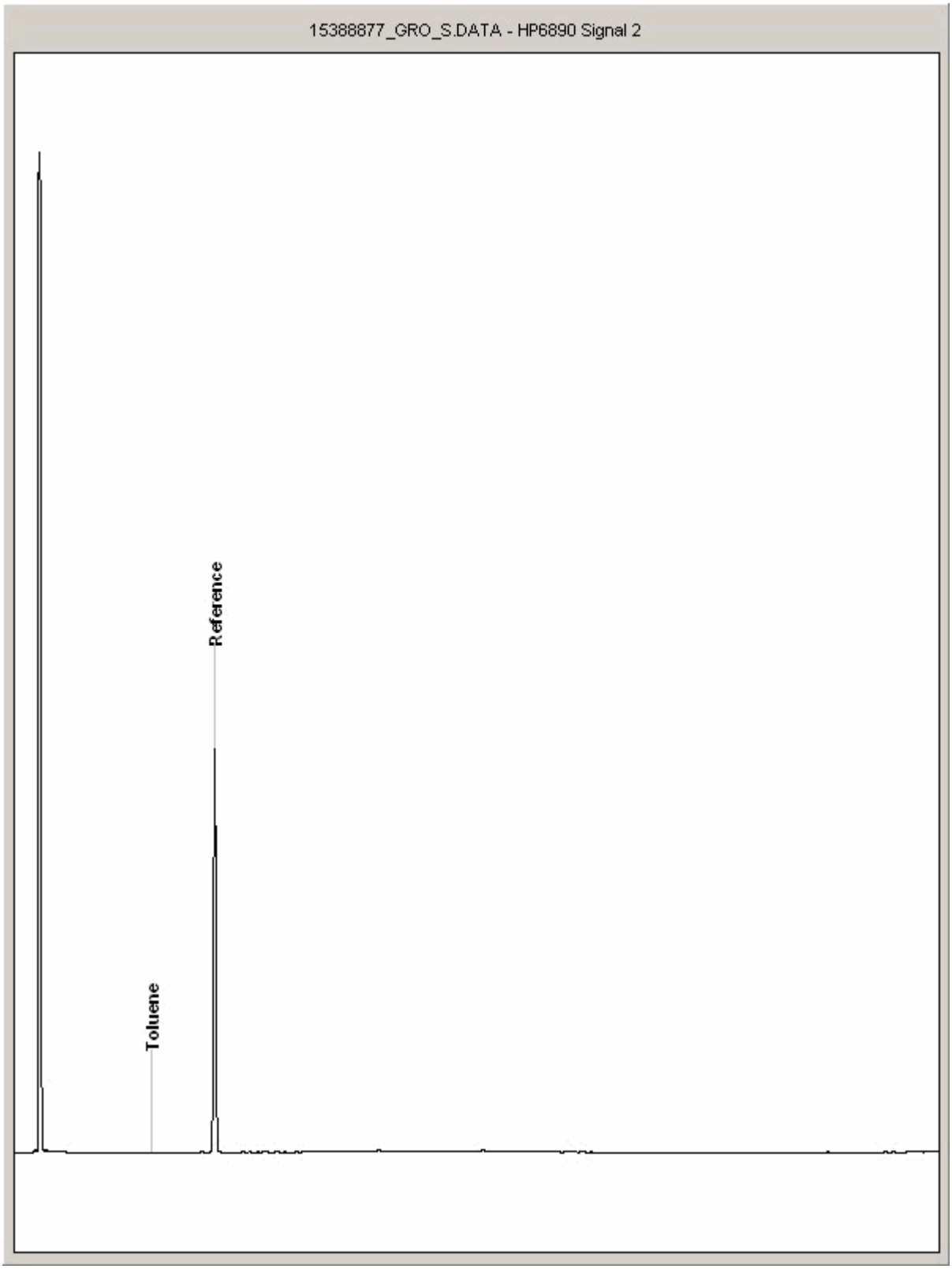
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15388877
Sample ID : W3WS301

Depth : 1.30 - 1.45

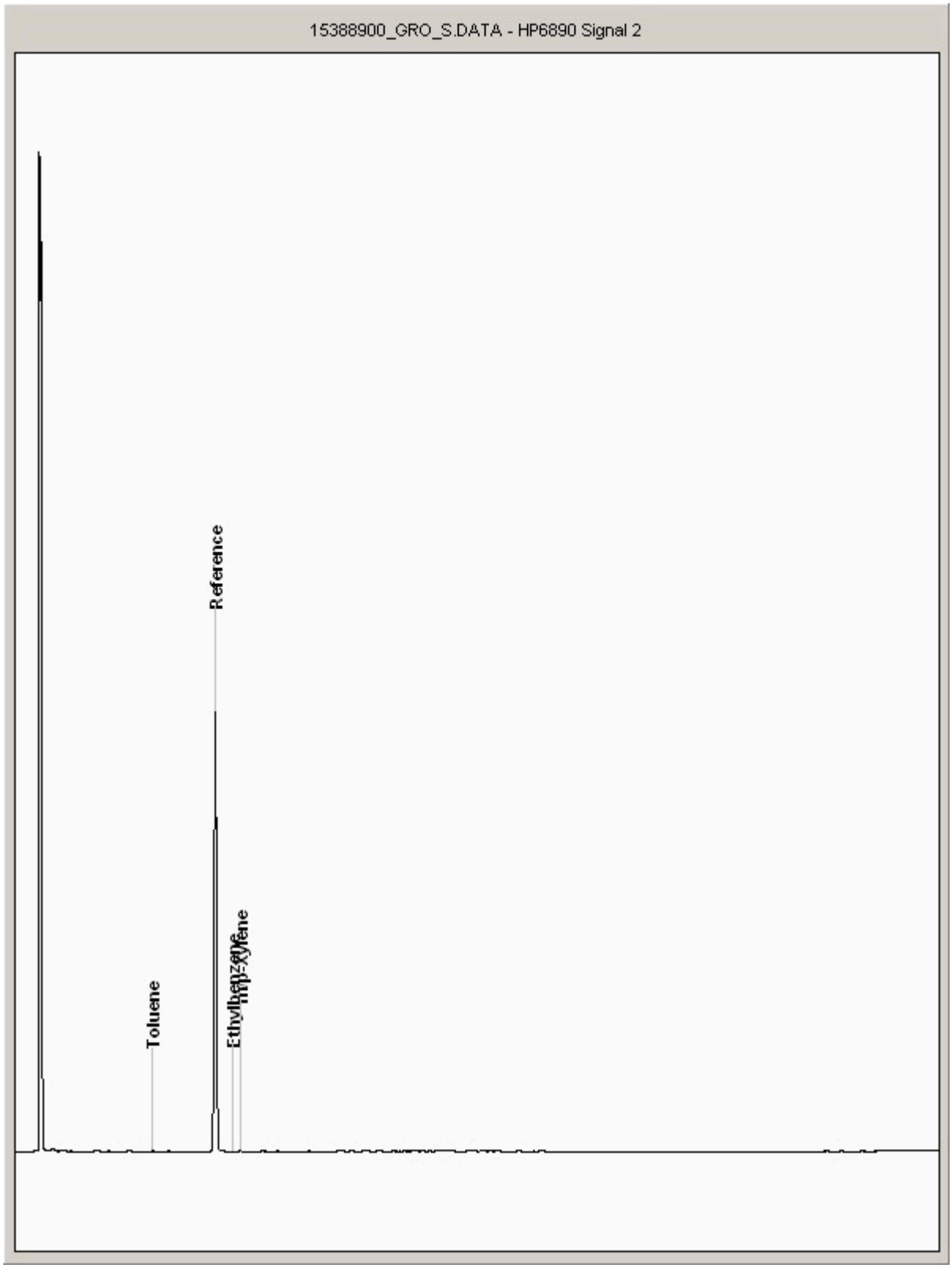


CERTIFICATE OF ANALYSIS

SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 15388900 **Depth :** 0.15 - 0.30
Sample ID : W3WS303



CERTIFICATE OF ANALYSIS

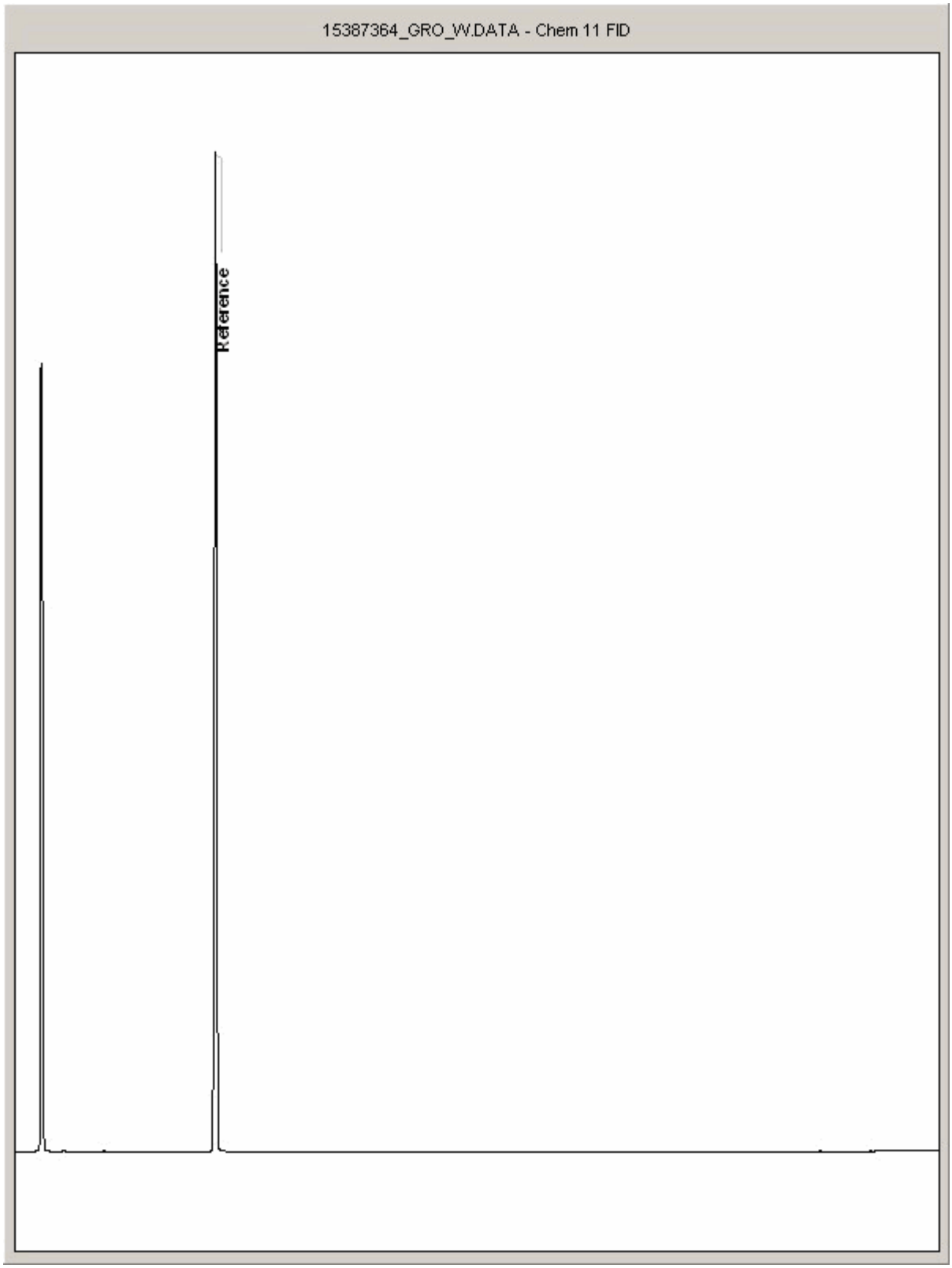
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15387364
Sample ID : W5BH303

Depth : 3.70



CERTIFICATE OF ANALYSIS

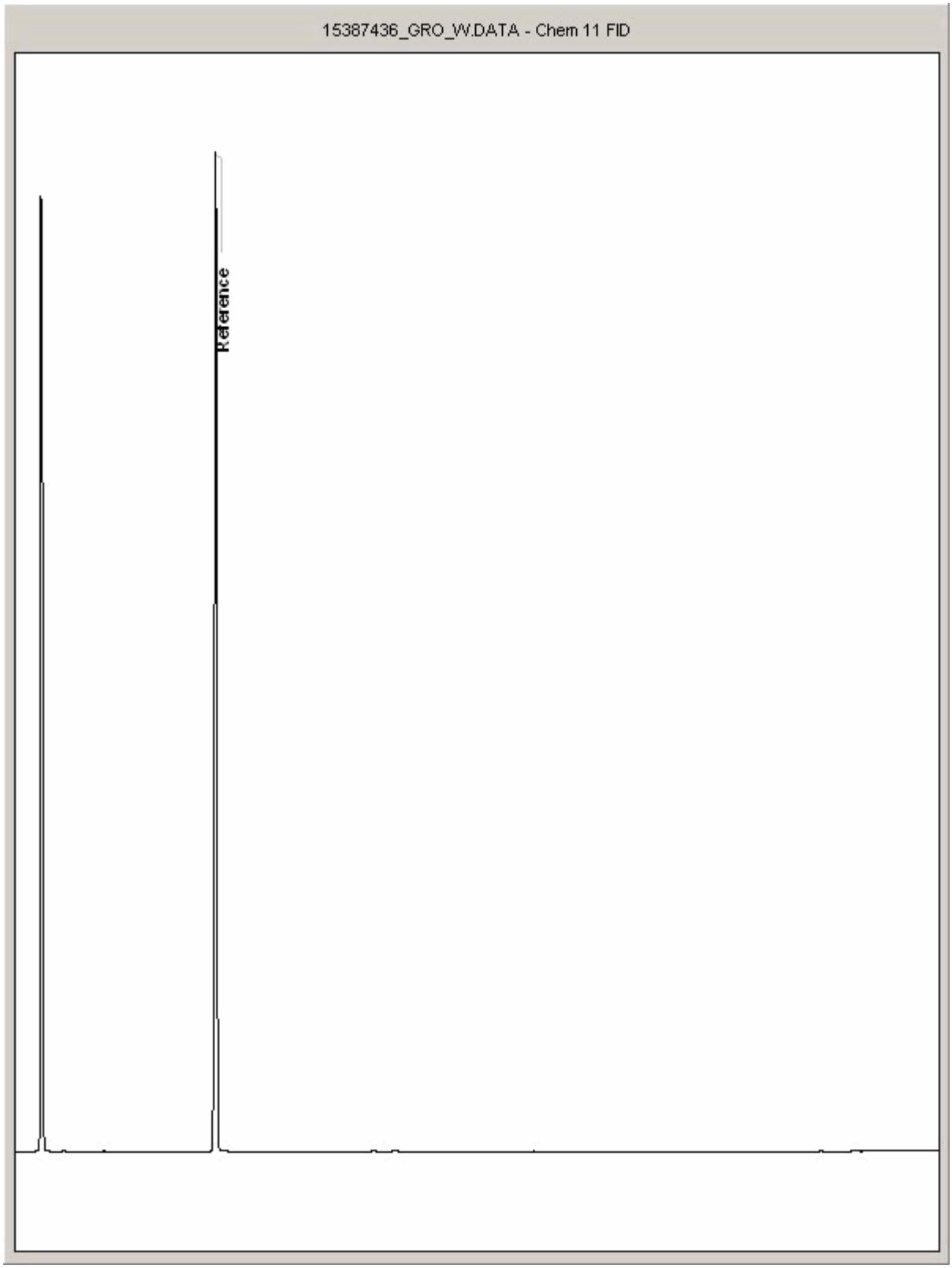
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15387436
Sample ID : W5BH302

Depth : 0.90 - 1.00



CERTIFICATE OF ANALYSIS

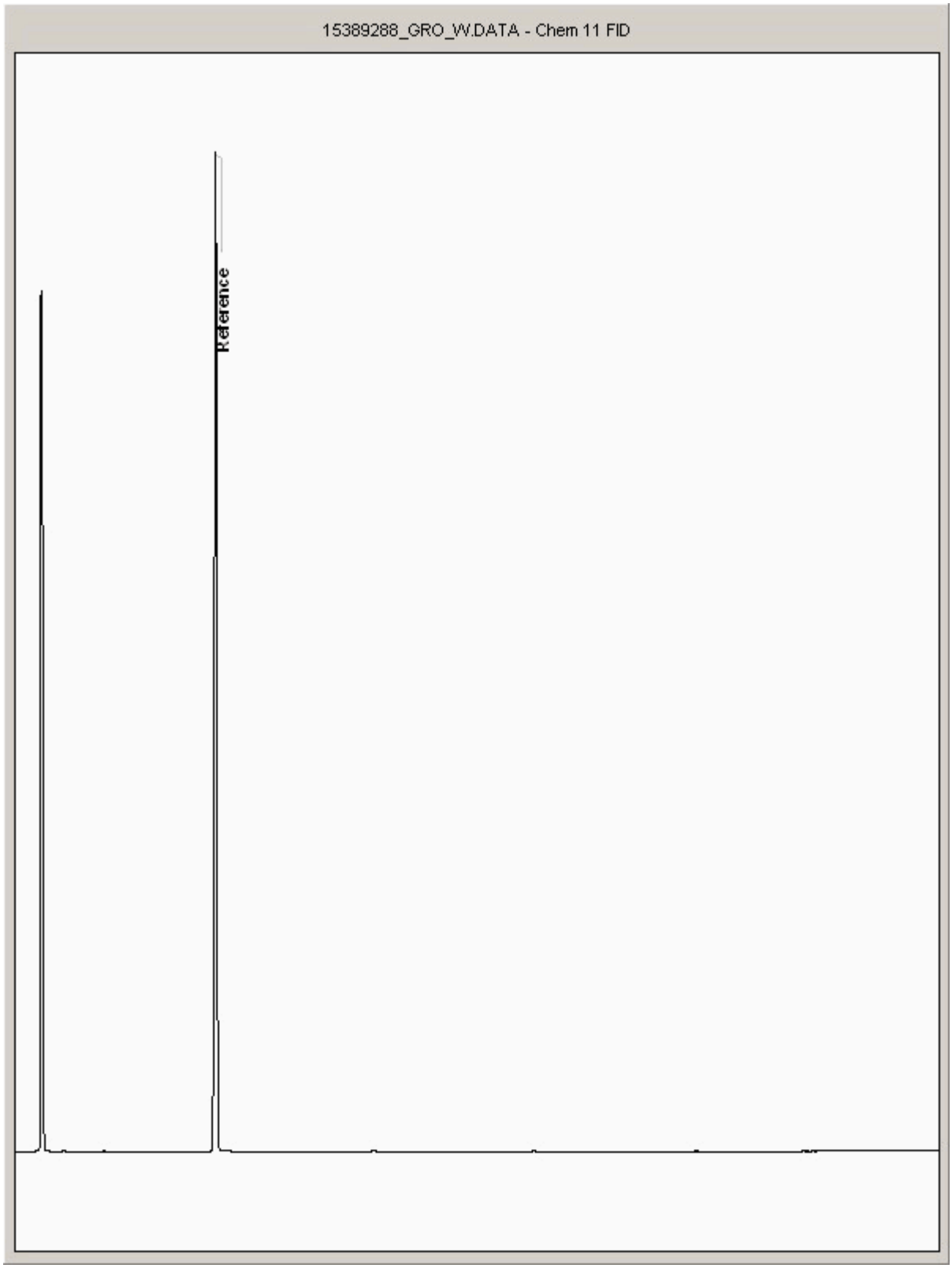
SDG:	170419-19	**Client Reference:**	70015362	**Report Number:**	407713
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15389288
Sample ID : W5BH302

Depth : 5.80 - 6.00



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
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Certificate of Analysis

Report No.: 17-61411-1

Issue No.: **1**
Date of Issue **08/05/2017**

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	33617
Customer Reference:	170419-19
Quotation Reference:	161220/03
Description:	1 soil sample
Date Received:	26/04/2017
Date Started:	02/05/2017
Date Completed:	05/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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A member of the RPS Group plc. Terms and conditions apply - copy on request

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Results Summary

Report No.: 17-61411-1

Customer Reference: 170419-19

Customer Order No: 33617

Customer Sample No	**15389663**
Customer Sample ID	W3WS303
RPS Sample No	327631
Sample Type	**SOIL**
Sample Depth (m)	0.3-0.5
Sampling Date	12/04/2017

Determinand	CAS No	Codes	SOP	Units	RL	
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	28 April 2017
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	170419-105
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	406659

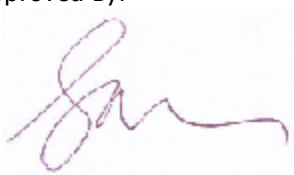
This report has been revised and directly supersedes 406630 in its entirety.

We received 5 samples on Wednesday April 19, 2017 and 5 of these samples were scheduled for analysis which was completed on Friday April 28, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:



Sonia McWhan
Operations Manager

1291

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CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15360818	W3BH301	ES	0.35 - 0.50	10/04/2017
15360838	W3BH301	ES	0.90 - 1.00	10/04/2017
15360832	W3BH301	ES	1.90 - 2.00	10/04/2017
15360804	W3WS305	ES	0.25 - 0.30	10/04/2017
15360810	W3WS305	ES	0.70 - 0.80	10/04/2017

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15360818			15360838			15360832			15360804			15360810		
			Customer Sample Reference	W3BH301			W3BH301			W3BH301			W3WS305			W3WS305		
			AGS Reference	ES			ES			ES			ES			ES		
			Depth (m)	0.35 - 0.50			0.90 - 1.00			1.90 - 2.00			0.25 - 0.30			0.70 - 0.80		
			Container	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4			X			X					X			X	
CEN Readings	All	NDPs: 0 Tests: 1			X												
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1			X												
Dissolved Tin by ICPMS	All	NDPs: 0 Tests: 1			X												
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1			X												
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 5	X			X			X		X				X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1		X													
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 5	X			X			X		X				X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5			X			X		X				X			X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1		X													
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5	X			X			X		X				X		
Mercury Dissolved	All	NDPs: 0 Tests: 1		X													
Metals in solid samples by OES	All	NDPs: 0 Tests: 5	X			X			X		X				X		
Organotins in Aqueous Samples	All	NDPs: 0 Tests: 1		X													
Organotins on soils*	All	NDPs: 0 Tests: 2	X												X		

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	15360818			15360838			15360832			15360804			15360810		
			Customer Sample Reference	W3BH301			W3BH301			W3BH301			W3WS305			W3WS305		
			AGS Reference	ES			ES			ES			ES			ES		
			Depth (m)	0.35 - 0.50			0.90 - 1.00			1.90 - 2.00			0.25 - 0.30			0.70 - 0.80		
			Container	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X		X			X		
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1			X													
pH	All	NDPs: 0 Tests: 5		X			X			X		X			X		
pH Value	All	NDPs: 0 Tests: 1			X													
Sample description	All	NDPs: 0 Tests: 5		X			X			X		X			X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 4		X			X					X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 2		X								X					
TPH CWG (W)	All	NDPs: 0 Tests: 1			X													
TPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X			X		X			X		
VOC MS (S)	All	NDPs: 0 Tests: 5				X			X		X			X			X	
VOC MS (W)	All	NDPs: 0 Tests: 1			X													

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15360818	W3BH301	0.35 - 0.50	Light Brown	Sandy Clay Loam	Brick	Stones
15360832	W3BH301	1.90 - 2.00	Dark Brown	Silty Clay Loam	None	None
15360838	W3BH301	0.90 - 1.00	Light Brown	Sandy Clay Loam	Brick	Stones
15360804	W3WS305	0.25 - 0.30	Dark Brown	Stone/Soil	Stones	N/A
15360810	W3WS305	0.70 - 0.80	Light Brown	Rubble/Soil	Brick	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3BH301	W3BH301	W3WS305	W3WS305
			Depth (m)	0.35 - 0.50	0.90 - 1.00	1.90 - 2.00	0.25 - 0.30	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
			Sampled Time	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-105	170419-105	170419-105	170419-105	170419-105
			Lab Sample No.(s)	15360818	15360838	15360832	15360804	15360810
			AGS Reference	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		9.8	15	28	13	16
Soil Organic Matter (SOM)	<0.35 %	TM132		0.8 #			0.8 #	
pH	1 pH Units	TM133		10.2 M	10.4 M	8.21 M	9.9 #	9.59 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		8.11 M	12.3 M	32.6 M	6.25 #	6.83 M
Cadmium	<0.02 mg/kg	TM181		0.178 M	0.863 M	<0.02 M	0.0723 #	0.199 M
Chromium	<0.9 mg/kg	TM181		6.91 M	6.88 M	36.3 M	2.91 #	14.8 M
Copper	<1.4 mg/kg	TM181		75.3 M	109 M	7.16 M	177 #	57.7 M
Lead	<0.7 mg/kg	TM181		203 M	132 M	21.1 M	384 #	420 M
Mercury	<0.14 mg/kg	TM181		0.608 M	1.57 M	<0.14 M	0.672 #	0.531 M
Nickel	<0.2 mg/kg	TM181		8.52 M	12.2 M	19.3 M	16.5 #	10.8 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #
Tin	<0.24 mg/kg	TM181		7.11 #				7.17 #
Zinc	<1.9 mg/kg	TM181		184 M	88.2 M	55 M	80.9 #	100 M

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.					
			W3BH301	W3WS305				
			Depth (m)	0.35 - 0.50	0.70 - 0.80			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	10/04/2017	10/04/2017			
			Sampled Time	.	.			
			Date Received	19/04/2017	19/04/2017			
			SDG Ref	170419-105	170419-105			
			Lab Sample No.(s)	15360818	15360810			
			AGS Reference	ES	ES			
Dibutyl Tin*	<0.02 mg/kg	SUB	0.06	<0.02				
Tributyl Tin*	<0.02 mg/kg	SUB	1.26	<0.02				
Triphenyl Tin*	<0.05 mg/kg	SUB	<0.05	<0.05				
Tetrabutyl Tin*	<0.02 mg/kg	SUB	<0.02	<0.02				
Monobutyl Tin*	<0.1 mg/kg	SUB	<0.1	<0.1				
Monophenyl Tin*	<0.02 mg/kg	SUB	<0.02	<0.02				
Diphenyl Tin*	<0.02 mg/kg	SUB	<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3BH301	W3BH301	W3WS305	W3WS305
			Depth (m)	0.35 - 0.50	0.90 - 1.00	1.90 - 2.00	0.25 - 0.30	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
			Sampled Time	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-105	170419-105	170419-105	170419-105	170419-105
			Lab Sample No.(s)	15360818	15360838	15360832	15360804	15360810
			AGS Reference	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		93.3	98	111	97.2	97.2
Acenaphthene-d10 % recovery**	%	TM218		90.4	95.1	102	96.1	96.9
Phenanthrene-d10 % recovery**	%	TM218		88.9	90.4	91.2	96.6	95
Chrysene-d12 % recovery**	%	TM218		89	81.8	72.7	106	101
Perylene-d12 % recovery**	%	TM218		96.9	82.7	75.9	112	108
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	0.0118 M	0.0169 M	0.206 #	0.107 M
Acenaphthylene	<0.012 mg/kg	TM218		0.031 M	0.0161 M	<0.012 M	0.611 #	0.473 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	0.0121 M	<0.008 M	0.462 #	4.06 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M	0.448 #	3.66 M
Phenanthrene	<0.015 mg/kg	TM218		0.0961 M	0.112 M	<0.015 M	3.24 #	22.8 M
Anthracene	<0.016 mg/kg	TM218		0.065 M	0.0359 M	<0.016 M	1.93 #	10.7 M
Fluoranthene	<0.017 mg/kg	TM218		0.376 M	0.324 M	<0.017 M	12.2 #	70.5 M
Pyrene	<0.015 mg/kg	TM218		0.31 M	0.266 M	<0.015 M	12.1 #	49.2 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.353 M	0.191 M	<0.014 M	9.61 #	27 M
Chrysene	<0.01 mg/kg	TM218		0.32 M	0.236 M	<0.01 M	8.19 #	25.4 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.512 M	0.253 M	<0.015 M	16.1 #	33.3 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.21 M	0.102 M	<0.014 M	6.06 #	11.7 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.4 M	0.178 M	<0.015 M	14.5 #	25.1 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.195 M	0.106 M	<0.018 M	7.91 #	14.6 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0639 M	0.0346 M	<0.023 M	2.1 #	4.1 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.214 M	0.137 M	<0.024 M	8.91 #	15.3 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		3.15	2.01	<0.118	105	318

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3BH301	W3WS305	W3WS305		
			Depth (m)	0.35 - 0.50	0.90 - 1.00	0.25 - 0.30	0.70 - 0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/04/2017	10/04/2017	10/04/2017	10/04/2017		
			Sampled Time	.	.	.	.		
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017		
			SDG Ref	170419-105	170419-105	170419-105	170419-105		
			Lab Sample No.(s)	15360818	15360838	15360804	15360810		
			AGS Reference	ES	ES	ES	ES		
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
n-Dibutyl phthalate	<0.1 mg/kg	TM157		0.111	<0.1	<0.5	<0.5		
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3BH301	W3WS305	W3WS305		
			Depth (m)	0.35 - 0.50	0.90 - 1.00	0.25 - 0.30	0.70 - 0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/04/2017	10/04/2017	10/04/2017	10/04/2017		
			Sampled Time	.	.	.	.		
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017		
			SDG Ref	170419-105	170419-105	170419-105	170419-105		
			Lab Sample No.(s)	15360818	15360838	15360804	15360810		
			AGS Reference	ES	ES	ES	ES		
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Benzo(a)anthracene	<0.1 mg/kg	TM157		0.258	0.472	5.42	4.56		
Chrysene	<0.1 mg/kg	TM157		0.306	0.541	5.8	5.22		
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.5	<0.5		

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3BH301	W3BH301	W3WS305	W3WS305
			Depth (m)	0.35 - 0.50	0.90 - 1.00	1.90 - 2.00	0.25 - 0.30	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
			Sampled Time	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-105	170419-105	170419-105	170419-105	170419-105
			Lab Sample No.(s)	15360818	15360838	15360832	15360804	15360810
			AGS Reference	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		122	110 @	95	112	88
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		0.0821 M	<0.044 @ M	<0.044 M	0.562 #	0.136 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01	0.0207	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01	0.0449	0.0107
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0266	<0.01 @	<0.01	0.0449	0.0238
Aliphatics >C10-C12	<0.01 mg/kg	TM089		0.0111	<0.01 @	<0.01	0.25	0.0452
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.509	0.527	<0.1	24	3.47
Aliphatics >C16-C21	<0.1 mg/kg	TM173		1.75	1.44	<0.1	73.8	7.26
Aliphatics >C21-C35	<0.1 mg/kg	TM173		8.98	8.94	5.19	55.9	28.5
Aliphatics >C35-C44	<0.1 mg/kg	TM173		1	0.916	<0.1	9.64	49.4
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		12.2	11.8	5.19	163	88.7
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0244	<0.01 @	<0.01	0.0345	0.019
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01	0.167	0.0298
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	<0.1	<0.1	20.5	5.17
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		3.26	3.54	<0.1	155	46.9
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		20	17.5	4.77	468	129
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		7.27	5.8	3.96	132	89.6
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		2.71	2.38	2.12	44.8	40.3
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		30.5	26.8	8.74	776	270
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		42.9	38.7	13.9	940	359
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		23.3	21	4.77	623	176

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3BH301	W3BH301	W3WS305	W3WS305
			Depth (m)	0.35 - 0.50	0.90 - 1.00	1.90 - 2.00	0.25 - 0.30	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
			Sampled Time	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-105	170419-105	170419-105	170419-105	170419-105
			Lab Sample No.(s)	15360818	15360838	15360832	15360804	15360810
			AGS Reference	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116		98.6	101		93	94.2
Toluene-d8**	%	TM116		96.6	96.8		96.6	96
4-Bromofluorobenzene**	%	TM116		103	102		97	97
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.06 M	<0.06 M		<0.06 #	<0.06 M
Chloromethane	<0.007 mg/kg	TM116		<0.07 #	<0.07 #		<0.07 #	<0.07 #
Vinyl Chloride	<0.006 mg/kg	TM116		<0.06 M	<0.06 M		<0.06 #	<0.06 M
Bromomethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Chloroethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.06 M	<0.06 M		<0.06 #	<0.06 M
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #		<0.1 #	<0.1 #
Carbon Disulphide	<0.007 mg/kg	TM116		<0.07 M	<0.07 M		<0.07 #	<0.07 M
Dichloromethane	<0.01 mg/kg	TM116		<0.1 #	<0.1 #		<0.1 #	<0.1 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M	<0.1 #	<0.1 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.08 M	<0.08 M		<0.08 #	<0.08 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.06 M	<0.06 M		<0.06 #	<0.06 M
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1	<0.1		<0.1	<0.1
Bromochloromethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Chloroform	<0.008 mg/kg	TM116		<0.08 M	<0.08 M		<0.08 #	<0.08 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.07 M	<0.07 M		<0.07 #	<0.07 M
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Carbontetrachloride	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.05 M	<0.05 M		<0.05 #	<0.05 M
Benzene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M	<0.09 M	<0.09 #	<0.09 M
Trichloroethene	<0.009 mg/kg	TM116		<0.09 #	<0.09 #		<0.09 #	<0.09 #
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Dibromomethane	<0.009 mg/kg	TM116		<0.09 M	<0.09 M		<0.09 #	<0.09 M
Bromodichloromethane	<0.007 mg/kg	TM116		<0.07 M	<0.07 M		<0.07 #	<0.07 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Toluene	<0.007 mg/kg	TM116		<0.07 M	<0.07 M	<0.07 M	<0.07 #	<0.07 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1	<0.1		<0.1	<0.1
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M

CERTIFICATE OF ANALYSIS

SDG: 170419-105 Client Reference: 70015362 Report Number: 406659
Location: City Deal Tipner West Order Number: 70015362-CS2 Superseded Report: 406630

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W3BH301	W3BH301	W3BH301	W3WS305	W3WS305
			Depth (m)	0.35 - 0.50	0.90 - 1.00	1.90 - 2.00	0.25 - 0.30	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/04/2017	10/04/2017	10/04/2017	10/04/2017	10/04/2017
			Sampled Time	.	.	.	.	.
			Date Received	19/04/2017	19/04/2017	19/04/2017	19/04/2017	19/04/2017
			SDG Ref	170419-105	170419-105	170419-105	170419-105	170419-105
			Lab Sample No.(s)	15360818	15360838	15360832	15360804	15360810
			AGS Reference	ES	ES	ES	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.07 M	<0.07 M		<0.07 #	<0.07 M
Tetrachloroethene	<0.005 mg/kg	TM116		<0.05 M	<0.05 M		<0.05 #	<0.05 M
Dibromochloromethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Chlorobenzene	<0.005 mg/kg	TM116		<0.05 M	<0.05 M		<0.05 #	<0.05 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 M	<0.04 M	<0.04 M	<0.04 #	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M	<0.1 #	<0.1 M
Styrene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #		<0.1 #	<0.1 #
Bromoform	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Isopropylbenzene	<0.005 mg/kg	TM116		<0.05 #	<0.05 #		<0.05 #	<0.05 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.16 M	<0.16 M		<0.16 #	<0.16 M
Bromobenzene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
Propylbenzene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M		<0.09 #	<0.09 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.08 M	<0.08 M		<0.08 #	<0.08 M
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.14 M	<0.14 M		<0.14 #	<0.14 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.09 #	<0.09 #		<0.09 #	<0.09 #
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.1	<0.1		<0.1	<0.1
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.08 M	<0.08 M		<0.08 #	<0.08 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.05 M	<0.05 M		<0.05 #	<0.05 M
n-Butylbenzene	<0.011 mg/kg	TM116		<0.11	<0.11		<0.11	<0.11
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 #	<0.1 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.14 M	<0.14 M		<0.14 #	<0.14 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2	<0.2		<0.2	<0.2
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.2	<0.2		<0.2	<0.2
Naphthalene	<0.013 mg/kg	TM116		<0.13 M	<0.13 M		<0.13 #	<0.13 M

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W3BH301	0.35 - 0.50	Soil/Solid (S)	10/04/2017	.	19/04/2017	170419-105	15360818	ES
			W3BH301	0.90 - 1.00	Soil/Solid (S)	10/04/2017	.	19/04/2017	170419-105	15360838	ES
			W3BH301	1.90 - 2.00	Soil/Solid (S)	10/04/2017	.	19/04/2017	170419-105	15360832	ES
			W3WS305	0.25 - 0.30	Soil/Solid (S)	10/04/2017	.	19/04/2017	170419-105	15360804	ES
			W3WS305	0.70 - 0.80	Soil/Solid (S)	10/04/2017	.	19/04/2017	170419-105	15360810	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2 #	<0.2 #		<0.2 #	<0.2 #				

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3BH301 ES 0.35 - 0.50 SOLID 10/04/2017 00:00:00 20/04/2017 10:55:48 170419-105 15360818 TM048	21/4/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3BH301 ES 0.90 - 1.00 SOLID 10/04/2017 00:00:00 20/04/2017 10:53:47 170419-105 15360838 TM048	21/4/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS305 ES 0.25 - 0.30 SOLID 10/04/2017 00:00:00 20/04/2017 11:51:04 170419-105 15360804 TM048	21/4/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W3WS305 ES 0.70 - 0.80 SOLID 10/04/2017 00:00:00 20/04/2017 10:51:10 170419-105 15360810 TM048	24/4/17	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	10.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.2
Particle Size <4mm	>95%		

Case	
SDG	170419-105
Lab Sample Number(s)	15360818
Sampled Date	10-Apr-2017
Customer Sample Ref.	W3BH301 ESZ
Depth (m)	0.35 - 0.50

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Mercury Dissolved (CVAF)	0.0000137	<0.00001	0.000137	<0.0001	-	-	-
Tin(diss.filt)	0.000363	<0.00036	0.00363	<0.0036	-	-	-
Arsenic	0.0115	<0.00051	0.115	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	0.0000182	<0.000015	0.000182	<0.00015	-	-	-
Dibutyl Tin	0.0000221	<0.005	0.000221	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	0.0000736	<0.001	0.000736	<0.01	-	-	-
Fluoranthene (diss.filt)	0.0000543	<0.000017	0.000543	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.0000999	<0.000022	0.000999	<0.00022	-	-	-
Fluorene (diss.filt)	0.000014	<0.000014	0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	0.00464	<0.0012	0.0464	<0.012	-	-	-
Pyrene (diss.filt)	0.0000421	<0.000015	0.000421	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.0239	<0.00085	0.239	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	0.0041	<0.0001	0.041	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	0.000635	<0.00044	0.00635	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	0.00136	<0.00081	0.0136	<0.0081	-	-	-
Zinc	0.00346	<0.0013	0.0346	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	21-Apr-2017
pH (pH Units)	9.92
Conductivity (µS/cm)	124.00
Temperature (°C)	17.90
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

28/04/2017 14:51:27

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	10.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.2
Particle Size <4mm	>95%		

Case	
SDG	170419-105
Lab Sample Number(s)	15360818
Sampled Date	10-Apr-2017
Customer Sample Ref.	W3BH301 ESZ
Depth (m)	0.35 - 0.50

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	21-Apr-2017
pH (pH Units)	9.92
Conductivity (µS/cm)	124.00
Temperature (°C)	17.90
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

28/04/2017 14:51:27

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
SUB		Subcontracted Test		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM283		Determination of Dissolved Niobium, Tungsten, and Zirconium in Water Matrices by ICP-MS		
TM328				

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Test Completion Dates

Lab Sample No(s)	15360818	15360832	15360838	15360804	15360810
Customer Sample Ref.	W3BH301	W3BH301	W3BH301	W3WS305	W3WS305
AGS Ref.	ES	ES	ES	ES	ES
Depth	0.35 - 0.50	1.90 - 2.00	0.90 - 1.00	0.25 - 0.30	0.70 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Asbestos ID in Solid Samples	24-Apr-2017		24-Apr-2017	24-Apr-2017	24-Apr-2017
CEN 10:1 Leachate (1 Stage)	21-Apr-2017				
CEN Readings	22-Apr-2017				
Dissolved Metals by ICP-MS	24-Apr-2017				
Dissolved Tin by ICPMS	25-Apr-2017				
EPH CWG (Aliphatic) Aqueous GC (W)	25-Apr-2017				
EPH CWG (Aliphatic) GC (S)	24-Apr-2017	24-Apr-2017	24-Apr-2017	21-Apr-2017	24-Apr-2017
EPH CWG (Aromatic) Aqueous GC (W)	25-Apr-2017				
EPH CWG (Aromatic) GC (S)	24-Apr-2017	24-Apr-2017	24-Apr-2017	21-Apr-2017	24-Apr-2017
GRO by GC-FID (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
GRO by GC-FID (W)	24-Apr-2017				
Hexavalent Chromium (s)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
Mercury Dissolved	25-Apr-2017				
Metals in solid samples by OES	24-Apr-2017	20-Apr-2017	25-Apr-2017	24-Apr-2017	24-Apr-2017
Organotins in Aqueous Samples	27-Apr-2017				
Organotins on soils*	28-Apr-2017				28-Apr-2017
PAH by GCMS	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017
PAH in waters by GC-MS (diss.filt)	24-Apr-2017				
pH	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017	21-Apr-2017
pH Value	24-Apr-2017				
Sample description	20-Apr-2017	19-Apr-2017	20-Apr-2017	20-Apr-2017	20-Apr-2017
Semi Volatile Organic Compounds	25-Apr-2017		27-Apr-2017	25-Apr-2017	25-Apr-2017
Total Organic Carbon	24-Apr-2017			24-Apr-2017	
TPH CWG (W)	25-Apr-2017				
TPH CWG GC (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
VOC MS (S)	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017	25-Apr-2017
VOC MS (W)	24-Apr-2017				

CERTIFICATE OF ANALYSIS

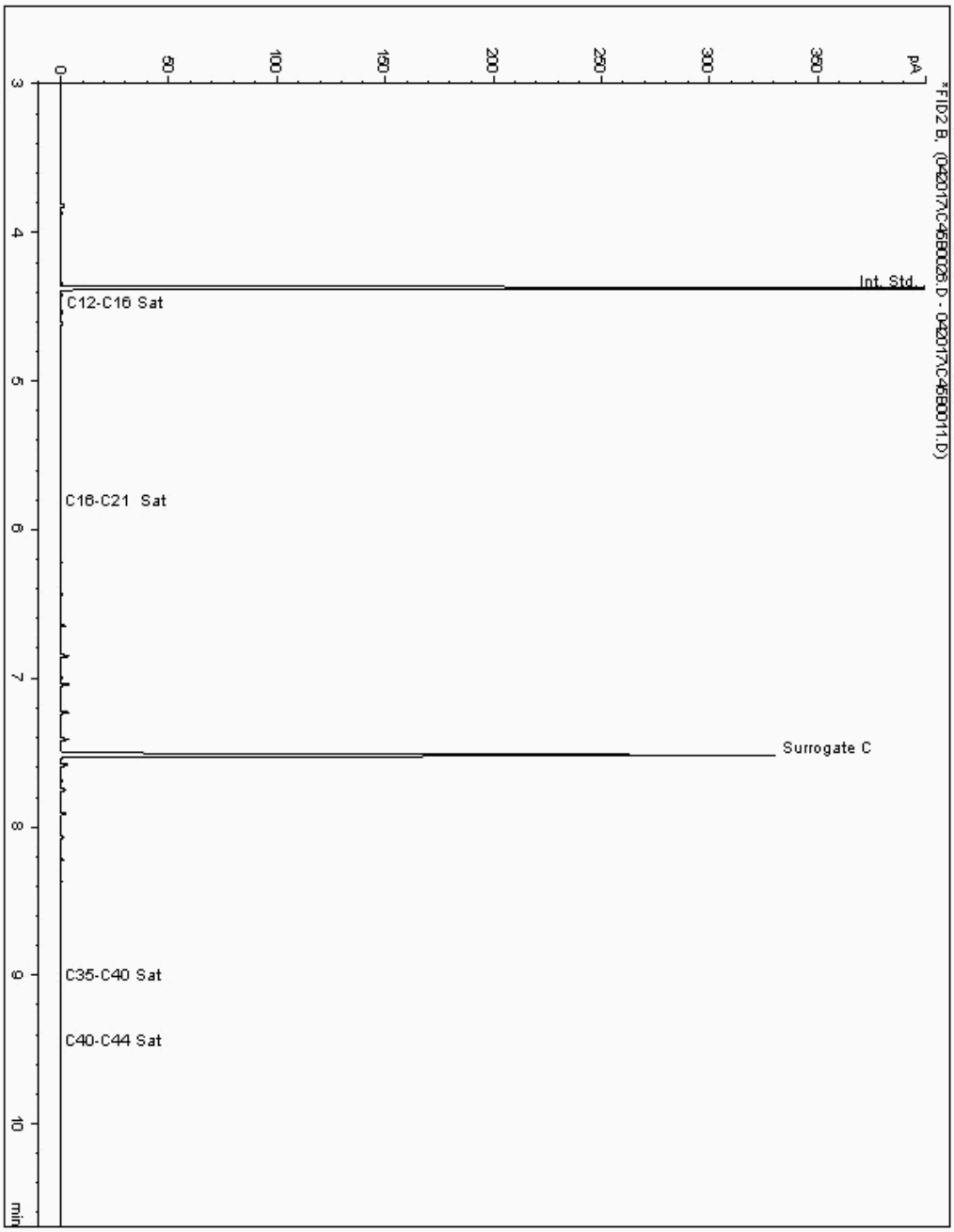
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15361852 **Sample ID :** W3BH301 **Depth :** 1.90 - 2.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14387672-
Date Acquired : 21/04/2017 09:24:40 PM
Units : ppb
Dilution: WS3BH301[1.90 - 2.00] ->



CERTIFICATE OF ANALYSIS

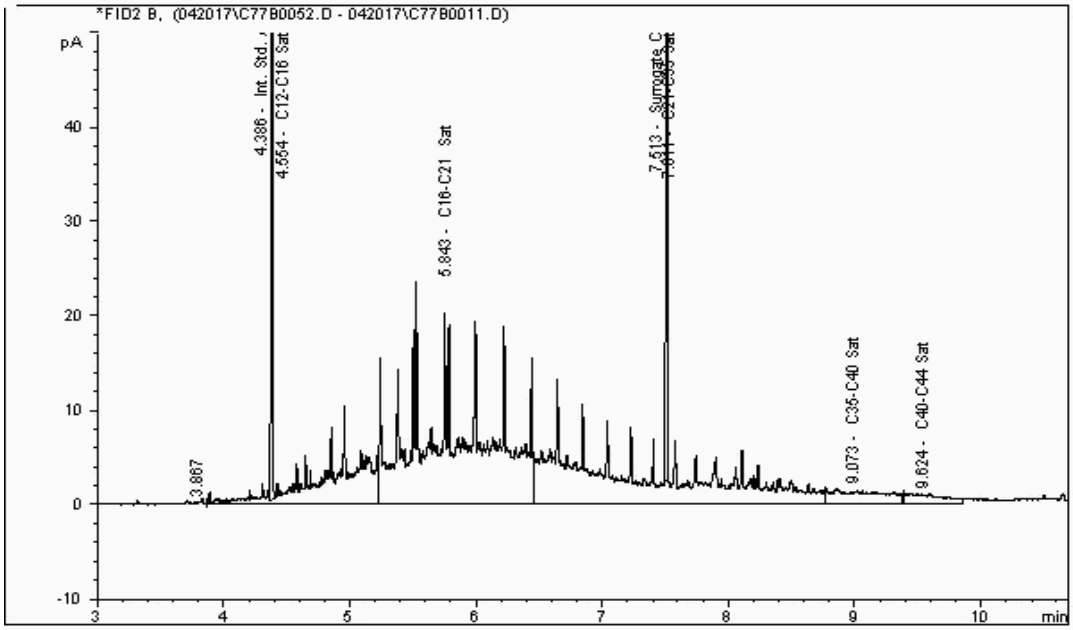
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15365768 **Sample ID :** W3WS305 **Depth :** 0.25 - 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14387634-
Date Acquired : 21/04/2017 02:14:41 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

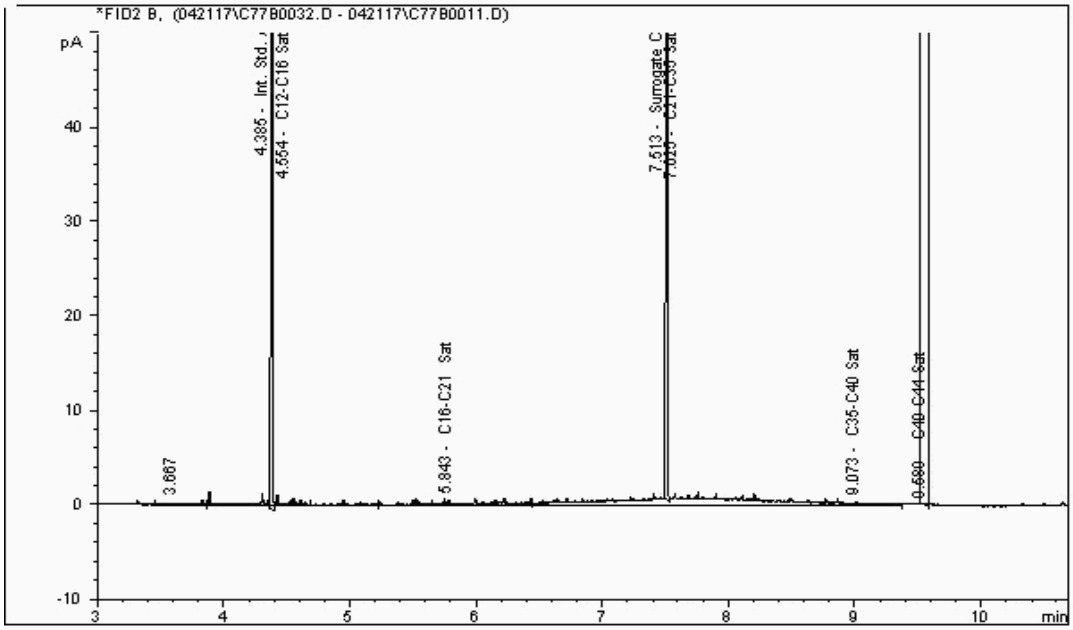
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15366100 **Sample ID :** W3BH301 **Depth :** 0.90 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14387686-
Date Acquired : 21/04/2017 21:07:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

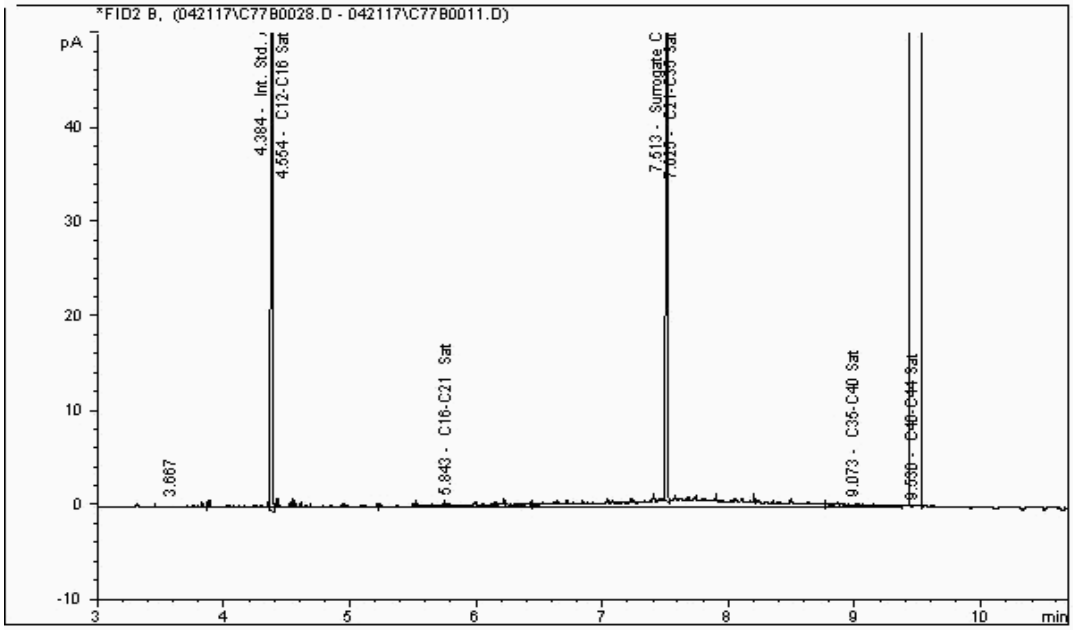
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15366279 **Sample ID :** W3BH301 **Depth :** 0.35 - 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14387710-
Date Acquired : 21/04/2017 20:03:53 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

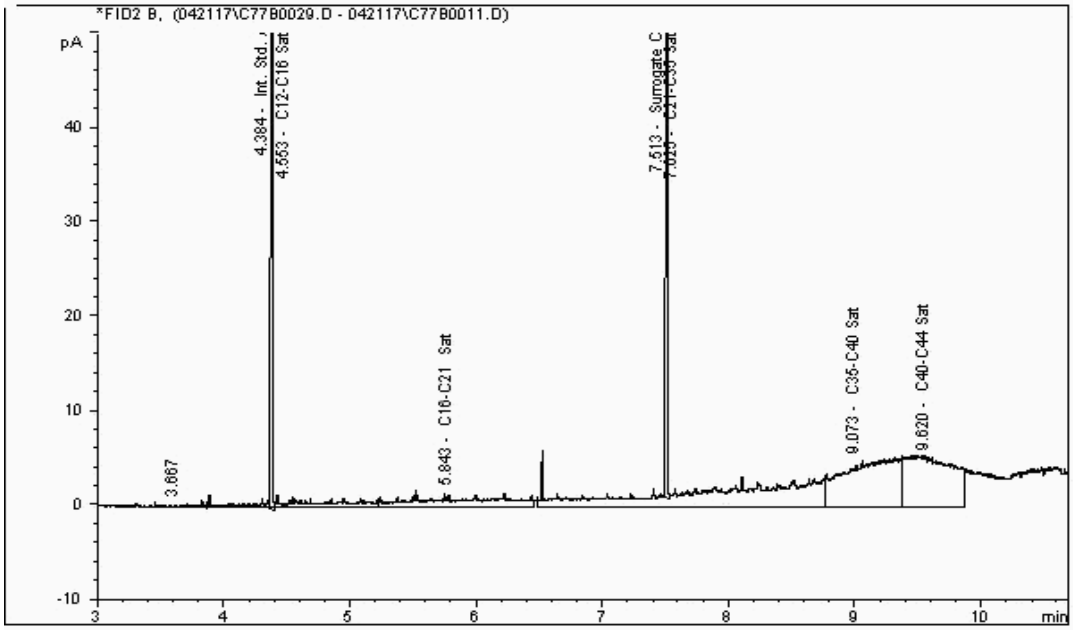
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15366510 **Sample ID :** W3WS305 **Depth :** 0.70 - 0.80

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14387656-
Date Acquired : 21/04/2017 20:23:57 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

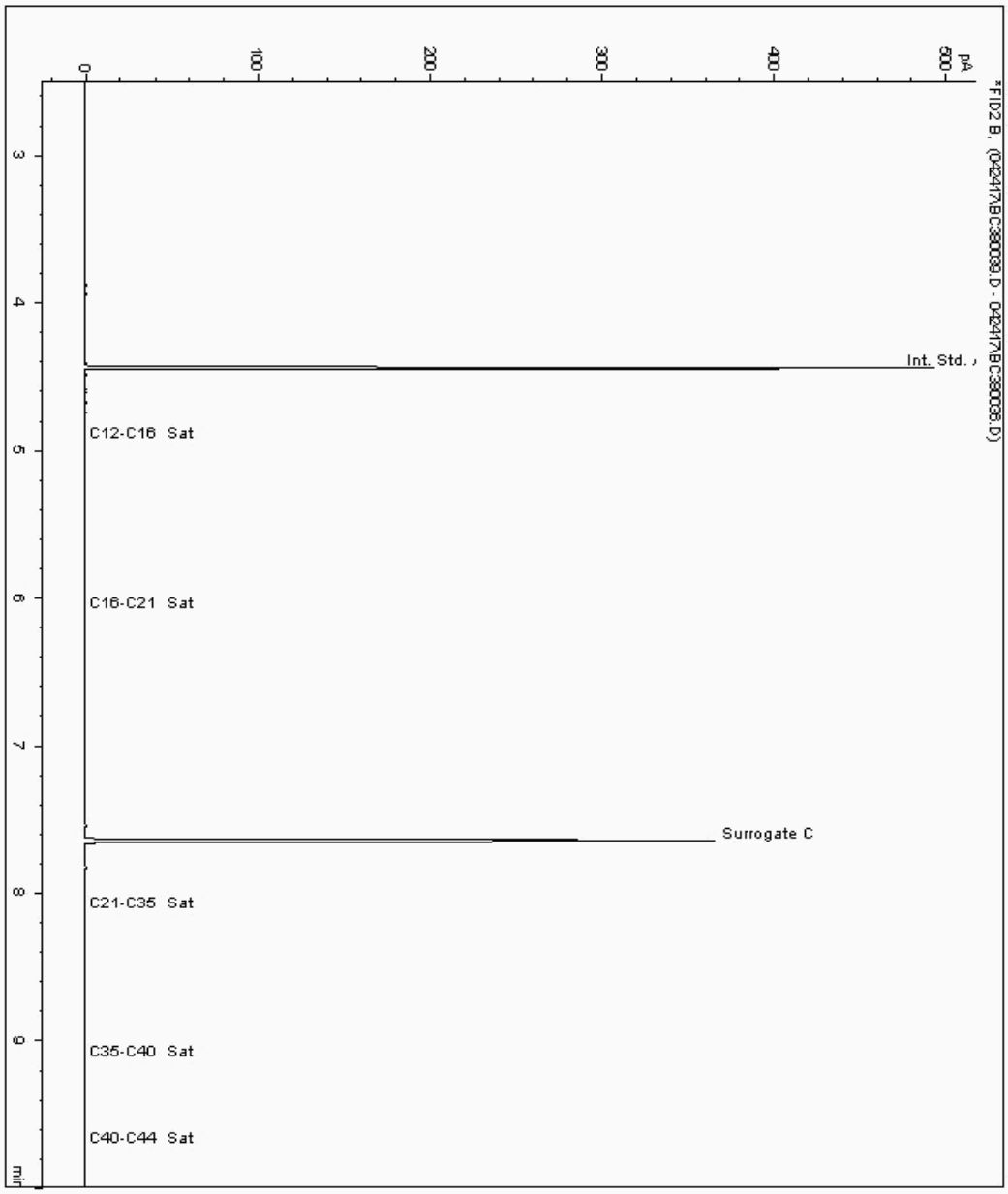
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15384029 **Sample ID :** W3BH301 **Depth :** 0.35 - 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14387728-
Date Acquired : 25/04/17 08:42:06 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

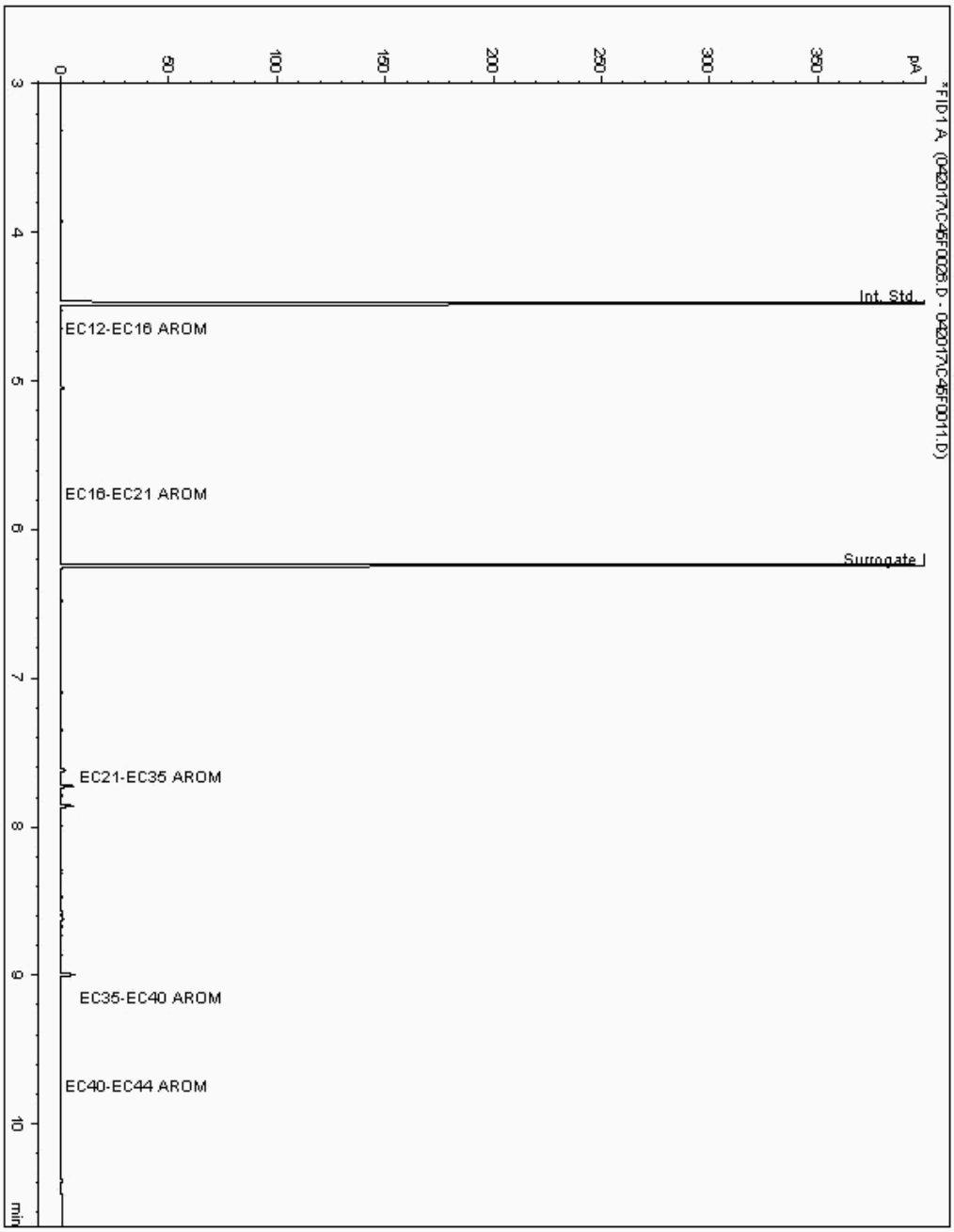
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15361852 **Sample ID :** W3BH301 **Depth :** 1.90 - 2.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14387673-
Date Acquired : 21/04/2017 09:24:41 PM
Units : ppb
Dilution: WS3BH301[1.90 - 2.00] ->



CERTIFICATE OF ANALYSIS

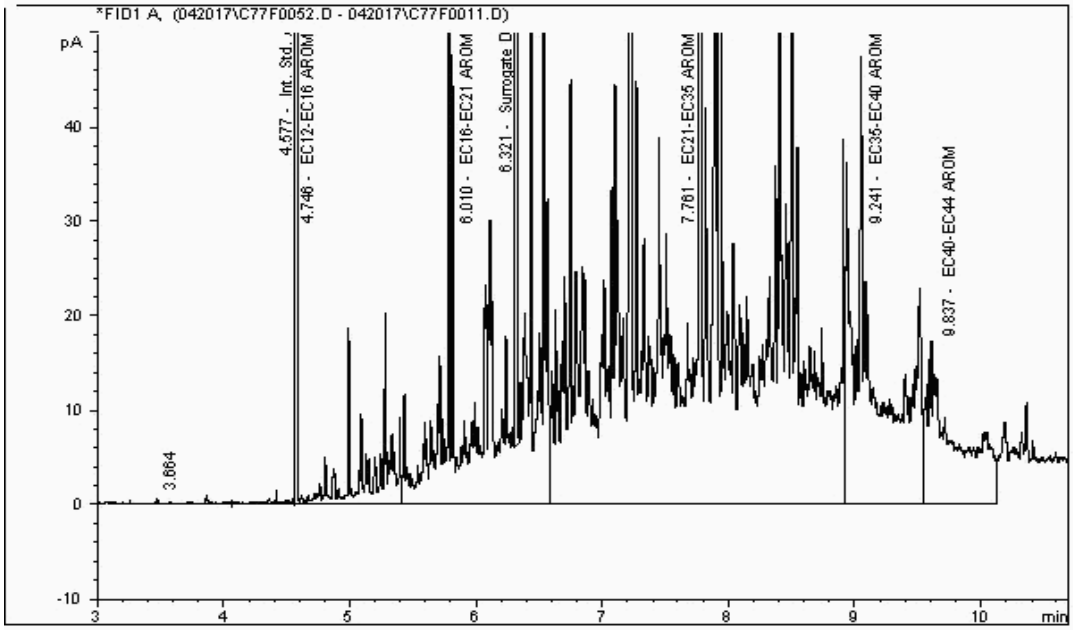
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15365768 **Depth :** 0.25 - 0.30
Sample ID : W3WS305

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14387635-
Date Acquired : 21/04/2017 02:14:42 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

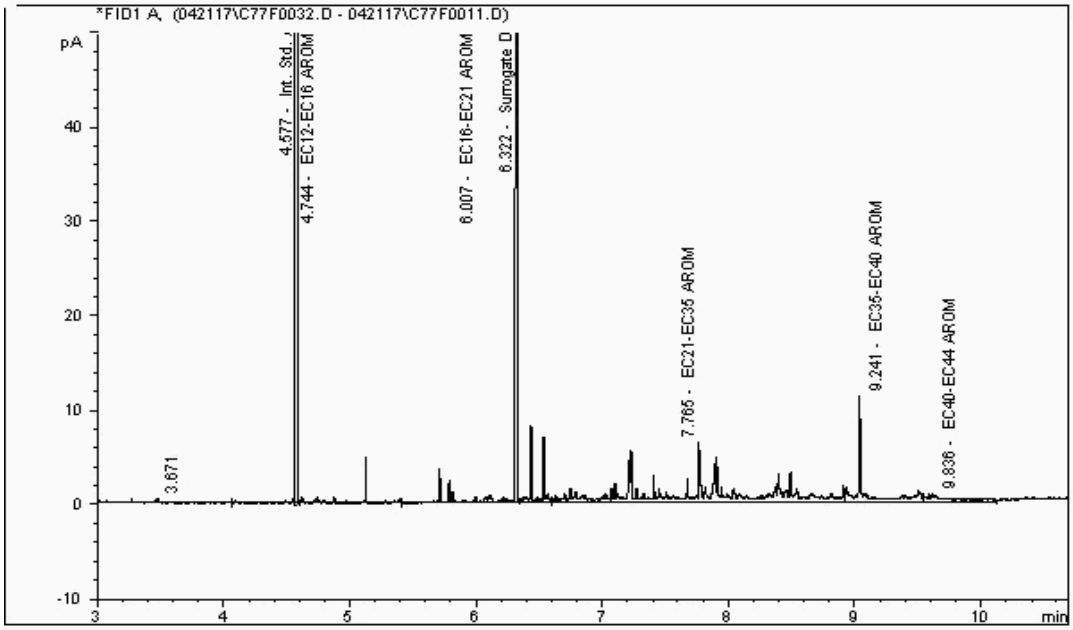
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15366100 **Sample ID :** W3BH301 **Depth :** 0.90 - 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14387687-
Date Acquired : 21/04/2017 21:07:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

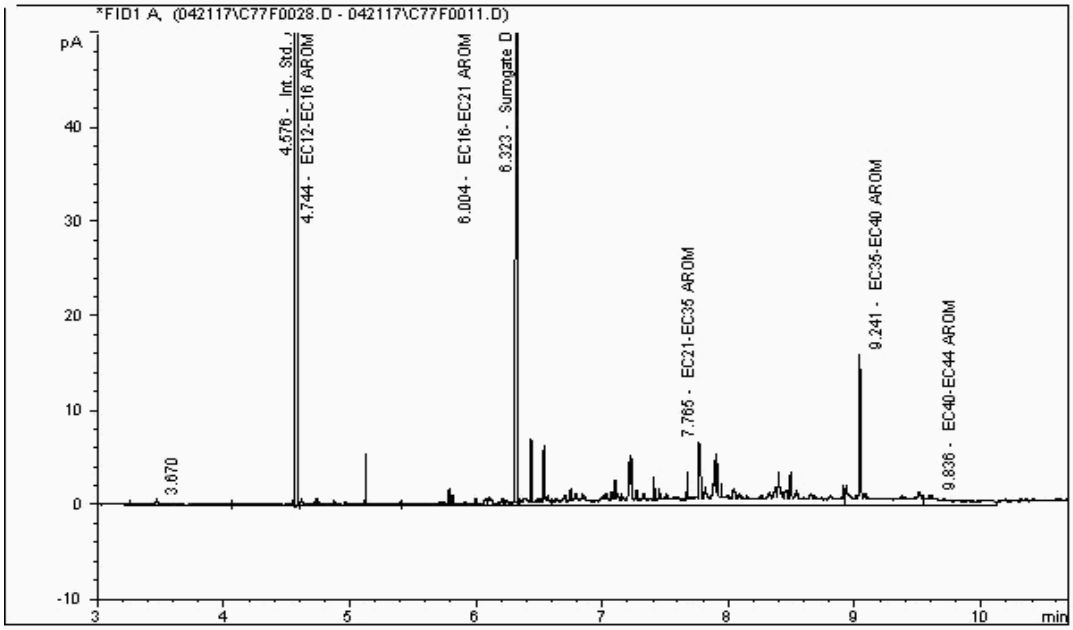
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15366279 **Sample ID :** W3BH301 **Depth :** 0.35 - 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 143877ll-
Date Acquired : 21/04/2017 20:03:53 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

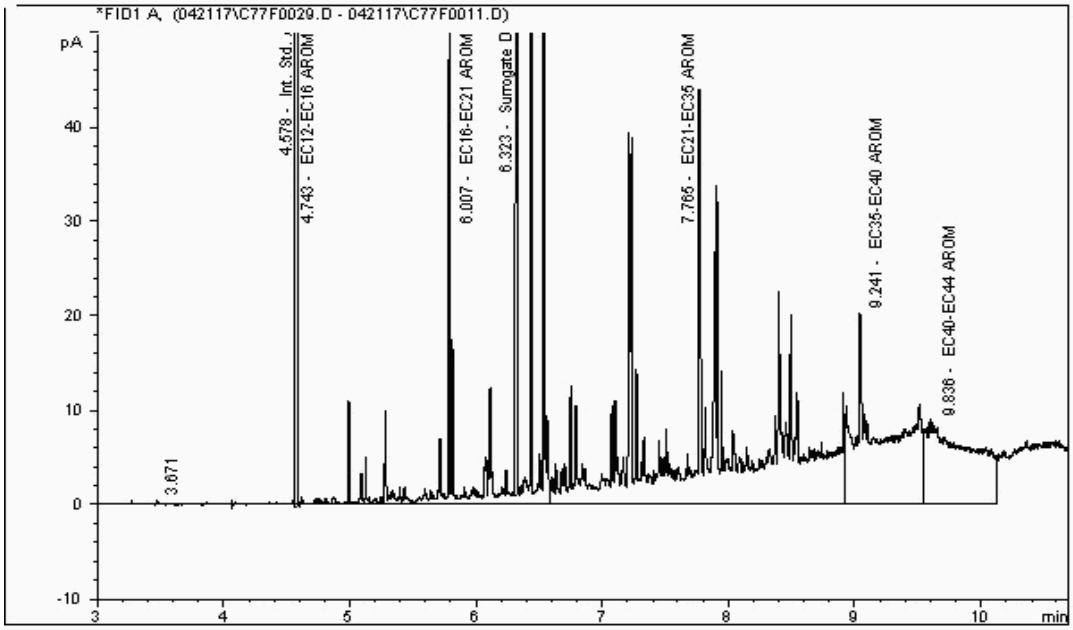
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15366510 **Sample ID :** W3WS305 **Depth :** 0.70 - 0.80

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14387657-
Date Acquired : 21/04/2017 20:23:57 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

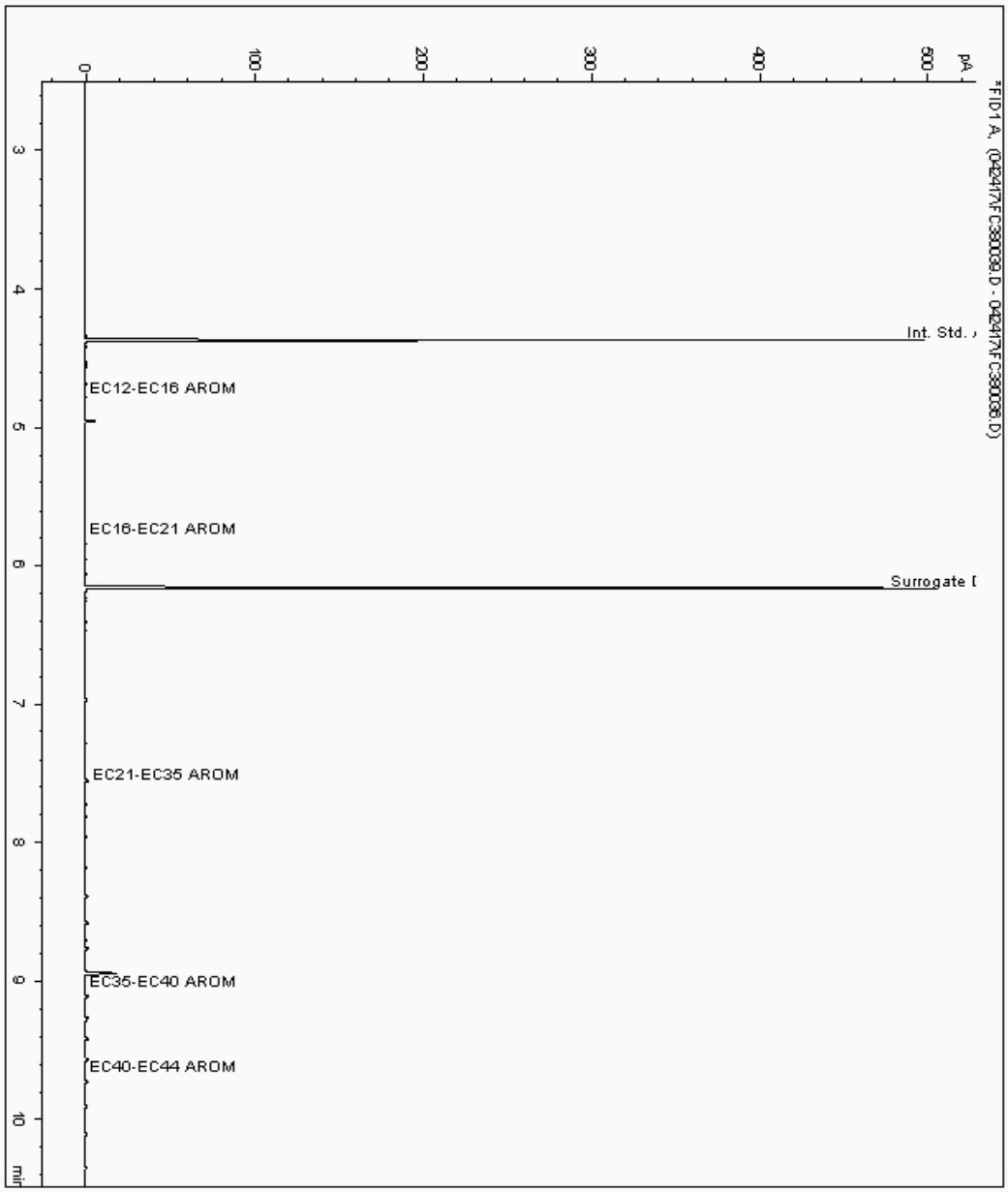
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15384029 **Sample ID :** W3BH301 **Depth :** 0.35 - 0.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14387729-
Date Acquired : 25/04/17 08:42:07 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

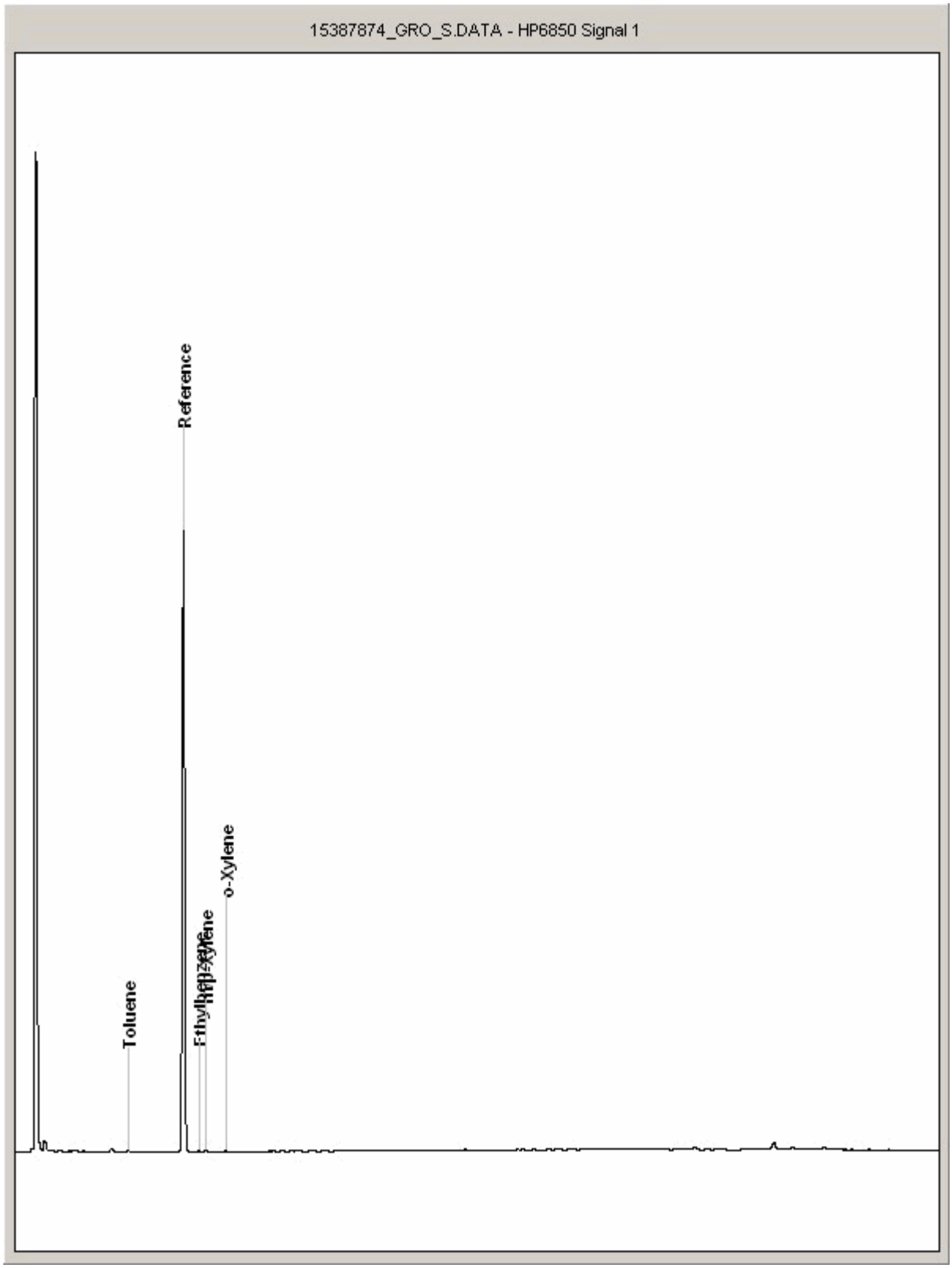
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15387874
Sample ID : W3WS305

Depth : 0.25 - 0.30



CERTIFICATE OF ANALYSIS

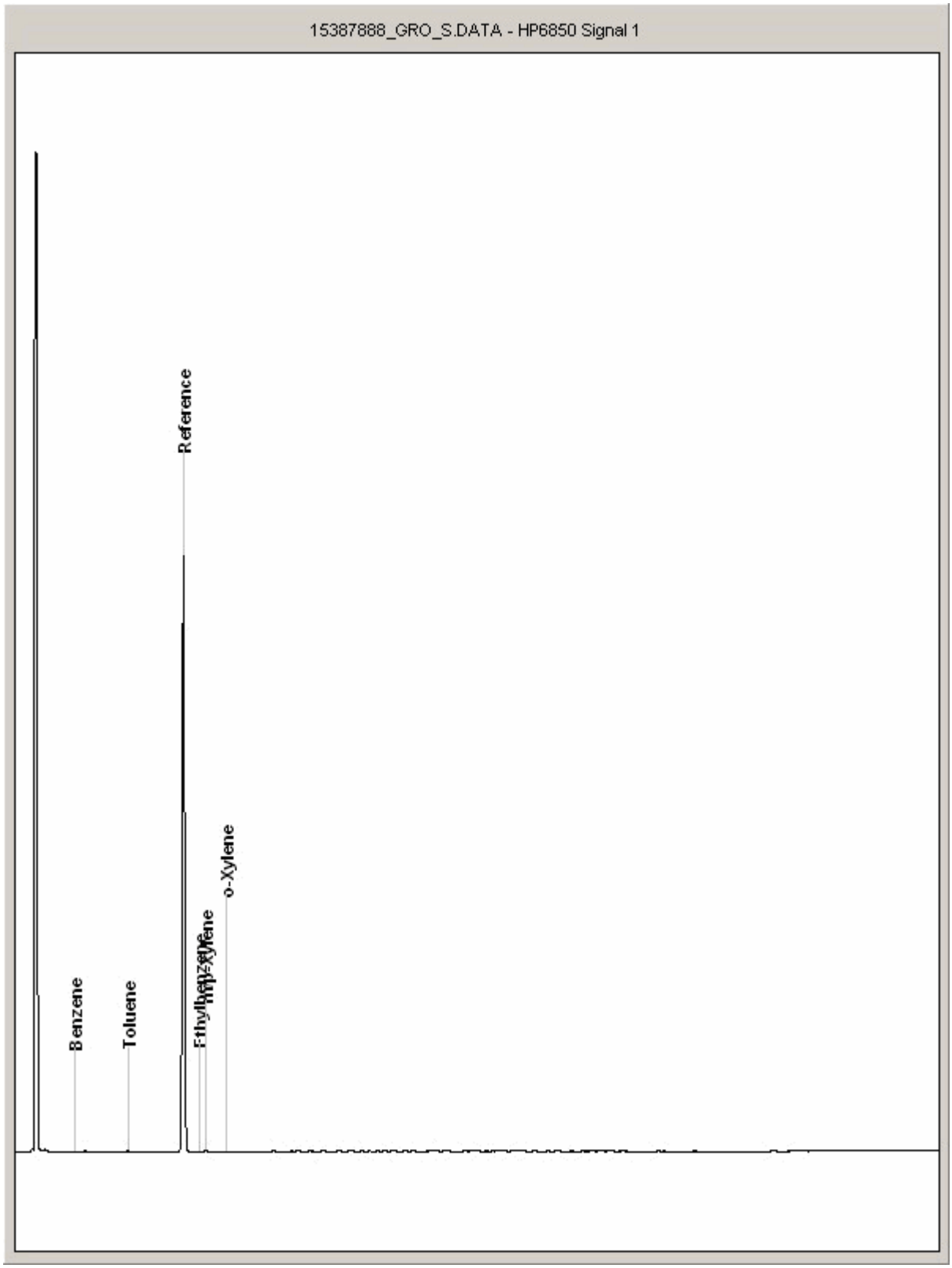
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15387888
Sample ID : W3WS305

Depth : 0.70 - 0.80



CERTIFICATE OF ANALYSIS

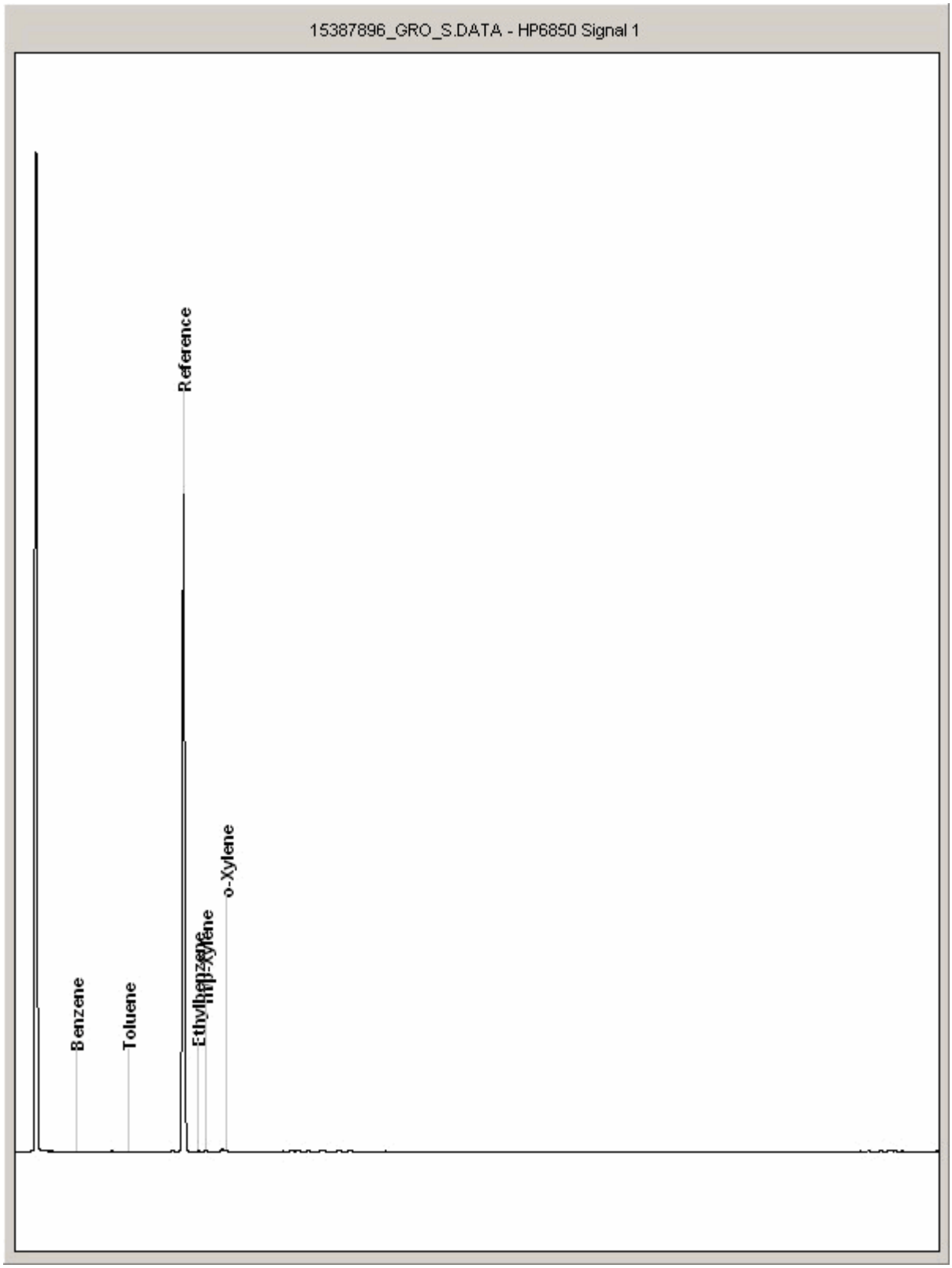
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15387896
Sample ID : W3BH301

Depth : 0.35 - 0.50



CERTIFICATE OF ANALYSIS

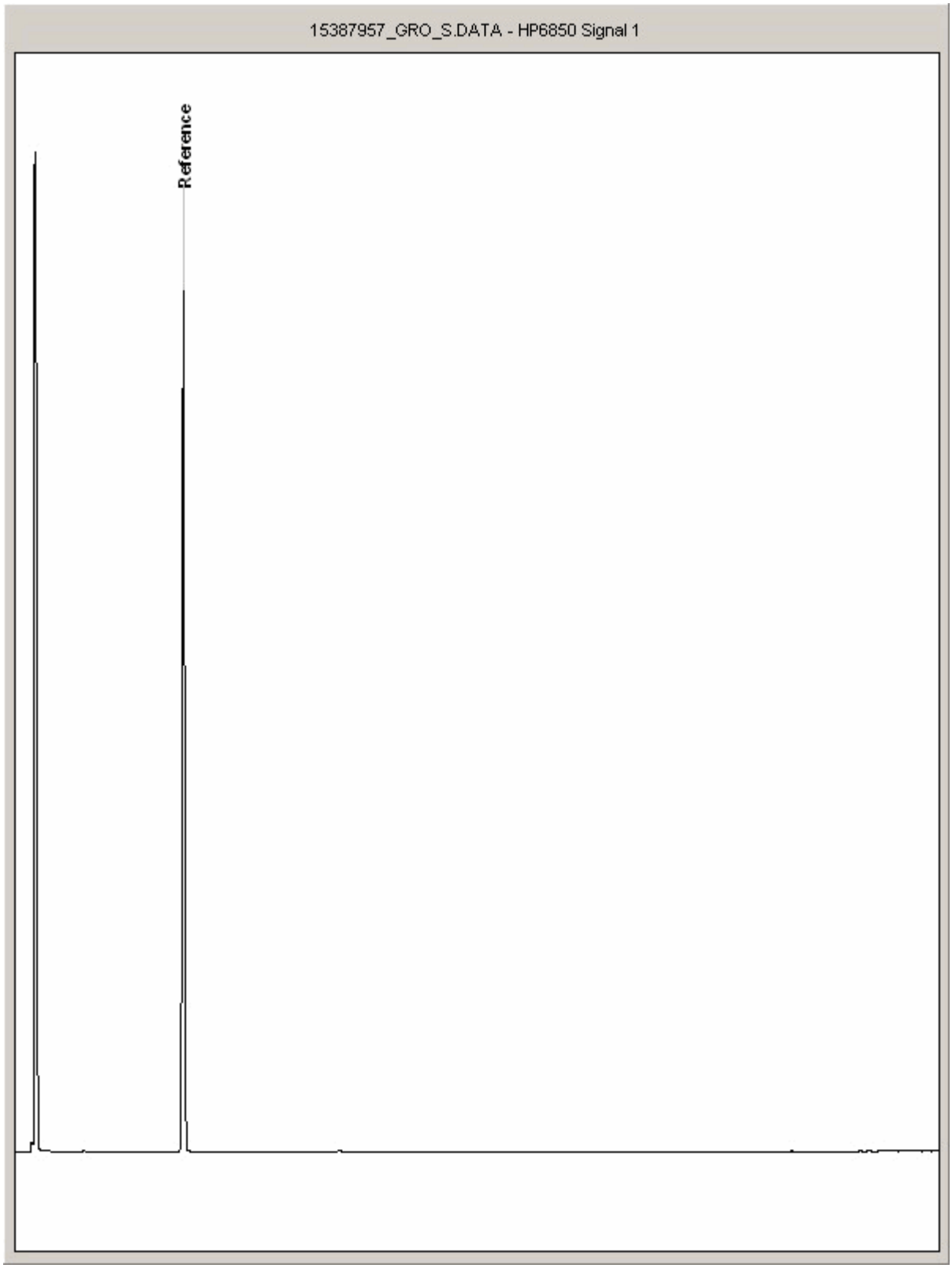
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15387957
Sample ID : W3BH301

Depth : 1.90 - 2.00



CERTIFICATE OF ANALYSIS

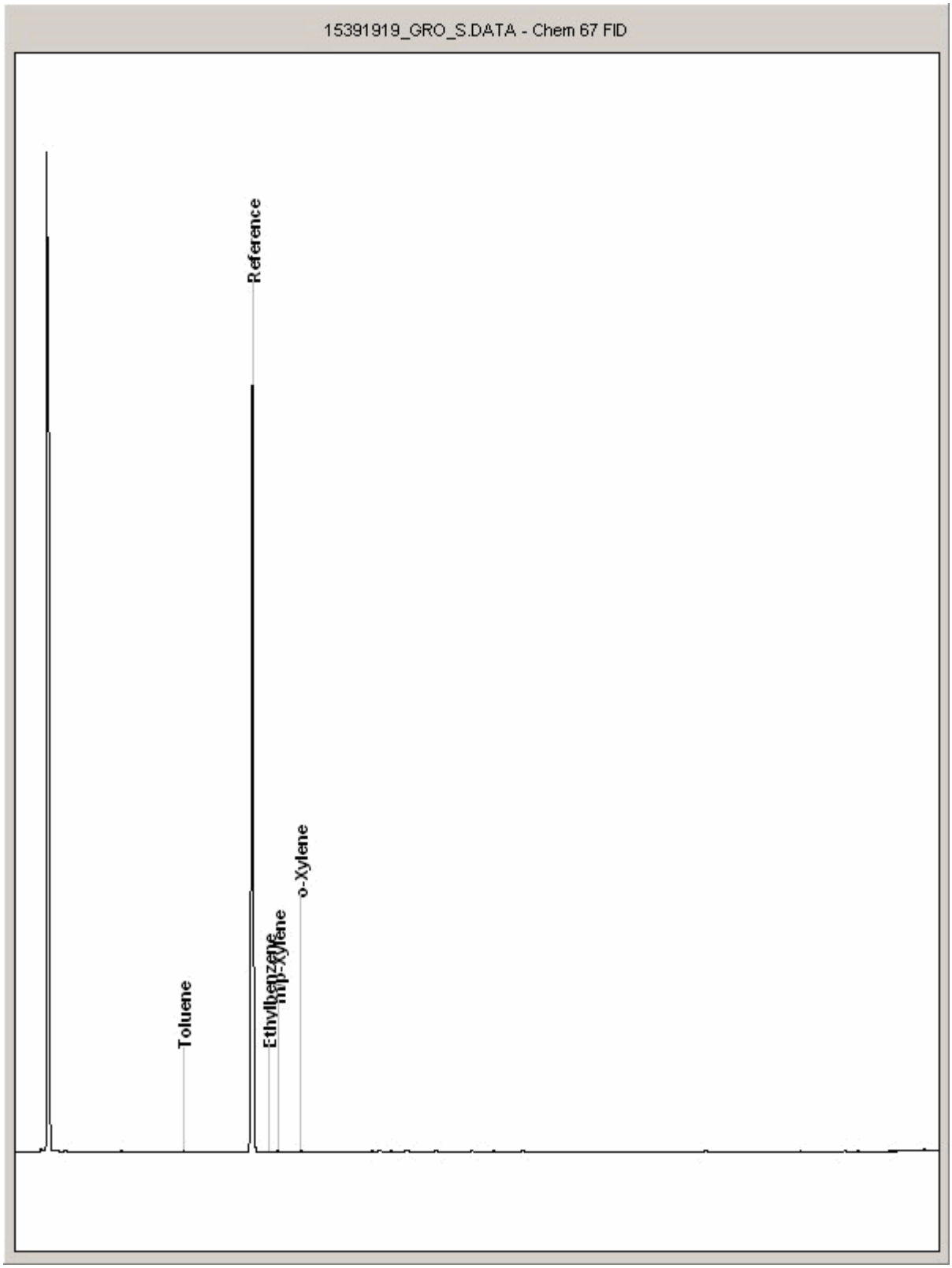
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15391919
Sample ID : W3BH301

Depth : 0.90 - 1.00



CERTIFICATE OF ANALYSIS

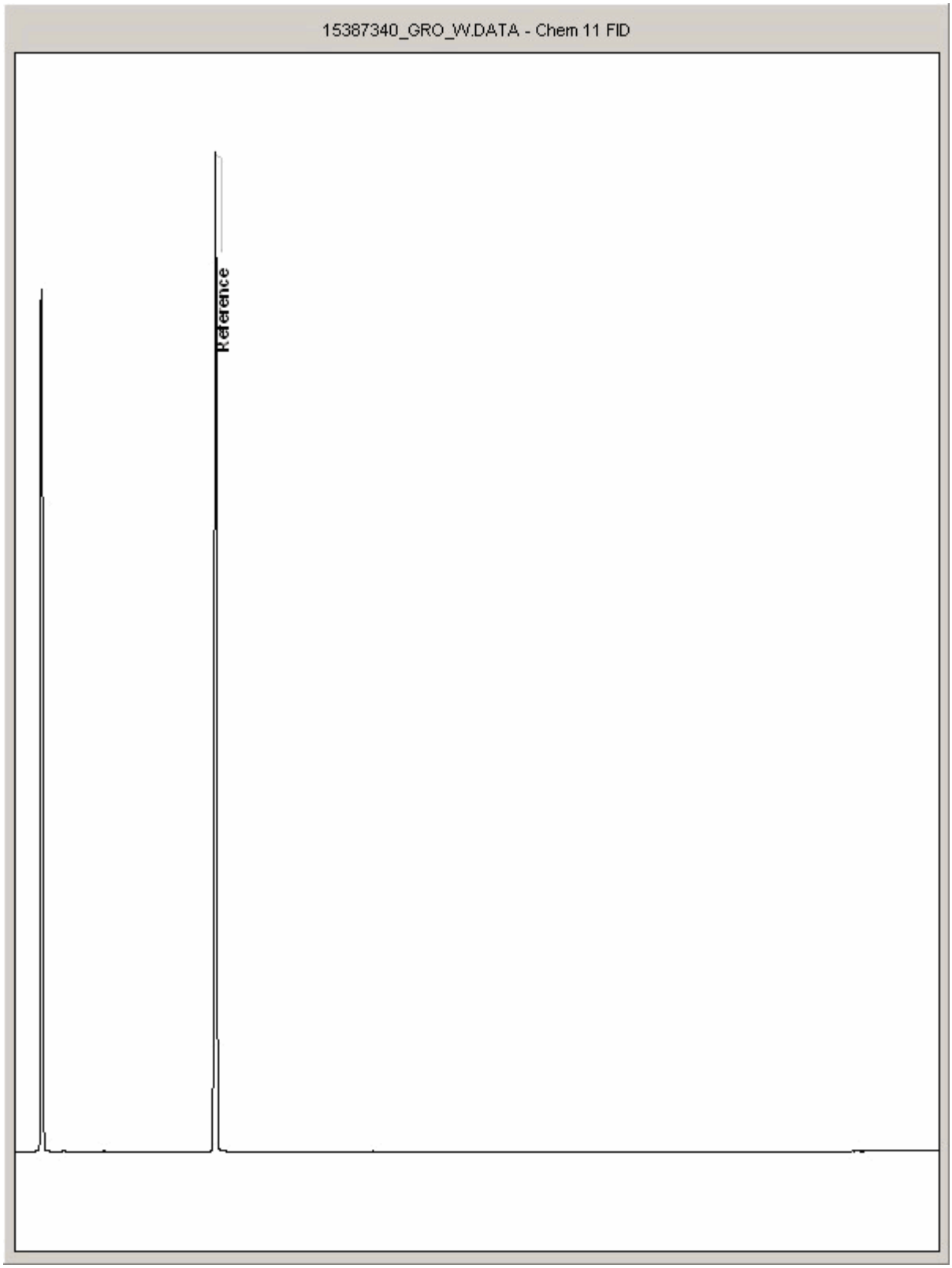
SDG:	170419-105	**Client Reference:**	70015362	**Report Number:**	406659
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	406630

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15387340
Sample ID : W3BH301

Depth : 0.35 - 0.50



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Certificate of Analysis

Report No.: 17-61300-1

Issue No.: 1
Date of Issue 27/04/2017

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	33514
Customer Reference:	170419-105
Quotation Reference:	161220/03
Description:	2 soil samples
Date Received:	21/04/2017
Date Started:	25/04/2017
Date Completed:	27/04/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

RPS Mountainheath Limited, Registered in England No. 2772276, a wholly-owned subsidiary of RPS Consulting Services Ltd.
A member of the RPS Group plc. Terms and conditions apply - copy on request

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Results Summary

Report No.: 17-61300-1

Customer Reference: 170419-105

Customer Order No: 33514

				Customer Sample No		**15366617**	**15366370**
				Customer Sample ID		W3WS305	W3WS301
				RPS Sample No		327210	327211
				Sample Type		**SOIL**	**SOIL**
				Sample Depth (m)		0.70-0.80m	0.35-0.50m
				Sampling Date		10/04/2017	10/04/2017
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**		
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	< 0.02	0.06
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.10	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02	1.26
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02	< 0.02

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Report No.: 17-61300-1
Customer Reference: 170419-105
Customer Order No: 33514

Comments

RPS Sample Number	Customer Number	Sample Comments
327211	15366370	Sample extract was diluted 1:20 to bring the TBT concentration within the range of the calibration. Precision and accuracy may have been affected.

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

Date:	31 May 2017
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	170422-90
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	410535

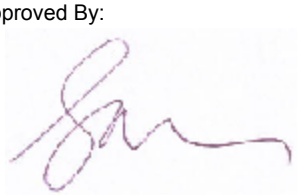
This report has been revised and directly supersedes 407714 in its entirety.

We received 4 samples on Saturday April 22, 2017 and 3 of these samples were scheduled for analysis which was completed on Wednesday May 31, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:



Sonia McWhan

Operations Manager

1291

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CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15383456	W4BH304	ES	0.30	19/04/2017
15383463	W4BH304	ES	0.90	19/04/2017
15383470	W4BH304	ES	2.95	19/04/2017
15383475	W4BH304	ES	4.60	19/04/2017

Maximum Sample/Coolbox Temperature (°C) : **7.8**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

| | | | | |

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15383456			15383463				15383475		
Customer Sample Reference			W4BH304			W4BH304				W4BH304		
AGS Reference			ES			ES				ES		
Depth (m)			0.30			0.90				4.60		
Container			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	S	S	
Organotins in Aqueous Samples	All	NDPs: 0 Tests: 2		X						X		
Organotins on soils*	All	NDPs: 0 Tests: 2	X			X						
PAH by GCMS	All	NDPs: 0 Tests: 3	X			X			X			
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 2		X						X		
pH	All	NDPs: 0 Tests: 3	X			X			X			
pH Value	All	NDPs: 0 Tests: 2		X						X		
Sample description	All	NDPs: 0 Tests: 3	X			X			X			
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2	X						X			
Total Organic Carbon	All	NDPs: 0 Tests: 2	X						X			
TPH CWG (W)	All	NDPs: 0 Tests: 2		X						X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 3	X			X			X			
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X			X	
VOC MS (W)	All	NDPs: 0 Tests: 2		X						X		

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15383456	W4BH304	0.30	Light Brown	Silty Clay	Vegetation	Stones
15383463	W4BH304	0.90	Light Brown	Sandy Clay Loam	Brick	Concrete/Aggregate
15383475	W4BH304	4.60	Beige	Silty Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH304	W4BH304	W4BH304			
			Depth (m)	0.30	0.90	4.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	19/04/2017	19/04/2017	19/04/2017			
			Sampled Time	.	.	.			
			Date Received	22/04/2017	22/04/2017	22/04/2017			
			SDG Ref	170422-90	170422-90	170422-90			
			Lab Sample No.(s)	15383456	15383463	15383475			
			AGS Reference	ES	ES	ES			
Moisture Content Ratio (% of as received sample)	%	PM024		19	10	17			
Soil Organic Matter (SOM)	<0.35 %	TM132		2 #		<0.35 #			
pH	1 pH Units	TM133		7.94 #	8.7 #	9.28 #			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 #	<1 #	<1 #			
Cyanide, Free	<1 mg/kg	TM153		<1 #	<1 #	<1 #			
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1			
Arsenic	<0.6 mg/kg	TM181		8.97 #	14.3 #	2.67 #			
Cadmium	<0.02 mg/kg	TM181		0.103 #	0.968 #	0.365 #			
Chromium	<0.9 mg/kg	TM181		22.3 #	26.4 #	4.52 #			
Copper	<1.4 mg/kg	TM181		26.9 #	207 #	1.74 #			
Lead	<0.7 mg/kg	TM181		43.6 #	305 #	2.08 #			
Mercury	<0.14 mg/kg	TM181		0.55 #	0.872 #	0.296 #			
Nickel	<0.2 mg/kg	TM181		23.9 #	24.2 #	3.79 #			
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #			
Tin	<0.24 mg/kg	TM181		4.53 #		<0.24 #			
Zinc	<1.9 mg/kg	TM181		93.3 #	200 #	13 #			

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Organotins on soils*

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.					
			W4BH304	W4BH304				
			Depth (m)	0.30	0.90			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	19/04/2017	19/04/2017			
			Sampled Time	.	.			
			Date Received	22/04/2017	22/04/2017			
			SDG Ref	170422-90	170422-90			
			Lab Sample No.(s)	15383456	15383463			
			AGS Reference	ES	ES			
Dibutyl Tin*	mg/kg	SUB		<0.02	<0.02			
Tributyl Tin*	mg/kg	SUB		<0.02	<0.02			
Triphenyl Tin*	mg/kg	SUB		<0.05	<0.05			
Tetrabutyl Tin*	mg/kg	SUB		<0.02	<0.02			
Monobutyl Tin*	mg/kg	SUB		<0.1	<0.1			
Monophenyl Tin*	mg/kg	SUB		<0.02	<0.02			
Diphenyl Tin*	mg/kg	SUB		<0.02	<0.02			

Validated

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH304	W4BH304	W4BH304			
			Depth (m)	0.30	0.90	4.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	19/04/2017	19/04/2017	19/04/2017			
			Sampled Time	.	.	.			
			Date Received	22/04/2017	22/04/2017	22/04/2017			
			SDG Ref	170422-90	170422-90	170422-90			
			Lab Sample No.(s)	15383456	15383463	15383475			
			AGS Reference	ES	ES	ES			
Naphthalene-d8 % recovery**	%	TM218		89.8	90.5	97.2			
Acenaphthene-d10 % recovery**	%	TM218		86.8	87.7	97.3			
Phenanthrene-d10 % recovery**	%	TM218		84.2	86.8	93.6			
Chrysene-d12 % recovery**	%	TM218		82	90.2	89.3			
Perylene-d12 % recovery**	%	TM218		95.3	107	103			
Naphthalene	<0.009 mg/kg	TM218		0.0196 #	0.0247 #	<0.009 #			
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 #	0.0494 #	<0.012 #			
Acenaphthene	<0.008 mg/kg	TM218		<0.008 #	0.0235 #	<0.008 #			
Fluorene	<0.01 mg/kg	TM218		<0.01 #	0.0192 #	<0.01 #			
Phenanthrene	<0.015 mg/kg	TM218		0.135 #	0.538 #	<0.015 #			
Anthracene	<0.016 mg/kg	TM218		0.0407 #	0.178 #	<0.016 #			
Fluoranthene	<0.017 mg/kg	TM218		0.287 #	0.96 #	<0.017 #			
Pyrene	<0.015 mg/kg	TM218		0.259 #	0.793 #	<0.015 #			
Benz(a)anthracene	<0.014 mg/kg	TM218		0.2 #	0.57 #	<0.014 #			
Chrysene	<0.01 mg/kg	TM218		0.139 #	0.454 #	<0.01 #			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.308 #	0.865 #	<0.015 #			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.115 #	0.302 #	<0.014 #			
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.258 #	0.746 #	<0.015 #			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.161 #	0.488 #	<0.018 #			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 #	0.151 #	<0.023 #			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.205 #	0.587 #	<0.024 #			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		2.13	6.75	<0.118			

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH304	W4BH304				
			Depth (m)	0.30	4.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	19/04/2017	19/04/2017				
			Sampled Time	.	.				
			Date Received	22/04/2017	22/04/2017				
			SDG Ref	170422-90	170422-90				
			Lab Sample No.(s)	15383456	15383475				
			AGS Reference	ES	ES				
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1				
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1				
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1				
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1				
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1				
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1				
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH304	W4BH304
			Depth (m)	0.30	4.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2017	19/04/2017
			Sampled Time	-	-
			Date Received	22/04/2017	22/04/2017
			SDG Ref	170422-90	170422-90
			Lab Sample No.(s)	15383456	15383475
			AGS Reference	ES	ES
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.1
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH304	W4BH304	W4BH304			
			Depth (m)	0.30	0.90	4.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	19/04/2017	19/04/2017	19/04/2017			
			Sampled Time	.	.	.			
			Date Received	22/04/2017	22/04/2017	22/04/2017			
			SDG Ref	170422-90	170422-90	170422-90			
			Lab Sample No.(s)	15383456	15383463	15383475			
			AGS Reference	ES	ES	ES			
GRO Surrogate % recovery**	%	TM089		65	75	103			
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 #	<0.044 #	2.48 #			
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	0.0109			
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	0.0242			
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	0.0799			
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	1.39			
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	<0.1	1.79			
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	0.365	5.31			
Aliphatics >C21-C35	<0.1 mg/kg	TM173		4.61	<0.1	79			
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	43.6			
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		4.61	0.365	130			
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01			
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01			
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	0.0532			
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	0.926			
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	<0.1	<0.1			
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.449	7	<0.1			
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		12.1	48.3	<0.1			
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		10.8	27.8	<0.1			
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		5.37	12.1	<0.1			
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		23.3	83	<0.1			
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		27.9	83.4	132			
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		12.5	55.3	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.								
			W4BH304		W4BH304		W4BH304				
			Depth (m)	0.30	Depth (m)	0.90	Depth (m)	4.60			
			Sample Type	Soil/Solid (S)	Sample Type	Soil/Solid (S)	Sample Type	Soil/Solid (S)			
			Date Sampled	19/04/2017	Date Sampled	19/04/2017	Date Sampled	19/04/2017			
			Sampled Time	.	Sampled Time	.	Sampled Time	.			
			Date Received	22/04/2017	Date Received	22/04/2017	Date Received	22/04/2017			
			SDG Ref	170422-90	SDG Ref	170422-90	SDG Ref	170422-90			
			Lab Sample No.(s)	15383456	Lab Sample No.(s)	15383463	Lab Sample No.(s)	15383475			
			AGS Reference	ES	AGS Reference	ES	AGS Reference	ES			
Dibromofluoromethane**	%	TM116	109				106				
Toluene-d8**	%	TM116	96.4				98.1				
4-Bromofluorobenzene**	%	TM116	92.6				101				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.06	#			<0.06	#			
Chloromethane	<0.007 mg/kg	TM116	<0.07	#			<0.07	#			
Vinyl Chloride	<0.006 mg/kg	TM116	<0.06	#			<0.06	#			
Bromomethane	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
Chloroethane	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.06	#			<0.06	#			
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
Carbon Disulphide	<0.007 mg/kg	TM116	<0.07	#			<0.07	#			
Dichloromethane	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1	#	<0.1	#	<0.1	#			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.08	#			<0.08	#			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.06	#			<0.06	#			
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1				<0.1				
Bromochloromethane	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
Chloroform	<0.008 mg/kg	TM116	<0.08	#			<0.08	#			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.07	#			<0.07	#			
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
Carbontetrachloride	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.05	#			<0.05	#			
Benzene	<0.009 mg/kg	TM116	<0.09	#	<0.09	#	<0.09	#			
Trichloroethene	<0.009 mg/kg	TM116	<0.09	#			<0.09	#			
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
Dibromomethane	<0.009 mg/kg	TM116	<0.09	#			<0.09	#			
Bromodichloromethane	<0.007 mg/kg	TM116	<0.07	#			<0.07	#			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			
Toluene	<0.007 mg/kg	TM116	<0.07	#	<0.07	#	<0.07	#			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1				<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.1	#			<0.1	#			

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH304	W4BH304	W4BH304			
			Depth (m)	0.30	0.90	4.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	19/04/2017	19/04/2017	19/04/2017			
			Sampled Time	-	-	-			
			Date Received	22/04/2017	22/04/2017	22/04/2017			
			SDG Ref	170422-90	170422-90	170422-90			
			Lab Sample No.(s)	15383456	15383463	15383475			
			AGS Reference	ES	ES	ES			
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.07 #		<0.07 #			
Tetrachloroethene	<0.005 mg/kg	TM116		<0.05 #		<0.05 #			
Dibromochloromethane	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
Chlorobenzene	<0.005 mg/kg	TM116		<0.05 #		<0.05 #			
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 #	<0.04 #	<0.04 #			
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #			
o-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #			
Styrene	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
Bromoform	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
Isopropylbenzene	<0.005 mg/kg	TM116		<0.05 #		<0.05 #			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.16 #		<0.16 #			
Bromobenzene	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
Propylbenzene	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.09 #		<0.09 #			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.08 #		<0.08 #			
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.14 #		<0.14 #			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.09 #		<0.09 #			
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.1		<0.1			
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.08 #		<0.08 #			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.05 #		<0.05 #			
n-Butylbenzene	<0.011 mg/kg	TM116		<0.11		<0.11			
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.1 #		<0.1 #			
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.14 #		<0.14 #			
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #			
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2		<0.2			
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.2		<0.2			
Naphthalene	<0.013 mg/kg	TM116		<0.13 #		<0.13 #			

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4BH304	W4BH304	W4BH304			
			Depth (m)	0.30	0.90	4.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	19/04/2017	19/04/2017	19/04/2017			
			Sampled Time	-	-	-			
			Date Received	22/04/2017	22/04/2017	22/04/2017			
			SDG Ref	170422-90	170422-90	170422-90			
			Lab Sample No.(s)	15383456	15383463	15383475			
			AGS Reference	ES	ES	ES			
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2 #		<0.2 #			

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH304 ES 0.30 SOLID 19/04/2017 00:00:00 24/04/2017 06:04:32 170422-90 15383456 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4BH304 ES 0.90 SOLID 19/04/2017 00:00:00 24/04/2017 06:12:44 170422-90 15383463 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170422-90
Lab Sample Number(s)	15383456
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH304 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	0.000657	<0.00051	0.00657	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	0.0000375	<0.000017	0.000375	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.0000436	<0.000022	0.000436	<0.00022	-	-	-
Fluorene (diss.filt)	0.0000147	<0.000014	0.000147	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Pyrene (diss.filt)	0.0000244	<0.000015	0.000244	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Surrogate	-	<0	-	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	0.00336	<0.00085	0.0336	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	0.000562	<0.0001	0.00562	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	0.000771	<0.00044	0.00771	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00153	<0.0013	0.0153	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	6.87
Conductivity (µS/cm)	62.60
Temperature (ºC)	18.80
Volume Leachant (Litres)	0.879

Mcerts Certification does not apply to leachates

31/05/2017 12:31:52

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170422-90
Lab Sample Number(s)	15383456
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH304 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Dibromofluoromethane	-	<0	-	<0	-	-	-
Toluene-d8	-	<0	-	<0	-	-	-
4-Bromofluorobenzene	-	<0	-	<0	-	-	-
Dichlorodifluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Vinyl Chloride	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichlorofluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbon Disulphide	<0.001	<0.001	<0.01	<0.01	-	-	-
Dichloromethane	<0.003	<0.003	<0.03	<0.03	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	6.87
Conductivity (µS/cm)	62.60
Temperature (°C)	18.80
Volume Leachant (Litres)	0.879

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170422-90
Lab Sample Number(s)	15383456
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH304 ESZ
Depth (m)	0.30

Eluate Analysis	C_2 Concⁿ in 10:1 eluate (mg/l)		A_2 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
Bromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroform	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbontetrachloride	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromodichloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Tetrachloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromoethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Styrene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromoform	<0.001	<0.001	<0.01	<0.01	-	-	-
Isopropylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Propylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	6.87
Conductivity (µS/cm)	62.60
Temperature (°C)	18.80
Volume Leachant (Litres)	0.879

Mcerts Certification does not apply to leachates

31/05/2017 12:31:52

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81
Particle Size <4mm	>95%		

Case	
SDG	170422-90
Lab Sample Number(s)	15383456
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH304 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Sec-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Isopropyltoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
n-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromo-3-Chloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Naphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	6.87
Conductivity (µS/cm)	62.60
Temperature (°C)	18.80
Volume Leachant (Litres)	0.879

Mcerts Certification does not apply to leachates

31/05/2017 12:31:52

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	20.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.8
Particle Size <4mm	>95%		

Case	
SDG	170422-90
Lab Sample Number(s)	15383475
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH304 ESZ
Depth (m)	4.60

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Tin(diss.filt)	<0.00036	<0.00036	<0.0036	<0.0036	-	-	-
Arsenic	<0.00051	<0.00051	<0.0051	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Dibutyl Tin	<0.000005	<0.005	<0.00005	<0.05	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Tributyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Fluoranthene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Tetrabutyl Tin	<0.000002	<0.002	<0.00002	<0.02	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Triphenyl Tin	<0.000001	<0.001	<0.00001	<0.01	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Pyrene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Surrogate	0	<0	0	<0	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	<0.00085	<0.00085	<0.0085	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Lead	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	<0.0013	<0.0013	<0.013	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	8.66
Conductivity (µS/cm)	105.00
Temperature (°C)	14.60
Volume Leachant (Litres)	0.881

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	20.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.8
Particle Size <4mm	>95%		

Case	
SDG	170422-90
Lab Sample Number(s)	15383475
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH304 ESZ
Depth (m)	4.60

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	0.012	<0.01	0.12	<0.1	-	-	-
Aromatics >EC16-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
VOC MS (W)							
Dibromofluoromethane	-	<0	-	<0	-	-	-
Toluene-d8	-	<0	-	<0	-	-	-
4-Bromofluorobenzene	-	<0	-	<0	-	-	-
Dichlorodifluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Vinyl Chloride	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichlorofluoromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbon Disulphide	<0.001	<0.001	<0.01	<0.01	-	-	-
Dichloromethane	<0.003	<0.003	<0.03	<0.03	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,2-Dichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
2,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	8.66
Conductivity (µS/cm)	105.00
Temperature (°C)	14.60
Volume Leachant (Litres)	0.881

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	20.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.8
Particle Size <4mm	>95%		

Case	
SDG	170422-90
Lab Sample Number(s)	15383475
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH304 ESZ
Depth (m)	4.60

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
VOC MS (W)							
Bromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloroform	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Carbontetrachloride	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Benzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trichloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromomethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromodichloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Cis-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
Toluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Trans-1,3-Dichloropropene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2-Trichloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Tetrachloroethene	<0.001	<0.001	<0.01	<0.01	-	-	-
Dibromochloromethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromoethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Chlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,1,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
Ethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
p/m-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
o-Xylene	<0.001	<0.001	<0.01	<0.01	-	-	-
Styrene	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromoform	<0.001	<0.001	<0.01	<0.01	-	-	-
Isopropylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
Bromobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Propylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
2-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Chlorotoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	8.66
Conductivity (µS/cm)	105.00
Temperature (°C)	14.60
Volume Leachant (Litres)	0.881

Mcerts Certification does not apply to leachates

31/05/2017 12:31:52

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	20.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.8
Particle Size <4mm	>95%		

Case	
SDG	170422-90
Lab Sample Number(s)	15383475
Sampled Date	19-Apr-2017
Customer Sample Ref.	W4BH304 ESZ
Depth (m)	4.60

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
VOC MS (W)							
1,2,4-Trimethylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Sec-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
4-Isopropyltoluene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,4-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
n-Butylbenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2-Dibromo-3-Chloropropane	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,4-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Hexachlorobutadiene	<0.001	<0.001	<0.01	<0.01	-	-	-
Tert-amyl methyl ether	<0.001	<0.001	<0.01	<0.01	-	-	-
Naphthalene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,2,3-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
1,3,5-Trichlorobenzene	<0.001	<0.001	<0.01	<0.01	-	-	-
Total Xylenes	<0.002	<0.002	<0.02	<0.02	-	-	-

Leach Test Information

Date Prepared	25-Apr-2017
pH (pH Units)	8.66
Conductivity (µS/cm)	105.00
Temperature (°C)	14.60
Volume Leachant (Litres)	0.881

Mcerts Certification does not apply to leachates

31/05/2017 12:31:52

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
SUB		Subcontracted Test		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM283		Determination of Dissolved Niobium, Tungsten, and Zirconium in Water Matrices by ICP-MS		
TM328				

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Test Completion Dates

Lab Sample No(s)	15383456	15383463	15383475
Customer Sample Ref.	W4BH304	W4BH304	W4BH304
AGS Ref.	ES	ES	ES
Depth	0.30	0.90	4.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen	27-Apr-2017		27-Apr-2017
Asbestos ID in Solid Samples	27-Apr-2017	27-Apr-2017	
CEN 10:1 Leachate (1 Stage)	25-Apr-2017		25-Apr-2017
CEN Readings	26-Apr-2017		26-Apr-2017
Cyanide Comp/Free/Total/Thiocyanate	27-Apr-2017	29-Apr-2017	29-Apr-2017
Dissolved Metals by ICP-MS	27-Apr-2017		27-Apr-2017
Dissolved Tin by ICPMS	28-Apr-2017		28-Apr-2017
EPH CWG (Aliphatic) Aqueous GC (W)	27-Apr-2017		28-Apr-2017
EPH CWG (Aliphatic) GC (S)	26-Apr-2017	26-Apr-2017	26-Apr-2017
EPH CWG (Aromatic) Aqueous GC (W)	27-Apr-2017		28-Apr-2017
EPH CWG (Aromatic) GC (S)	26-Apr-2017	26-Apr-2017	26-Apr-2017
GRO by GC-FID (S)	28-Apr-2017	28-Apr-2017	28-Apr-2017
GRO by GC-FID (W)	27-Apr-2017		27-Apr-2017
Hexavalent Chromium (s)	27-Apr-2017	27-Apr-2017	26-Apr-2017
Mercury Dissolved	28-Apr-2017		28-Apr-2017
Metals in solid samples by OES	26-Apr-2017	26-Apr-2017	26-Apr-2017
Organotins in Aqueous Samples	28-Apr-2017		27-Apr-2017
Organotins on soils*	31-May-2017	31-May-2017	
PAH by GCMS	28-Apr-2017	28-Apr-2017	26-Apr-2017
PAH in waters by GC-MS (diss.filt)	28-Apr-2017		28-Apr-2017
pH	27-Apr-2017	27-Apr-2017	25-Apr-2017
pH Value	28-Apr-2017		28-Apr-2017
Sample description	24-Apr-2017	25-Apr-2017	24-Apr-2017
Semi Volatile Organic Compounds	27-Apr-2017		27-Apr-2017
Total Organic Carbon	27-Apr-2017		27-Apr-2017
TPH CWG (W)	27-Apr-2017		28-Apr-2017
TPH CWG GC (S)	28-Apr-2017	28-Apr-2017	28-Apr-2017
VOC MS (S)	27-Apr-2017	27-Apr-2017	27-Apr-2017
VOC MS (W)	28-Apr-2017		28-Apr-2017

CERTIFICATE OF ANALYSIS

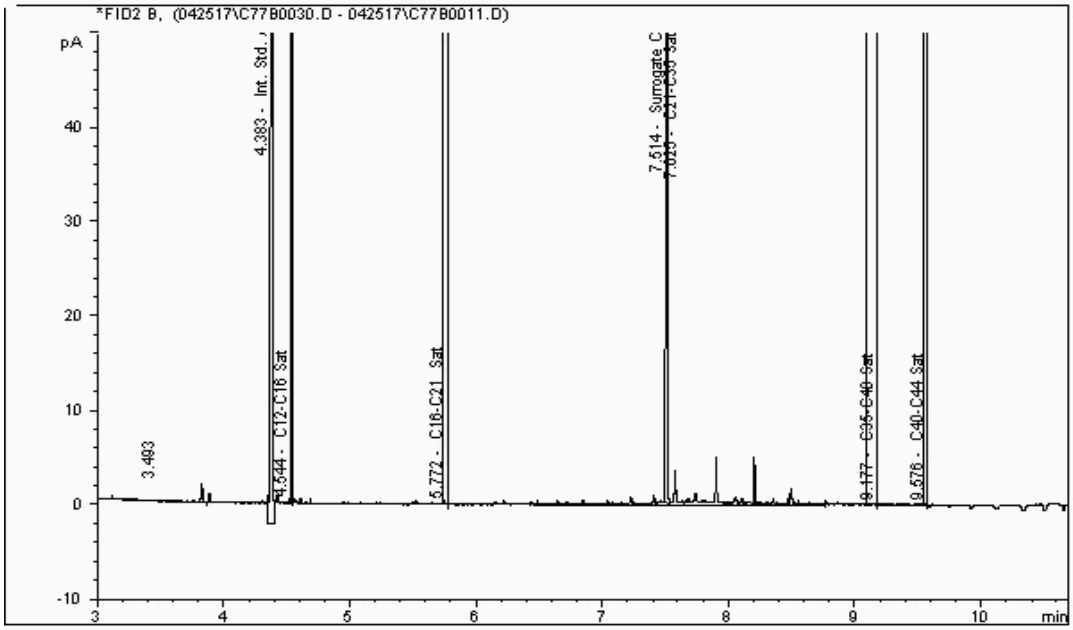
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15386651 **Sample ID :** W4BH304 **Depth :** 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14410667-
Date Acquired : 25/04/2017 19:33:36 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

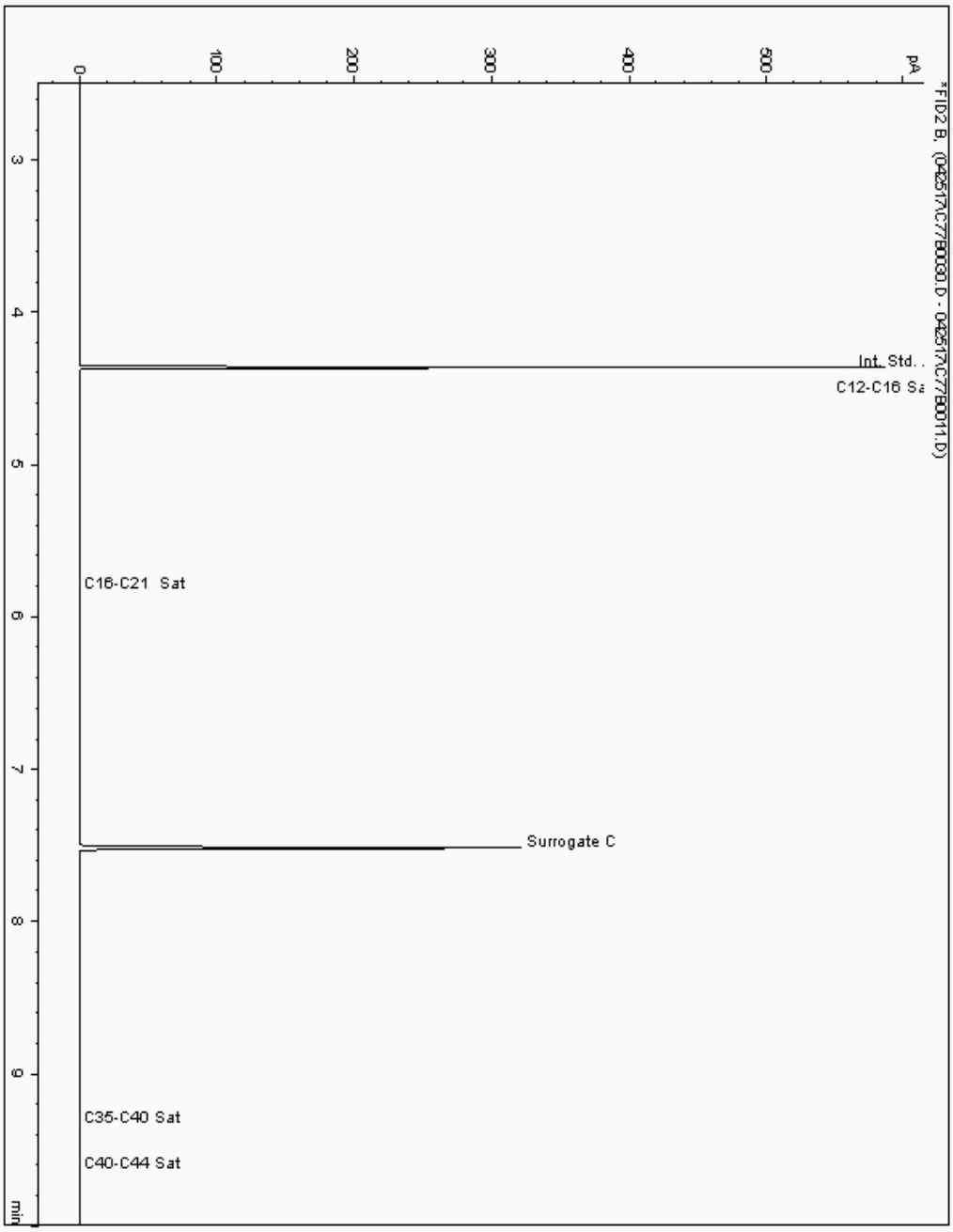
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15386662 **Sample ID :** W4BH304 **Depth :** 0.90

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14410634-
Date Acquired : 4/25/2017 9:44:58 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.030



CERTIFICATE OF ANALYSIS

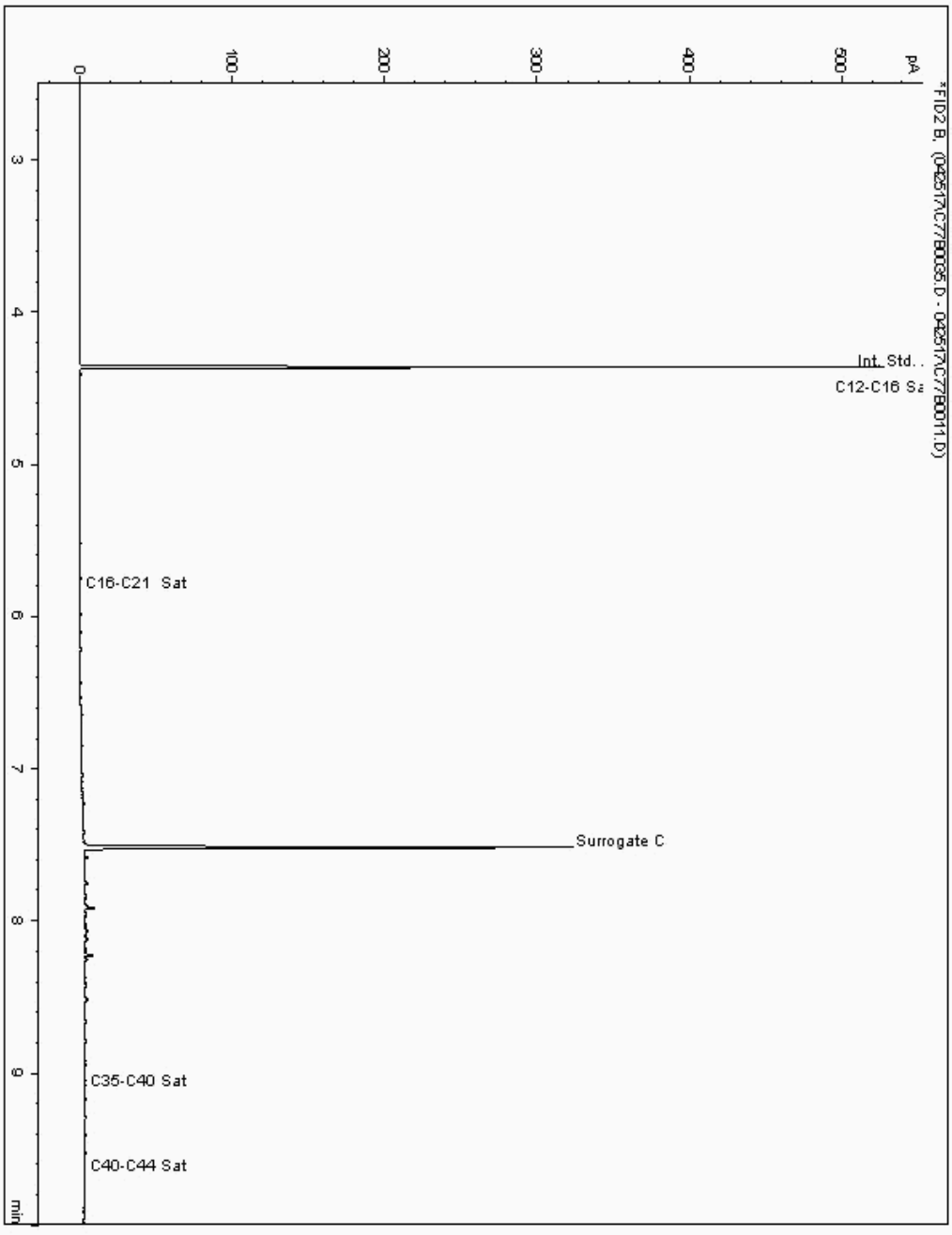
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15386732 **Sample ID :** W4BH304 **Depth :** 4.60

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 14410723-
Date Acquired : 4/25/2017 11:09:59 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.030



CERTIFICATE OF ANALYSIS

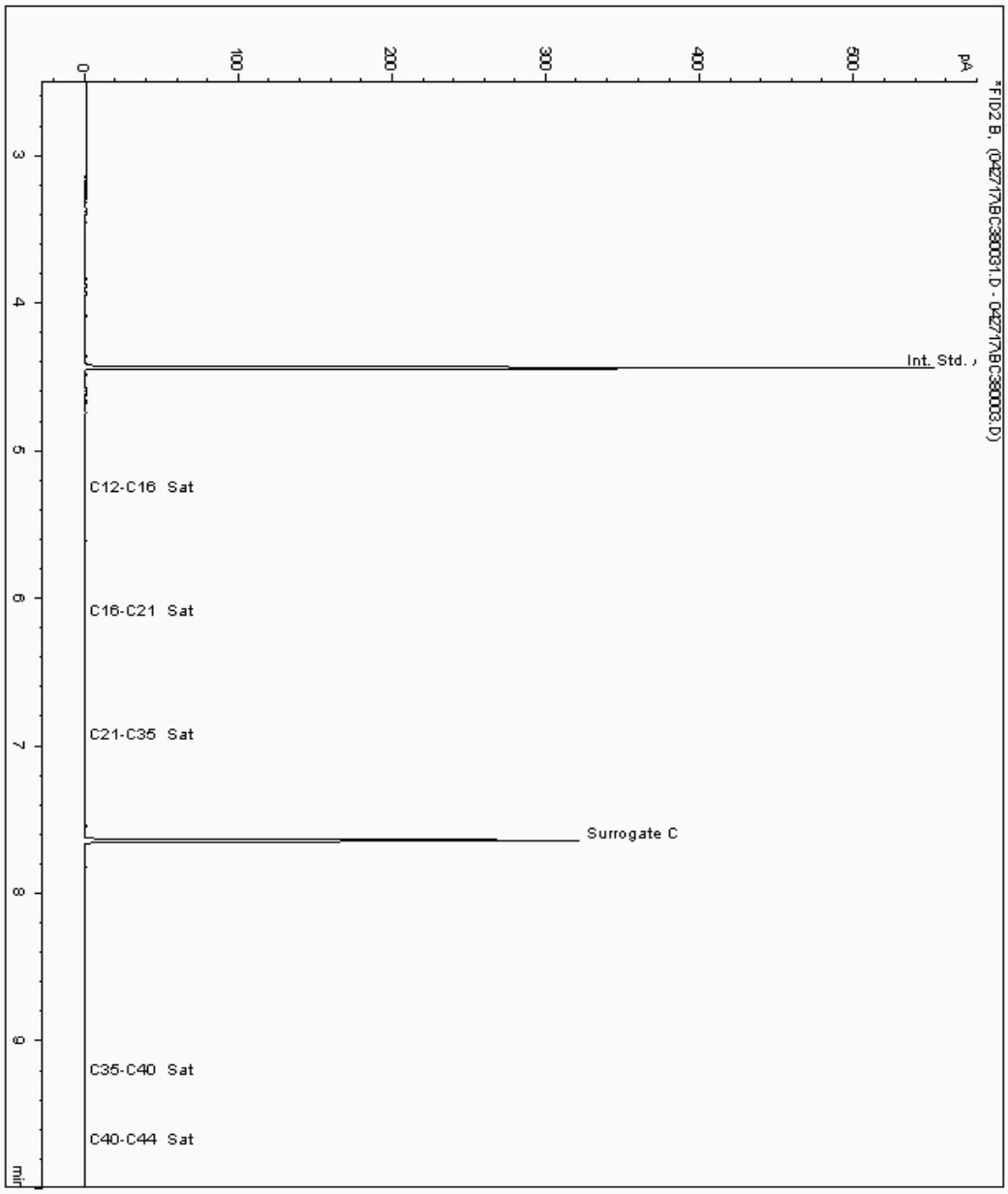
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15400742 **Sample ID :** W4BH304 **Depth :** 4.60

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14410794-
Date Acquired : 28/04/17 10:01:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.010



CERTIFICATE OF ANALYSIS

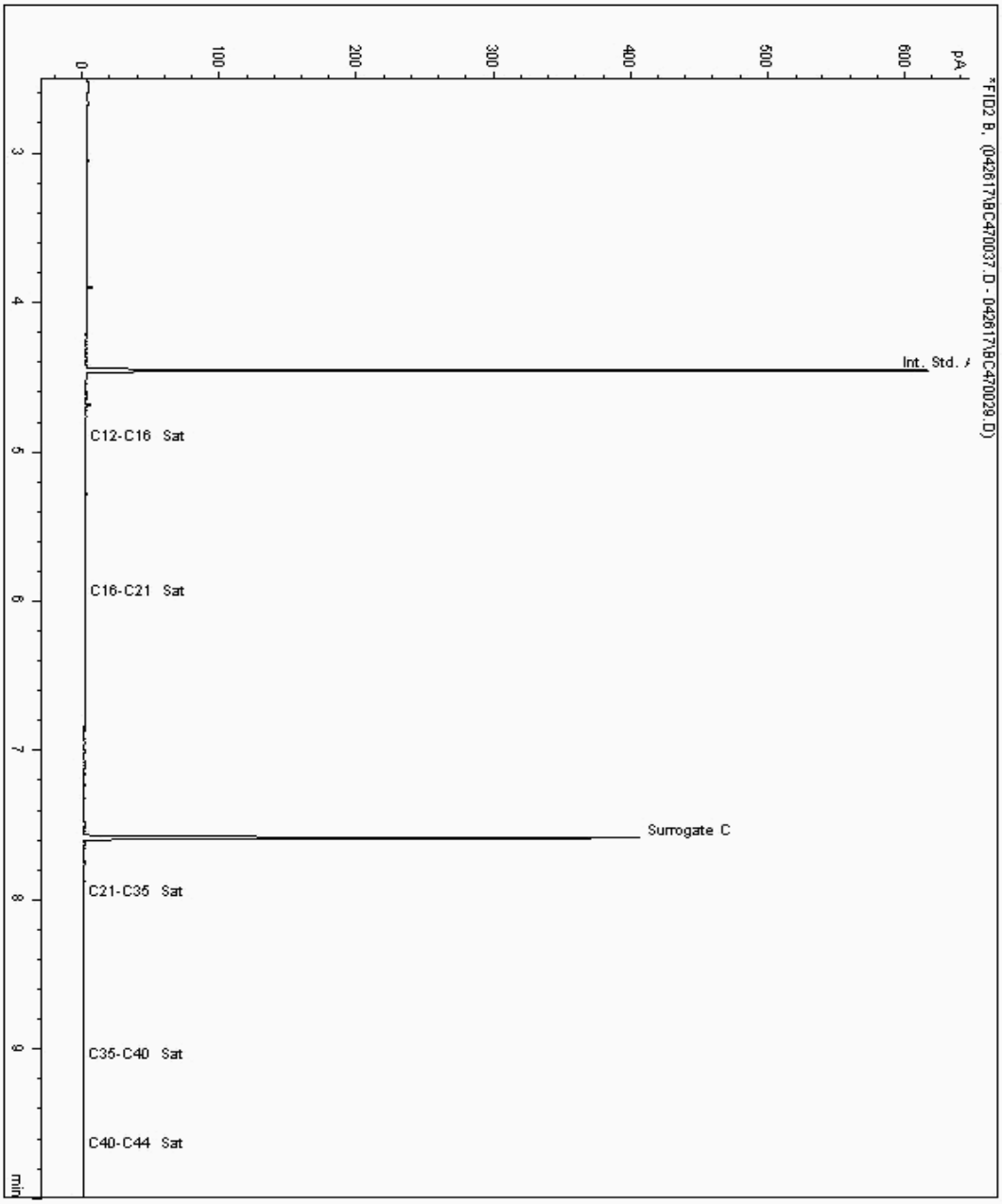
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 15400769 **Sample ID :** W4BH304 **Depth :** 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14410756-
Date Acquired : 27/04/17 11:37:53 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.010



CERTIFICATE OF ANALYSIS

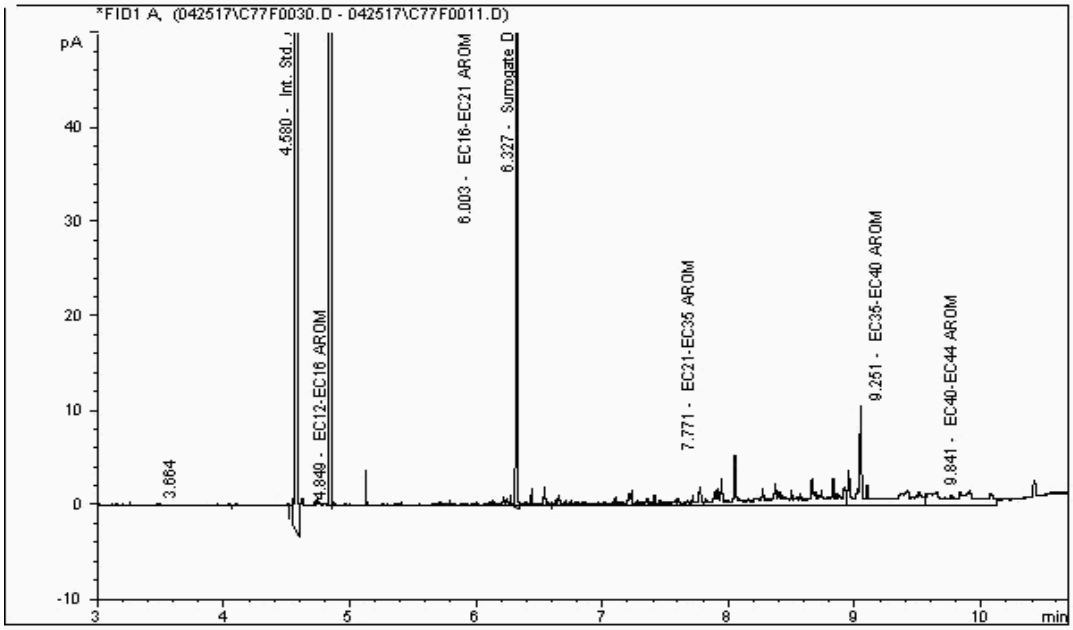
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15386651 **Sample ID :** W4BH304 **Depth :** 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 14410668-
Date Acquired : 25/04/2017 19:33:36 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

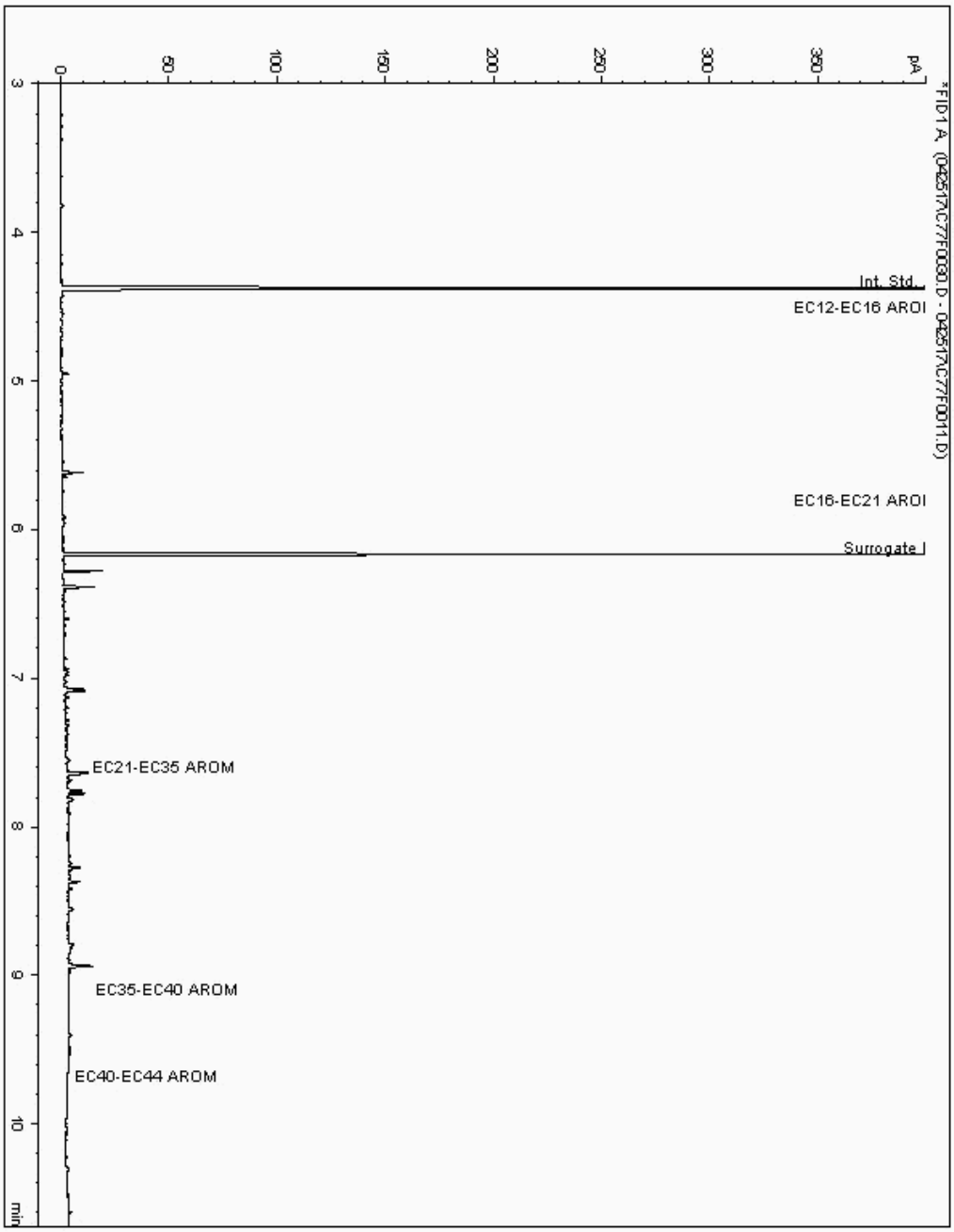
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15386662 **Sample ID :** W4BH304 **Depth :** 0.90

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14410635-
Date Acquired : 4/25/2017 9:44:58 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

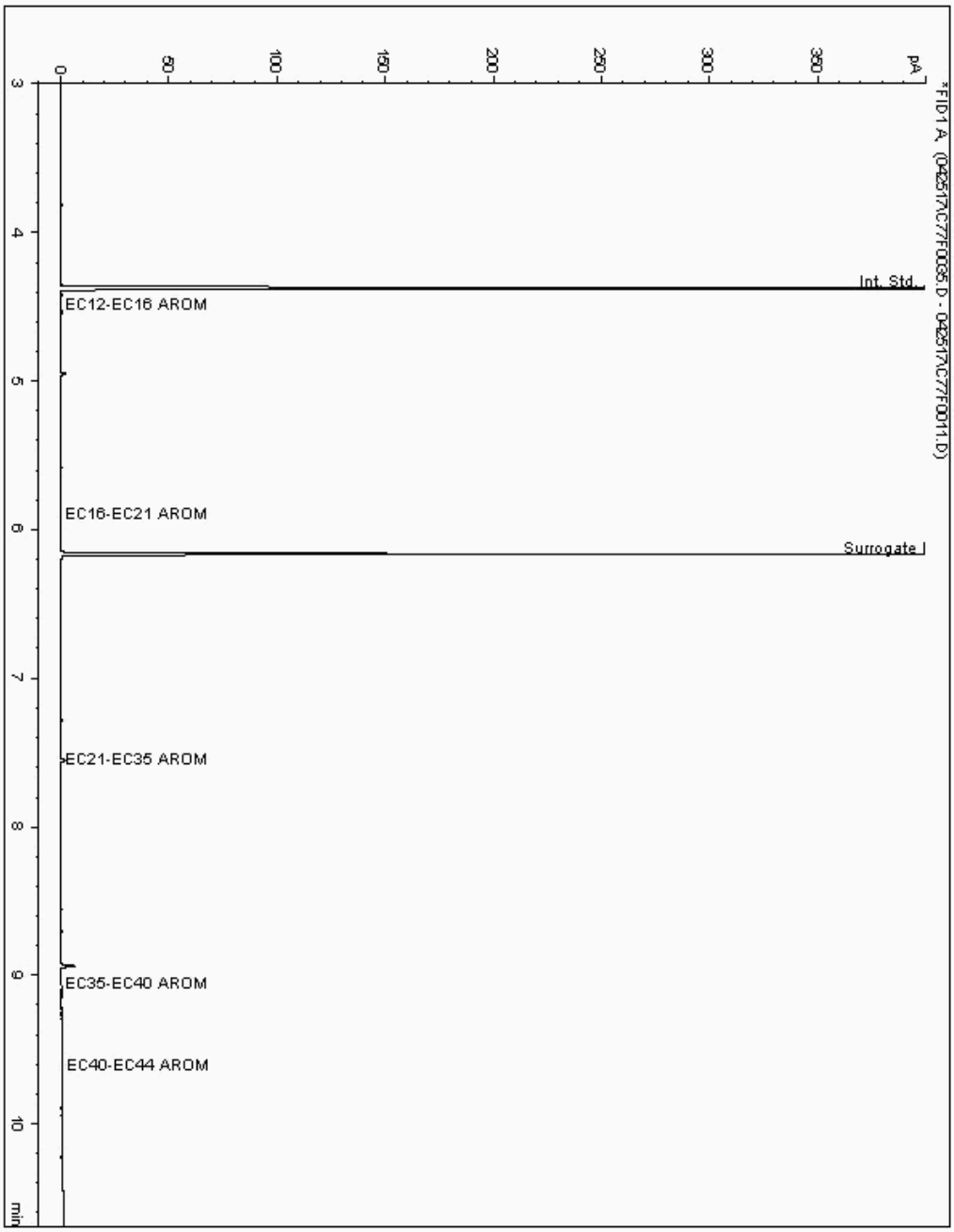
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15386732 **Sample ID :** W4BH304 **Depth :** 4.60

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14410724-
Date Acquired : 4/25/2017 11:09:59 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

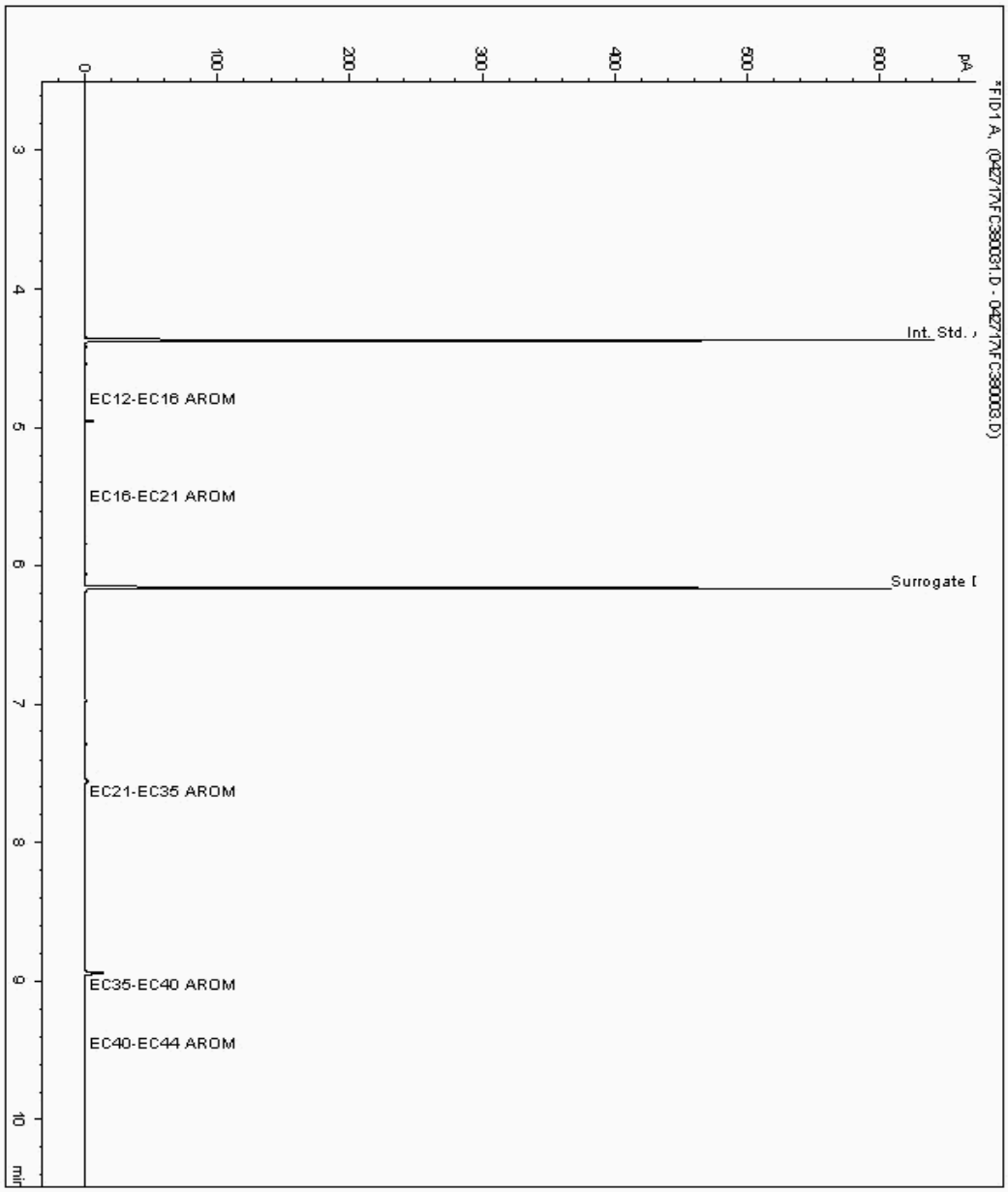
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15400742 **Sample ID :** W4BH304 **Depth :** 4.60

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14410795-
Date Acquired : 28/04/17 10:01:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.010

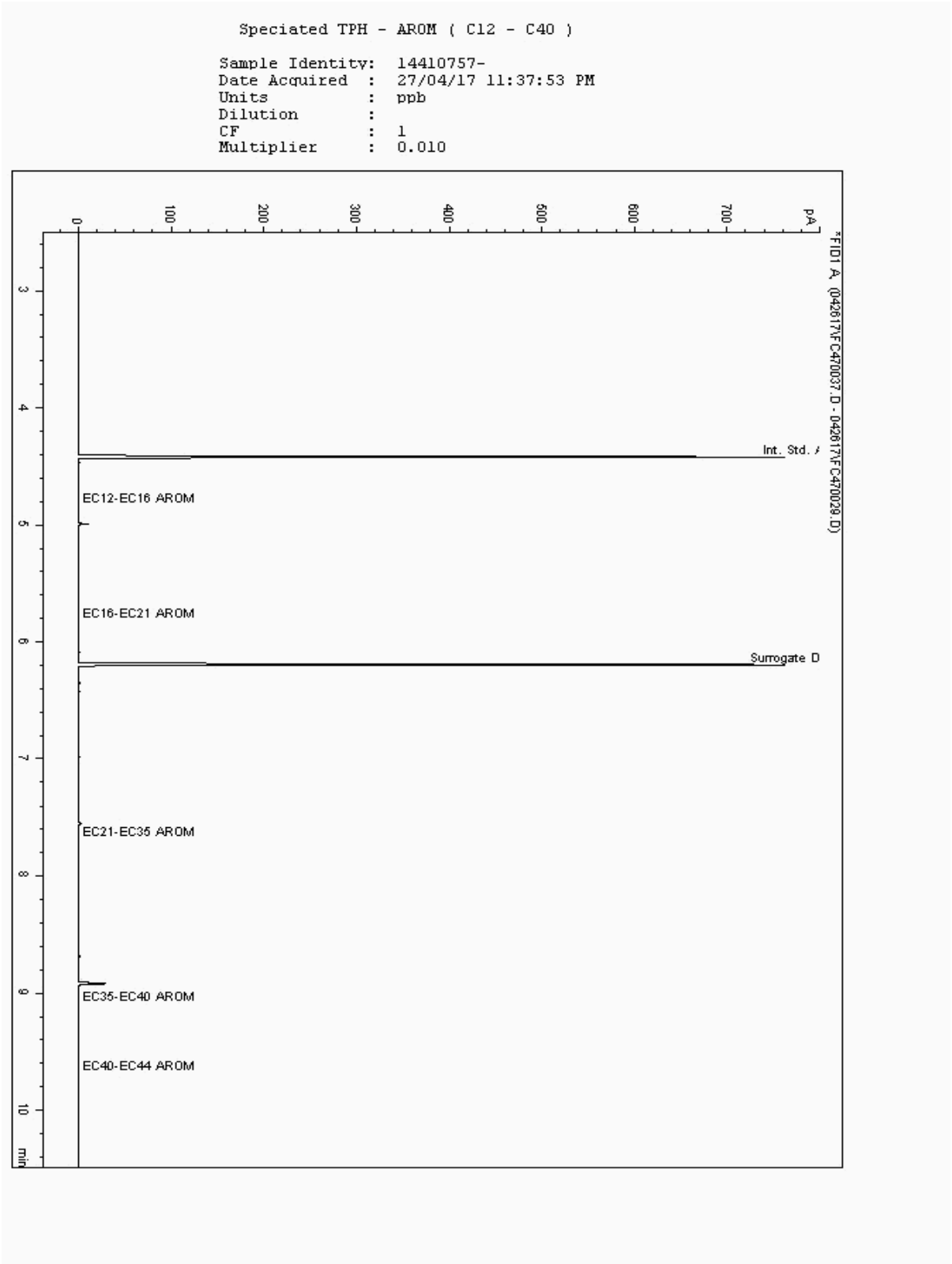


CERTIFICATE OF ANALYSIS

SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 15400769 **Sample ID :** W4BH304 **Depth :** 0.30



CERTIFICATE OF ANALYSIS

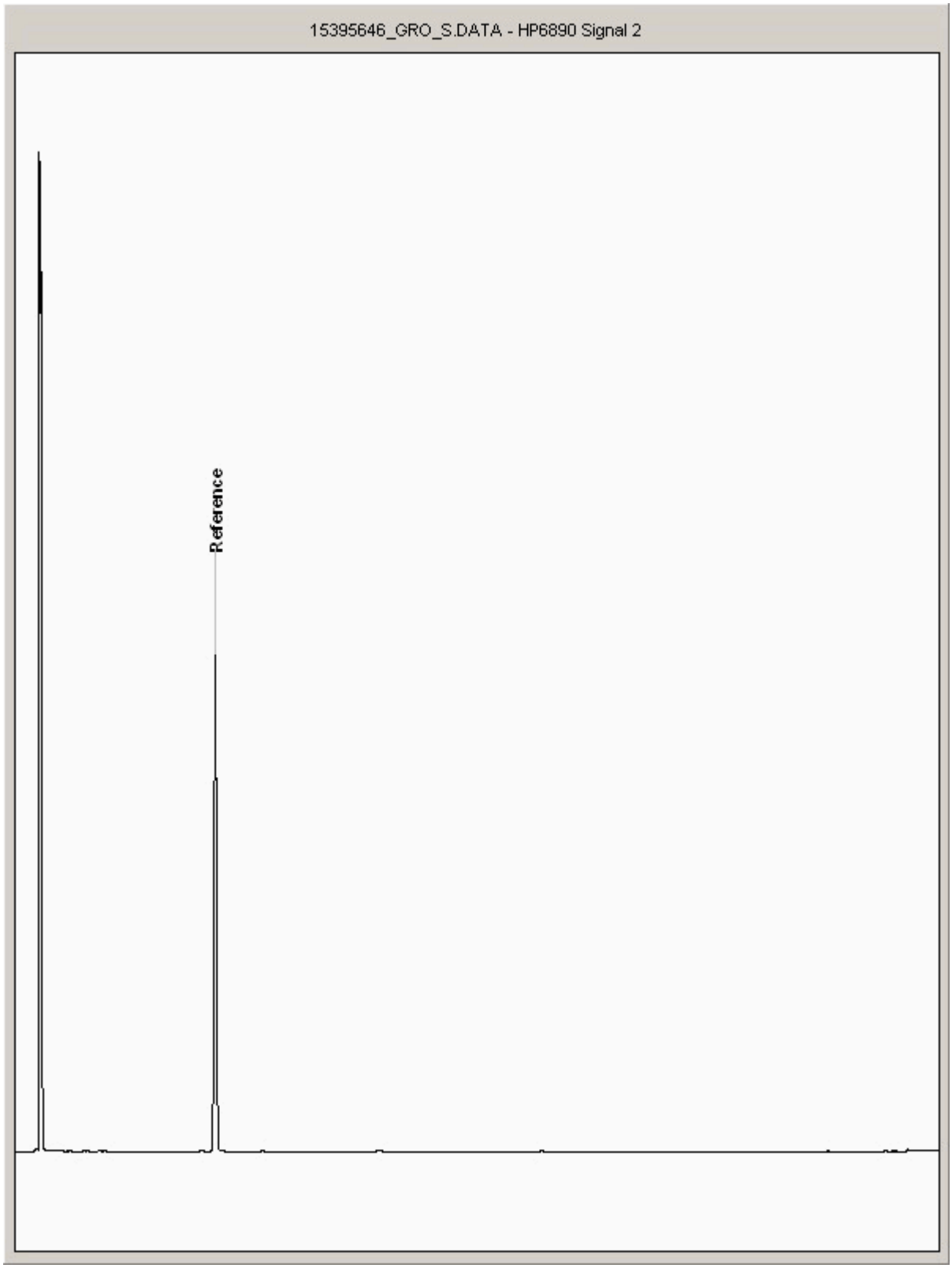
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15395646
Sample ID : W4BH304

Depth : 0.30



CERTIFICATE OF ANALYSIS

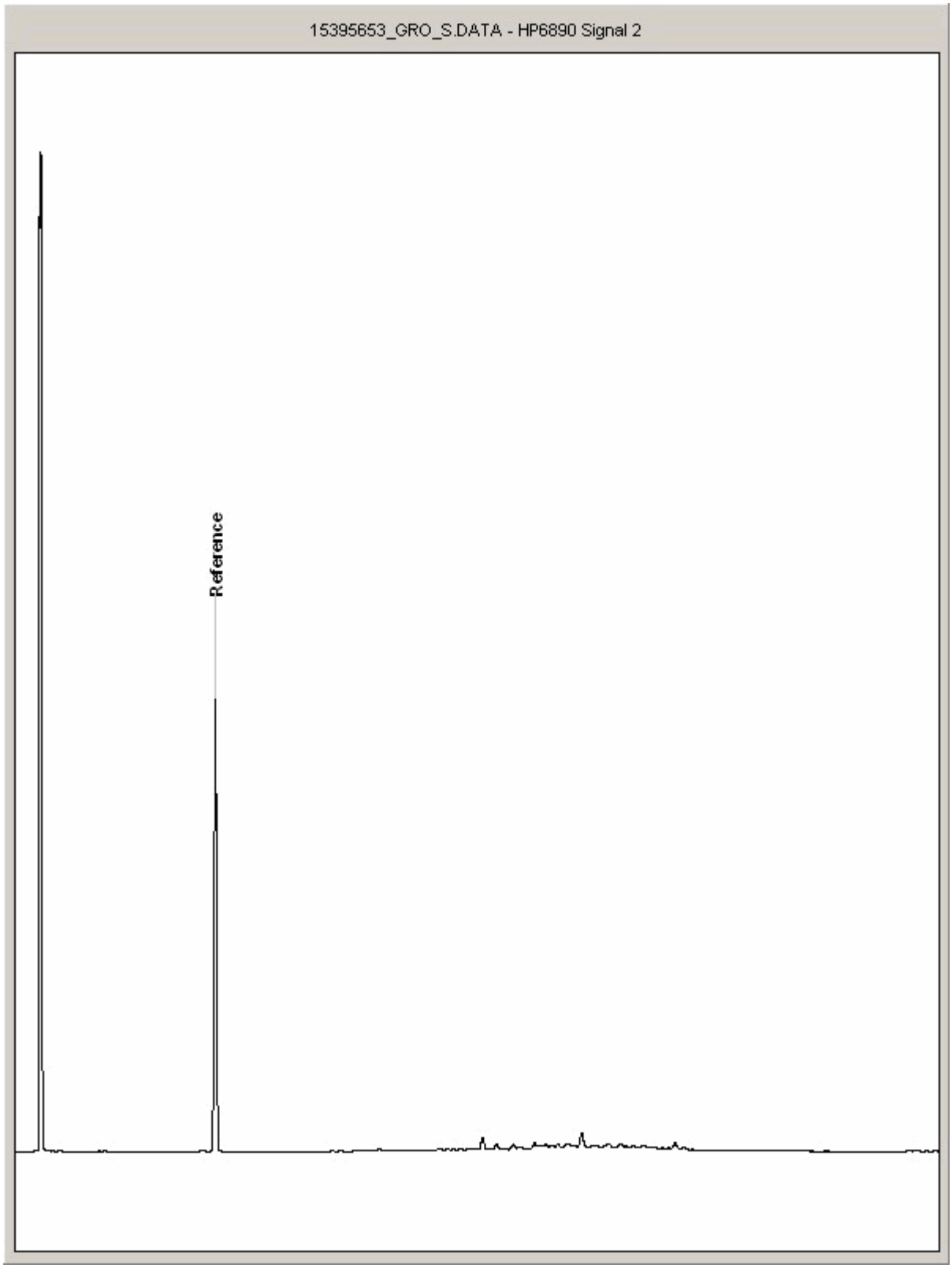
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15395653
Sample ID : W4BH304

Depth : 4.60



CERTIFICATE OF ANALYSIS

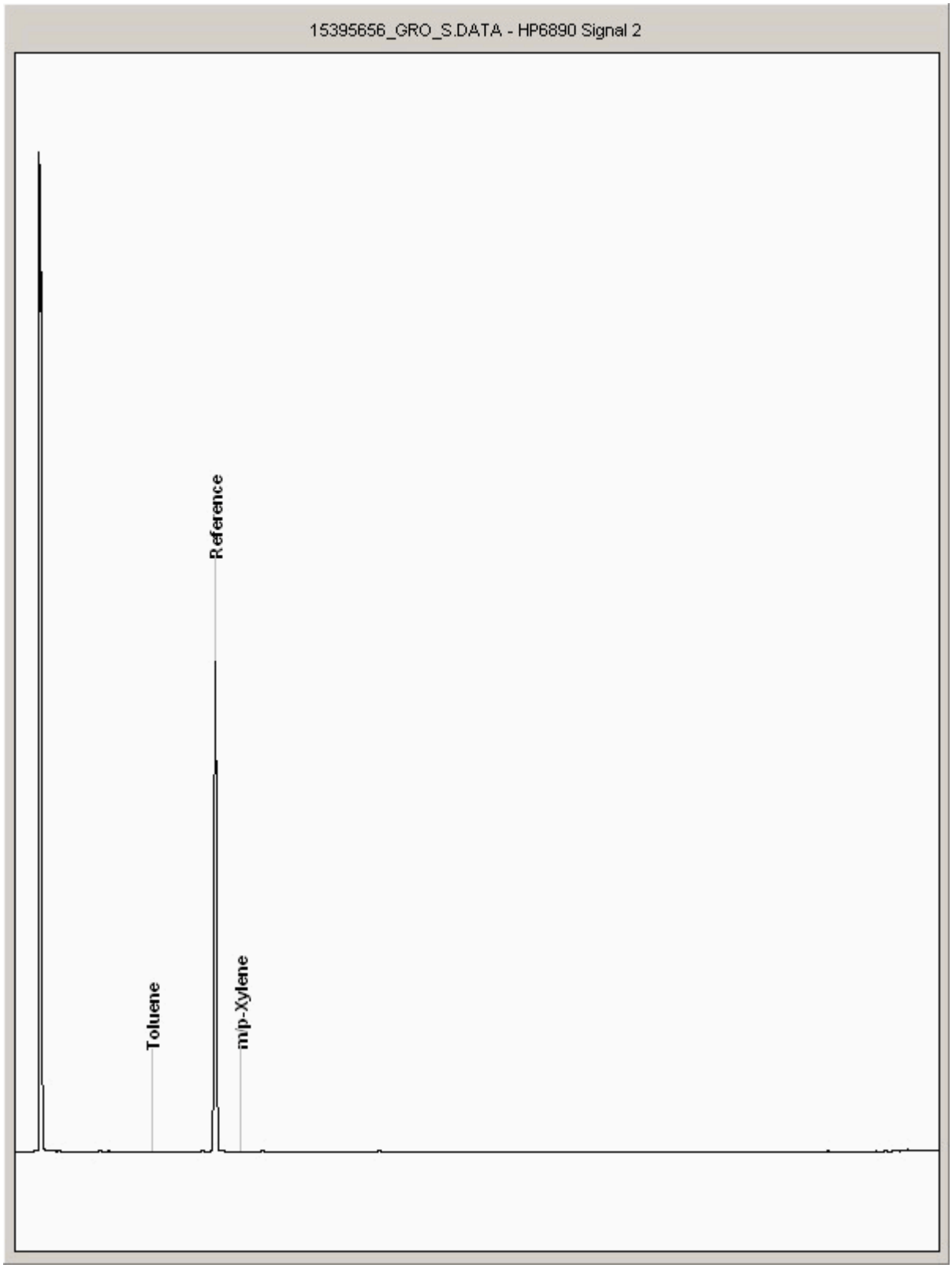
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15395656
Sample ID : W4BH304

Depth : 0.90



CERTIFICATE OF ANALYSIS

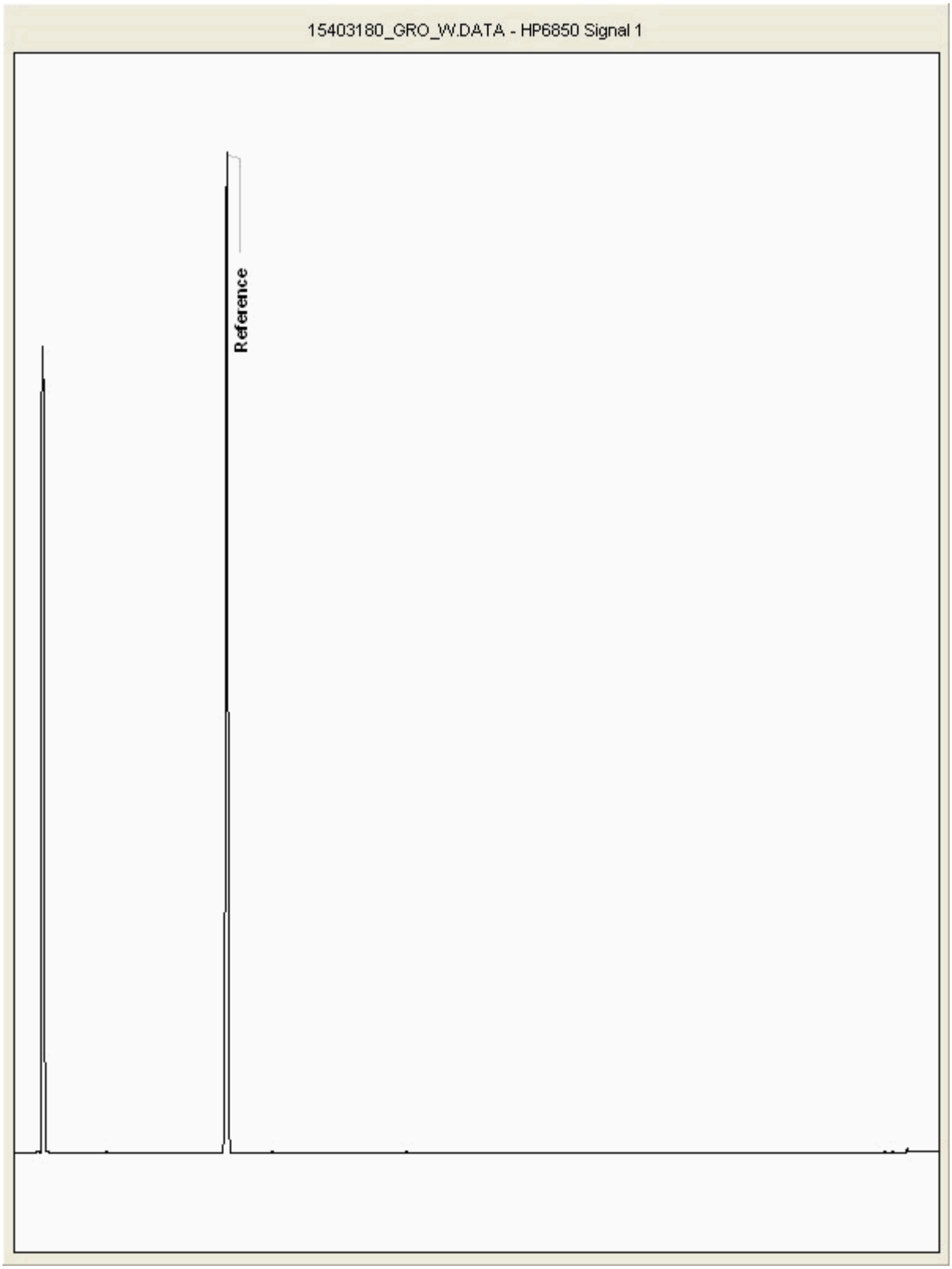
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15403180
Sample ID : W4BH304

Depth : 0.30



CERTIFICATE OF ANALYSIS

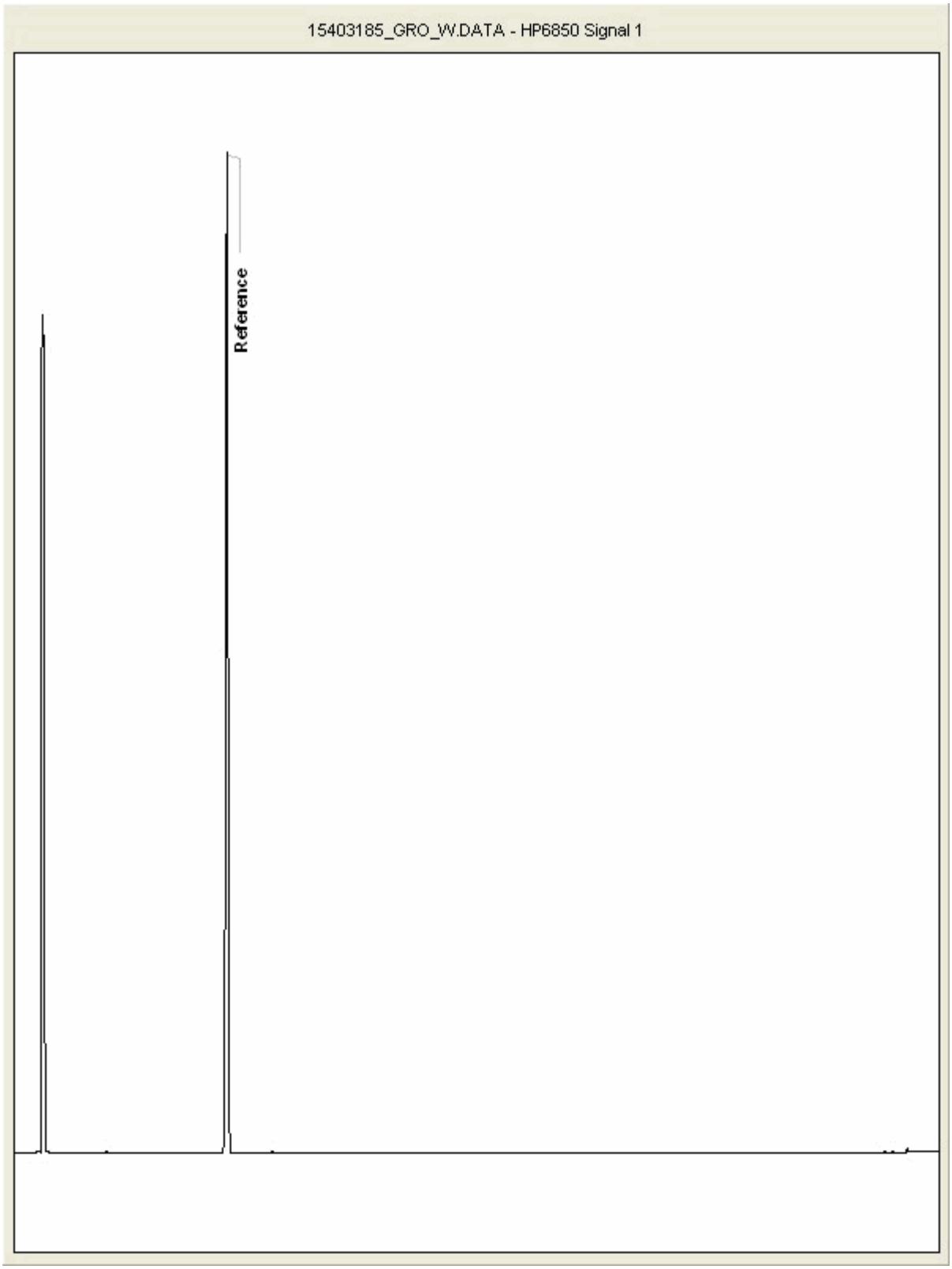
SDG:	170422-90	**Client Reference:**	70015362	**Report Number:**	410535
Location:	City Deal Tipner West	**Order Number:**	70015362-cs2	**Superseded Report:**	407714

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 15403185
Sample ID : W4BH304

Depth : 4.60



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Certificate of Analysis

Report No.: 17-61412-1

Issue No.: **1**
Date of Issue **08/05/2017**

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	33617
Customer Reference:	170422-90
Quotation Reference:	161220/03
Description:	1 soil sample
Date Received:	26/04/2017
Date Started:	02/05/2017
Date Completed:	05/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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Results Summary

Report No.: 17-61412-1

Customer Reference: 170422-90

Customer Order No: 33617

Customer Sample No	**15386655**
Customer Sample ID	W4BH304
RPS Sample No	327632
Sample Type	**SOIL**
Sample Depth (m)	0.3
Sampling Date	19/04/2017

Determinand	CAS No	Codes	SOP	Units	RL	
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

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Certificate of Analysis

Report No.: 17-62168-1

Issue No.: **1**
Date of Issue **30/05/2017**

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	34438
Customer Reference:	170422-90
Quotation Reference:	161220/03
Description:	2 soil samples
Date Received:	22/05/2017
Date Started:	24/05/2017
Date Completed:	30/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
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Results Summary

Report No.: 17-62168-1

Customer Reference: 170422-90

Customer Order No: 34438

				Customer Sample No		**15518119**	**15518398**
				Customer Sample ID		W4BH304 0.3	W4BH304 0.9
				RPS Sample No		329981	329982
				Sample Type		**SOIL**	**SOIL**
				Sample Depth (m)		0.3m	0.9m
				Sampling Date		19/04/2017	19/04/2017
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**		
dry solids (at 105øC)		N	208	% w/w		81.0	84.1
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation DW	0.1	< 0.10	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation DW	0.05	< 0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation DW	0.02	< 0.02	< 0.02

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MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
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USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
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U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
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Type X	Other

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Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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3rd Floor, Kings Orchard,
1 Queen Street
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BS2 0HQ

Attention: Siobhan McGeever

CERTIFICATE OF ANALYSIS

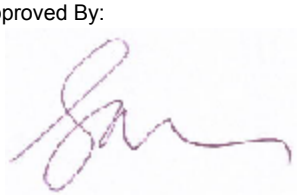
Date:	08 May 2017
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	170422-92
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	407648

We received 4 samples on Saturday April 22, 2017 and 2 of these samples were scheduled for analysis which was completed on Monday May 08, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:



Sonia McWhan

Operations Manager

1291

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CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
15383587	W4WS313	ES	0.10 - 0.25	18/04/2017
15383594	W4WS313	ES	0.40 - 0.60	18/04/2017
15383601	W4WS313	ES	1.70 - 1.80	18/04/2017
15383606	W4WS313	ES	2.00 - 2.20	18/04/2017

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)							
			15383587			15383606				
			Customer Sample Reference							
			W4WS313			W4WS313				
			AGS Reference							
			ES			ES				
			Depth (m)							
			0.10 - 0.25			2.00 - 2.20				
			Container							
			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)		
			Sample Type							
			S	S	S	S	S	S		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1				X				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2		X			X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X			X				
Dioxins/Furans (S)*	All	NDPs: 1 Tests: 0				N				
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2	X			X				
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2	X			X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2	X			X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 2	X			X				
Organotins on soils*	All	NDPs: 0 Tests: 1				X				
PAH by GCMS	All	NDPs: 0 Tests: 2	X			X				
PCBs by GCMS	All	NDPs: 0 Tests: 1				X				
pH	All	NDPs: 0 Tests: 2	X			X				
Sample description	All	NDPs: 0 Tests: 2	X			X				
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1				X				

Validated

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			15383587				15383606					
Customer Sample Reference			W4WS313				W4WS313					
AGS Reference			ES				ES					
Depth (m)			0.10 - 0.25				2.00 - 2.20					
Container			250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)		250g Amber Jar (ALE210)	400g Tub (ALE214)	60g VOC (ALE215)			
Sample Type			S	S	S		S	S	S			
Total Organic Carbon	All	NDPs: 0 Tests: 2	X				X					
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X				X					
VOC MS (S)	All	NDPs: 0 Tests: 2			X				X			

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
15383587	W4WS313	0.10 - 0.25	Dark Brown	Loamy Sand	Brick	Glass & Stones
15383606	W4WS313	2.00 - 2.20	Black	Sandy Clay	Brick	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS313	W4WS313
			Depth (m)	0.10 - 0.25	2.00 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	18/04/2017	18/04/2017
			Sampled Time	.	.
			Date Received	22/04/2017	22/04/2017
			SDG Ref	170422-92	170422-92
			Lab Sample No.(s)	15383587	15383606
			AGS Reference	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		13	26
Exchangeable Ammonia as NH4	<15 mg/kg	TM024			85.5 M
Soil Organic Matter (SOM)	<0.35 %	TM132		4.48 #	15.1 #
pH	1 pH Units	TM133		8.59 M	8.46 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	1.52 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1	1.52
PCB congener 118	<0.003 mg/kg	TM168			0.184 M
PCB congener 81	<0.003 mg/kg	TM168			<0.003 M
PCB congener 77	<0.003 mg/kg	TM168			<0.003 M
PCB congener 123	<0.003 mg/kg	TM168			<0.003 M
PCB congener 114	<0.003 mg/kg	TM168			<0.003 M
PCB congener 105	<0.003 mg/kg	TM168			0.052 M
PCB congener 126	<0.003 mg/kg	TM168			<0.003 M
PCB congener 167	<0.003 mg/kg	TM168			0.00543 M
PCB congener 156	<0.003 mg/kg	TM168			0.022 M
PCB congener 157	<0.003 mg/kg	TM168			<0.003 M
PCB congener 169	<0.003 mg/kg	TM168			<0.003 M
PCB congener 189	<0.003 mg/kg	TM168			<0.003 M
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168			0.263
Arsenic	<0.6 mg/kg	TM181		10.8 M	21.7 M
Cadmium	<0.02 mg/kg	TM181		3.27 M	2.87 M
Chromium	<0.9 mg/kg	TM181		53 M	174 M
Copper	<1.4 mg/kg	TM181		534 M	737 M
Lead	<0.7 mg/kg	TM181		429 M	1870 M
Mercury	<0.14 mg/kg	TM181		0.31 M	1.88 M
Nickel	<0.2 mg/kg	TM181		36 M	97.6 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #
Tin	<0.24 mg/kg	TM181			82.2 #
Zinc	<1.9 mg/kg	TM181		1640 M	1210 M

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Organotins on soils*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W4WS313							
Depth (m)	2.00 - 2.20							
Sample Type	Soil/Solid (S)							
Date Sampled	18/04/2017							
Sampled Time	.							
Date Received	22/04/2017							
SDG Ref	170422-92							
Lab Sample No.(s)	15383606							
AGS Reference	ES							
Component	**LOD/Units**	**Method**						
Dibutyl Tin*	<0.02 mg/kg	SUB	<0.02					
Tributyl Tin*	<0.02 mg/kg	SUB	<0.02					
Triphenyl Tin*	<0.05 mg/kg	SUB	<0.05					
Tetrabutyl Tin*	<0.02 mg/kg	SUB	<0.02					
Monobutyl Tin*	<0.1 mg/kg	SUB	<0.1					
Monophenyl Tin*	<0.02 mg/kg	SUB	<0.02					
Diphenyl Tin*	<0.02 mg/kg	SUB	<0.02					

Validated

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS313	W4WS313				
			Depth (m)	0.10 - 0.25	2.00 - 2.20				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	18/04/2017	18/04/2017				
			Sampled Time	.	.				
			Date Received	22/04/2017	22/04/2017				
			SDG Ref	170422-92	170422-92				
			Lab Sample No.(s)	15383587	15383606				
			AGS Reference	ES	ES				
Naphthalene-d8 % recovery**	%	TM218		94.1	93.3				
Acenaphthene-d10 % recovery**	%	TM218		94.6	94.3				
Phenanthrene-d10 % recovery**	%	TM218		92	91.5				
Chrysene-d12 % recovery**	%	TM218		92.5	98.6				
Perylene-d12 % recovery**	%	TM218		104	113				
Naphthalene	<0.009 mg/kg	TM218		0.026 M	0.515 M				
Acenaphthylene	<0.012 mg/kg	TM218		0.0255 M	0.253 M				
Acenaphthene	<0.008 mg/kg	TM218		0.0452 M	1.28 M				
Fluorene	<0.01 mg/kg	TM218		0.0387 M	1.26 M				
Phenanthrene	<0.015 mg/kg	TM218		0.345 M	4.79 M				
Anthracene	<0.016 mg/kg	TM218		0.0871 M	1.42 M				
Fluoranthene	<0.017 mg/kg	TM218		0.627 M	9.51 M				
Pyrene	<0.015 mg/kg	TM218		0.524 M	7.68 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.378 M	4.71 M				
Chrysene	<0.01 mg/kg	TM218		0.323 M	3.77 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.509 M	5.45 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.208 M	2.35 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.452 M	5.24 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.32 M	2.8 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0963 M	0.835 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.445 M	3.22 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		4.45	55.1				

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample Ref.	W4WS313
Depth (m)	2.00 - 2.20
Sample Type	Soil/Solid (S)
Date Sampled	18/04/2017
Sampled Time	.
Date Received	22/04/2017
SDG Ref	170422-92
Lab Sample No.(s)	15383606
AGS Reference	ES

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	0.267
Dibenzofuran	<0.1 mg/kg	TM157	0.846
Carbazole	<0.1 mg/kg	TM157	0.408
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	0.223
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4WS313	2.00 - 2.20	Soil/Solid (S)	18/04/2017	-	22/04/2017	170422-92	15383606	ES
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1								
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1								
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1								
2-Methylnaphthalene	<0.1 mg/kg	TM157	0.859								
Benzo(a)anthracene	<0.1 mg/kg	TM157	3.72								
Chrysene	<0.1 mg/kg	TM157	3.84								
Naphthalene	<0.1 mg/kg	TM157	0.736								
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1								

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS313	W4WS313				
			Depth (m)	0.10 - 0.25	2.00 - 2.20				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	18/04/2017	18/04/2017				
			Sampled Time	.	.				
			Date Received	22/04/2017	22/04/2017				
			SDG Ref	170422-92	170422-92				
			Lab Sample No.(s)	15383587	15383606				
			AGS Reference	ES	ES				
GRO Surrogate % recovery**	%	TM089		64	31				
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	13.1 M				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	0.0174				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	0.117				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	2.95				
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	4.86				
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.859	385				
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	597				
Aliphatics >C21-C35	<0.1 mg/kg	TM173		6.56	1660				
Aliphatics >C35-C44	<0.1 mg/kg	TM173		19.7	355				
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		27.1	3000				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	1.97				
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	3.24				
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	230				
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		5.55	538				
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		76.8	1150				
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		71.3	449				
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		32.3	167				
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		154	2370				
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		181	5380				
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		82.4	1690				

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS313	W4WS313				
			Depth (m)	0.10 - 0.25	2.00 - 2.20				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	18/04/2017	18/04/2017				
			Sampled Time	.	.				
			Date Received	22/04/2017	22/04/2017				
			SDG Ref	170422-92	170422-92				
			Lab Sample No.(s)	15383587	15383606				
			AGS Reference	ES	ES				
Dibromofluoromethane**	%	TM116			104				
Toluene-d8**	%	TM116			85.1				
4-Bromofluorobenzene**	%	TM116			81.3				
Dichlorodifluoromethane	<0.006 mg/kg	TM116			<0.06 M				
Chloromethane	<0.007 mg/kg	TM116			<0.07 #				
Vinyl Chloride	<0.006 mg/kg	TM116			<0.06 M				
Bromomethane	<0.01 mg/kg	TM116			<0.1 M				
Chloroethane	<0.01 mg/kg	TM116			<0.1 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116			<0.06 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116			<0.1 #				
Carbon Disulphide	<0.007 mg/kg	TM116			<0.07 M				
Dichloromethane	<0.01 mg/kg	TM116			<0.1 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116			<0.1 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116			<0.08 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116			<0.06 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116			<0.1				
Bromochloromethane	<0.01 mg/kg	TM116			<0.1 M				
Chloroform	<0.008 mg/kg	TM116			<0.08 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116			<0.07 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116			<0.1 M				
Carbontetrachloride	<0.01 mg/kg	TM116			<0.1 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116			<0.05 M				
Benzene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M				
Trichloroethene	<0.009 mg/kg	TM116			<0.09 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116			<0.1 M				
Dibromomethane	<0.009 mg/kg	TM116			<0.09 M				
Bromodichloromethane	<0.007 mg/kg	TM116			<0.07 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.1 M				
Toluene	<0.007 mg/kg	TM116		<0.07 M	<0.07 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116			<0.1 M				

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			W4WS313	0.10 - 0.25	Soil/Solid (S)	18/04/2017	-	22/04/2017	170422-92	15383587	ES
			W4WS313	2.00 - 2.20	Soil/Solid (S)	18/04/2017	-	22/04/2017	170422-92	15383606	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.07 M							
Tetrachloroethene	<0.005 mg/kg	TM116		<0.05 M							
Dibromochloromethane	<0.01 mg/kg	TM116		<0.1 M							
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.1 M							
Chlorobenzene	<0.005 mg/kg	TM116		<0.05 M							
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 M							
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M	<0.04 M							
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #							
o-Xylene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M							
Styrene	<0.01 mg/kg	TM116		<0.1 #							
Bromoform	<0.01 mg/kg	TM116		<0.1 M							
Isopropylbenzene	<0.005 mg/kg	TM116		<0.05 #							
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 M							
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.16 M							
Bromobenzene	<0.01 mg/kg	TM116		<0.1 M							
Propylbenzene	<0.01 mg/kg	TM116		<0.1 M							
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.09 M							
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.08 M							
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.1 M							
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.14 M							
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		1.07 #							
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.1							
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.1 M							
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.08 M							
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.05 M							
n-Butylbenzene	<0.011 mg/kg	TM116		<0.11							
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.1 M							
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.14 M							
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #							
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2							
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.2							
Naphthalene	<0.013 mg/kg	TM116		0.982 M							

Validated

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	W4WS313	W4WS313
			Depth (m)	0.10 - 0.25	2.00 - 2.20
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	18/04/2017	18/04/2017
			Sampled Time	-	-
			Date Received	22/04/2017	22/04/2017
			SDG Ref	170422-92	170422-92
			Lab Sample No.(s)	15383587	15383606
			AGS Reference	ES	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116			<0.2 #

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS313 ES 0.10 - 0.25 SOLID 18/04/2017 00:00:00 24/04/2017 13:13:25 170422-92 15383587 TM048	27/04/17	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	W4WS313 ES 2.00 - 2.20 SOLID 18/04/2017 00:00:00 24/04/2017 13:14:42 170422-92 15383606 TM048	27/04/17	Christian Hallam	Loose Fibres in Soil.	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 22/04/2017 13:31:22

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
15383606	W4WS313 ESZ	2.00 - 2.20	Dioxins/Furans (S)*	Unsuitable sample for analysis

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
SUB		Subcontracted Test		
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Test Completion Dates

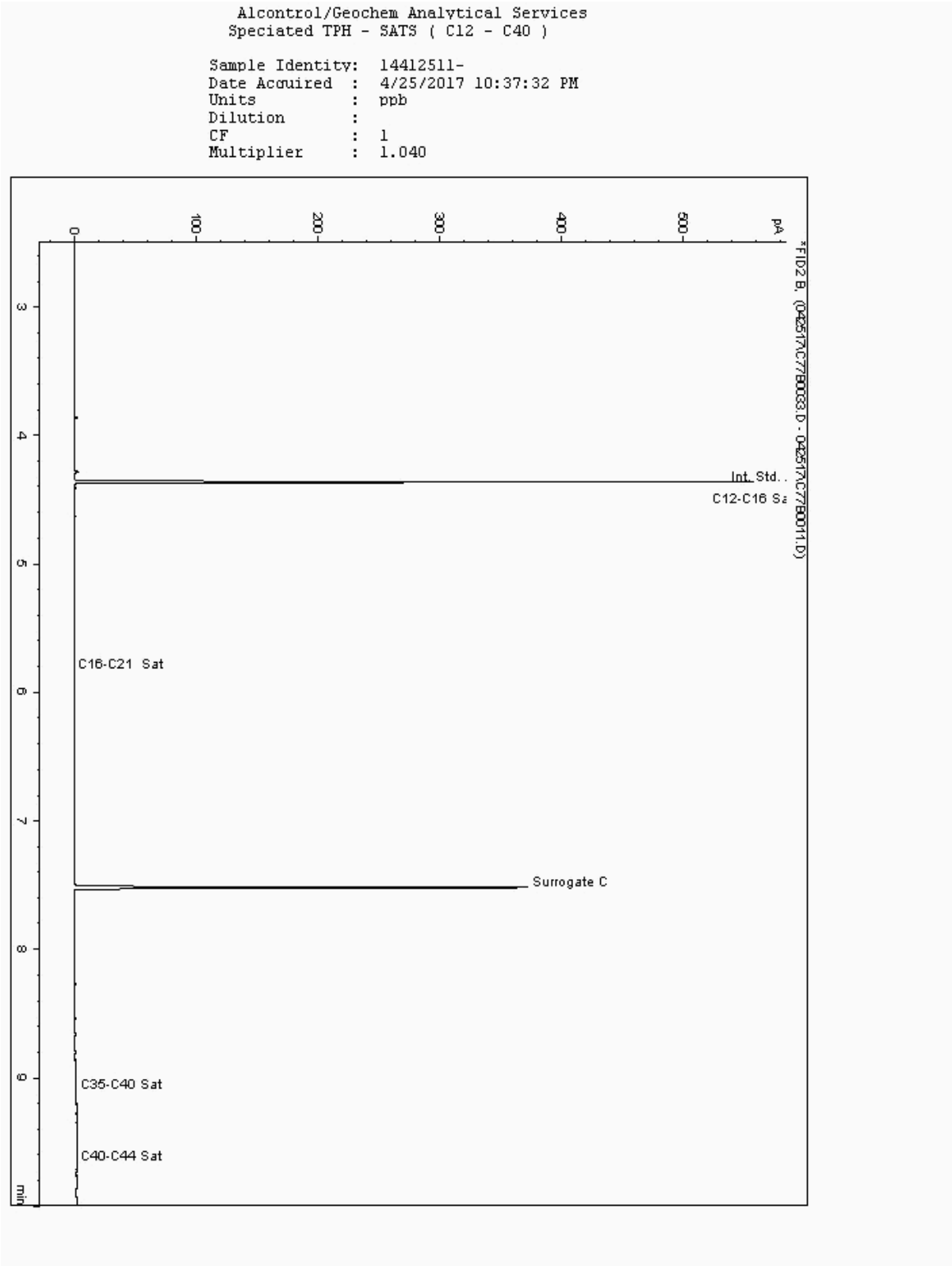
Lab Sample No(s)	15383587	15383606
Customer Sample Ref.	W4WS313	W4WS313
AGS Ref.	ES	ES
Depth	0.10 - 0.25	2.00 - 2.20
Type	Soil/Solid (S)	Soil/Solid (S)
Ammonium Soil by Titration		26-Apr-2017
Asbestos ID in Solid Samples	27-Apr-2017	27-Apr-2017
Cyanide Comp/Free/Total/Thiocyanate	27-Apr-2017	27-Apr-2017
EPH CWG (Aliphatic) GC (S)	26-Apr-2017	26-Apr-2017
EPH CWG (Aromatic) GC (S)	26-Apr-2017	26-Apr-2017
GRO by GC-FID (S)	26-Apr-2017	26-Apr-2017
Hexavalent Chromium (s)	26-Apr-2017	26-Apr-2017
Metals in solid samples by OES	27-Apr-2017	27-Apr-2017
Organotins on soils*		08-May-2017
PAH by GCMS	26-Apr-2017	26-Apr-2017
PCBs by GCMS		27-Apr-2017
pH	27-Apr-2017	27-Apr-2017
Sample description	25-Apr-2017	25-Apr-2017
Semi Volatile Organic Compounds		27-Apr-2017
Total Organic Carbon	27-Apr-2017	27-Apr-2017
TPH CWG GC (S)	26-Apr-2017	26-Apr-2017
VOC MS (S)	26-Apr-2017	26-Apr-2017

CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15388656 **Sample ID :** W4WS313 **Depth :** 0.10 - 0.25

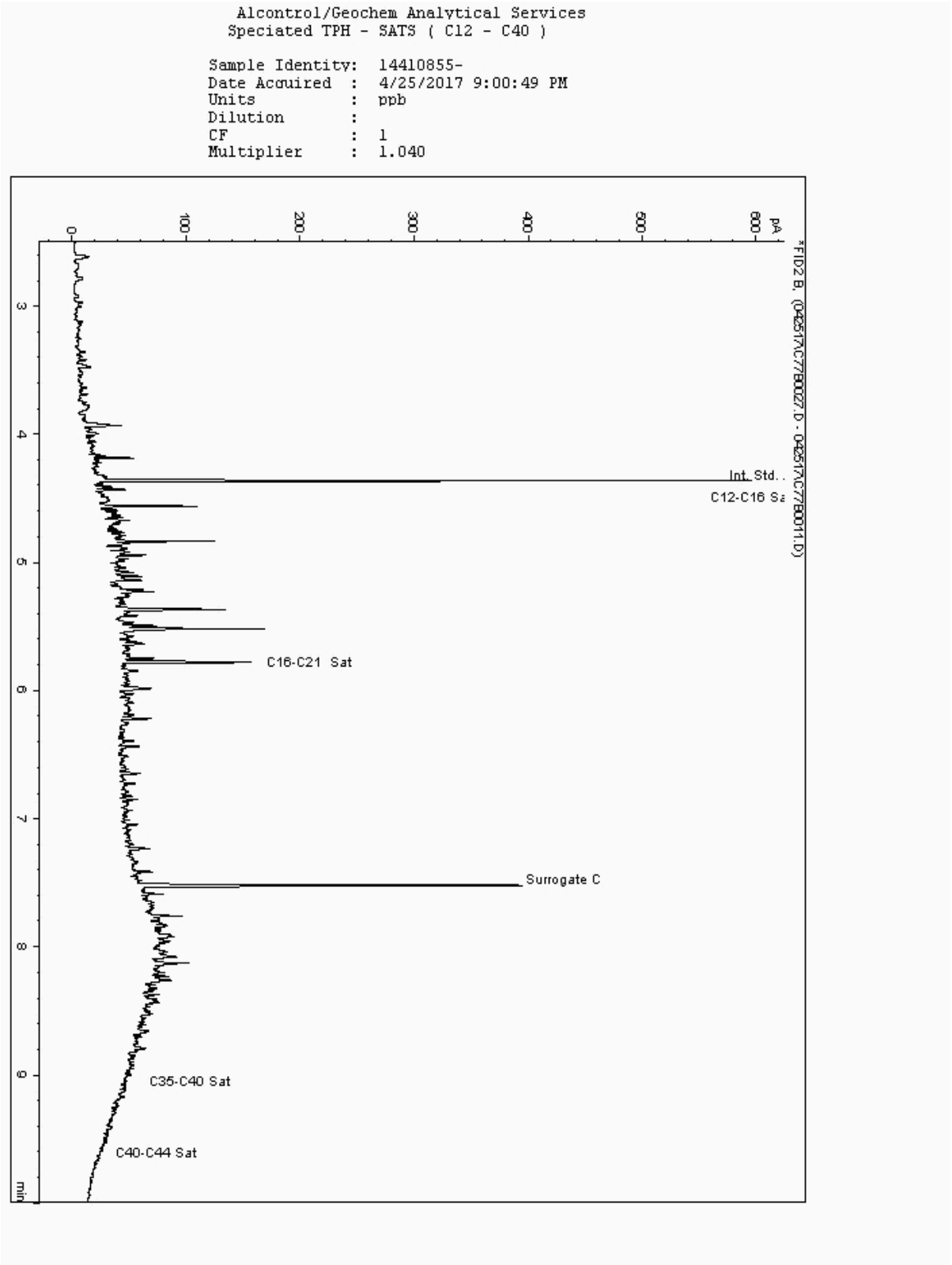


CERTIFICATE OF ANALYSIS

SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 15388698 **Sample ID :** W4WS313 **Depth :** 2.00 - 2.20



CERTIFICATE OF ANALYSIS

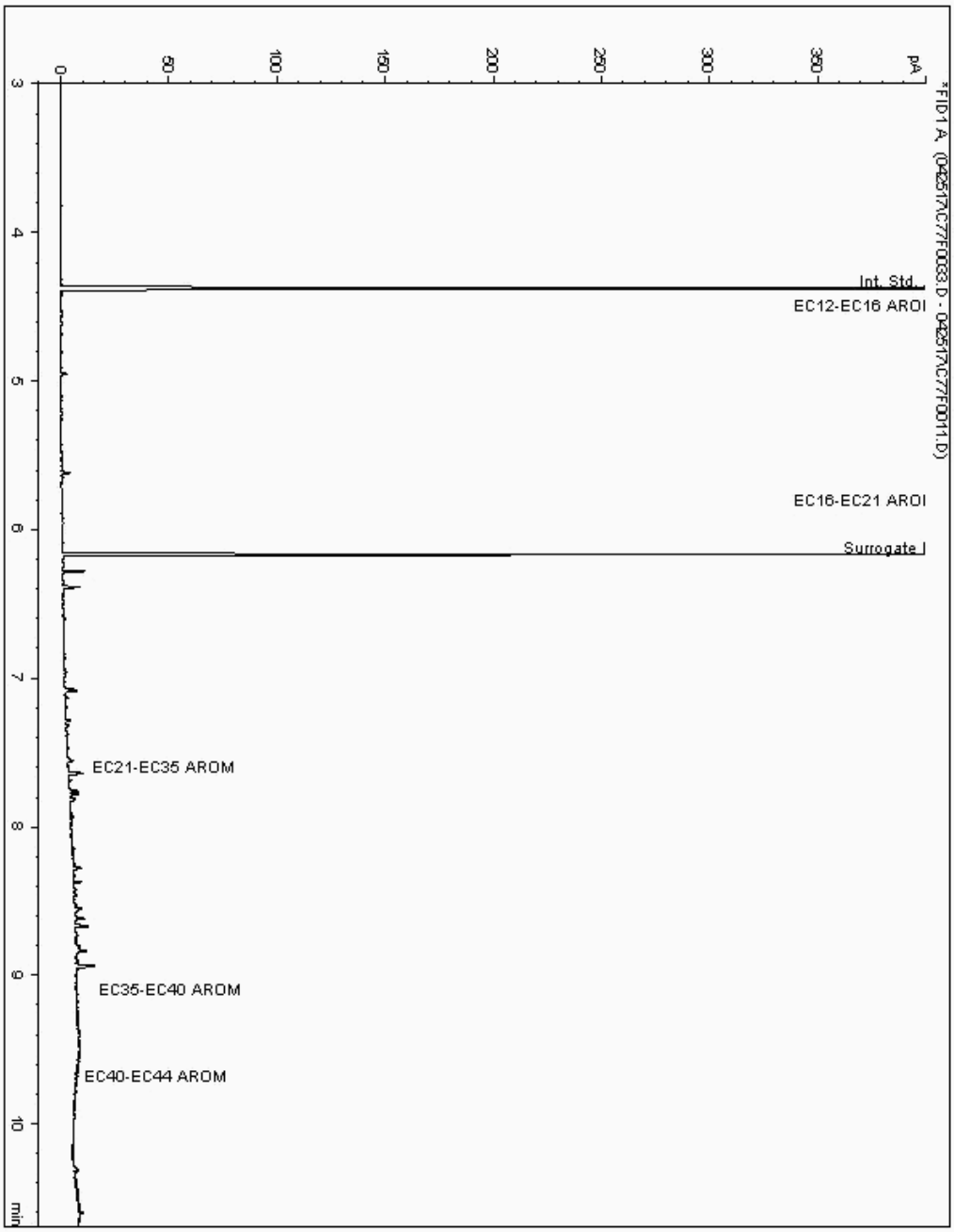
SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15388656 **Sample ID :** W4WS313 **Depth :** 0.10 - 0.25

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14412512-
Date Acquired : 4/25/2017 10:37:32 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

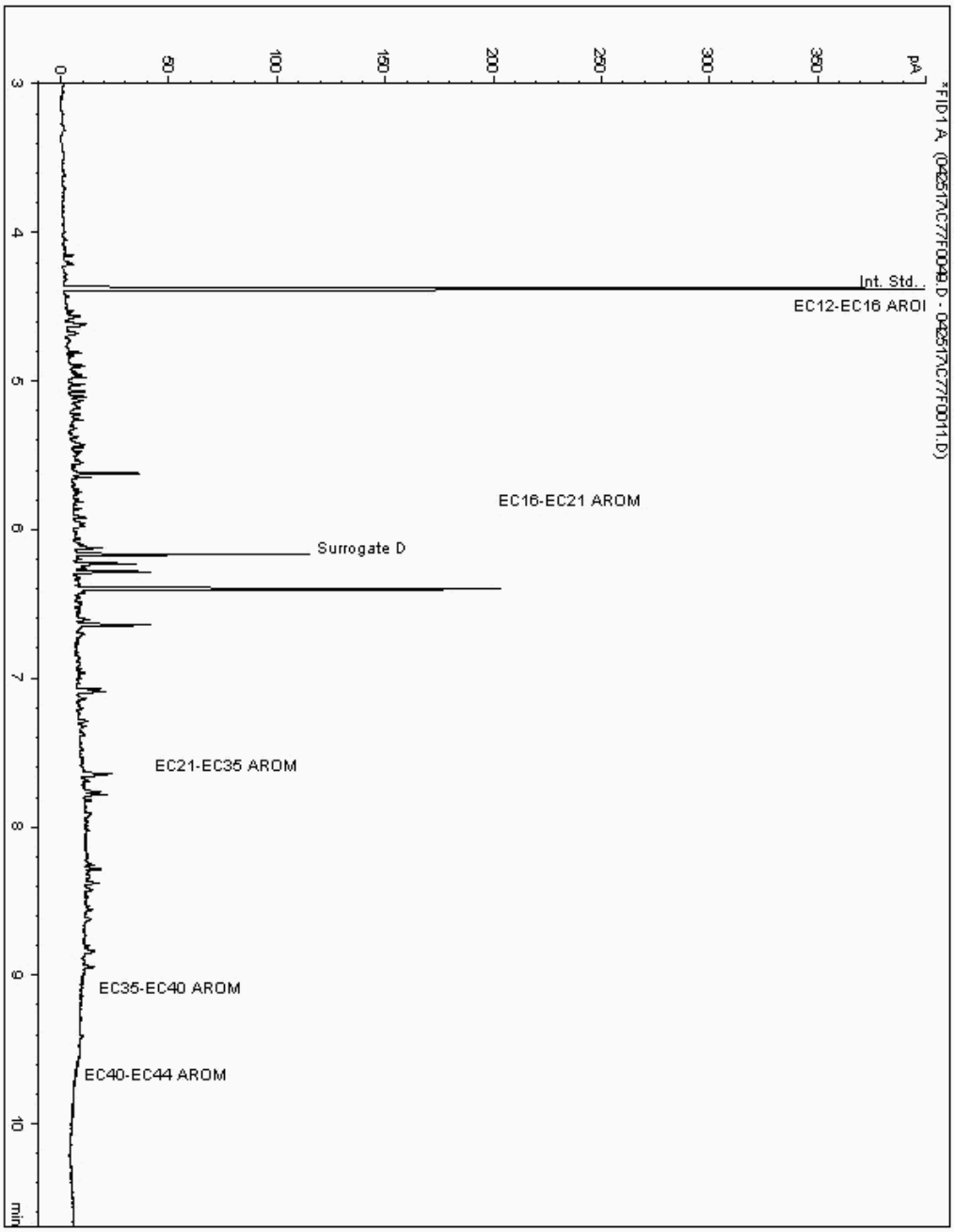
SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 15388698 **Sample ID :** W4WS313 **Depth :** 2.00 - 2.20

Speciated TPH - AROM (C12 - C40)

Sample Identity: 14410856-
Date Acquired : 4/26/2017 11:20:26 AM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

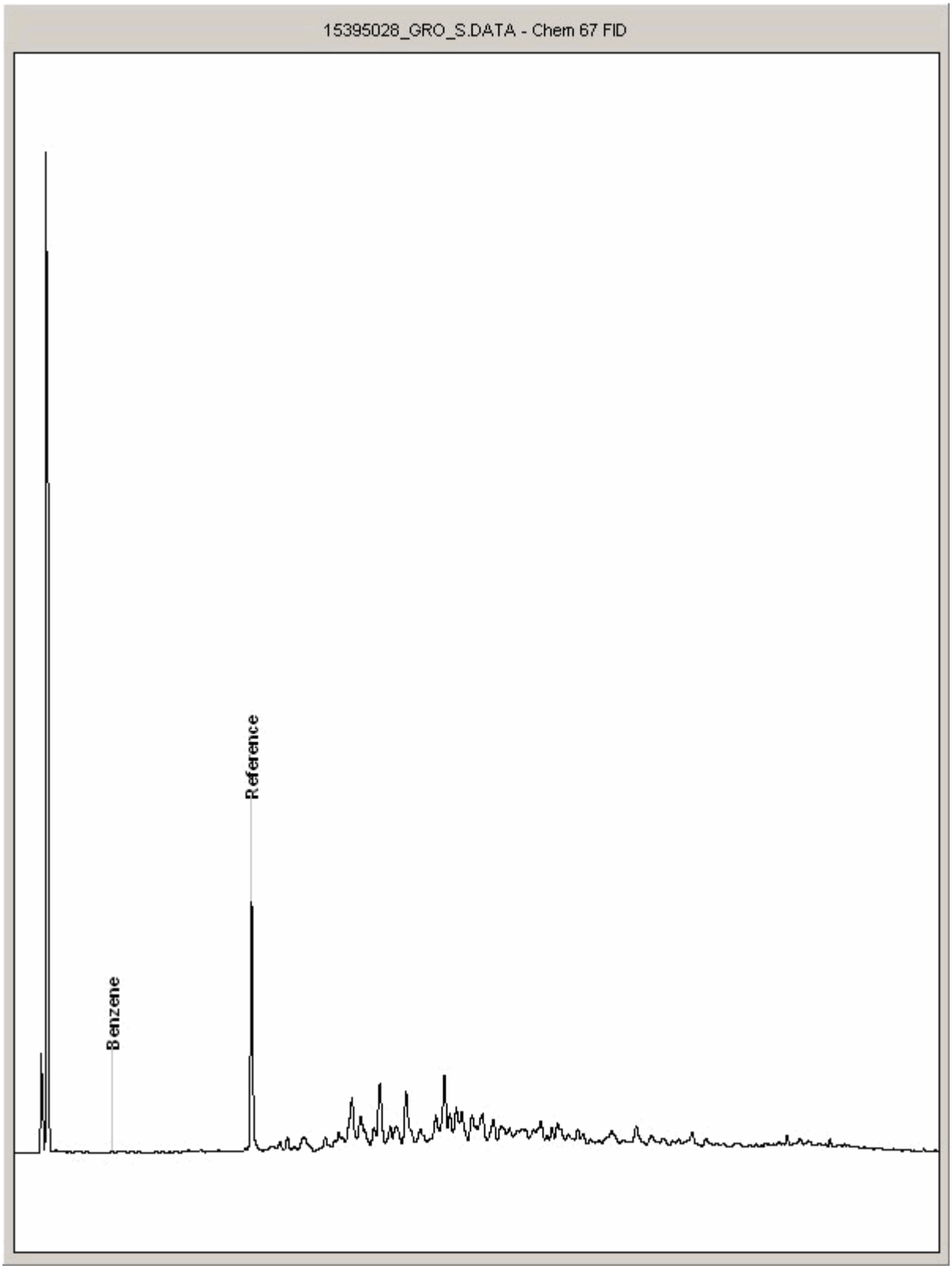
SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15395028
Sample ID : W4WS313

Depth : 2.00 - 2.20



CERTIFICATE OF ANALYSIS

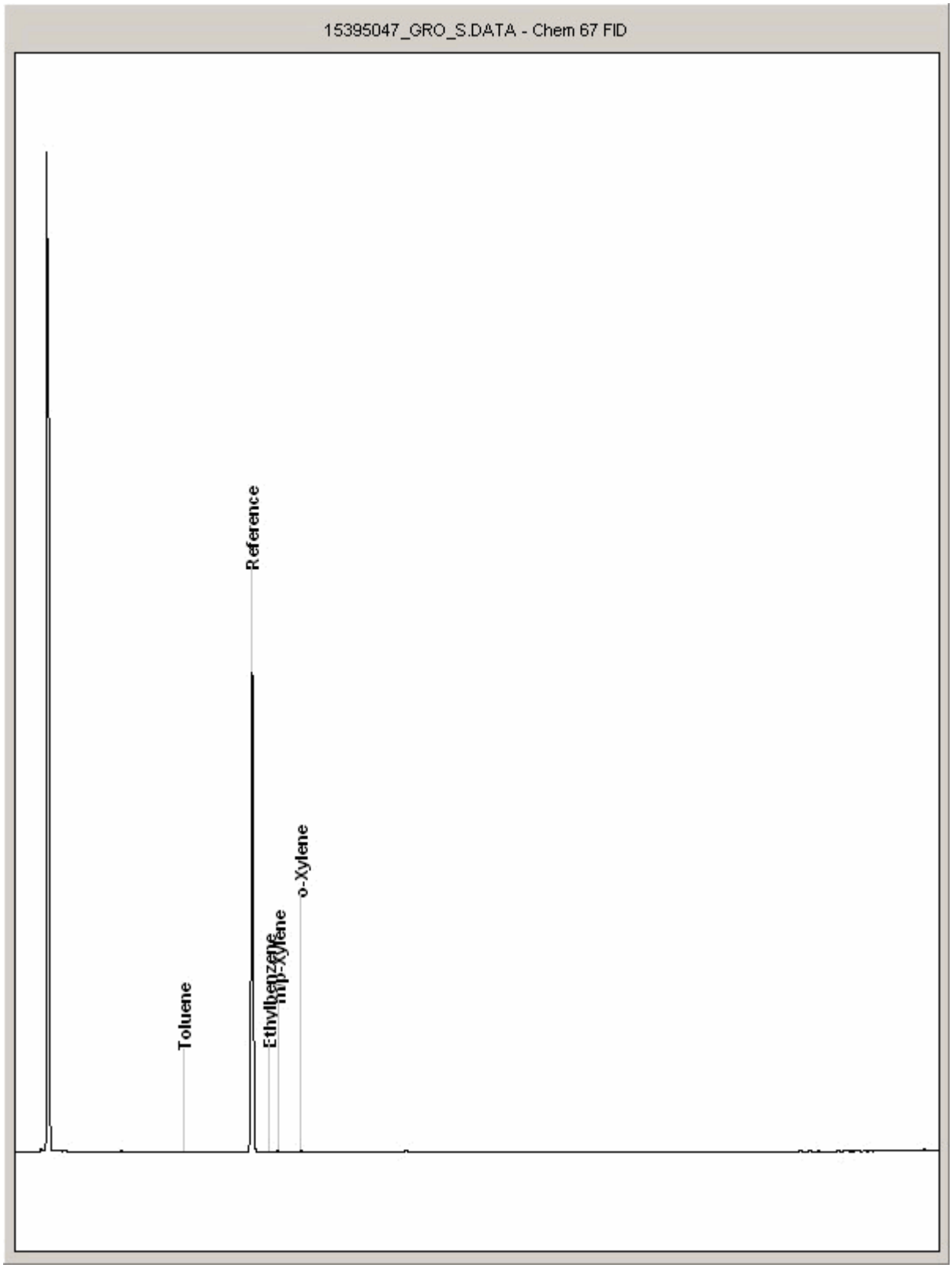
SDG:	170422-92	**Client Reference:**	70015362	**Report Number:**	407648
Location:	City Deal Tipner West	**Order Number:**	70015362-CS2	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 15395047
Sample ID : W4WS313

Depth : 0.10 - 0.25



2 Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire, SG6 1HE
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Certificate of Analysis

Report No.: 17-61403-1

Issue No.: 1
Date of Issue 08/05/2017

Customer Details:	ALS Life Sciences Limited, Unit7-8, Hawarden Business Park, Manor Road, Hawarden, Deeside, Flintshire, CH5 3US
Customer Contact:	Carrie Foster (2)
Customer Order No.:	33617
Customer Reference:	170422-92
Quotation Reference:	161220/03
Description:	1 soil sample
Date Received:	26/04/2017
Date Started:	02/05/2017
Date Completed:	05/05/2017
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Matthew Hickson, Laboratory Manager**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

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A member of the RPS Group plc. Terms and conditions apply - copy on request

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Results Summary

Report No.: 17-61403-1

Customer Reference: 170422-92

Customer Order No: 33617

Customer Sample No	**15388871**
Customer Sample ID	W4WS313
RPS Sample No	327604
Sample Type	**SOIL**
Sample Depth (m)	2.00-2.200
Sampling Date	18/04/2017

Determinand	CAS No	Codes	SOP	Units	RL	
dibutyltin (DBT)	1002-53-5	N	in house	mg/kg as cation	0.02	< 0.02
diphenyltin (DPT)		N	in house	mg/kg as cation	0.02	< 0.02
monobutyltin (MBT)	78763-54-9	N	in house	mg/kg as cation	0.1	< 0.10
monophenyltin (MPT)		N	in house	mg/kg as cation	0.02	< 0.02
tributyltin (TBT)	56573-85-4	N	in house	mg/kg as cation	0.02	< 0.02
triphenyltin (TPT)	668-34-8	N	in house	mg/kg as cation	0.05	< 0.05
tetrabutyltin	1461-25-2	N	in house	mg/kg as cation	0.02	< 0.02

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
N	Not accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

WSP Environmental
Mountbatten House
Basing View
Basingstoke
Hampshire
RG21 4HJ

Attention: Claire Nichols

CERTIFICATE OF ANALYSIS

Date:	31 October 2017
Customer:	H_WSP_BAS
Sample Delivery Group (SDG):	171014-35
Your Reference:	70015362
Location:	TIPNER
Report No:	430544

We received 1 sample on Tuesday October 03, 2017 and 1 of these samples were scheduled for analysis which was completed on Tuesday October 31, 2017. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

Sonia McWhan

Operations Manager

ALS Life Sciences Limited. Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No. 4057291.

CERTIFICATE OF ANALYSIS

SDG:	171014-35	**Client Reference:**	70015362	**Report Number:**	430544
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
16363025	W4BH307			

Maximum Sample/Coolbox Temperature (°C) : **13**

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	171014-35	**Client Reference:**	70015362	**Report Number:**	430544
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			16363025
Customer Sample Reference			W4BH307
AGS Reference			
Depth (m)			
Container			1000ml glass bottle (ALE220)
Sample Type			OTH
Character of hydrocarbon samples	All	NDPs: 0 Tests: 1	X
Density in Product*	All	NDPs: 0 Tests: 1	X

Validated

CERTIFICATE OF ANALYSIS

SDG:	171014-35	**Client Reference:**	70015362	**Report Number:**	430544
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Customer Sample Ref.	W4BH307
		Depth (m)	.
		Sample Type	Product (P)
		Date Sampled	-
		Sample Time	.
		Date Received	03/10/2017
		SDG Ref	171014-35
		Lab Sample No.(s)	16363025
		AGS Reference	
Component	**LOD/Units**	**Method**	
Density	kg/m³	SUB	834 §
Age Profile Report	-	TM059	See Attached §

CERTIFICATE OF ANALYSIS

SDG:	171014-35	**Client Reference:**	70015362	**Report Number:**	430544
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
SUB		Subcontracted Test		
TM059	In - house Method	Determination of whole oil by gas chromatography (C4-C40)		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	171014-35	**Client Reference:**	70015362	**Report Number:**	430544
Location:	TIPNER	**Order Number:**	70015362-CS2	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	16363025
Customer Sample Ref.	W4BH307
AGS Ref.	
Depth	
Type	Product (P)
Character of hydrocarbon samples	25-Oct-2017
Density in Product*	31-Oct-2017

Chemical Oil Fingerprint

Client: WSP Environmental

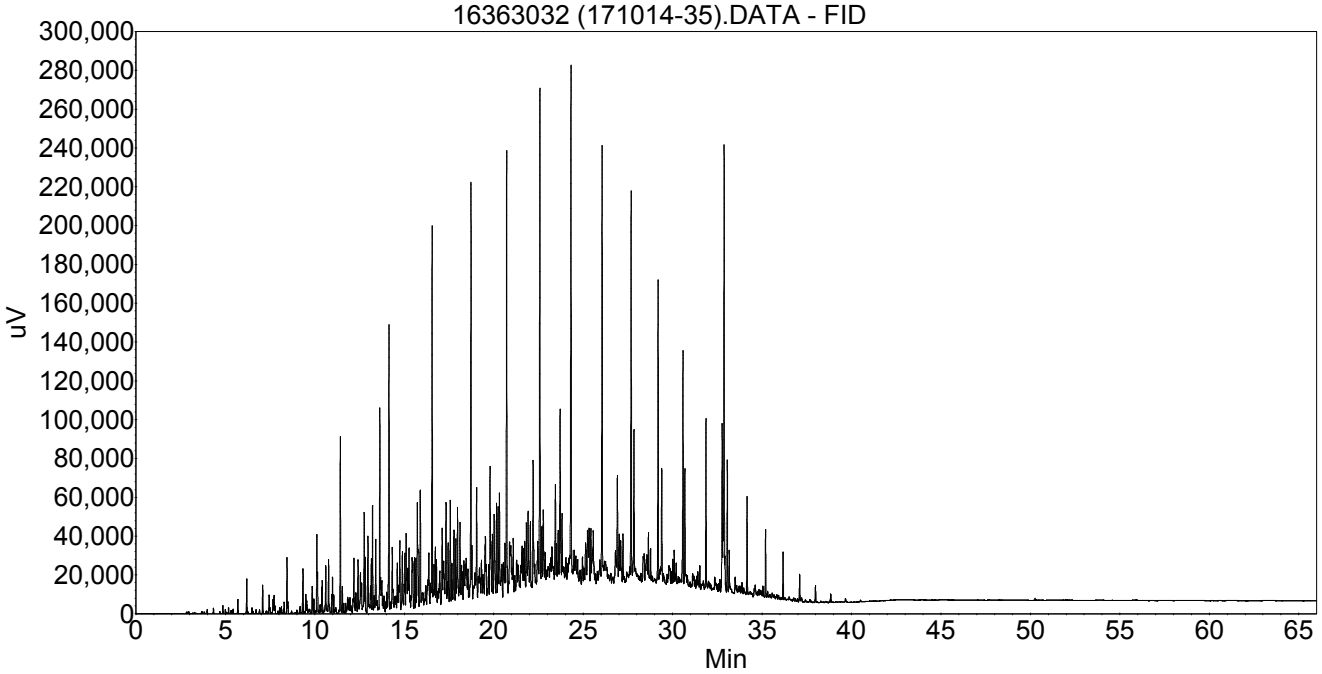
Job Number: 171014-35

Identity: W4BH307

Description: Pale orange product on liquid

Carbon Range:	C5-C28
Boiling Point Range:	36-432°C
Pristane/Phytane Ratio:	1.33
nC17/Pristane Ratio:	2.68
Fingerprint:	Diesel
Comments:	N/A
Diesel Age:	0 +/- 2 Years

The age of diesel is calculated using methodology from Christensen and Larsen, 1993.
The sample needs to have the following characteristics for the age to be considered accurate:
1. The methodology can only be used for ageing diesel spills.
2. The sample must have >100mg/kg diesel.
3. The sample has to be collected from at least 1m below ground level.
4. The sample has to be collected from under a paved area.
5. The sample has to be collected from the unsaturated zone.
6. The sample needs to be from a discrete spill, not a prolonged or continuous spill.
In the event that all six criteria are not met, the age result has to be considered as indicative information only.



ALS Laboratories

Product CWG by GC FID

SDG number	-	171014-35
Customer	-	WSP Environmental
Sample Identity	-	W4BH307
Sample Type [Units]	-	%

Aliphatics	
>C6 - C8	1.767
>C8 - C10	6.926
>C10 - C12	13.884
>C12 - C16	32.384
>C16 - C21	22.422
>C21 - C35	6.171
>C35 - C40	0.000
Total Aliphatics	83.554
Aromatics	
>C6 - C8	0.065
>C8 - C10	0.893
>C10 - C12	2.367
>C12 - C16	5.782
>C16 - C21	6.237
>C21 - C35	1.103
>C35 - C40	0.000
Total Aromatics	16.446

N.B. Results are reported as a banded percentage of total aliphatic and aromatic analytes found within the >C6-C40 range after cleanup and speciation.

ALcontrol Laboratories

Make:		Sample No:	5974215
Model:		Location:	ALS LIFE SCIENCES
Serial No:	16414025	Client:	ALS LIFE SCIENCES
System:	OTHER	Kit Ref/Bottle No:	W4BH307
Brand:	NOT GIVEN	Job No.:	39745
Grade:		Sampled:	
Unique No.:	4451972	Received:	25/10/17

Diagnosis Key: Normal | Caution | Serious — Diagnostician: Mr. Cutler

Analysis on sample as received. No diagnosis provided.

Results		Current Sample	Historical Samples
Sample No		5974215	
Status		✓	
Sampled			
Fluid Age			
Unit Age			
Received		25/10/17	
Fluid condition & other tests			
Density	kg/m3	833.6	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

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Website: www.alcontrol.com

WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Martin Weil

CERTIFICATE OF ANALYSIS

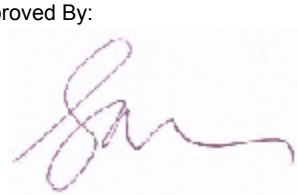
Date:	05 September 2016
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	160817-66
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	376235

We received 30 samples on Wednesday August 17, 2016 and 16 of these samples were scheduled for analysis which was completed on Monday September 05, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13985101	BH203	ES	0.30	16/08/2016
13985207	BH203	ES	1.00	16/08/2016
13985344	BH204	ESES1	0.30	15/08/2016
13985352	BH204	ESES2	0.80	15/08/2016
13985110	BH204	ESES3	2.30	15/08/2016
13985125	BH204	ESES4	3.00	15/08/2016
13985137	BH204	ESES5	4.00	15/08/2016
13985153	BH204	ESES6	5.00	15/08/2016
13985165	BH204	ESES7	6.10	15/08/2016
13985179	BH205	ESES1	0.30	16/08/2016
13985194	BH205	ESES2	0.70	16/08/2016
13985214	BH205	ESES7	5.50	16/08/2016
13985221	BH205	ESES8	6.30	16/08/2016
13985099	BH 206	ES4		
13985228	BH206	ESES1	0.30 - 0.40	15/08/2016
13985237	BH206	ESES2	0.60 - 0.70	15/08/2016
13985243	BH206	ESES3	1.90 - 2.00	15/08/2016
13985255	BH206	ESES4	3.00 - 3.10	15/08/2016
13985264	BH206	ESES5	4.00 - 4.10	15/08/2016
13985270	BH206	ESES6	4.70 - 4.80	15/08/2016
13985278	BH208	ES	2.00	16/08/2016
13985284	BH208	ES	3.00	16/08/2016
13985292	BH208	ES	4.00	16/08/2016
13985093	NO ID			
13985298	TP208	ES	0.20	16/08/2016
13985307	TP208	ES	1.00	16/08/2016
13985316	TP208	ES	2.30	16/08/2016
13985324	TP212	ES	0.20	16/08/2016
13985332	WS208	ESES1	0.20	16/08/2016
13985339	WS208	ESES2	0.70	16/08/2016

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			13985101	13985207	13985344	13985352	13985153	13985179	13985194	13985228	13985237	13985243	13985278	13985292	13985298	13985307
Customer Sample Reference			BH203	BH203	BH204	BH204	BH204	BH205	BH205	BH206	BH206	BH206	BH208	BH208	TP208	TP208
AGS Reference			ES	ES	ESES1	ESES2	ESES6	ESES1	ESES2	ESES1	ESES2	ESES3	ES	ES	ES	ES
Depth (m)			0.30	1.00	0.30	0.80	5.00	0.30	0.70	0.30 - 0.40	0.60 - 0.70	1.90 - 2.00	2.00	4.00	0.20	1.00
Container			1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

| | | | | |

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			13985307	TP208	ES	1.00	250g Amber Jar (AL
							60g VOC (ALE215)
			13985316	TP208	ES	2.30	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13985324	TP212	ES	0.20	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 12					X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 11				X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 16	X		X		X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 16	X		X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 16		X		X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 16			X		X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 16	X		X		X
PAH by GCMS	All	NDPs: 0 Tests: 16	X		X		X
pH	All	NDPs: 0 Tests: 16			X		X	
Sample description	All	NDPs: 0 Tests: 16	X		X		X
Total Organic Carbon	All	NDPs: 0 Tests: 10	X				X
TPH CWG GC (S)	All	NDPs: 0 Tests: 16	X		X		X
VOC MS (S)	All	NDPs: 0 Tests: 16		X		X		X

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
13985101	BH203	0.30	Light Brown	Sand	0.063 - 2.00 mm	Stones	Vegetation
13985207	BH203	1.00	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	None
13985153	BH204	5.00	Dark Brown	Silty Clay	0.002 - 0.063 mm	Vegetation	None
13985344	BH204	0.30	Light Brown	Sandy Loam	0.063 - 2.00 mm	Crushed Brick	Stones
13985352	BH204	0.80	Light Brown	Sandy Loam	0.063 - 2.00 mm	Crushed Brick	Stones
13985179	BH205	0.30	Dark Brown	Sand	0.063 - 2.00 mm	Stones	Vegetation
13985194	BH205	0.70	Light Brown	Silty Clay	0.002 - 0.063 mm	Vegetation	None
13985228	BH206	0.30 - 0.40	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Crushed Brick	Vegetation
13985237	BH206	0.60 - 0.70	Light Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
13985243	BH206	1.90 - 2.00	Light Brown	Clay	0.002 - 0.063 mm	Stones	None
13985278	BH208	2.00	Dark Brown	Silty Clay	0.002 - 0.063 mm	Stones	None
13985292	BH208	4.00	Red	Clay	<0.002 mm	None	None
13985298	TP208	0.20	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
13985307	TP208	1.00	Black	Sandy Clay	0.063 - 2.00 mm	Stones	Vegetation
13985316	TP208	2.30	Light Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
13985324	TP212	0.20	Light Brown	Sand	0.063 - 2.00 mm	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH203	BH204	BH204	BH204	BH205
			Depth (m)	0.30	1.00	0.30	0.80	5.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985101	13985207	13985344	13985352	13985153	13985179
			AGS Reference	ES	ES	ESES1	ESES2	ESES6	ESES1
Moisture Content Ratio (% of as received sample)	%	PM024		5.5	12	4.2	7.9	13	9.7
Soil Organic Matter (SOM)	<0.35 %	TM132		1.53 #			1.71 #	<0.35 #	
pH	1 pH Units	TM133		8.29 M	8.26 M	6.87 M	8.41 M	7.6 M	6.53 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Complex (low level)	<0.5 mg/kg	TM153					<0.5	<0.5	<0.5
Arsenic	<0.6 mg/kg	TM181		10.5 M	16 M	14.3 M	19.8 M	5.79 M	12.5 M
Cadmium	<0.02 mg/kg	TM181		0.269 M	0.401 M	<0.02 M	0.172 M	<0.02 M	0.579 M
Chromium	<0.9 mg/kg	TM181		18.7 M	17.8 M	8.56 M	18.3 M	27.6 M	17.2 M
Copper	<1.4 mg/kg	TM181		27.1 M	206 M	18 M	46.6 M	11.6 M	85.4 M
Lead	<0.7 mg/kg	TM181		80.4 M	641 M	287 M	146 M	16.5 M	509 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	0.211 M	0.157 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		16 M	13.9 M	8.59 M	22 M	25.7 M	20.7 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	1.04 #
Zinc	<1.9 mg/kg	TM181		81.6 M	432 M	72.8 M	85.1 M	46.7 M	428 M

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH205	BH206	BH206	BH206	BH208	BH208
			Depth (m)	0.70	0.30 - 0.40	0.60 - 0.70	1.90 - 2.00	2.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985194	13985228	13985237	13985243	13985278	13985292
			AGS Reference	ESES2	ESES1	ESES2	ESES3	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		15	9.5	15	13	17	15
Soil Organic Matter (SOM)	<0.35 %	TM132			3.22 #		<0.35 #	1.21 #	<0.35 #
pH	1 pH Units	TM133		8.14 M	6.62 M	7.69 M	7.7 M	8.16 M	8.02 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Complex (low level)	<0.5 mg/kg	TM153		<0.5	<0.5		<0.5	<0.5	<0.5
PCB congener 118	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 81	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 77	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 123	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 114	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 105	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 126	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 167	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 156	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 157	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 169	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 189	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168						<0.036	<0.036
Arsenic	<0.6 mg/kg	TM181		8.85 M	8.77 M	12.5 M	10.9 M	11.6 M	11.6 M
Cadmium	<0.02 mg/kg	TM181		0.178 M	<0.02 M	<0.02 M	<0.02 M	0.213 M	<0.02 M
Chromium	<0.9 mg/kg	TM181		29.9 M	17 M	32 M	34 M	22.6 M	31.8 M
Copper	<1.4 mg/kg	TM181		16.8 M	129 M	12.4 M	13.2 M	47.2 M	17 M
Lead	<0.7 mg/kg	TM181		18.1 M	1190 M	31.1 M	23.4 M	286 M	28.1 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	0.333 M	<0.14 M	<0.14 M	0.454 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		19.4 M	13.2 M	16 M	24.3 M	26.5 M	81.6 M
Selenium	<1 mg/kg	TM181		1.65 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		46.1 M	104 M	38.5 M	33.3 M	137 M	105 M

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP208	TP208	TP208	TP212		
			Depth (m)	0.20	1.00	2.30	0.20		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	16/08/2016		
			Sampled Time	.	.	.	.		
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016		
			SDG Ref	160817-66	160817-66	160817-66	160817-66		
			Lab Sample No.(s)	13985298	13985307	13985316	13985324		
			AGS Reference	ES	ES	ES	ES		
Moisture Content Ratio (% of as received sample)	%	PM024		5.1	23	12	6.1		
Soil Organic Matter (SOM)	<0.35 %	TM132		2.95 #	5.02 #		1.25 #		
pH	1 pH Units	TM133		8.22 M	7.37 M	8.39 M	7.61 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #		
Cyanide, Complex (low level)	<0.5 mg/kg	TM153		<0.5	<0.5	<0.5			
Arsenic	<0.6 mg/kg	TM181		11.6 M	7.4 M	15.6 M	8.05 M		
Cadmium	<0.02 mg/kg	TM181		0.144 M	<0.02 M	0.258 M	0.323 M		
Chromium	<0.9 mg/kg	TM181		15.5 M	11.2 M	10.2 M	7.65 M		
Copper	<1.4 mg/kg	TM181		152 M	150 M	56.7 M	896 M		
Lead	<0.7 mg/kg	TM181		646 M	1350 M	500 M	16000 M		
Mercury	<0.14 mg/kg	TM181		1.63 M	<0.14 M	<0.14 M	0.218 M		
Nickel	<0.2 mg/kg	TM181		24.4 M	69.5 M	22.2 M	9 M		
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #		
Zinc	<1.9 mg/kg	TM181		121 M	37 M	53.1 M	227 M		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH203	BH204	BH204	BH204	BH205
			Depth (m)	0.30	1.00	0.30	0.80	5.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985101	13985207	13985344	13985352	13985153	13985179
			AGS Reference	ES	ES	ESES1	ESES2	ESES6	ESES1
Naphthalene-d8 % recovery**	%	TM218		102	97.8	89.7	93.5	94.4	88.8
Acenaphthene-d10 % recovery**	%	TM218		99.2	94.8	88.1	93.6	93.1	86.8
Phenanthrene-d10 % recovery**	%	TM218		99.2	95	86.9	92.6	92.5	87.2
Chrysene-d12 % recovery**	%	TM218		98.8	93.2	83.3	95.8	90.4	83.8
Perylene-d12 % recovery**	%	TM218		102	95.3	92.6	107	98.2	81.8
Naphthalene	<0.009 mg/kg	TM218		0.0437 M	0.0173 M	0.0303 M	0.111 M	<0.009 M	0.0675 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0929 M	<0.012 M	0.0501 M	0.446 M	<0.012 M	0.0293 M
Acenaphthene	<0.008 mg/kg	TM218		0.0561 M	<0.008 M	0.0219 M	0.394 M	<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		0.0474 M	<0.01 M	0.0234 M	1.05 M	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		0.655 M	0.121 M	0.374 M	10.6 M	<0.015 M	0.288 M
Anthracene	<0.016 mg/kg	TM218		0.192 M	0.023 M	0.117 M	2.76 M	<0.016 M	0.0549 M
Fluoranthene	<0.017 mg/kg	TM218		1.89 M	0.205 M	1.07 M	13.6 M	<0.017 M	0.451 M
Pyrene	<0.015 mg/kg	TM218		1.7 M	0.165 M	0.933 M	10.7 M	<0.015 M	0.38 M
Benz(a)anthracene	<0.014 mg/kg	TM218		1.13 M	0.0658 M	0.685 M	6.67 M	<0.014 M	0.096 M
Chrysene	<0.01 mg/kg	TM218		1.01 M	0.0663 M	0.54 M	4.79 M	<0.01 M	0.129 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		1.66 M	0.172 M	1 M	6.17 M	<0.015 M	0.386 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.618 M	0.0659 M	0.374 M	2.27 M	<0.014 M	0.132 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		1.4 M	0.121 M	0.778 M	5.31 M	<0.015 M	0.217 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.79 M	0.0903 M	0.439 M	2.45 M	<0.018 M	0.178 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.244 M	0.0319 M	0.128 M	0.884 M	<0.023 M	0.0611 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.917 M	0.114 M	0.485 M	2.41 M	<0.024 M	0.222 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		12.4	1.26	7.05	70.7	<0.118	2.69

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH205	BH206	BH206	BH206	BH208	BH208
			Depth (m)	0.70	0.30 - 0.40	0.60 - 0.70	1.90 - 2.00	2.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985194	13985228	13985237	13985243	13985278	13985292
			AGS Reference	ESES2	ESES1	ESES2	ESES3	ES	ES
Naphthalene-d8 % recovery**	%	TM218		87.4	95	93.5	95.4	103	88.7
Acenaphthene-d10 % recovery**	%	TM218		84	94.2	93.5	94.7	100	85.6
Phenanthrene-d10 % recovery**	%	TM218		82.9	91.5	90.9	91.4	101	83.6
Chrysene-d12 % recovery**	%	TM218		78.2	84.7	80.1	78.9	100	78.7
Perylene-d12 % recovery**	%	TM218		76	94.2	78.8	72.8	106	81.7
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	0.0202 M	<0.009 M	<0.009 M	0.0273 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M	<0.012 M	<0.012 M	0.04 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	<0.008 M	<0.008 M	0.0822 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M	<0.01 M	0.0899 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	0.102 M	<0.015 M	<0.015 M	0.929 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	<0.016 M	<0.016 M	0.186 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	0.164 M	<0.017 M	<0.017 M	2.43 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	0.143 M	<0.015 M	<0.015 M	1.9 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	0.0293 M	<0.014 M	<0.014 M	1.15 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	0.0734 M	<0.01 M	<0.01 M	1.05 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	0.192 M	<0.015 M	<0.015 M	1.86 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	0.0511 M	<0.014 M	<0.014 M	0.633 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	0.144 M	<0.015 M	<0.015 M	1.42 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	0.0848 M	<0.018 M	<0.018 M	0.776 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	0.0287 M	<0.023 M	<0.023 M	0.245 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	0.0951 M	<0.024 M	<0.024 M	0.889 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	1.13	<0.118	<0.118	13.7	<0.118

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP208	TP208	TP208	TP212		
			Depth (m)	0.20	1.00	2.30	0.20		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	16/08/2016		
			Sampled Time	.	.	.	.		
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016		
			SDG Ref	160817-66	160817-66	160817-66	160817-66		
			Lab Sample No.(s)	13985298	13985307	13985316	13985324		
			AGS Reference	ES	ES	ES	ES		
Naphthalene-d8 % recovery**	%	TM218		92.5	95.2	99.9	103		
Acenaphthene-d10 % recovery**	%	TM218		92.7	91.8	101	101		
Phenanthrene-d10 % recovery**	%	TM218		93.6	89.5	100	100		
Chrysene-d12 % recovery**	%	TM218		98.6	85.8	96.2	103		
Perylene-d12 % recovery**	%	TM218		109	96.2	102	111		
Naphthalene	<0.009 mg/kg	TM218		0.0619 M	0.0329 M	0.0741 M	0.0391 M		
Acenaphthylene	<0.012 mg/kg	TM218		0.251 M	<0.012 M	0.0172 M	0.199 M		
Acenaphthene	<0.008 mg/kg	TM218		0.545 M	0.0207 M	0.139 M	0.0319 M		
Fluorene	<0.01 mg/kg	TM218		0.486 M	0.0176 M	0.11 M	0.0246 M		
Phenanthrene	<0.015 mg/kg	TM218		5.55 M	0.0445 M	0.473 M	0.325 M		
Anthracene	<0.016 mg/kg	TM218		2.43 M	<0.016 M	0.151 M	0.396 M		
Fluoranthene	<0.017 mg/kg	TM218		18.3 M	0.0682 M	0.692 M	1.24 M		
Pyrene	<0.015 mg/kg	TM218		16.1 M	0.058 M	0.62 M	1.11 M		
Benz(a)anthracene	<0.014 mg/kg	TM218		10.6 M	0.0198 M	0.158 M	0.813 M		
Chrysene	<0.01 mg/kg	TM218		7.57 M	0.0175 M	0.254 M	0.589 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		11.5 M	0.0608 M	0.478 M	1.85 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		4.24 M	0.0252 M	0.176 M	0.721 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		10.7 M	0.0463 M	0.364 M	1.45 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		4.79 M	0.0307 M	0.189 M	0.882 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		1.39 M	<0.023 M	0.0557 M	0.24 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		5.4 M	0.0357 M	0.226 M	1.01 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		99.9	0.478	4.18	10.9		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH204	BH206	BH208	BH208		
			Depth (m)	0.80	0.60 - 0.70	2.00	4.00		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	15/08/2016	15/08/2016	16/08/2016	16/08/2016		
			Sampled Time	.	.	.	.		
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016		
			SDG Ref	160817-66	160817-66	160817-66	160817-66		
			Lab Sample No.(s)	13985352	13985237	13985278	13985292		
			AGS Reference	ESES2	ESES2	ES	ES		
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Dibenzofuran	<0.1 mg/kg	TM157		0.317	<0.1	<0.1	<0.1		
Carbazole	<0.1 mg/kg	TM157		0.338	<0.1	<0.1	<0.1		
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH204	BH206	BH208	BH208		
			Depth (m)	0.80	0.60 - 0.70	2.00	4.00		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	15/08/2016	15/08/2016	16/08/2016	16/08/2016		
			Sampled Time	.	.	.	.		
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016		
			SDG Ref	160817-66	160817-66	160817-66	160817-66		
			Lab Sample No.(s)	13985352	13985237	13985278	13985292		
			AGS Reference	ESES2	ESES2	ES	ES		
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		
2-Methylnaphthalene	<0.1 mg/kg	TM157		0.116	<0.1	<0.1	<0.1		
Acenaphthylene	<0.1 mg/kg	TM157		0.174	<0.1	<0.1	<0.1		
Acenaphthene	<0.1 mg/kg	TM157		0.494	<0.1	<0.1	<0.1		
Anthracene	<0.1 mg/kg	TM157		2.1	<0.1	<0.1	<0.1		
Benzo(a)anthracene	<0.1 mg/kg	TM157		6.43	<0.1	0.633	<0.1		
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		4.22	<0.1	0.702	<0.1		
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		4.62	<0.1	0.616	<0.1		
Benzo(a)pyrene	<0.1 mg/kg	TM157		5.54	<0.1	0.705	<0.1		
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		2.68	<0.1	0.44	<0.1		
Chrysene	<0.1 mg/kg	TM157		5.75	<0.1	0.764	<0.1		
Fluoranthene	<0.1 mg/kg	TM157		14	<0.1	1.41	<0.1		
Fluorene	<0.1 mg/kg	TM157		0.518	<0.1	<0.1	<0.1		
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		3.21	<0.1	0.493	<0.1		
Phenanthrene	<0.1 mg/kg	TM157		6.69	<0.1	0.492	<0.1		
Pyrene	<0.1 mg/kg	TM157		11.8	<0.1	1.15	<0.1		
Naphthalene	<0.1 mg/kg	TM157		0.127	<0.1	<0.1	<0.1		
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		0.67	<0.1	<0.1	<0.1		
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH203	BH204	BH204	BH204	BH205
			Depth (m)	0.30	1.00	0.30	0.80	5.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985101	13985207	13985344	13985352	13985153	13985179
			AGS Reference	ES	ES	ESES1	ESES2	ESES6	ESES1
GRO Surrogate % recovery**	%	TM089		123	98	61	71	89	59 &
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 & M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aliphatics >C12-C16	<0.1 mg/kg	TM173		2.05	1.43	<0.1	2.08	1.73	1.61
Aliphatics >C16-C21	<0.1 mg/kg	TM173		0.521	0.506	<0.1	5.01	2.25	3.06
Aliphatics >C21-C35	<0.1 mg/kg	TM173		14.3	8.34	19.6	23.2	44.5	59.7
Aliphatics >C35-C44	<0.1 mg/kg	TM173		2.13	<0.1	1.77	1.32	4.12	20.7
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		19	10.3	21.3	31.6	52.6	85
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 &
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		1.71	1.24	1.48	22.5	<0.1	1.32
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		11.9	2.45	7.7	175	0.539	3.99
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		50.7	10.3	39.2	309	10.2	35
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		27.6	4.65	16.1	94.4	0.919	16.9
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		11.5	1.58	5.77	34.6	<0.1	5.83
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		91.9	18.7	64.4	601	11.7	57.2
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		111	28.9	85.7	632	64.3	142
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		62.6	12.8	46.9	484	10.8	39

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH205	BH206	BH206	BH206	BH208	BH208
			Depth (m)	0.70	0.30 - 0.40	0.60 - 0.70	1.90 - 2.00	2.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985194	13985228	13985237	13985243	13985278	13985292
			AGS Reference	ESES2	ESES1	ESES2	ESES3	ES	ES
GRO Surrogate % recovery**	%	TM089		113 &	85	103	97	95	107
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 & M	<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 &	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01 &	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01 &	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01 &	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	0.891	<0.1	<0.1	2.63	1.01
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	<0.1	<0.1	<0.1	7.47	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173		<0.1	8.03	3.64	4.35	36.3	<0.1
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	<0.1	<0.1	1.89	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		<0.1	8.92	3.64	4.35	48.3	1.01
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 &	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 &	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01 &	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01 &	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	0.579	<0.1	<0.1	1.17	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		<0.1	2.83	<0.1	<0.1	9.79	<0.1
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		<0.1	21.1	1.53	1.17	49.9	<0.1
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		<0.1	8.51	1.31	0.676	17.7	<0.1
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		<0.1	3.47	<0.1	<0.1	5.12	<0.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		<0.1	33	2.83	1.85	78.6	<0.1
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		<0.1	42	6.47	6.2	127	1.01
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		<0.1	23.9	1.53	1.17	59.7	<0.1

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP208	TP208	TP208	TP212		
			Depth (m)	0.20	1.00	2.30	0.20		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	16/08/2016		
			Sampled Time	.	.	.	.		
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016		
			SDG Ref	160817-66	160817-66	160817-66	160817-66		
			Lab Sample No.(s)	13985298	13985307	13985316	13985324		
			AGS Reference	ES	ES	ES	ES		
GRO Surrogate % recovery**	%	TM089		72	69	108 &	84		
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 & M	<0.044 M		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 &	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 &	<0.01		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 &	<0.01		
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 &	<0.01		
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.959	<0.1	0.467	0.649		
Aliphatics >C16-C21	<0.1 mg/kg	TM173		2.97	<0.1	1.76	<0.1		
Aliphatics >C21-C35	<0.1 mg/kg	TM173		23.7	3.02	5.48	10.2		
Aliphatics >C35-C44	<0.1 mg/kg	TM173		5.55	<0.1	1.74	1.02		
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		33.1	3.02	9.45	11.9		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 &	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 &	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 &	<0.01		
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 &	<0.01		
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		8.38	0.246	1.1	<0.1		
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		61.5	0.752	5.81	2.99		
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		181	16.4	15.4	21.2		
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		66	<0.1	4.26	7.93		
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		25.4	<0.1	1.57	2.9		
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		316	17.4	26.5	32.1		
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		350	20.4	36	44		
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		242	17.1	21.2	24.2		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH203	BH204	BH204	BH204	BH205
			Depth (m)	0.30	1.00	0.30	0.80	5.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985101	13985207	13985344	13985352	13985153	13985179
			AGS Reference	ES	ES	ESES1	ESES2	ESES6	ESES1
Dibromofluoromethane**	%	TM116					117		
Toluene-d8**	%	TM116					97.4		
4-Bromofluorobenzene**	%	TM116					77.4		
Dichlorodifluoromethane	<0.006 mg/kg	TM116					<0.006 M		
Chloromethane	<0.007 mg/kg	TM116					<0.007 #		
Vinyl Chloride	<0.006 mg/kg	TM116					<0.006 M		
Bromomethane	<0.01 mg/kg	TM116					<0.01 M		
Chloroethane	<0.01 mg/kg	TM116					<0.01 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116					<0.006 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116					<0.01 #		
Carbon Disulphide	<0.007 mg/kg	TM116					<0.007 M		
Dichloromethane	<0.01 mg/kg	TM116					<0.01 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.1 & M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116					<0.01 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116					<0.008 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116					<0.006 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116					<0.01 M		
Bromochloromethane	<0.01 mg/kg	TM116					<0.01 M		
Chloroform	<0.008 mg/kg	TM116					<0.008 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116					<0.007 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116					<0.01 M		
Carbontetrachloride	<0.01 mg/kg	TM116					<0.01 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116					<0.005 M		
Benzene	<0.009 mg/kg	TM116	<0.009 M	<0.009 M	<0.009 M	<0.009 M	<0.009 M	<0.09 & M
Trichloroethene	<0.009 mg/kg	TM116					<0.009 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116					<0.01 M		
Dibromomethane	<0.009 mg/kg	TM116					<0.009 M		
Bromodichloromethane	<0.007 mg/kg	TM116					<0.007 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.01 M		
Toluene	<0.007 mg/kg	TM116	<0.007 M	<0.007 M	<0.007 M	<0.007 M	<0.007 M	<0.07 & M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.01		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116					<0.01 M		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH203	BH204	BH204	BH204	BH205
			Depth (m)	0.30	1.00	0.30	0.80	5.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985101	13985207	13985344	13985352	13985153	13985179
			AGS Reference	ES	ES	ESES1	ESES2	ESES6	ESES1
1,3-Dichloropropane	<0.007 mg/kg	TM116					<0.007 M		
Tetrachloroethene	<0.005 mg/kg	TM116					<0.005 M		
Dibromochloromethane	<0.01 mg/kg	TM116					<0.01 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116					<0.01 M		
Chlorobenzene	<0.005 mg/kg	TM116					<0.005 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116					<0.01 M		
Ethylbenzene	<0.004 mg/kg	TM116	<0.004 M	<0.004 M	<0.004 M	<0.004 M	<0.004 M	<0.04 & M
p/m-Xylene	<0.01 mg/kg	TM116	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.1 & #
o-Xylene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.1 & M
Styrene	<0.01 mg/kg	TM116				<0.01 #		
Bromoform	<0.01 mg/kg	TM116				<0.01 M		
Isopropylbenzene	<0.005 mg/kg	TM116				<0.005 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.01 M		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116				<0.016 M		
Bromobenzene	<0.01 mg/kg	TM116				<0.01 M		
Propylbenzene	<0.01 mg/kg	TM116				<0.01 M		
2-Chlorotoluene	<0.009 mg/kg	TM116				<0.009 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116				<0.008 M		
4-Chlorotoluene	<0.01 mg/kg	TM116				<0.01 M		
tert-Butylbenzene	<0.014 mg/kg	TM116				<0.014 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116				<0.009 #		
sec-Butylbenzene	<0.01 mg/kg	TM116				<0.01 M		
4-Isopropyltoluene	<0.01 mg/kg	TM116				<0.01 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116				<0.008 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116				<0.005 M		
n-Butylbenzene	<0.011 mg/kg	TM116				<0.011		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116				<0.01 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116				<0.014 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.1 & #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116				<0.02		
Hexachlorobutadiene	<0.02 mg/kg	TM116				<0.02		
Naphthalene	<0.013 mg/kg	TM116				<0.013 M		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH203	BH204	BH204	BH204	BH205
			Depth (m)	0.30	1.00	0.30	0.80	5.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985101	13985207	13985344	13985352	13985153	13985179
			AGS Reference	ES	ES	ESES1	ESES2	ESES6	ESES1
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116					<0.02 #		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
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*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH205	BH206	BH206	BH206	BH208	BH208
			Depth (m)	0.70	0.30 - 0.40	0.60 - 0.70	1.90 - 2.00	2.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985194	13985228	13985237	13985243	13985278	13985292
			AGS Reference	ESES2	ESES1	ESES2	ESES3	ES	ES
Dibromofluoromethane**	%	TM116				129		117	122
Toluene-d8**	%	TM116				114		98.5	101
4-Bromofluorobenzene**	%	TM116				79.4		91.5	99.5
Dichlorodifluoromethane	<0.006 mg/kg	TM116				<0.006 M		<0.006 M	<0.006 M
Chloromethane	<0.007 mg/kg	TM116				<0.007 #		<0.007 #	<0.007 #
Vinyl Chloride	<0.006 mg/kg	TM116				<0.006 M		<0.006 M	<0.006 M
Bromomethane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Chloroethane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Trichlorofluorormethane	<0.006 mg/kg	TM116				<0.006 M		<0.006 M	<0.006 M
1,1-Dichloroethene	<0.01 mg/kg	TM116				<0.01 #		<0.01 #	<0.01 #
Carbon Disulphide	<0.007 mg/kg	TM116				<0.007 M		<0.007 M	<0.007 M
Dichloromethane	<0.01 mg/kg	TM116				<0.01 #		<0.01 #	<0.01 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 & M	<0.01 M	<0.01 M	<0.01 M		<0.01 M	<0.01 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
1,1-Dichloroethane	<0.008 mg/kg	TM116				<0.008 M		<0.008 M	<0.008 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116				<0.006 M		<0.006 M	<0.006 M
2,2-Dichloropropane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Bromochloromethane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Chloroform	<0.008 mg/kg	TM116				<0.008 M		<0.008 M	<0.008 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116				<0.007 M		<0.007 M	<0.007 M
1,1-Dichloropropene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Carbontetrachloride	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
1,2-Dichloroethane	<0.005 mg/kg	TM116				<0.005 M		<0.005 M	<0.005 M
Benzene	<0.009 mg/kg	TM116	<0.09 & M	<0.009 M	<0.009 M	<0.009 M		<0.009 M	<0.009 M
Trichloroethene	<0.009 mg/kg	TM116				<0.009 #		<0.009 #	<0.009 #
1,2-Dichloropropane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Dibromomethane	<0.009 mg/kg	TM116				<0.009 M		<0.009 M	<0.009 M
Bromodichloromethane	<0.007 mg/kg	TM116				<0.007 M		<0.007 M	<0.007 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Toluene	<0.007 mg/kg	TM116	<0.07 & M	<0.007 M	<0.007 M	<0.007 M		<0.007 M	<0.007 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.01		<0.01	<0.01
1,1,2-Trichloroethane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH205	BH206	BH206	BH206	BH208	BH208
			Depth (m)	0.70	0.30 - 0.40	0.60 - 0.70	1.90 - 2.00	2.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985194	13985228	13985237	13985243	13985278	13985292
			AGS Reference	ESES2	ESES1	ESES2	ESES3	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116				<0.007 M		<0.007 M	<0.007 M
Tetrachloroethene	<0.005 mg/kg	TM116				<0.005 M		<0.005 M	<0.005 M
Dibromochloromethane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
1,2-Dibromoethane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Chlorobenzene	<0.005 mg/kg	TM116				<0.005 M		<0.005 M	<0.005 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 & M	<0.004 M	<0.004 M	<0.004 M	<0.004 M	<0.004 M	<0.004 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 & #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
o-Xylene	<0.01 mg/kg	TM116	<0.1 & M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Styrene	<0.01 mg/kg	TM116				<0.01 #		<0.01 #	<0.01 #
Bromoform	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Isopropylbenzene	<0.005 mg/kg	TM116				<0.005 #		<0.005 #	<0.005 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
1,2,3-Trichloropropane	<0.016 mg/kg	TM116				<0.016 M		<0.016 M	<0.016 M
Bromobenzene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
Propylbenzene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
2-Chlorotoluene	<0.009 mg/kg	TM116				<0.009 M		<0.009 M	<0.009 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116				<0.008 M		<0.008 M	<0.008 M
4-Chlorotoluene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
tert-Butylbenzene	<0.014 mg/kg	TM116				<0.014 M		<0.014 M	<0.014 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116				<0.009 #		<0.009 #	<0.009 #
sec-Butylbenzene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
4-Isopropyltoluene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116				<0.008 M		<0.008 M	<0.008 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116				<0.005 M		<0.005 M	<0.005 M
n-Butylbenzene	<0.011 mg/kg	TM116				<0.011		<0.011	<0.011
1,2-Dichlorobenzene	<0.01 mg/kg	TM116				<0.01 M		<0.01 M	<0.01 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116				<0.014 M		<0.014 M	<0.014 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 & #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116				<0.02		<0.02	<0.02
Hexachlorobutadiene	<0.02 mg/kg	TM116				<0.02		<0.02	<0.02
Naphthalene	<0.013 mg/kg	TM116				<0.013 M		<0.013 M	<0.013 M

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH205	BH206	BH206	BH206	BH208	BH208
			Depth (m)	0.70	0.30 - 0.40	0.60 - 0.70	1.90 - 2.00	2.00	4.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	15/08/2016	15/08/2016	15/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016	17/08/2016
			SDG Ref	160817-66	160817-66	160817-66	160817-66	160817-66	160817-66
			Lab Sample No.(s)	13985194	13985228	13985237	13985243	13985278	13985292
			AGS Reference	ESES2	ESES1	ESES2	ESES3	ES	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116				<0.02 #		<0.02 #	<0.02 #

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP208	TP208	TP208	TP212		
			Depth (m)	0.20	1.00	2.30	0.20		
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	16/08/2016		
			Sampled Time	.	.	.	.		
			Date Received	17/08/2016	17/08/2016	17/08/2016	17/08/2016		
			SDG Ref	160817-66	160817-66	160817-66	160817-66		
			Lab Sample No.(s)	13985298	13985307	13985316	13985324		
			AGS Reference	ES	ES	ES	ES		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.1 & M	<0.01 M		
Benzene	<0.009 mg/kg	TM116		<0.009 M	<0.009 M	<0.09 & M	<0.009 M		
Toluene	<0.007 mg/kg	TM116		<0.007 M	<0.007 M	<0.07 & M	<0.007 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.004 M	<0.004 M	<0.04 & M	<0.004 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.01 #	<0.01 #	<0.1 & #	<0.01 #		
o-Xylene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.1 & M	<0.01 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.01 #	<0.01 #	<0.1 & #	<0.01 #		

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH203 ES 0.30 SOLID 16/08/2016 00:00:00 17/08/2016 20:02:15 160817-66 13985101 TM048	22/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH203 ES 1.00 SOLID 16/08/2016 00:00:00 18/08/2016 06:33:06 160817-66 13985207 TM048	22/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH204 ES ES1 0.30 SOLID 15/08/2016 00:00:00 18/08/2016 08:15:11 160817-66 13985344 TM048	22/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH204 ES ES2 0.80 SOLID 15/08/2016 00:00:00 18/08/2016 08:21:52 160817-66 13985352 TM048	22/08/16	Simon Postlewhite	Soil containing material typical of ACM debris.	Not Detected (#)	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH205 ES ES1 0.30 SOLID 16/08/2016 00:00:00 27/08/2016 11:09:34 160817-66 13985179 TM048	01/09/16	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH205 ES ES2 0.70 SOLID 16/08/2016 00:00:00 27/08/2016 11:05:51 160817-66 13985194 TM048	01/09/16	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH206 ES ES1 0.30 - 0.40 SOLID 15/08/2016 00:00:00 17/08/2016 20:05:23 160817-66 13985228 TM048	22/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH206 ES ES2 0.60 - 0.70 SOLID 15/08/2016 00:00:00 17/08/2016 20:19:41 160817-66 13985237 TM048	22/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH208 ES 2.00 SOLID 16/08/2016 00:00:00 18/08/2016 08:05:32 160817-66 13985278 TM048	22/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP208 ES 0.20 SOLID 16/08/2016 00:00:00 23/08/2016 07:03:58 160817-66 13985298 TM048	24/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP208 ES 1.00 SOLID 16/08/2016 00:00:00 23/08/2016 06:51:54 160817-66 13985307 TM048	24/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP212 ES 0.20 SOLID 16/08/2016 00:00:00 17/08/2016 19:50:41 160817-66 13985324 TM048	22/08/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Asbestos Quantification - Full

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH204 ES ES2 0.80 SOLID 15/08/2016 00:00:00 25/08/2016 12:23:00 160817-66 13985352 TM 304	None (#)	N/C	0.0069 (#)	<0.001 (#)	0.0069 (#)

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	13985101	13985207	13985153	13985344	13985352	13985179	13985194	13985228	13985237	13985243
Customer Sample Ref.	BH203	BH203	BH204	BH204	BH204	BH205	BH205	BH206	BH206	BH206
AGS Ref.	ES	ES	ESES6	ESES1	ESES2	ESES1	ESES2	ESES1	ESES2	ESES3
Depth	0.30	1.00	5.00	0.30	0.80	0.30	0.70	0.30 - 0.40	0.60 - 0.70	1.90 - 2.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	23-Aug-2016	23-Aug-2016		23-Aug-2016	23-Aug-2016	02-Sep-2016	02-Sep-2016	23-Aug-2016	23-Aug-2016	
Asbestos Quantification - Full					31-Aug-2016					
Cyanide Comp/Free/Total/Thiocyanate			22-Aug-2016		22-Aug-2016	01-Sep-2016	01-Sep-2016	22-Aug-2016		22-Aug-2016
EPH CWG (Aliphatic) GC (S)	23-Aug-2016	23-Aug-2016	22-Aug-2016	23-Aug-2016	23-Aug-2016	01-Sep-2016	01-Sep-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
EPH CWG (Aromatic) GC (S)	23-Aug-2016	23-Aug-2016	22-Aug-2016	23-Aug-2016	23-Aug-2016	01-Sep-2016	01-Sep-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
GRO by GC-FID (S)	22-Aug-2016	22-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	02-Sep-2016	02-Sep-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016
Hexavalent Chromium (s)	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	01-Sep-2016	02-Sep-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
Metals in solid samples by OES	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	02-Sep-2016	02-Sep-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
PAH by GCMS	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	31-Aug-2016	31-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
pH	22-Aug-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016	01-Sep-2016	01-Sep-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016
Sample description	18-Aug-2016	18-Aug-2016	17-Aug-2016	18-Aug-2016	18-Aug-2016	27-Aug-2016	27-Aug-2016	18-Aug-2016	17-Aug-2016	17-Aug-2016
Semi Volatile Organic Compounds					22-Aug-2016				22-Aug-2016	
Total Organic Carbon	24-Aug-2016		19-Aug-2016		19-Aug-2016			19-Aug-2016		19-Aug-2016
TPH CWG GC (S)	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	02-Sep-2016	02-Sep-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
VOC MS (S)	22-Aug-2016	22-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	02-Sep-2016	02-Sep-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016

Lab Sample No(s)	13985278	13985292	13985298	13985307	13985316	13985324
Customer Sample Ref.	BH208	BH208	TP208	TP208	TP208	TP212
AGS Ref.	ES	ES	ES	ES	ES	ES
Depth	2.00	4.00	0.20	1.00	2.30	0.20
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	23-Aug-2016		25-Aug-2016	25-Aug-2016		23-Aug-2016
Cyanide Comp/Free/Total/Thiocyanate	22-Aug-2016	22-Aug-2016	25-Aug-2016	25-Aug-2016	01-Sep-2016	
EPH CWG (Aliphatic) GC (S)	23-Aug-2016	22-Aug-2016	25-Aug-2016	25-Aug-2016	01-Sep-2016	22-Aug-2016
EPH CWG (Aromatic) GC (S)	23-Aug-2016	22-Aug-2016	25-Aug-2016	25-Aug-2016	01-Sep-2016	22-Aug-2016
GRO by GC-FID (S)	22-Aug-2016	22-Aug-2016	24-Aug-2016	24-Aug-2016	02-Sep-2016	22-Aug-2016
Hexavalent Chromium (s)	23-Aug-2016	23-Aug-2016	25-Aug-2016	25-Aug-2016	02-Sep-2016	23-Aug-2016
Metals in solid samples by OES	23-Aug-2016	23-Aug-2016	25-Aug-2016	25-Aug-2016	05-Sep-2016	23-Aug-2016
PAH by GCMS	23-Aug-2016	23-Aug-2016	25-Aug-2016	25-Aug-2016	01-Sep-2016	23-Aug-2016
PCBs by GCMS	23-Aug-2016	22-Aug-2016				
pH	22-Aug-2016	22-Aug-2016	24-Aug-2016	24-Aug-2016	31-Aug-2016	22-Aug-2016
Sample description	18-Aug-2016	17-Aug-2016	23-Aug-2016	23-Aug-2016	26-Aug-2016	18-Aug-2016
Semi Volatile Organic Compounds	22-Aug-2016	23-Aug-2016				
Total Organic Carbon	24-Aug-2016	19-Aug-2016	26-Aug-2016	25-Aug-2016		24-Aug-2016
TPH CWG GC (S)	23-Aug-2016	22-Aug-2016	25-Aug-2016	25-Aug-2016	02-Sep-2016	22-Aug-2016
VOC MS (S)	23-Aug-2016	23-Aug-2016	25-Aug-2016	25-Aug-2016	02-Sep-2016	22-Aug-2016

CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

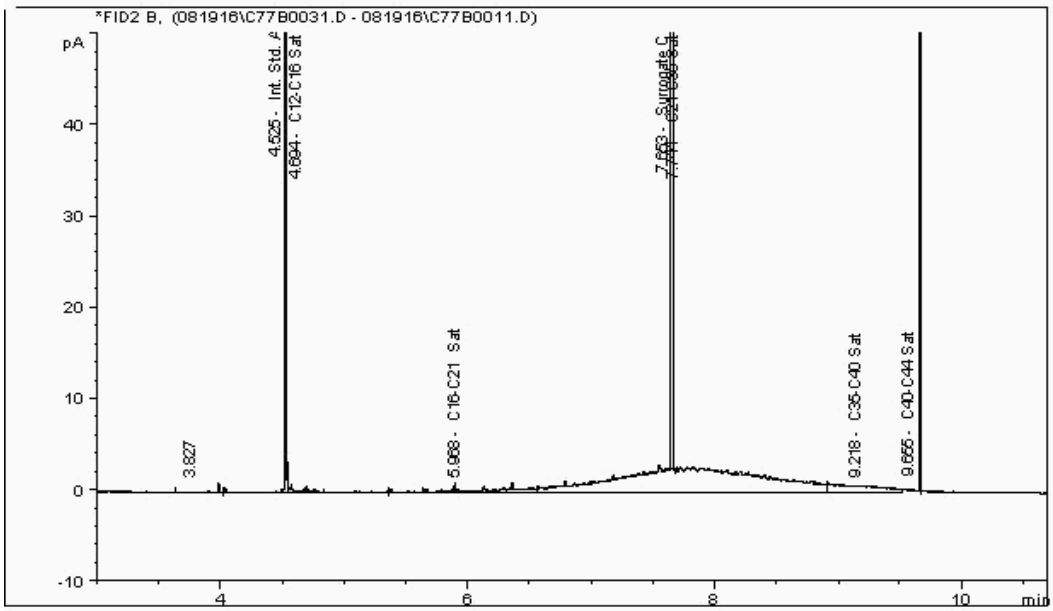
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13987140
Sample ID : BH204

Depth : 5.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146024-
Date Acquired : 20/08/2016 02:29:40 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

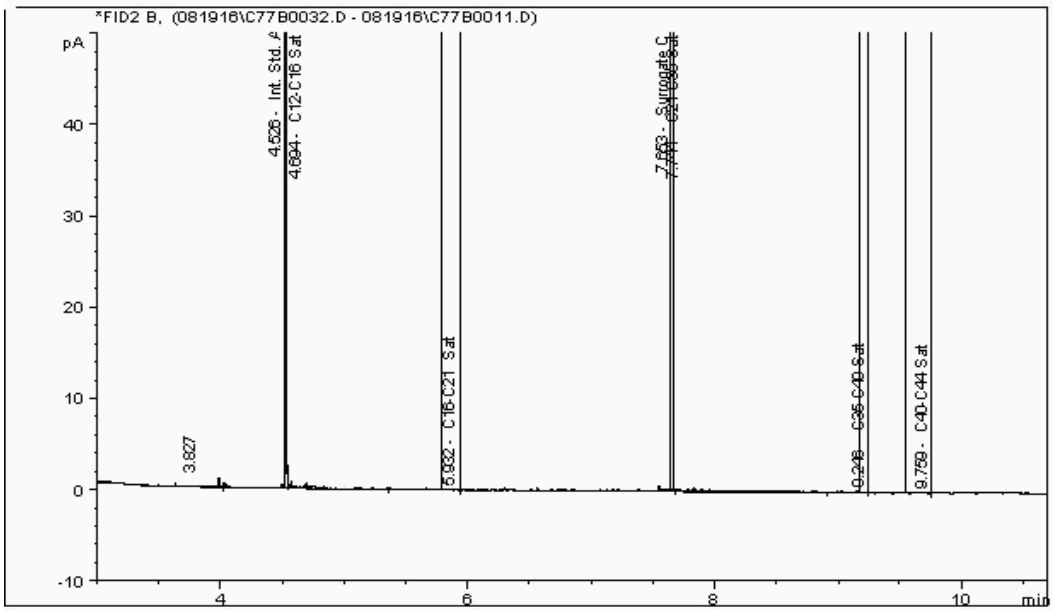
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13987183
Sample ID : BH208

Depth : 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146194-
Date Acquired : 20/08/2016 02:50:23 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

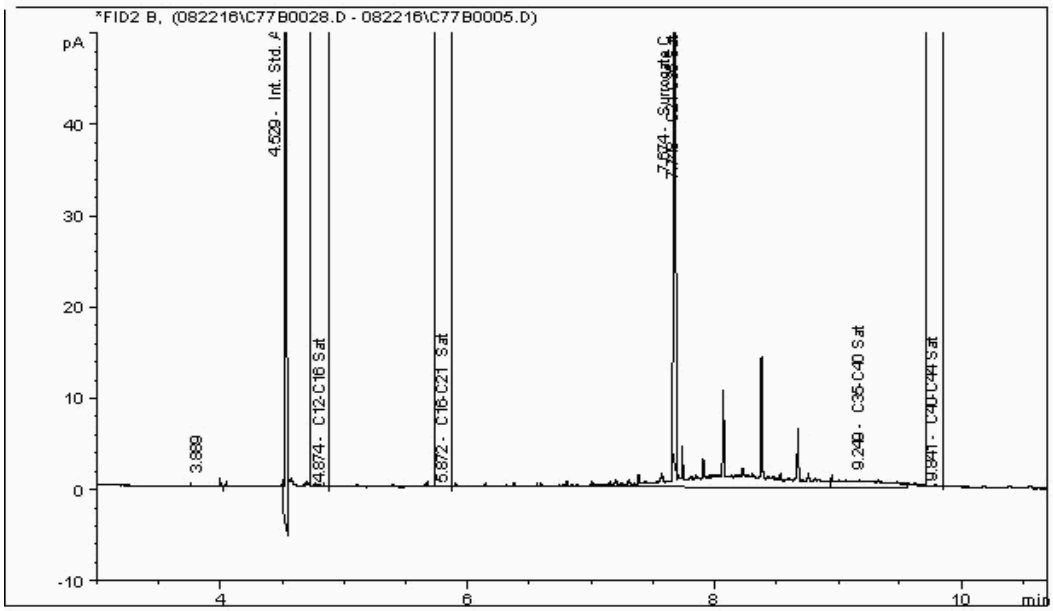
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13988837
Sample ID : BH204

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146247-
Date Acquired : 8/22/2016 3:27:59 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

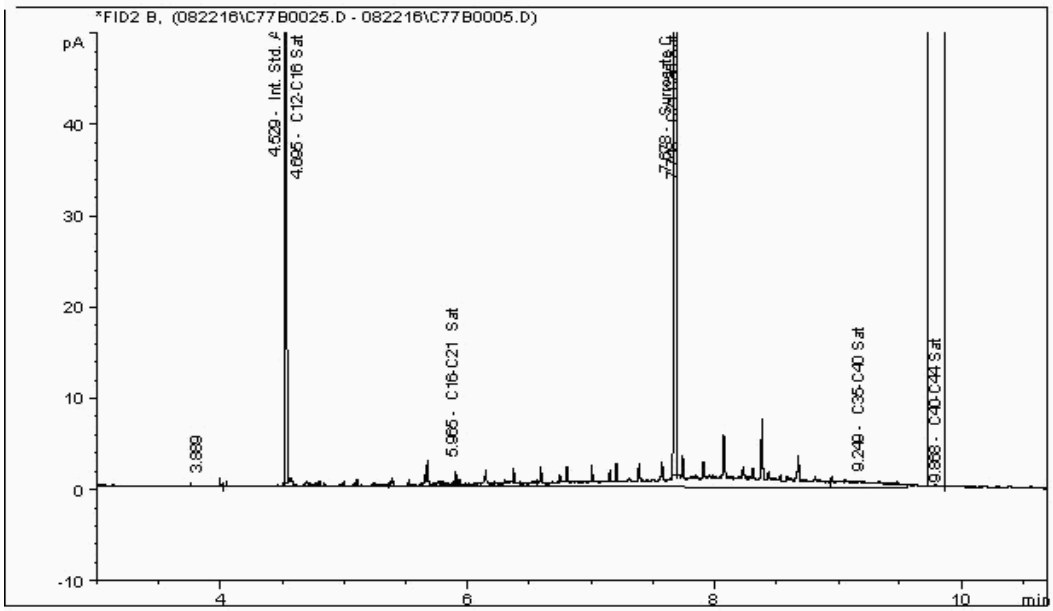
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13988842
Sample ID : BH204

Depth : 0.80

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146264-
Date Acquired : 8/22/2016 2:43:54 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

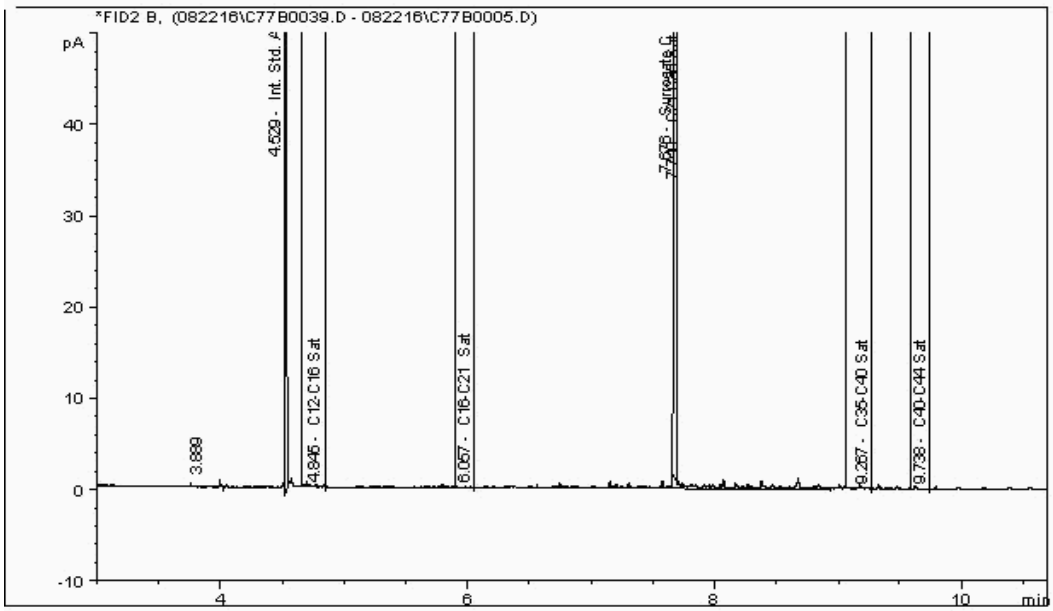
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13988851
Sample ID : BH206

Depth : 0.60 - 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146109-
Date Acquired : 8/22/2016 6:22:23 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

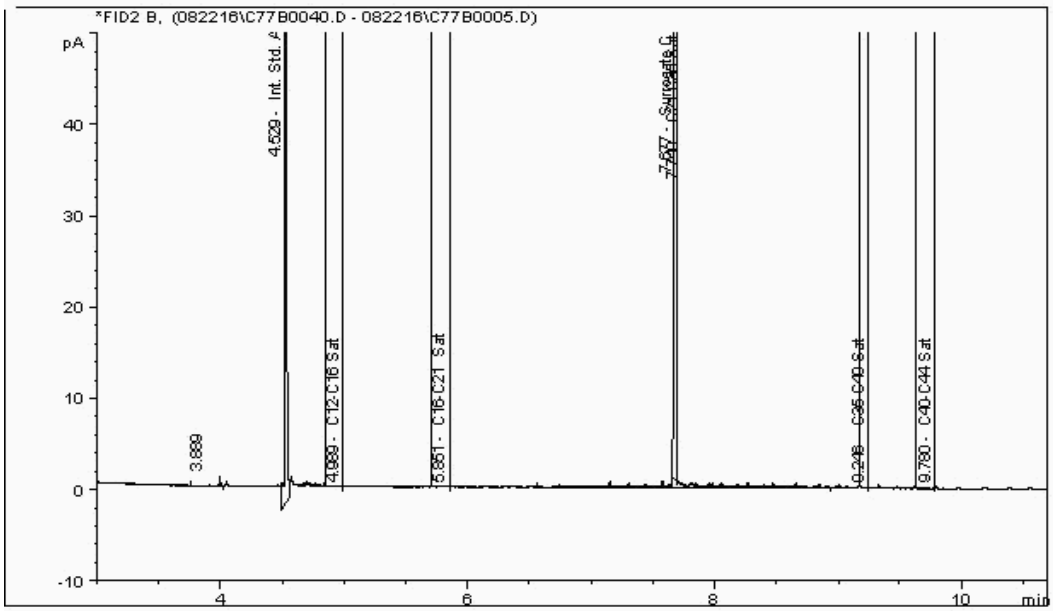
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13988855
Sample ID : BH206

Depth : 1.90 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146147-
Date Acquired : 8/22/2016 6:42:56 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

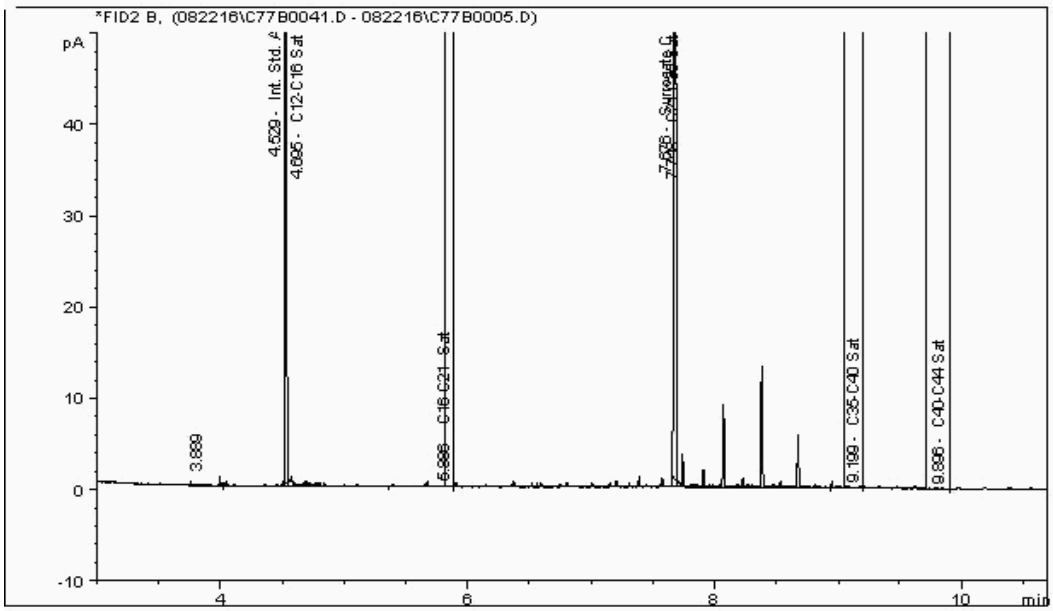
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13988860
Sample ID : BH206

Depth : 0.30 - 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146087-
Date Acquired : 8/22/2016 7:03:28 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

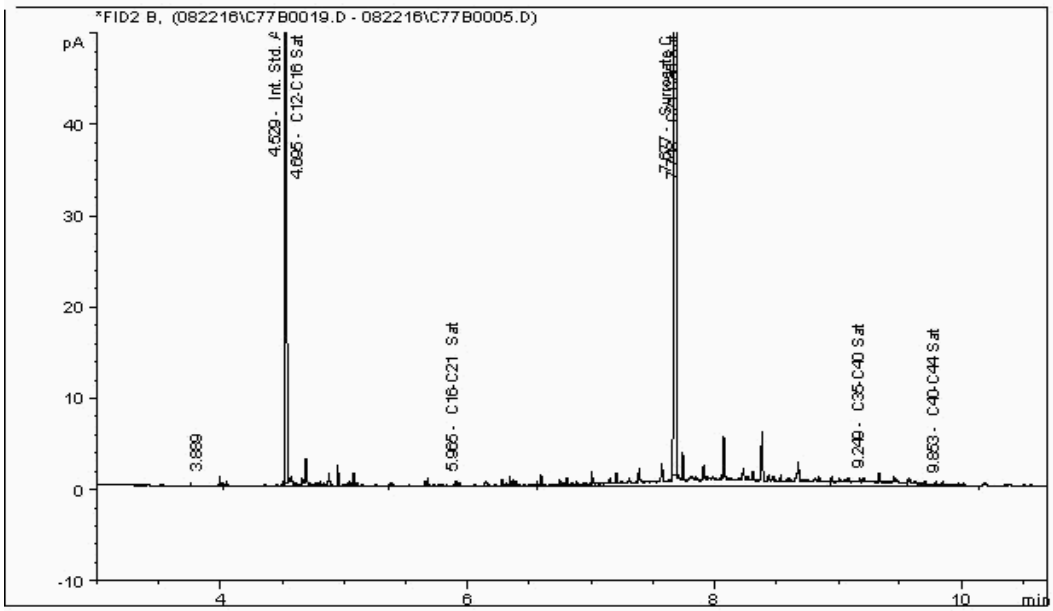
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13989449
Sample ID : BH203

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13145991-
Date Acquired : 8/22/2016 12:57:14 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

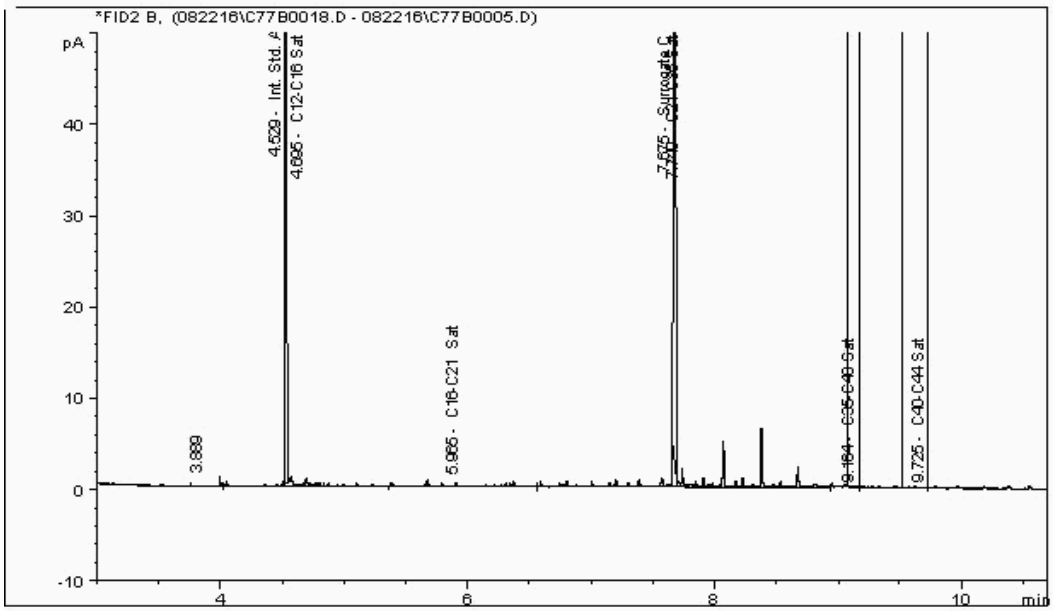
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13989480
Sample ID : BH203

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146056-
Date Acquired : 8/22/2016 12:36:31 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

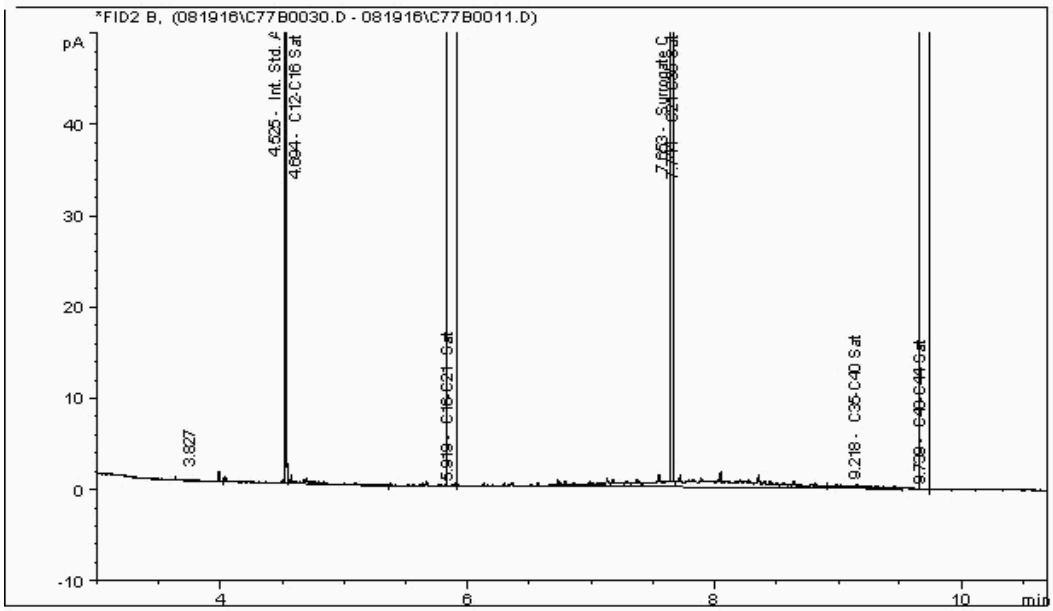
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13989518
Sample ID : TP212

Depth : 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146231-
Date Acquired : 20/08/2016 02:09:09 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

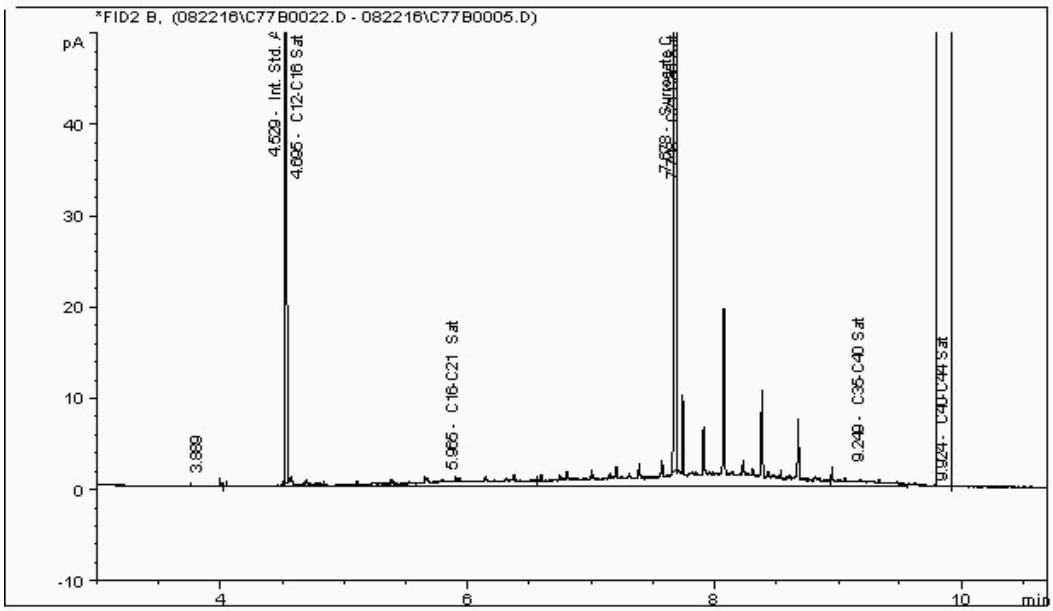
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13989567
Sample ID : BH208

Depth : 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146166-
Date Acquired : 8/22/2016 1:50:36 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

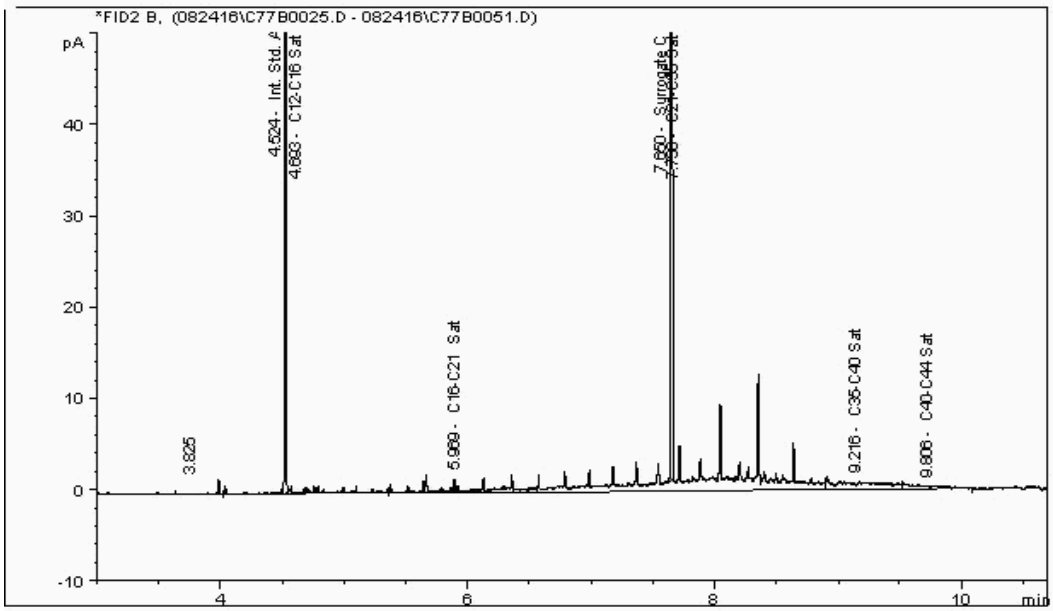
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14022821
Sample ID : TP208

Depth : 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13178777-
Date Acquired : 24/08/2016 20:24:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

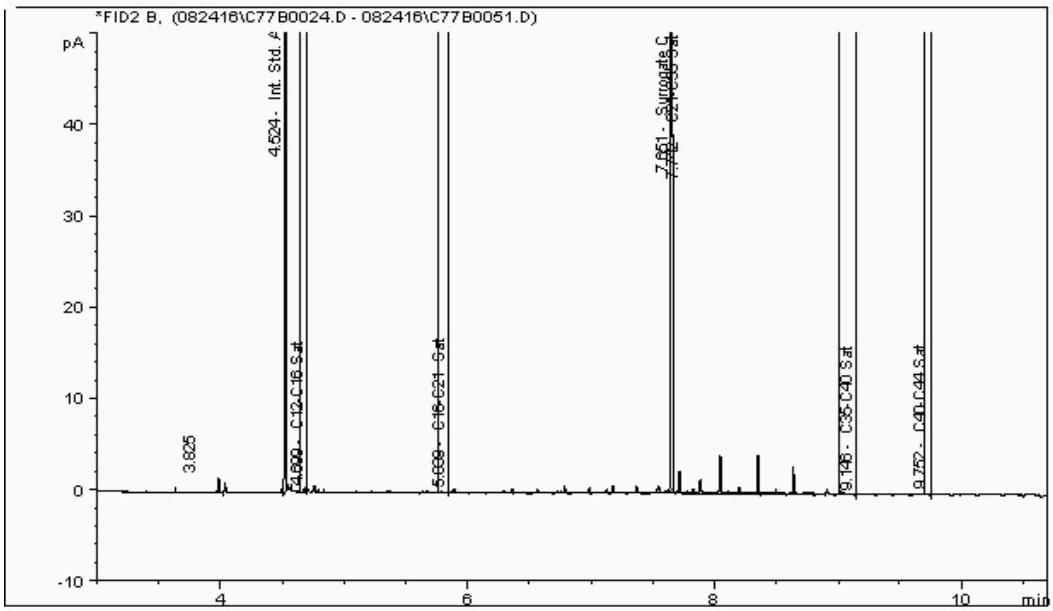
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14022892
Sample ID : TP208

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13178796-
Date Acquired : 24/08/2016 20:03:56 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

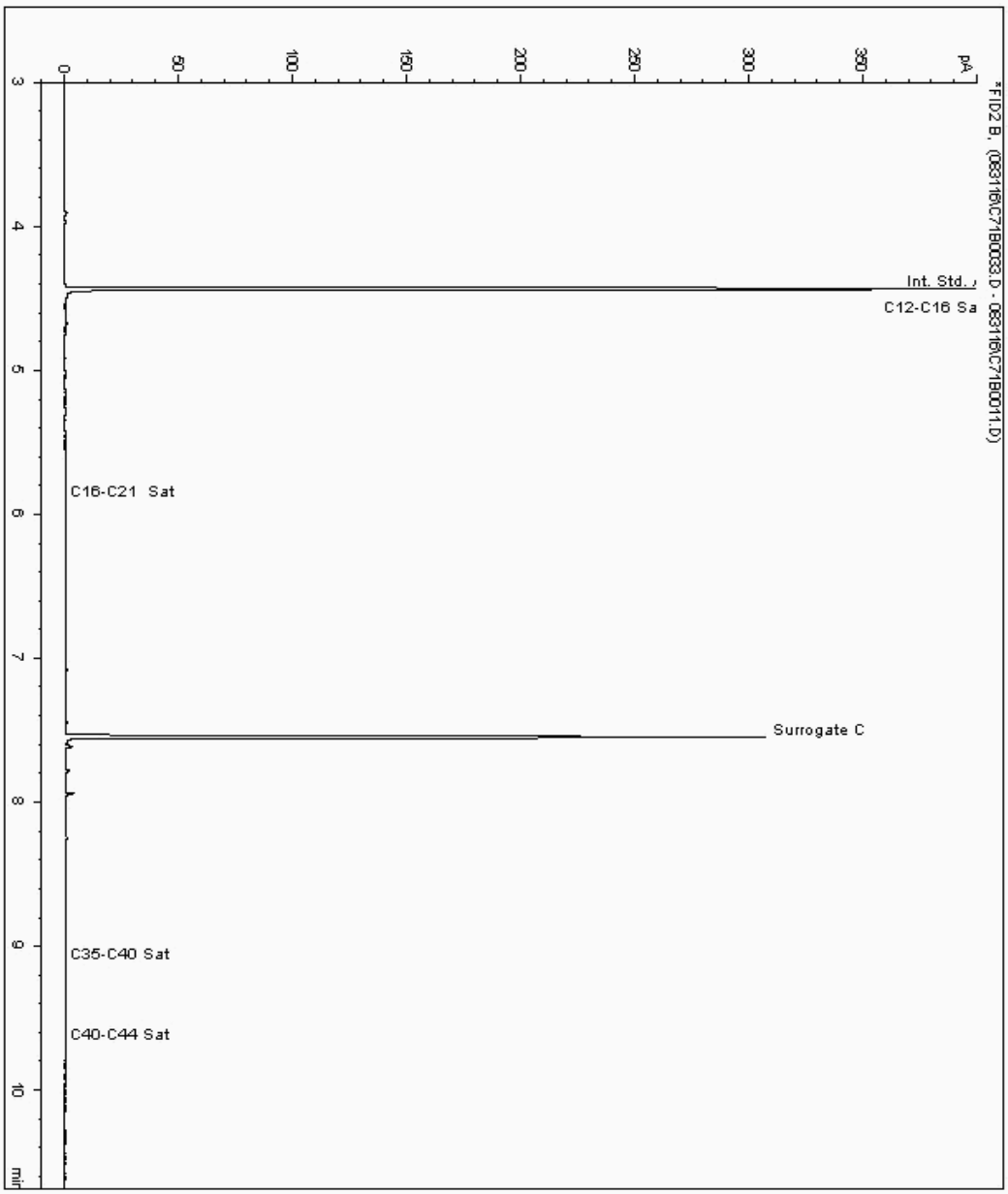
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14051411
Sample ID : TP208

Depth : 2.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199615-
Date Acquired : 01/09/2016 00:18:34 PM
Units : ppb
Dilution: TP208[2.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

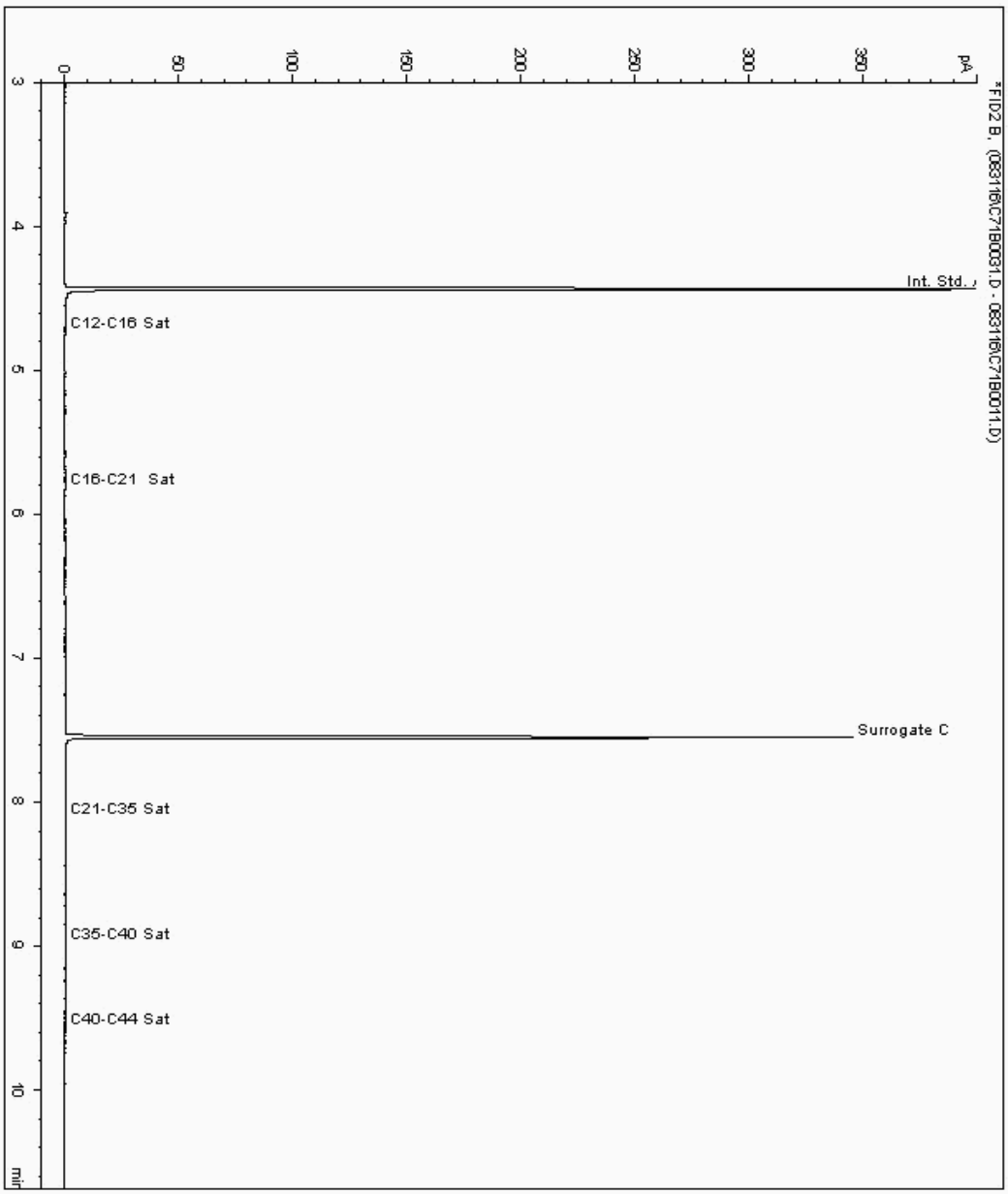
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14054083
Sample ID : BH205

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199595-
Date Acquired : 31/08/2016 23:37:05 PM
Units : ppb
Dilution: BH205[0.70] ->



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

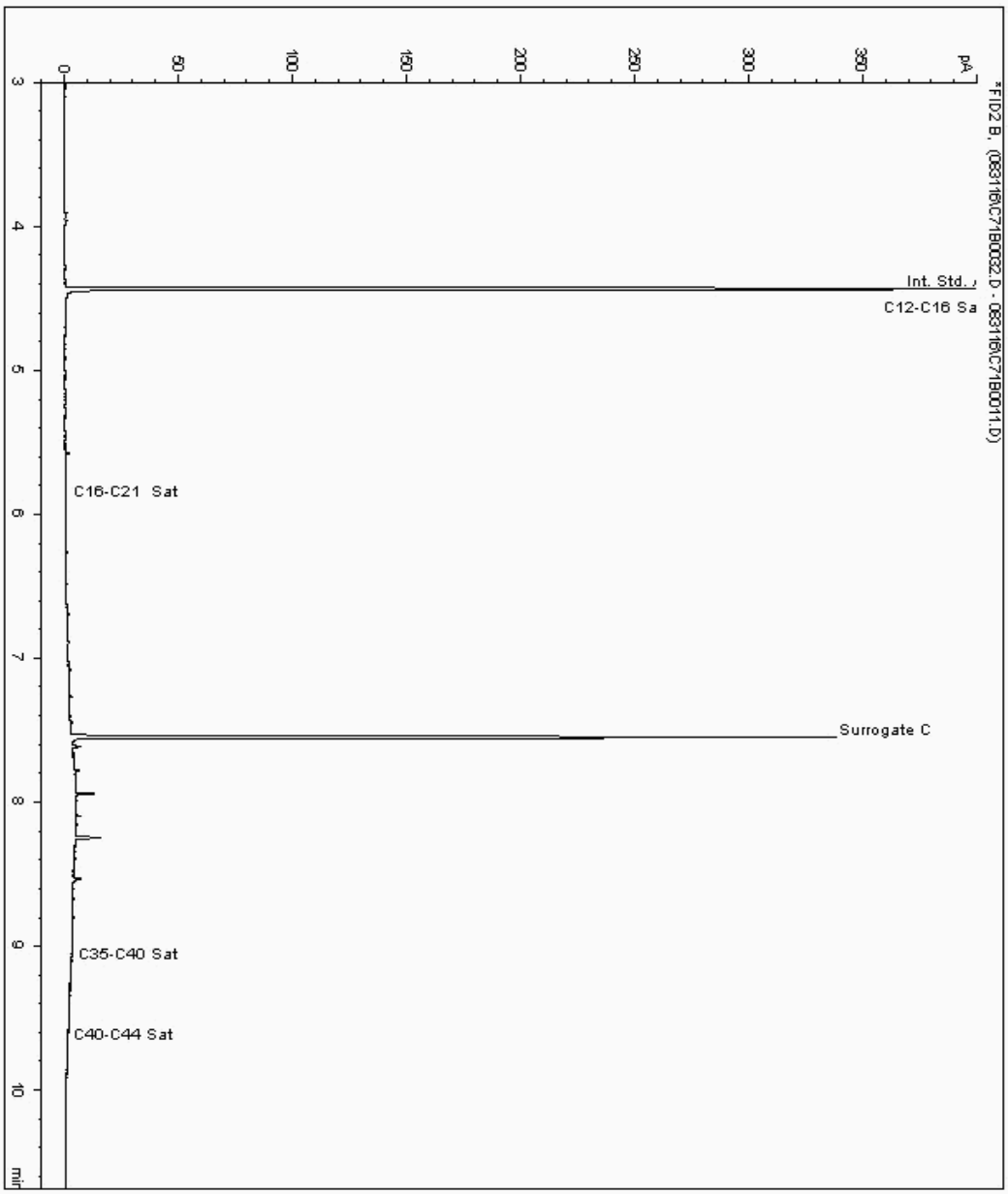
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14054123
Sample ID : BH205

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199547-
Date Acquired : 31/08/2016 23:57:50 PM
Units : ppb
Dilution: BH205[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

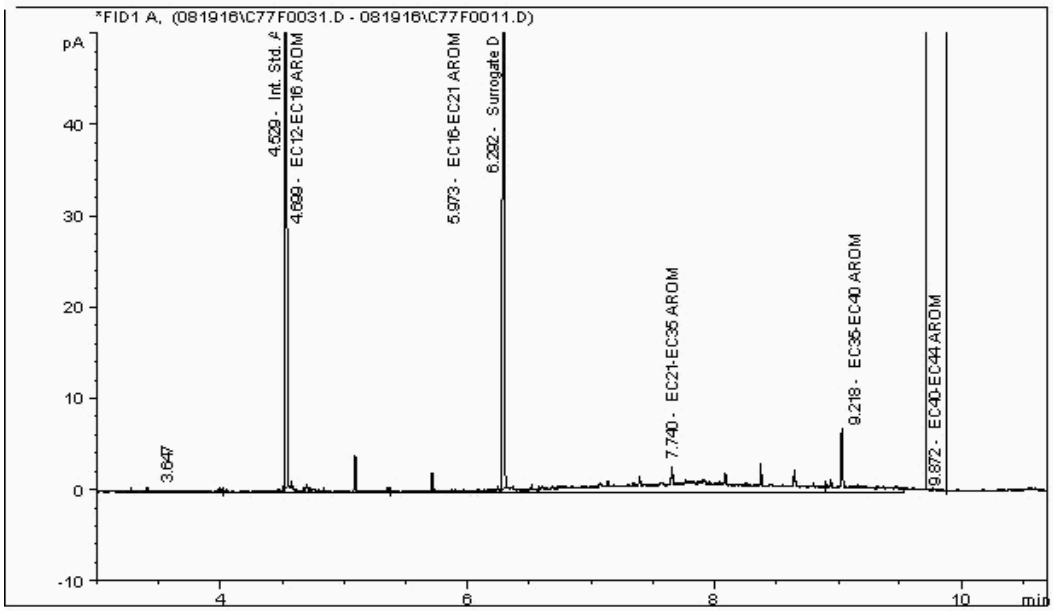
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13987140
Sample ID : BH204

Depth : 5.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146025-
Date Acquired : 20/08/2016 02:29:39 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

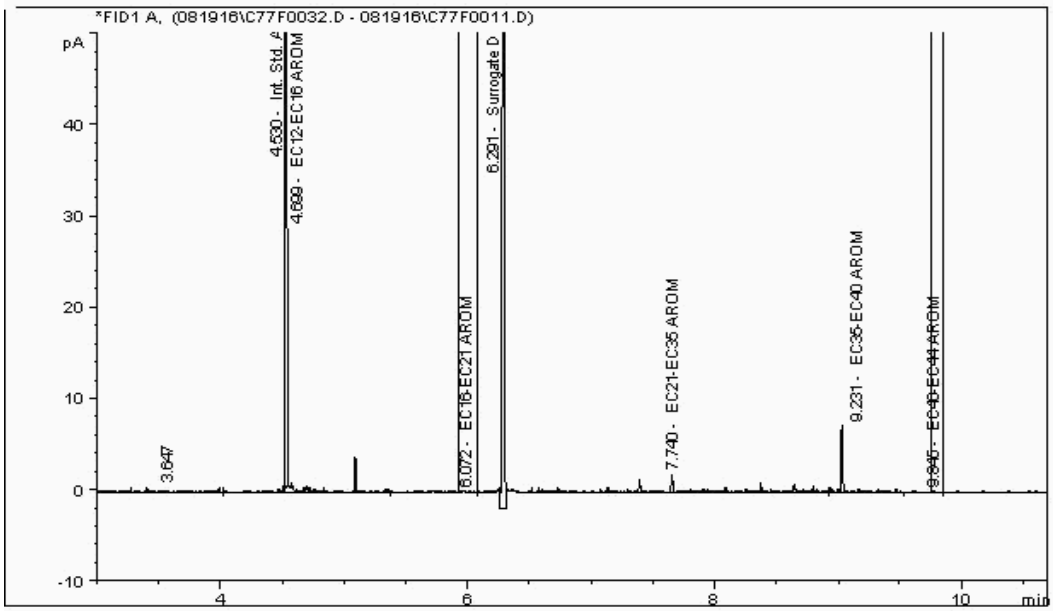
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13987183
Sample ID : BH208

Depth : 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146195-
Date Acquired : 20/08/2016 02:50:22 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

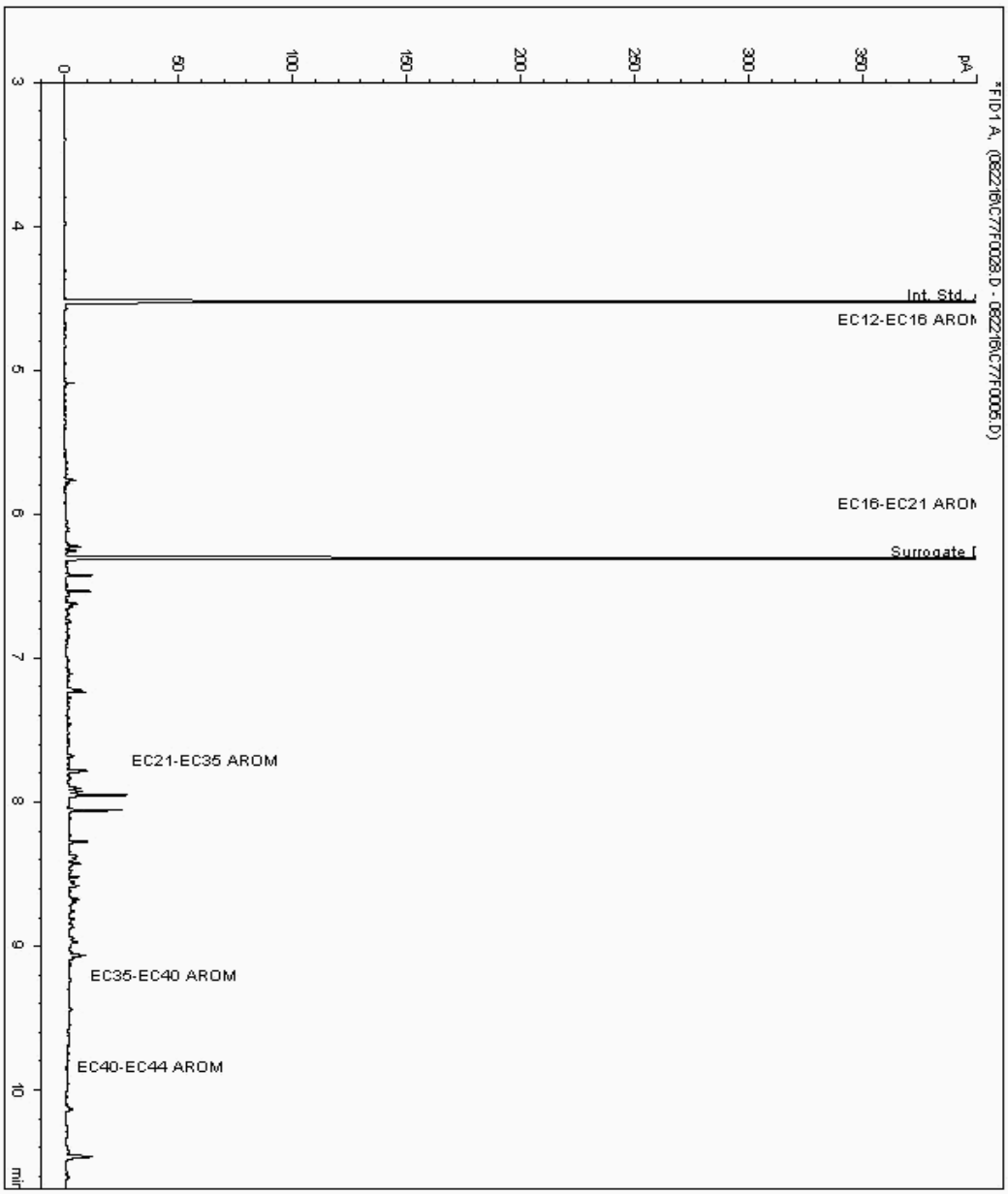
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13988837
Sample ID : BH204

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13146248-
Date Acquired : 8/22/2016 3:27:59 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

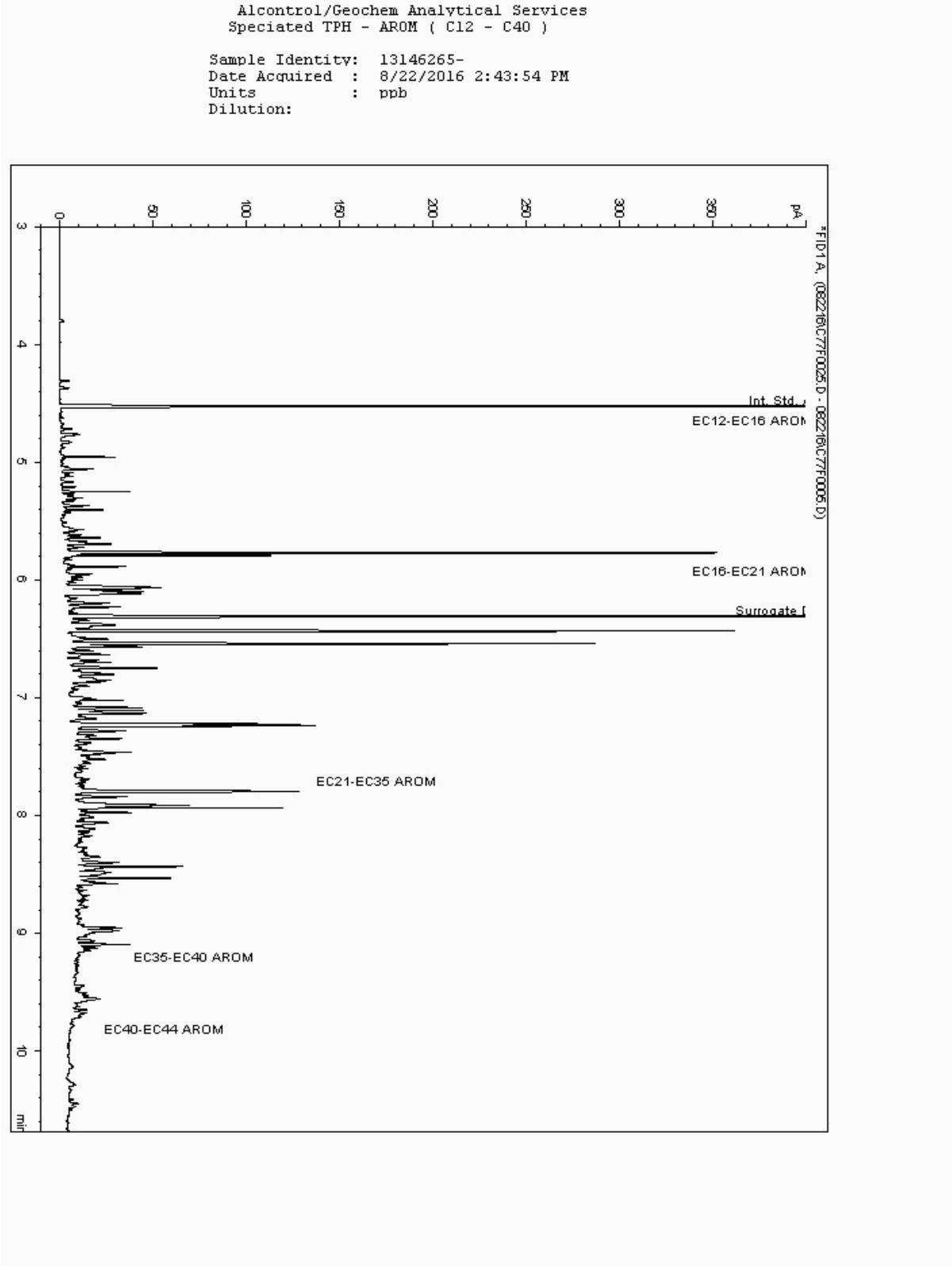
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13988842
Sample ID : BH204

Depth : 0.80



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

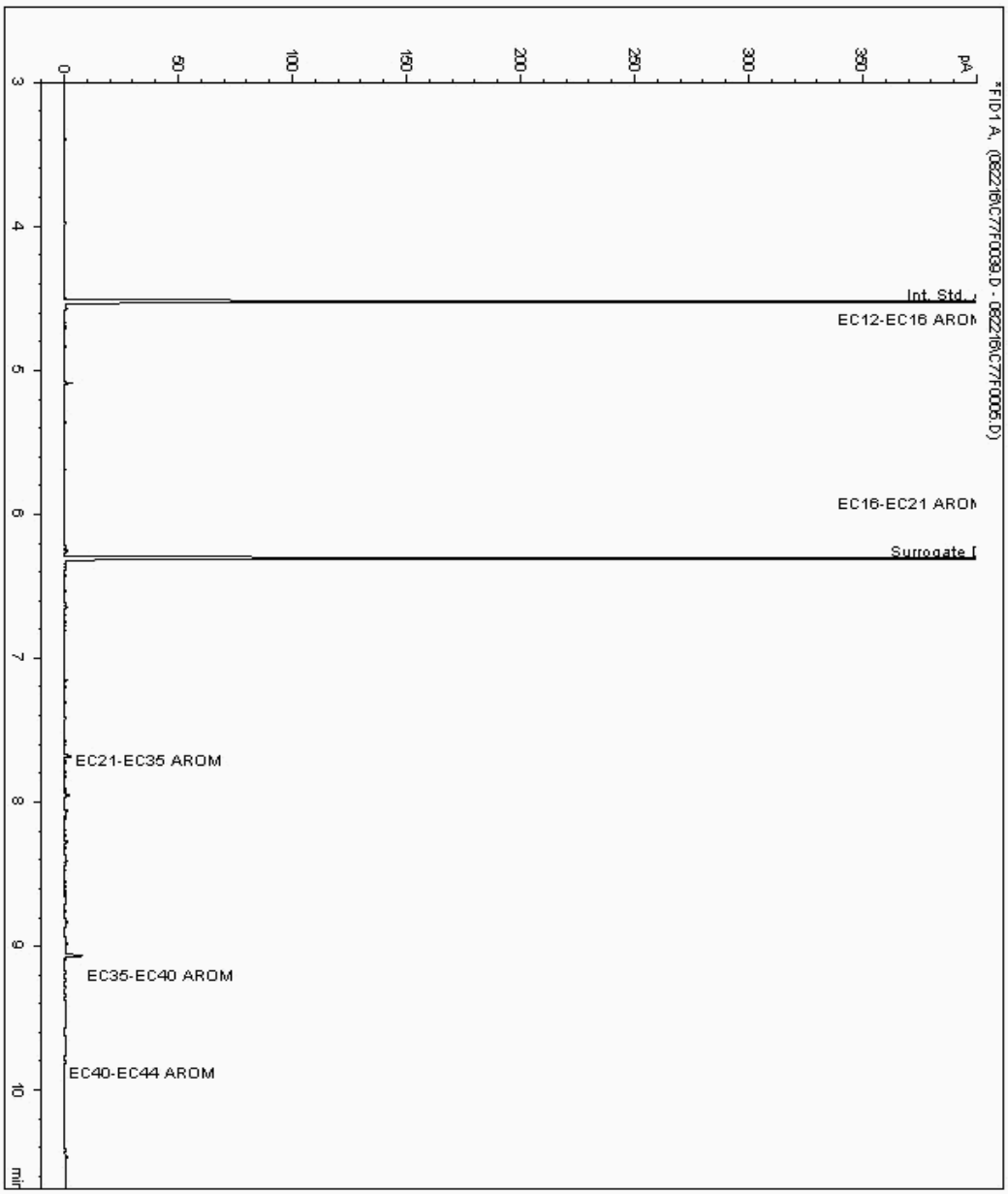
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13988851
Sample ID : BH206

Depth : 0.60 - 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13146110-
Date Acquired : 8/22/2016 6:22:23 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

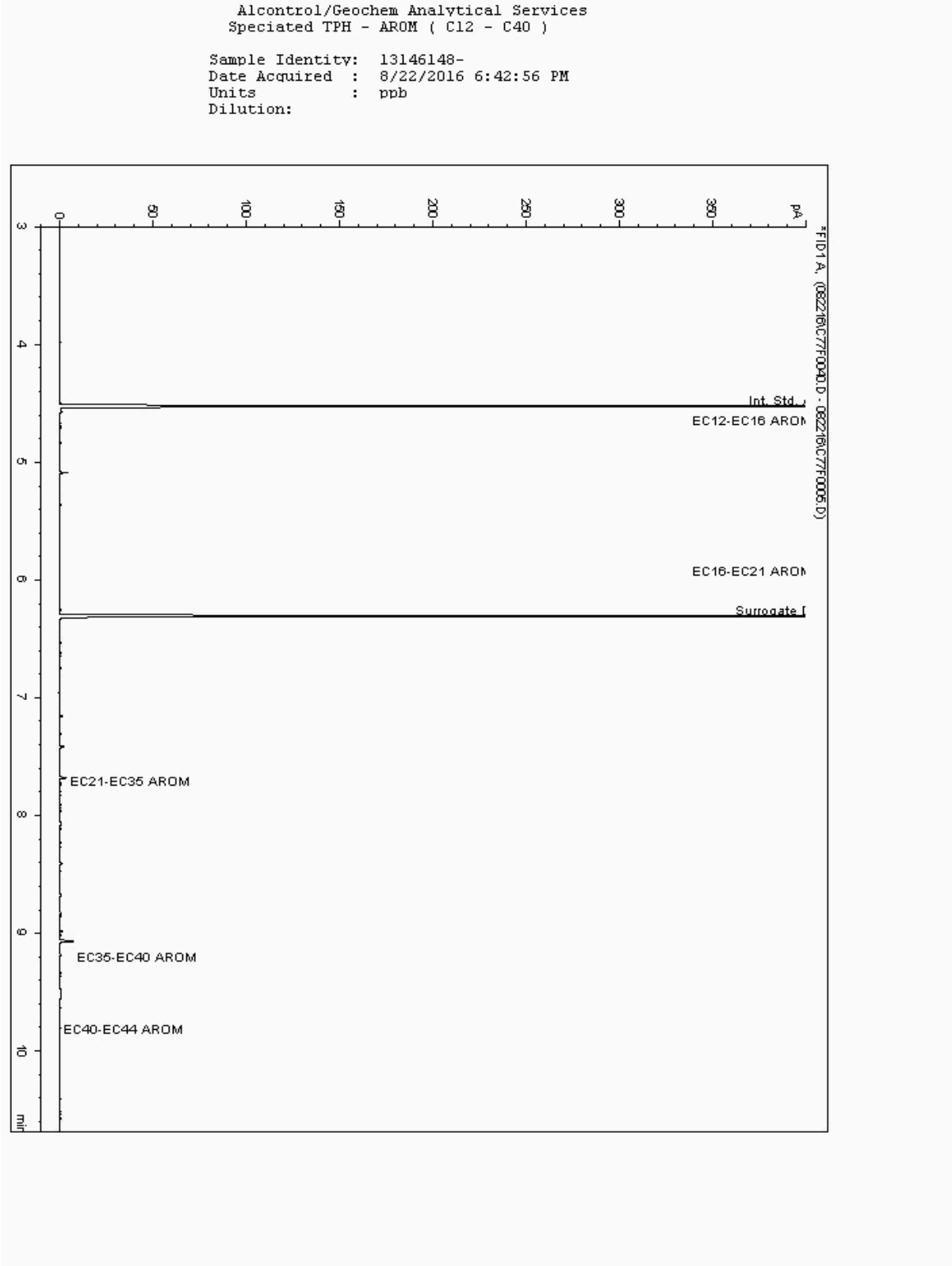
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13988855
Sample ID : BH206

Depth : 1.90 - 2.00



CERTIFICATE OF ANALYSIS

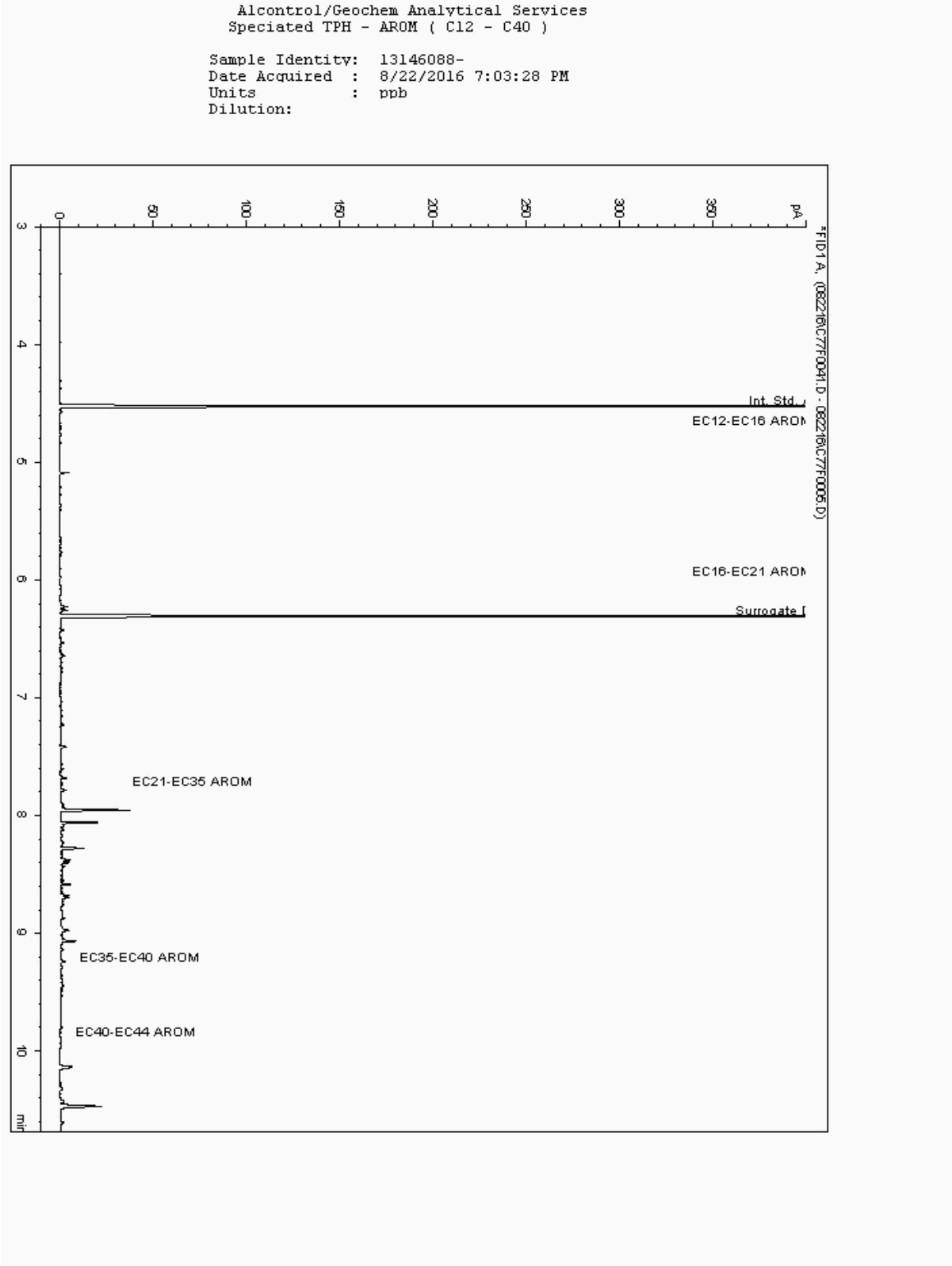
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13988860
Sample ID : BH206

Depth : 0.30 - 0.40



CERTIFICATE OF ANALYSIS

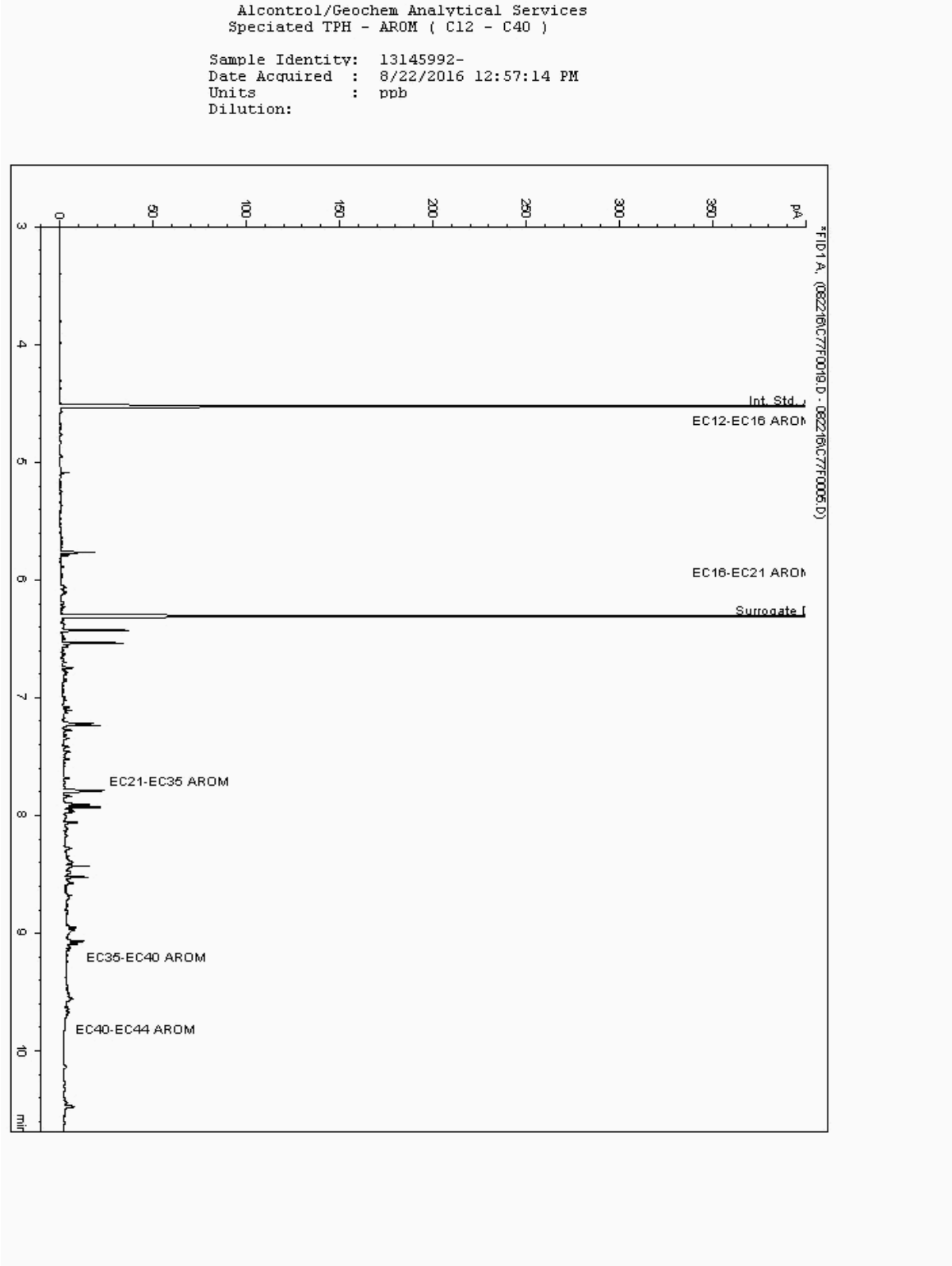
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13989449
Sample ID : BH203

Depth : 0.30



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

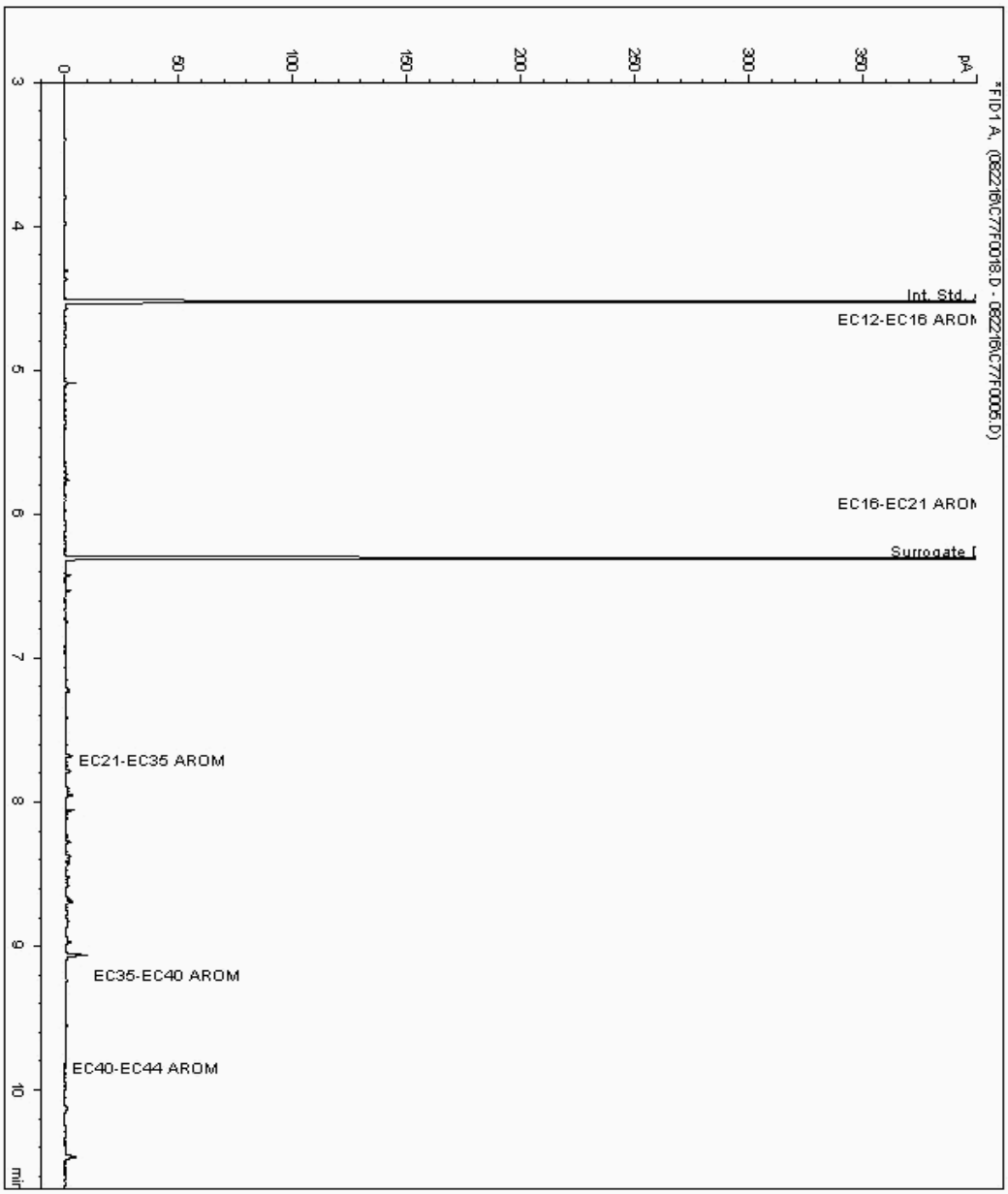
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13989480
Sample ID : BH203

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13146057-
Date Acquired : 8/22/2016 12:36:31 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

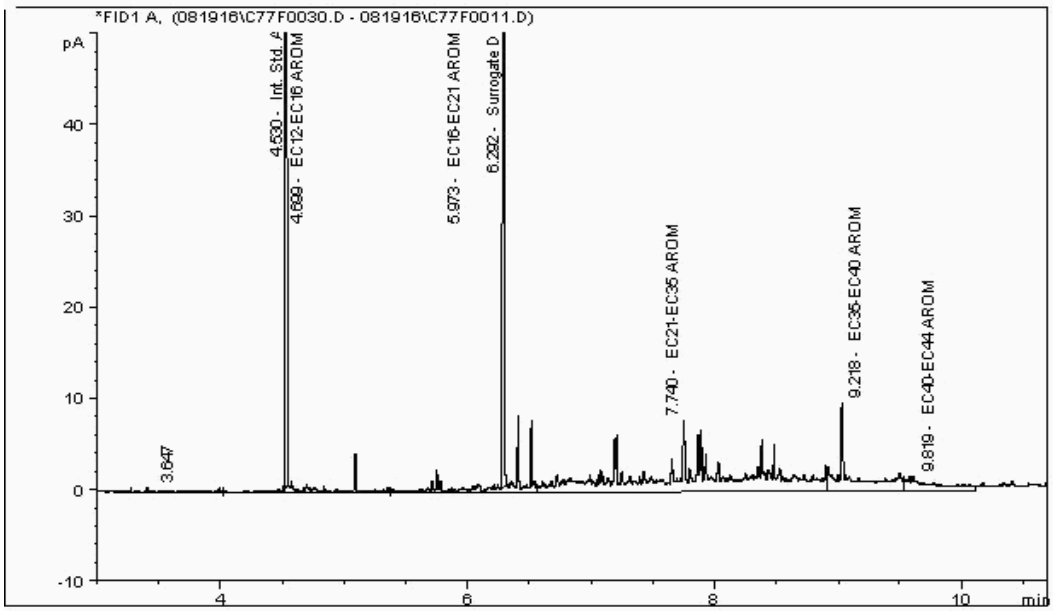
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13989518
Sample ID : TP212

Depth : 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13146232-
Date Acquired : 20/08/2016 02:09:09 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

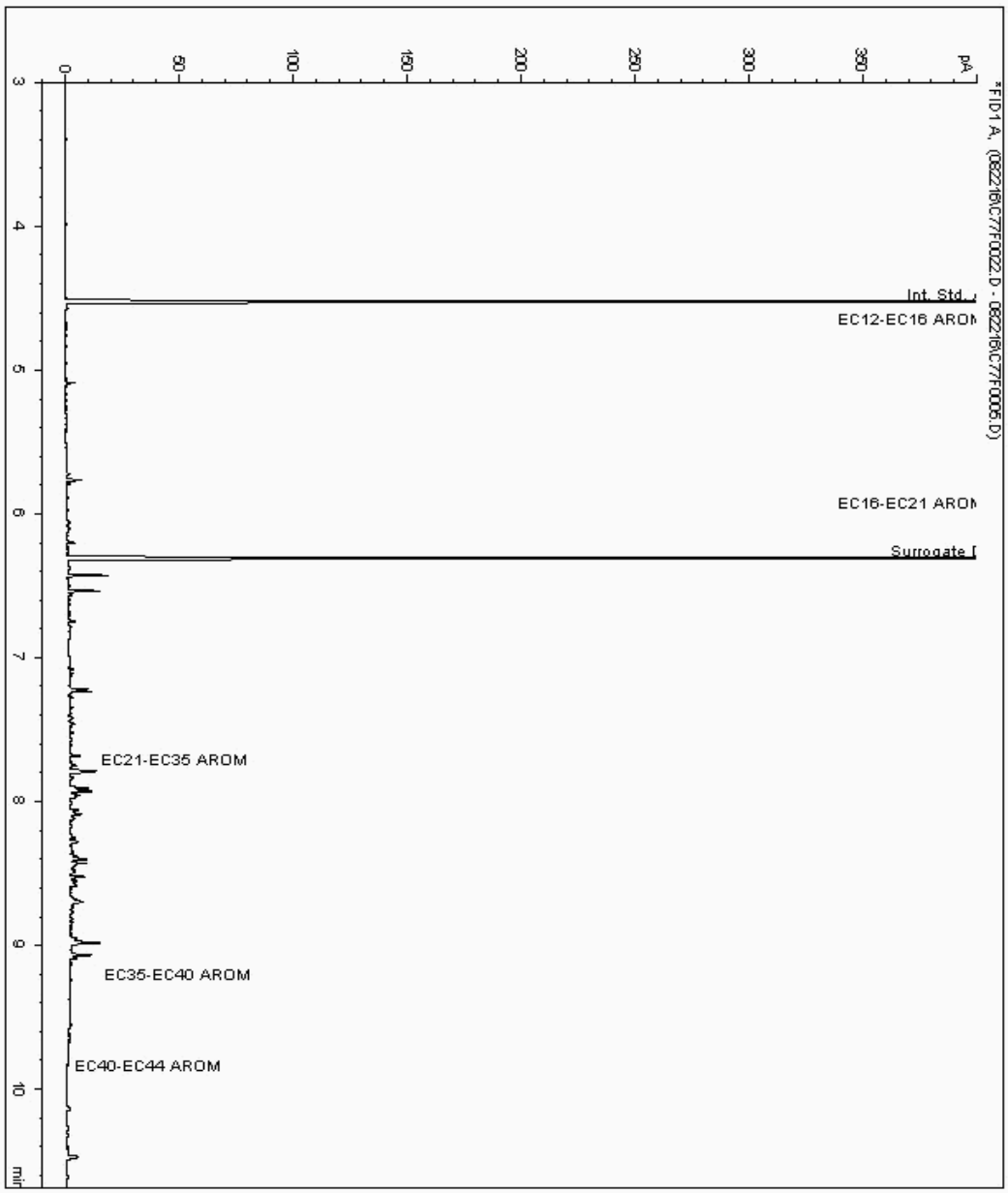
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13989567
Sample ID : BH208

Depth : 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13146167-
Date Acquired : 8/22/2016 1:50:36 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

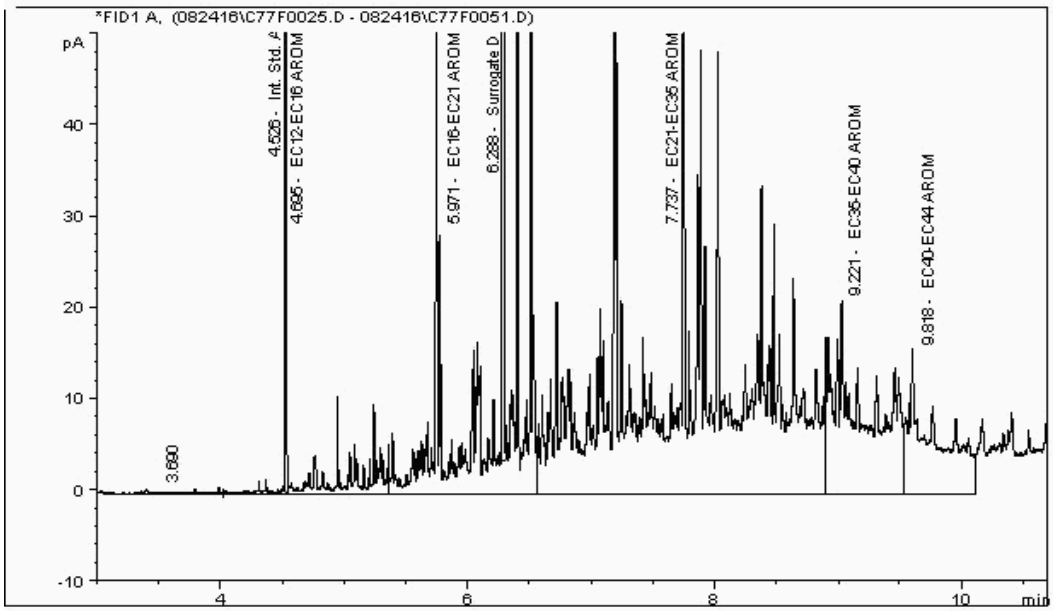
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14022821
Sample ID : TP208

Depth : 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13178778-
Date Acquired : 24/08/2016 20:24:21 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

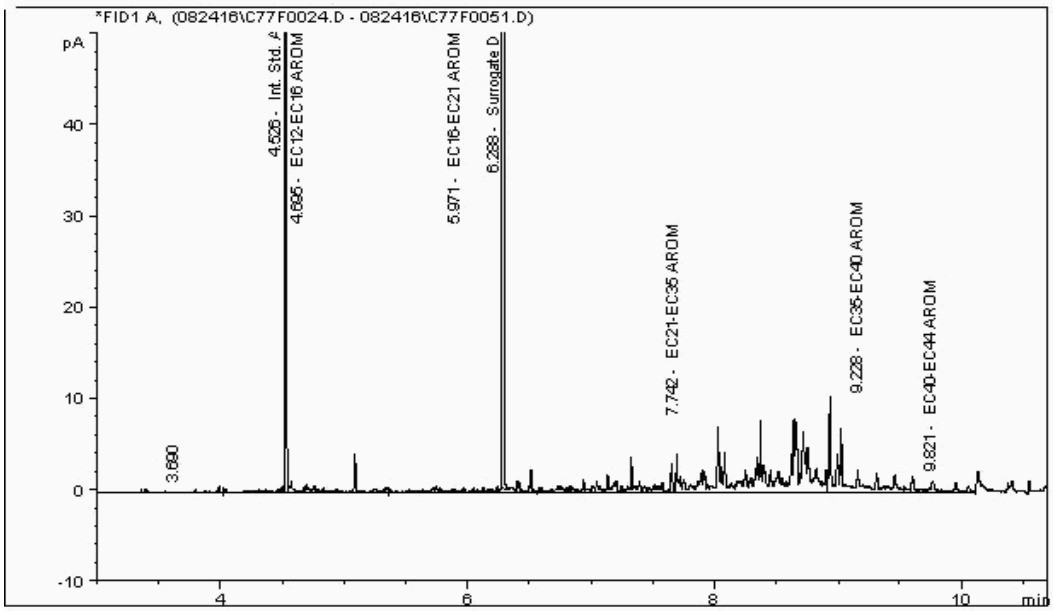
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14022892
Sample ID : TP208

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13178797-
Date Acquired : 24/08/2016 20:03:56 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

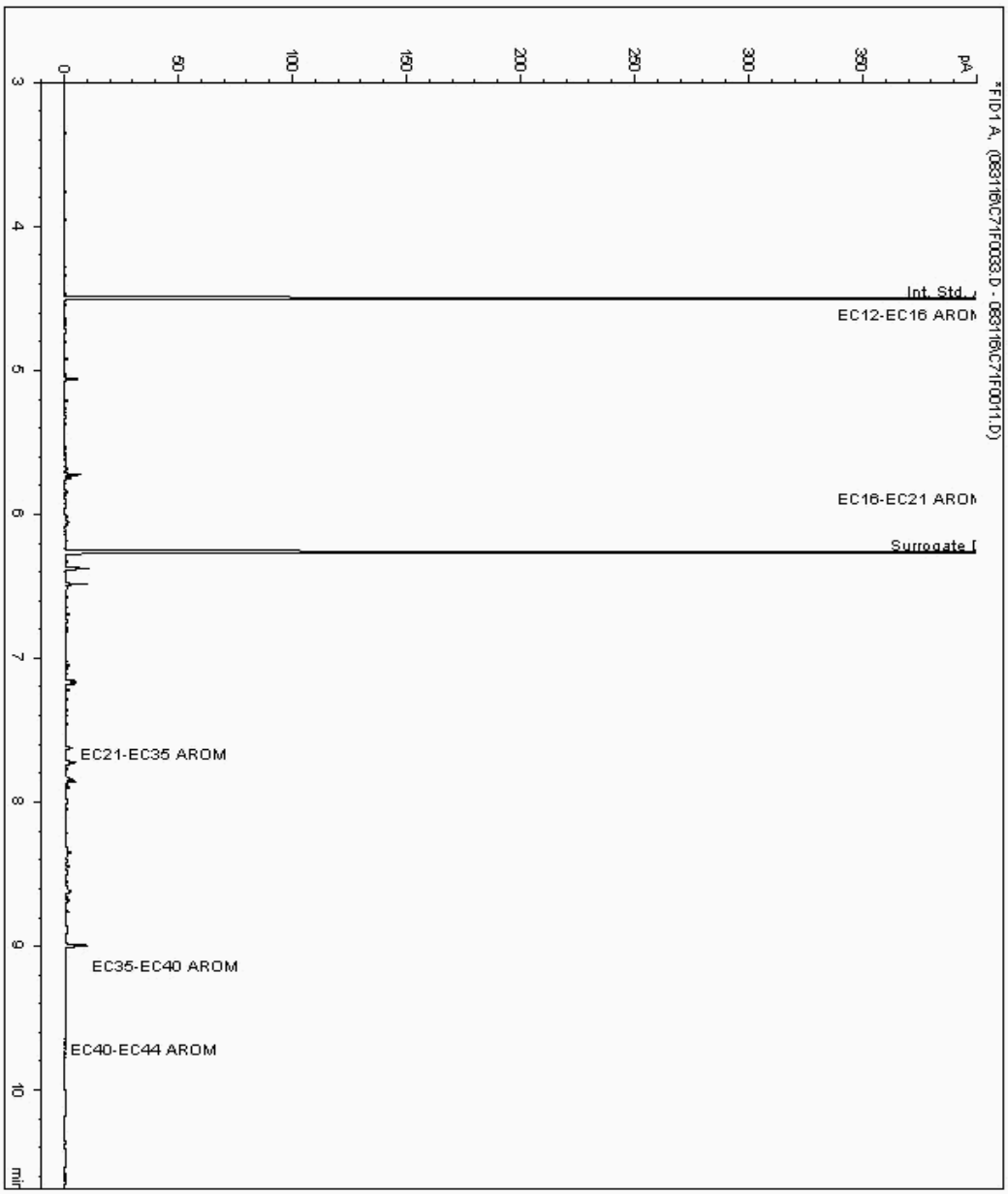
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14051411
Sample ID : TP208

Depth : 2.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199616-
Date Acquired : 01/09/2016 00:18:34 PM
Units : ppb
Dilution: TP208[2.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

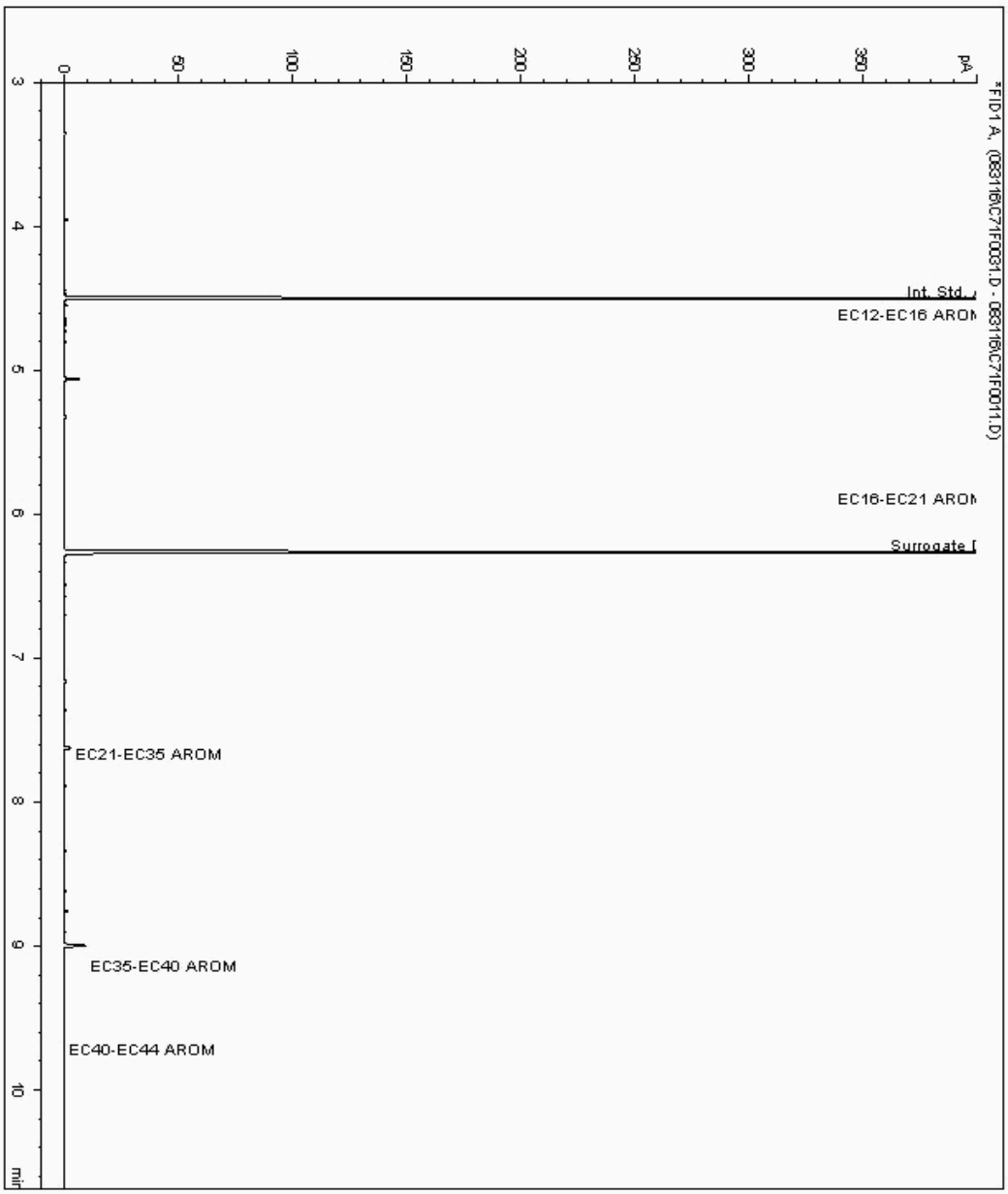
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14054083
Sample ID : BH205

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199596-
Date Acquired : 31/08/2016 23:37:05 PM
Units : ppb
Dilution: BH205[0.70] ->



CERTIFICATE OF ANALYSIS

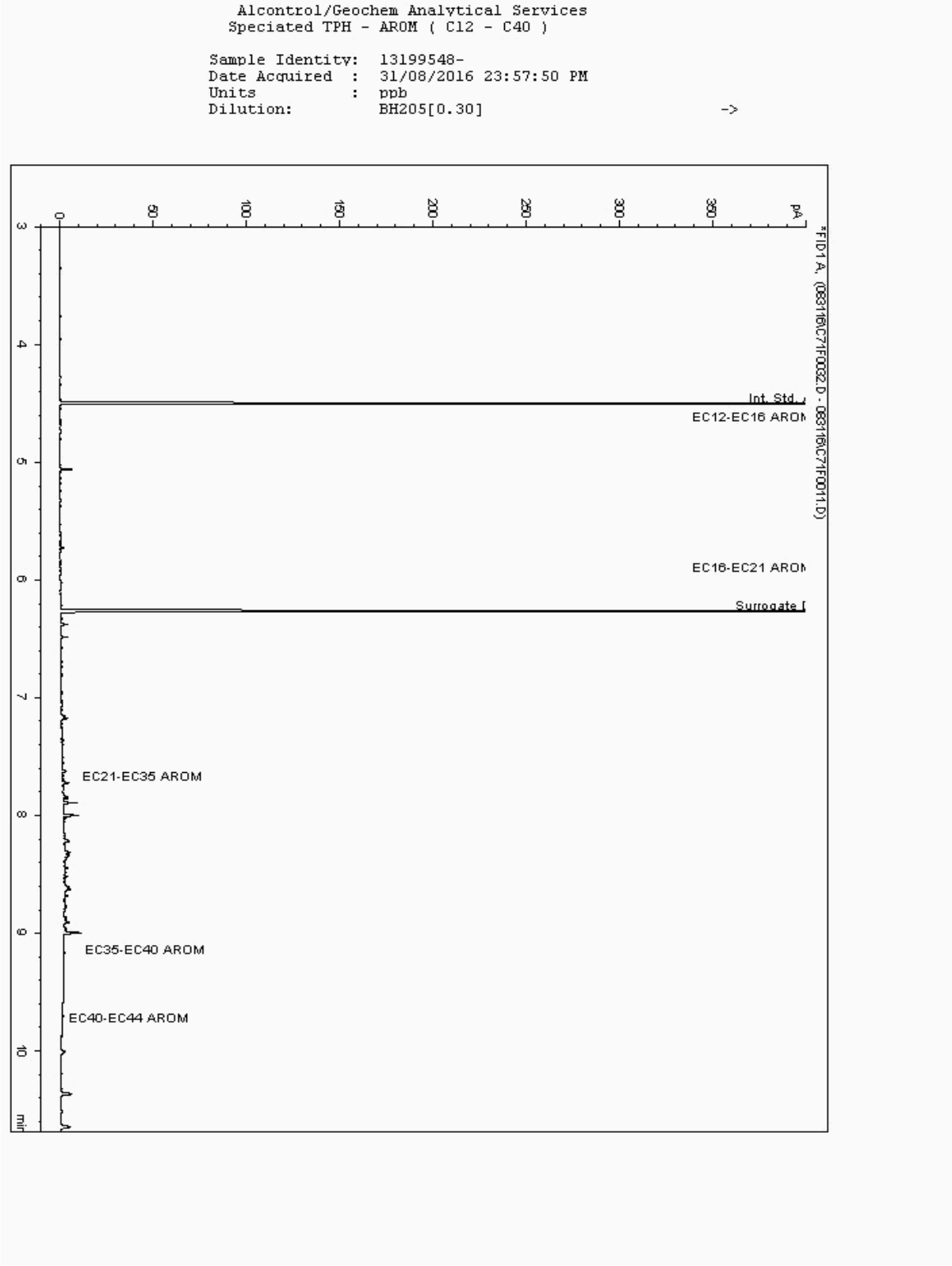
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14054123
Sample ID : BH205

Depth : 0.30



CERTIFICATE OF ANALYSIS

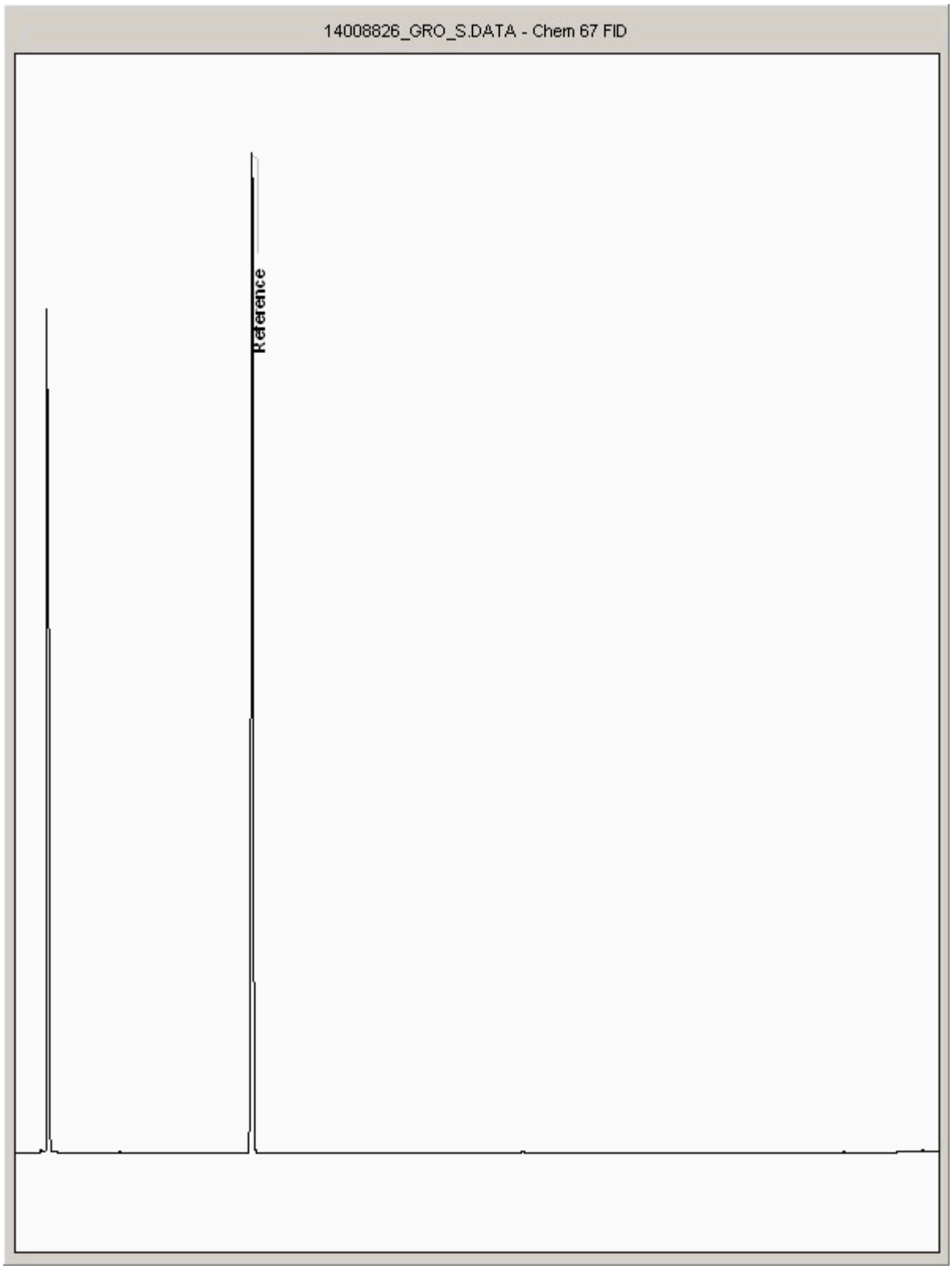
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14008826
Sample ID : BH208

Depth : 4.00



CERTIFICATE OF ANALYSIS

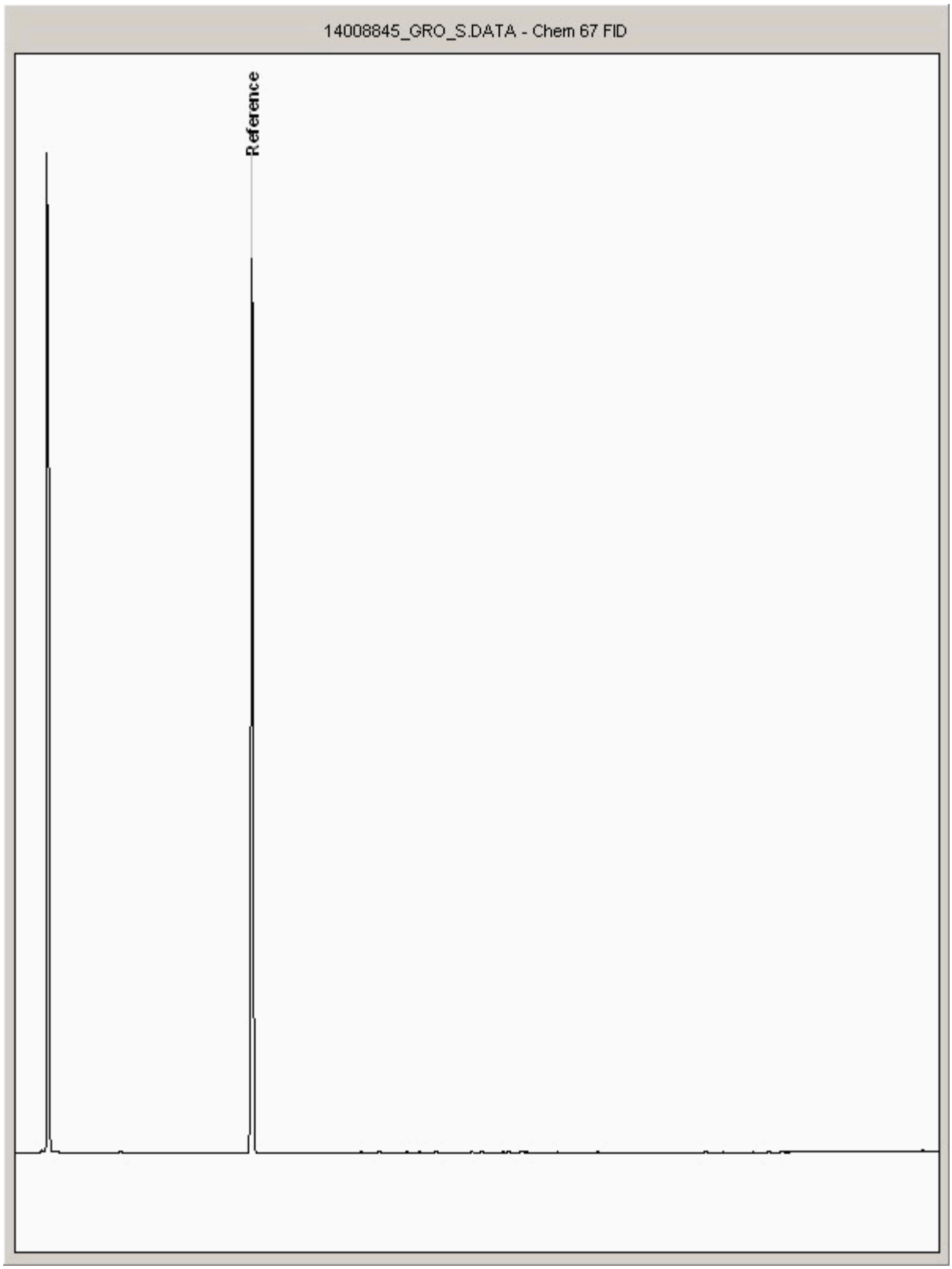
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14008845
Sample ID : BH208

Depth : 2.00



CERTIFICATE OF ANALYSIS

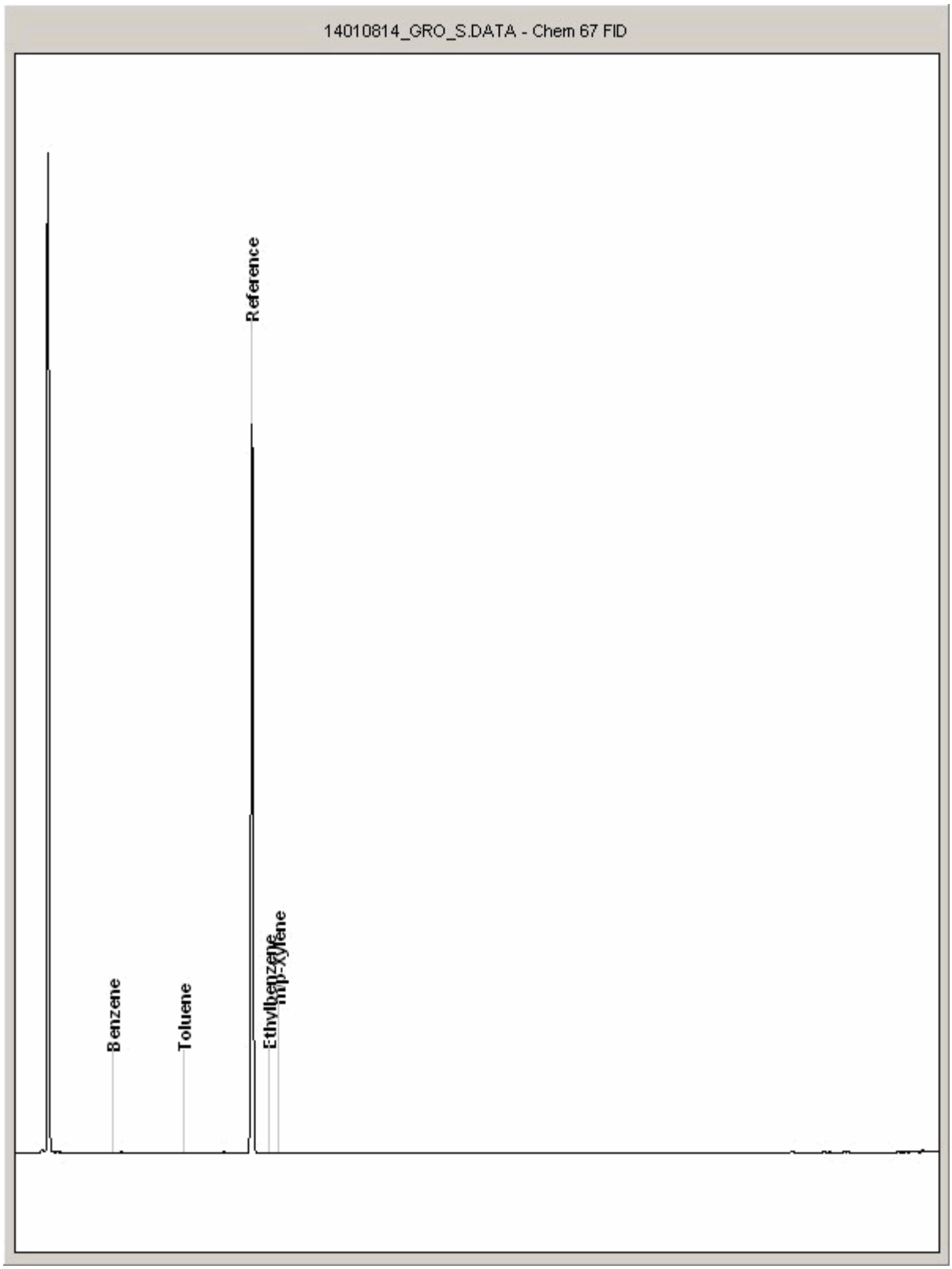
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010814
Sample ID : BH203

Depth : 1.00



CERTIFICATE OF ANALYSIS

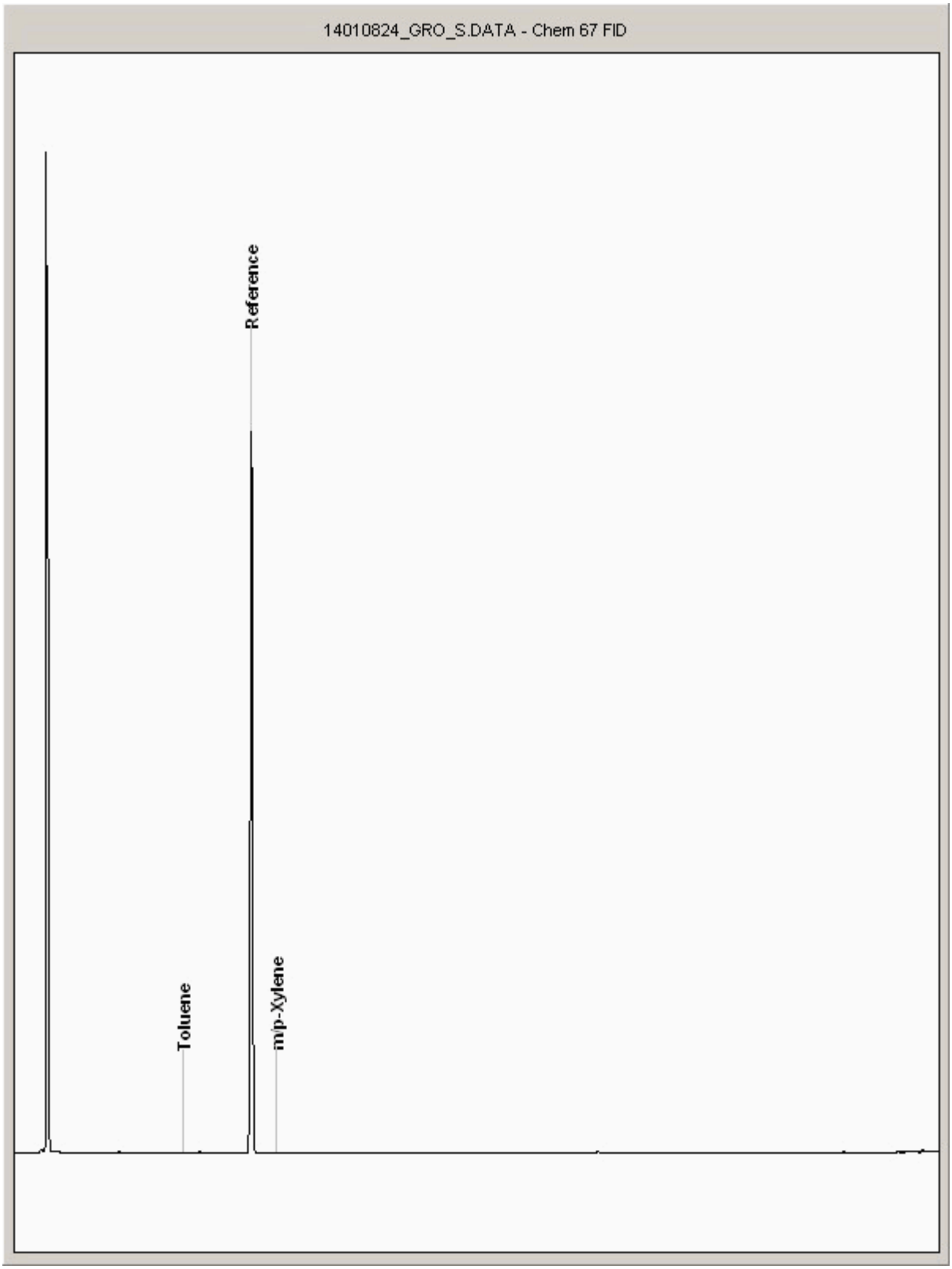
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010824
Sample ID : TP212

Depth : 0.20



CERTIFICATE OF ANALYSIS

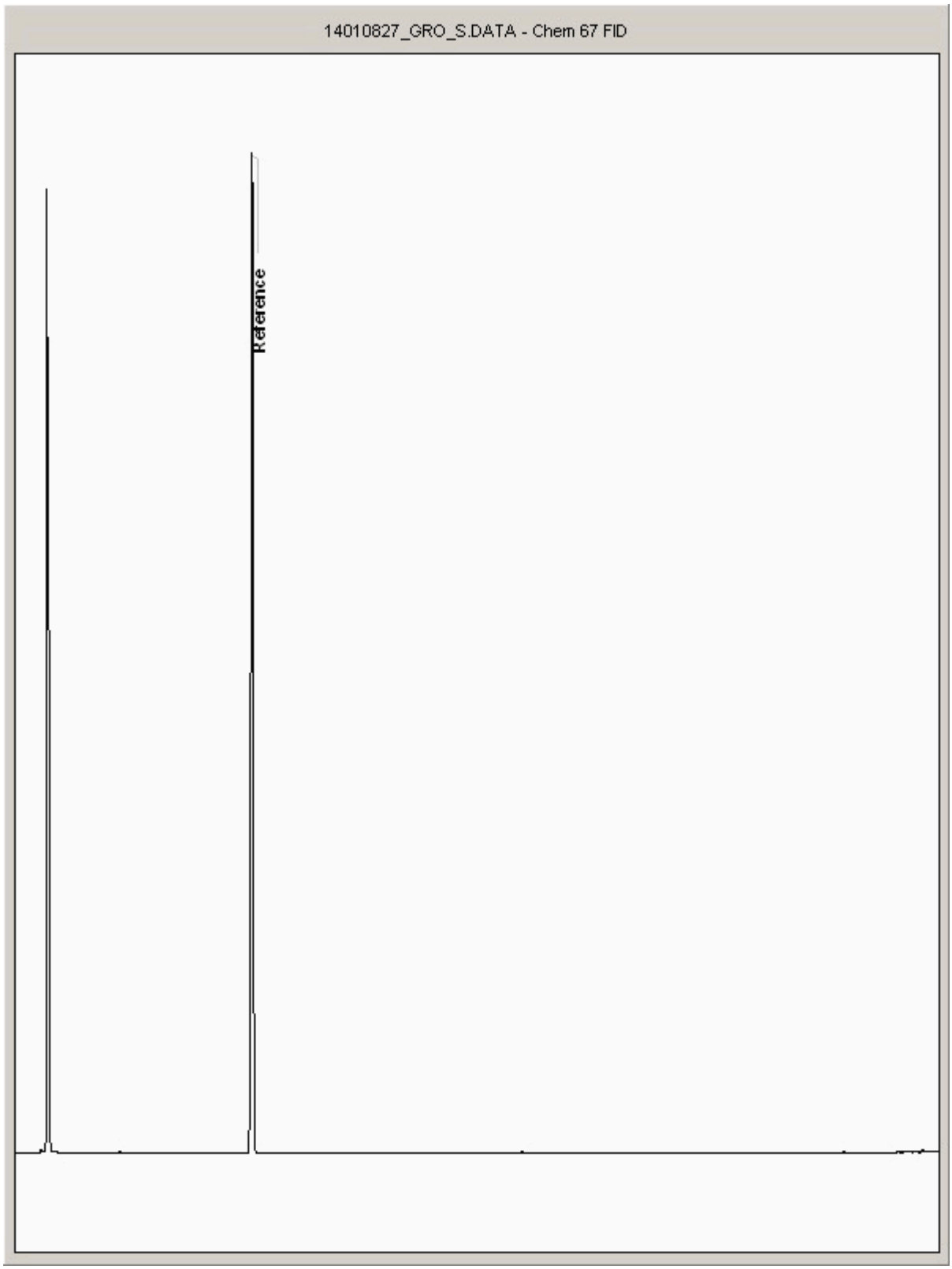
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010827
Sample ID : BH206

Depth : 0.60 - 0.70



CERTIFICATE OF ANALYSIS

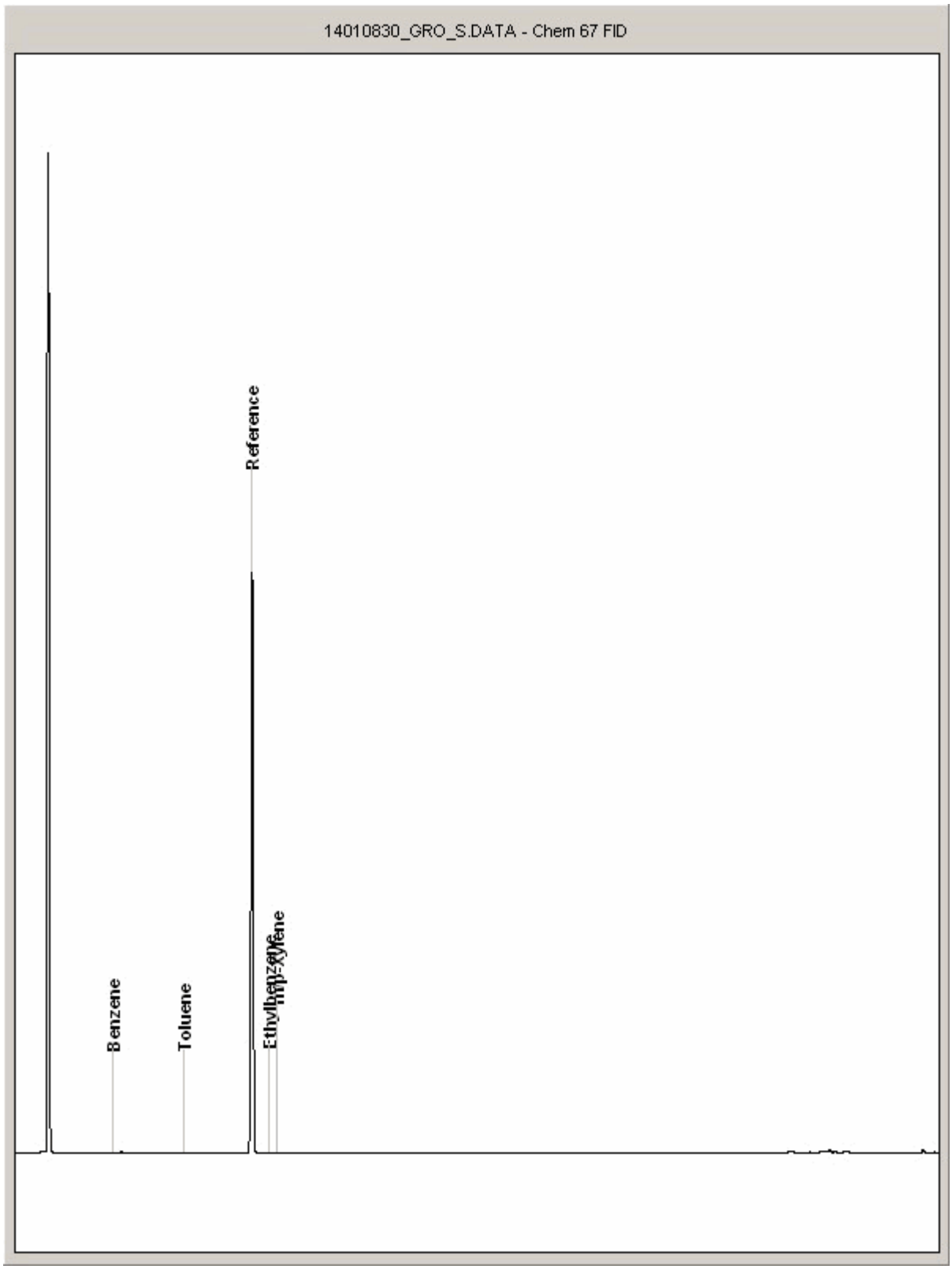
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010830
Sample ID : BH203

Depth : 0.30



CERTIFICATE OF ANALYSIS

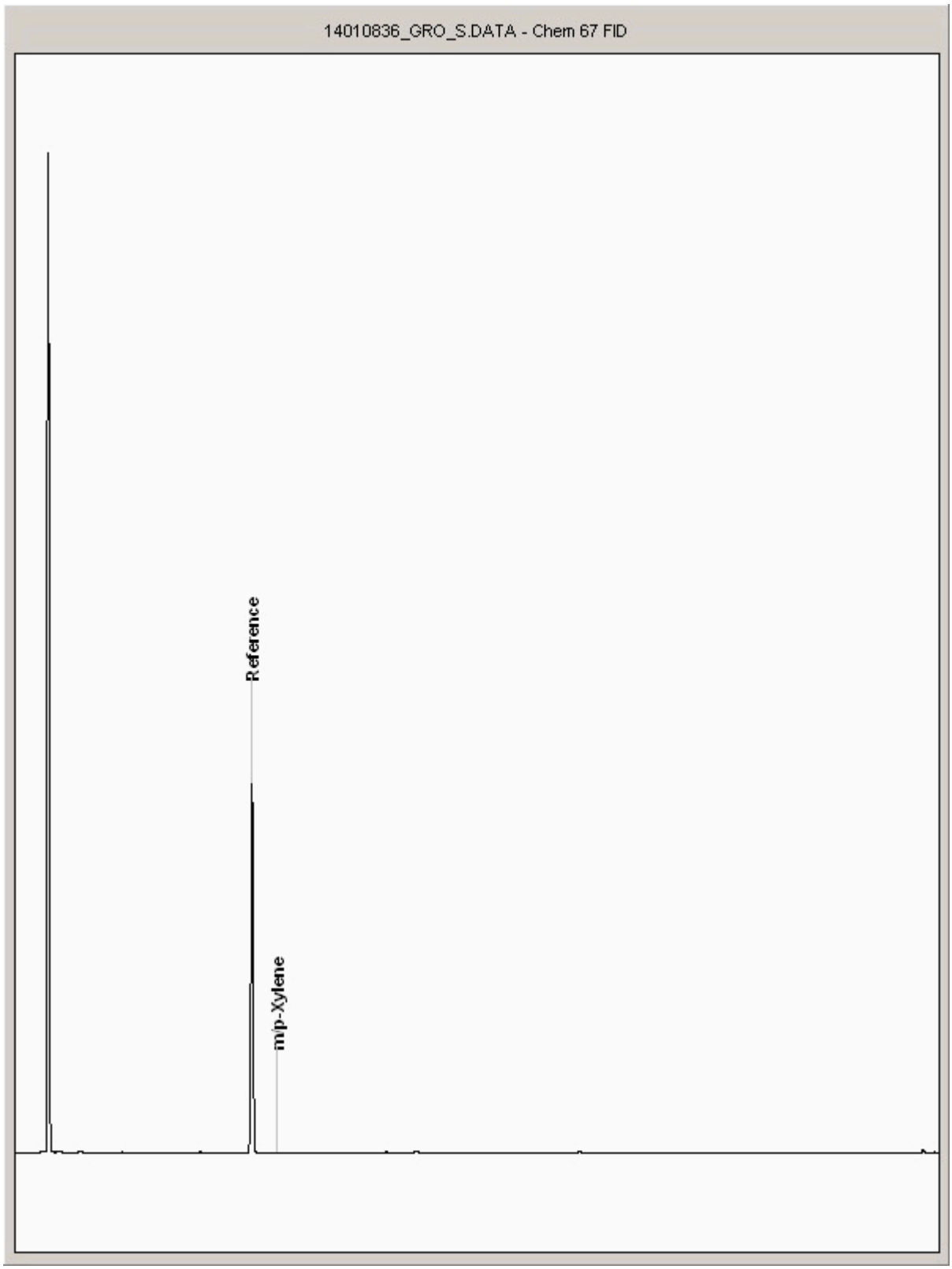
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010836
Sample ID : BH206

Depth : 0.30 - 0.40



CERTIFICATE OF ANALYSIS

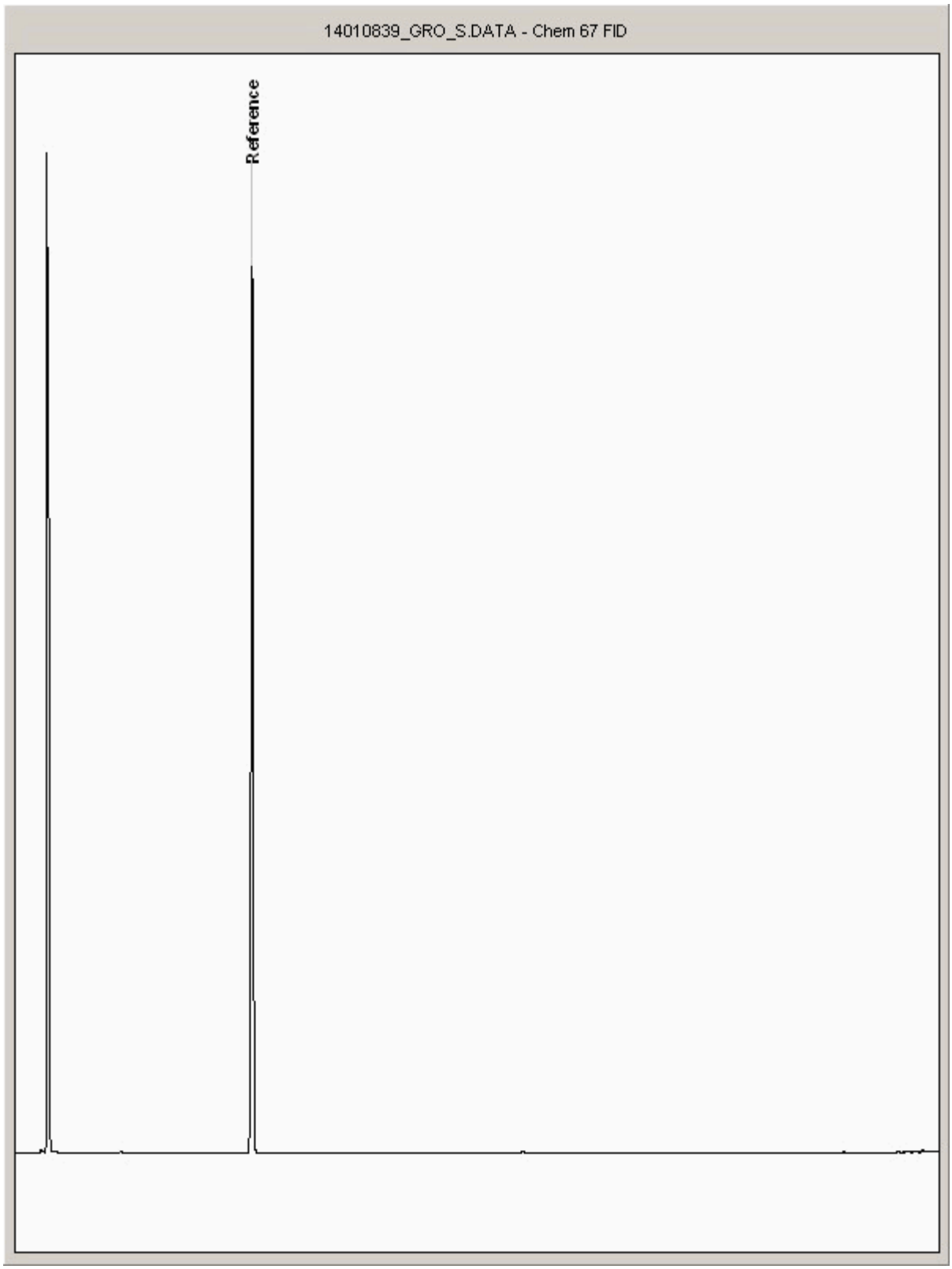
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010839
Sample ID : BH206

Depth : 1.90 - 2.00



CERTIFICATE OF ANALYSIS

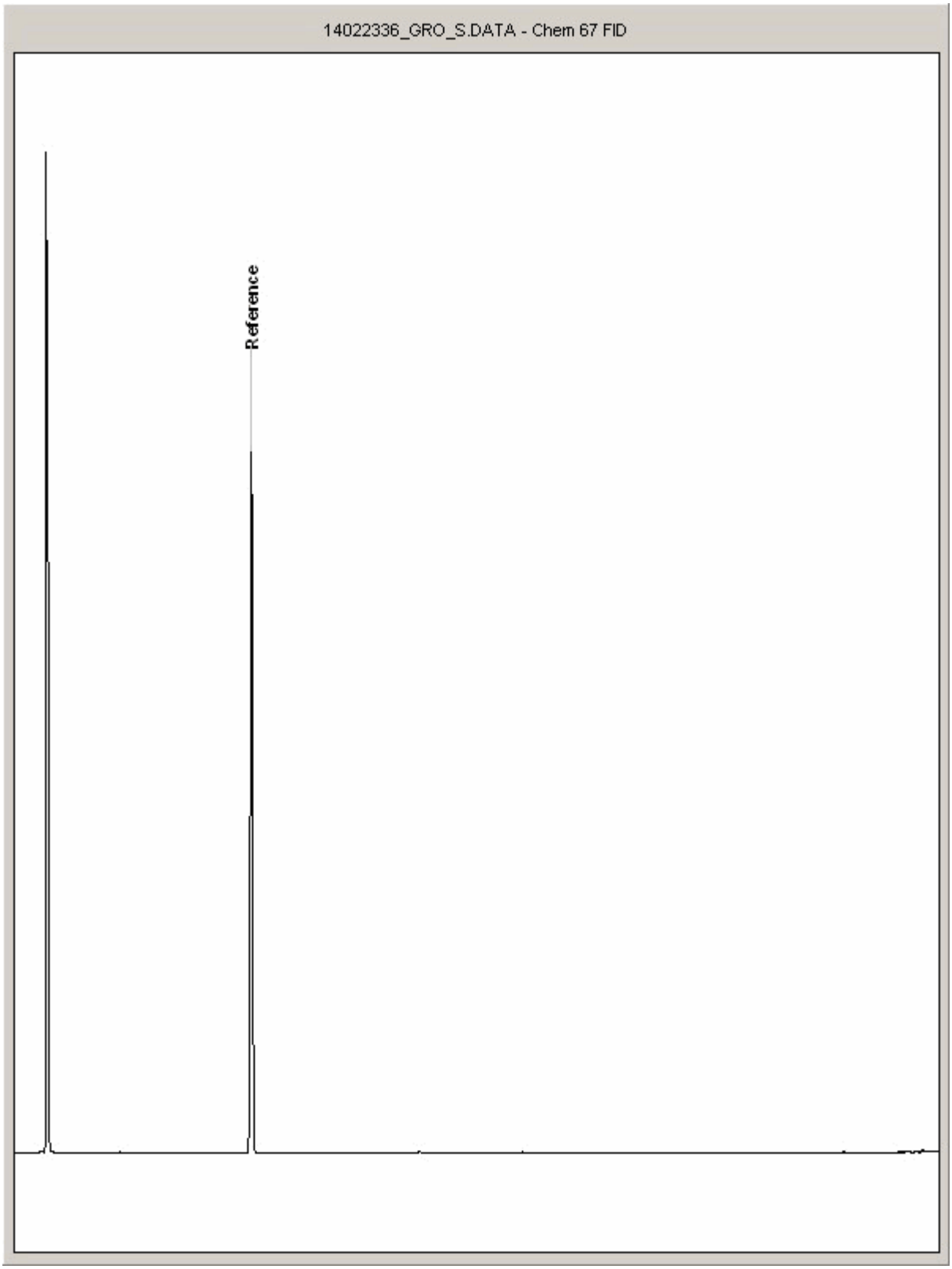
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14022336
Sample ID : BH204

Depth : 5.00



CERTIFICATE OF ANALYSIS

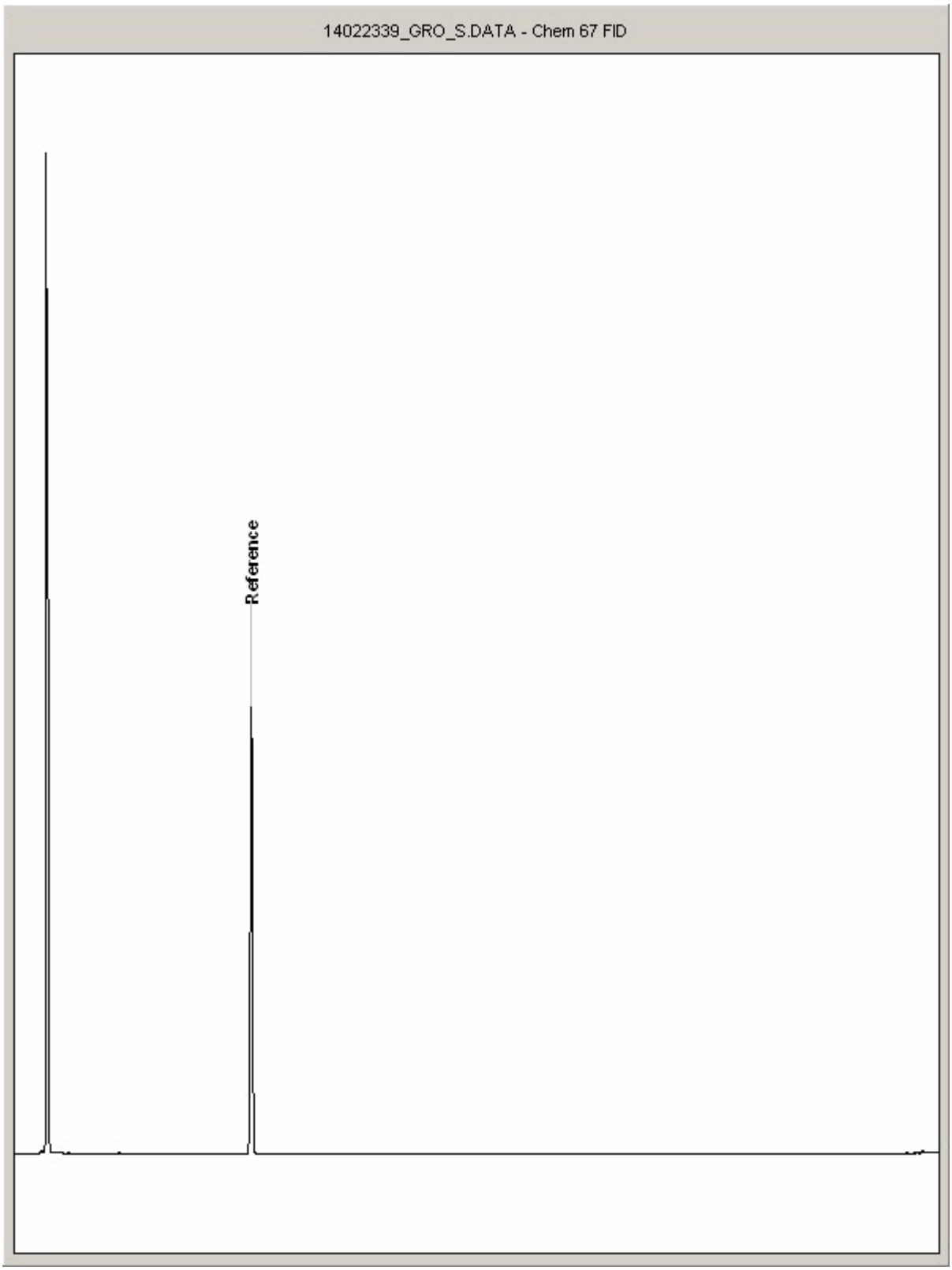
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14022339
Sample ID : BH204

Depth : 0.30



CERTIFICATE OF ANALYSIS

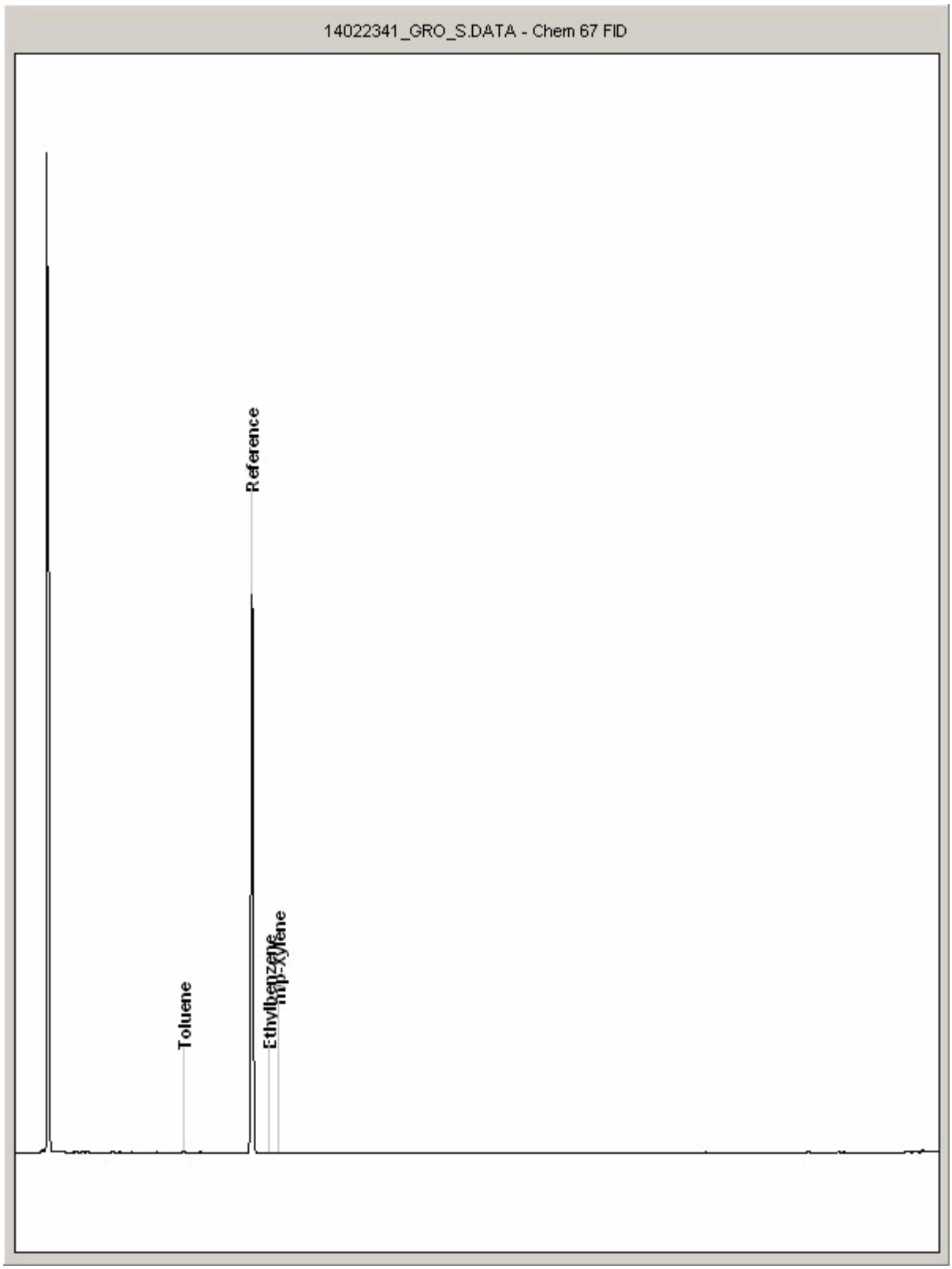
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14022341
Sample ID : BH204

Depth : 0.80



CERTIFICATE OF ANALYSIS

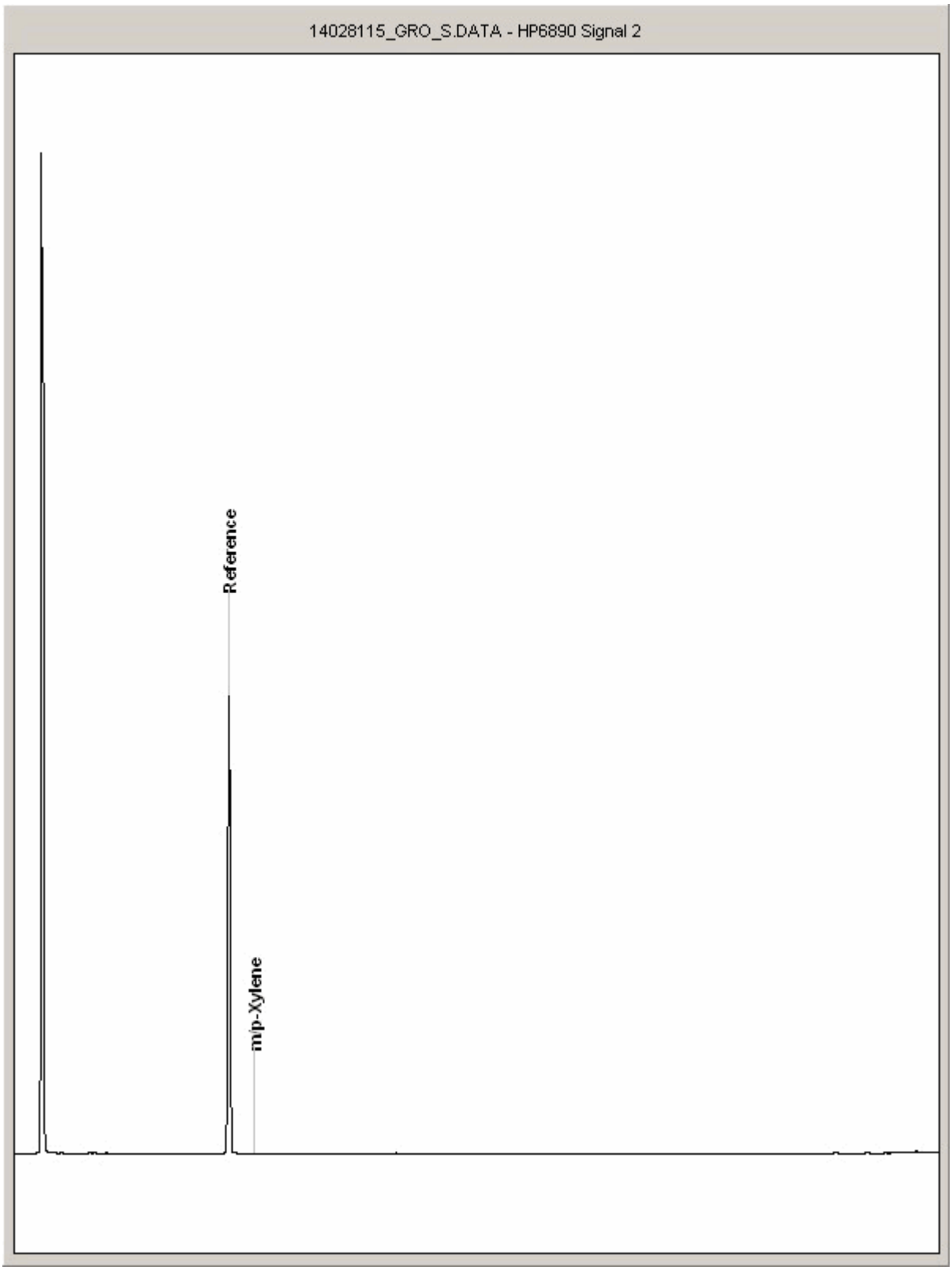
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14028115
Sample ID : TP208

Depth : 0.20



CERTIFICATE OF ANALYSIS

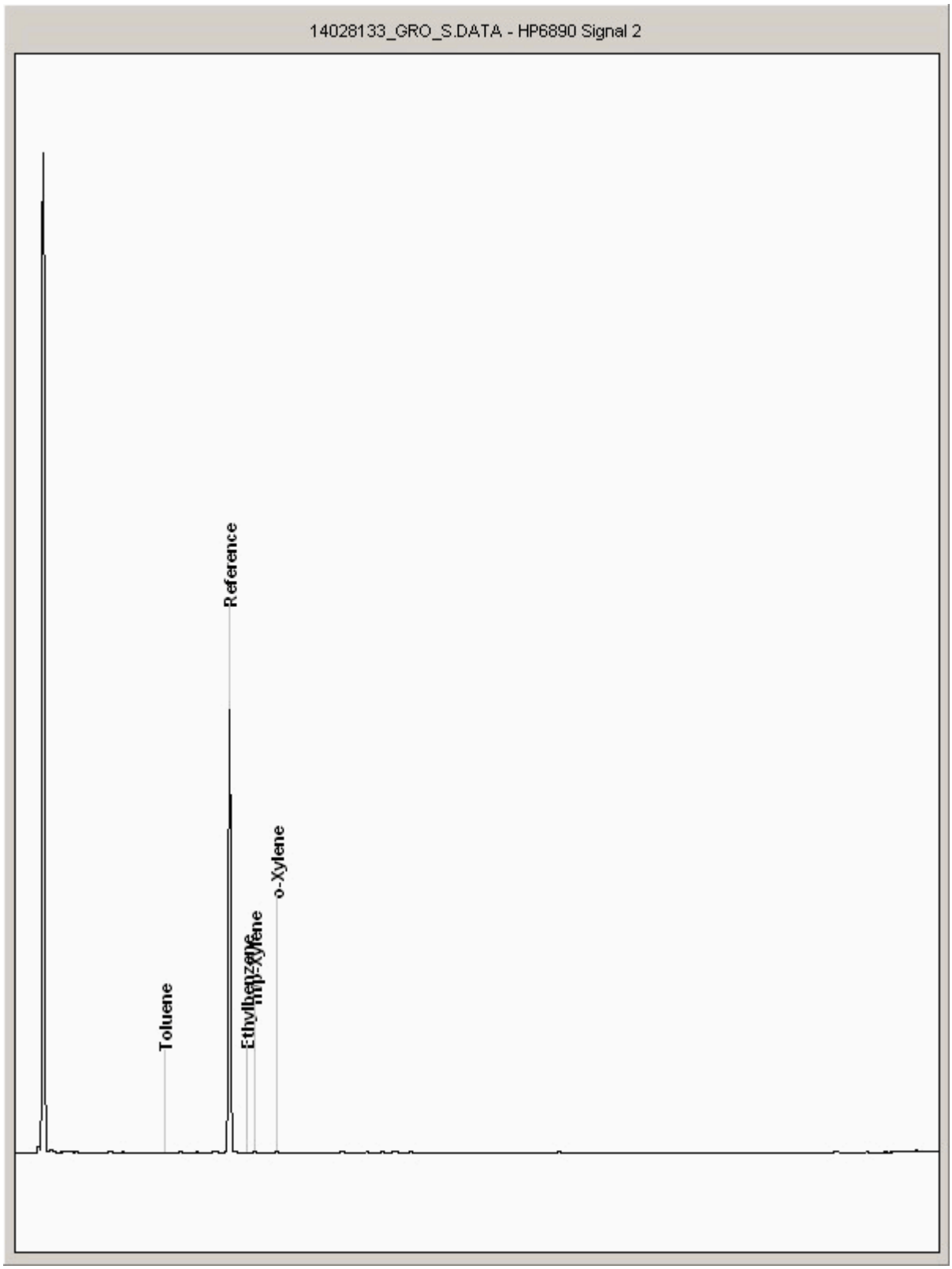
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14028133
Sample ID : TP208

Depth : 1.00



CERTIFICATE OF ANALYSIS

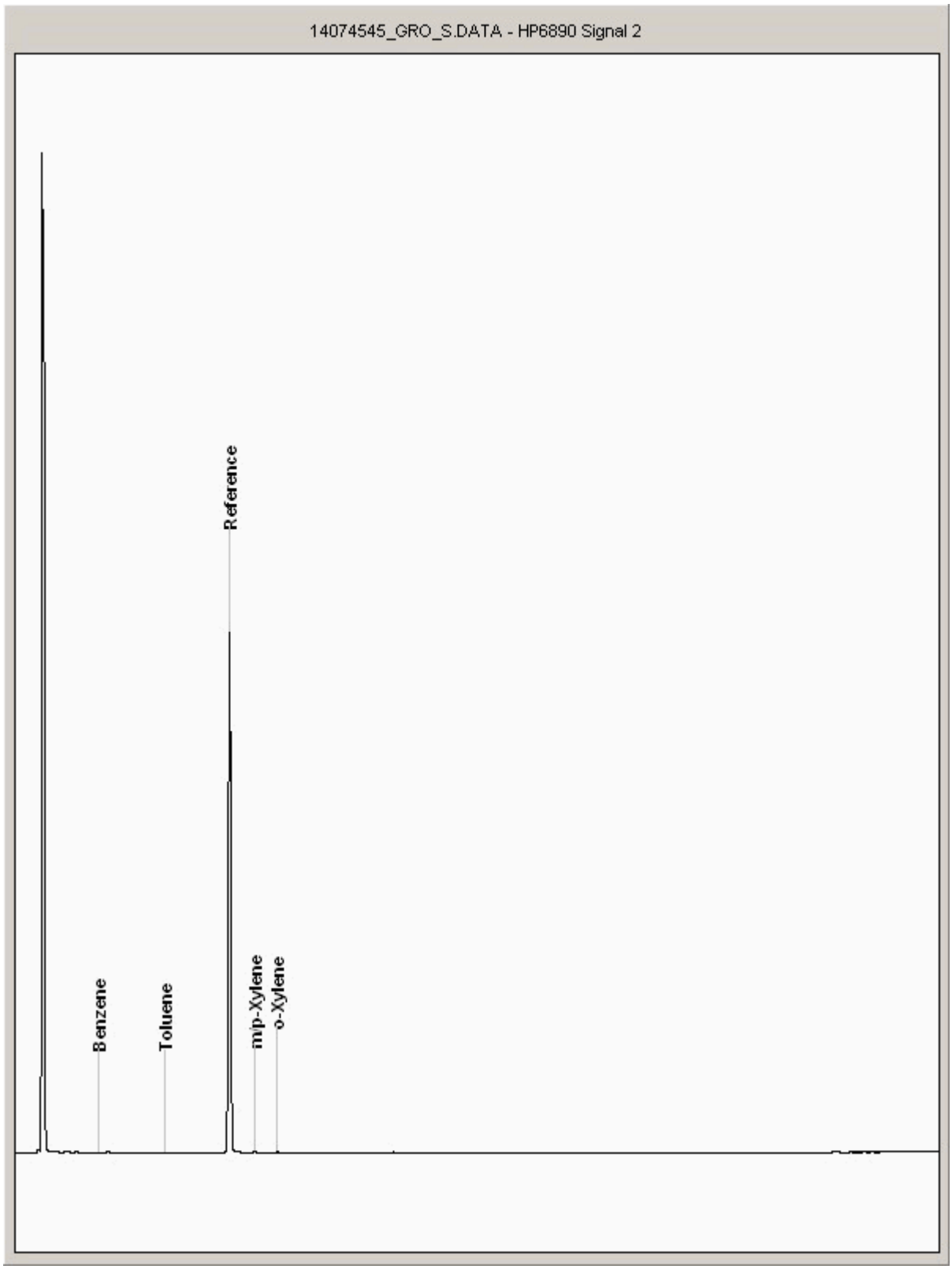
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14074545
Sample ID : BH205

Depth : 0.30



CERTIFICATE OF ANALYSIS

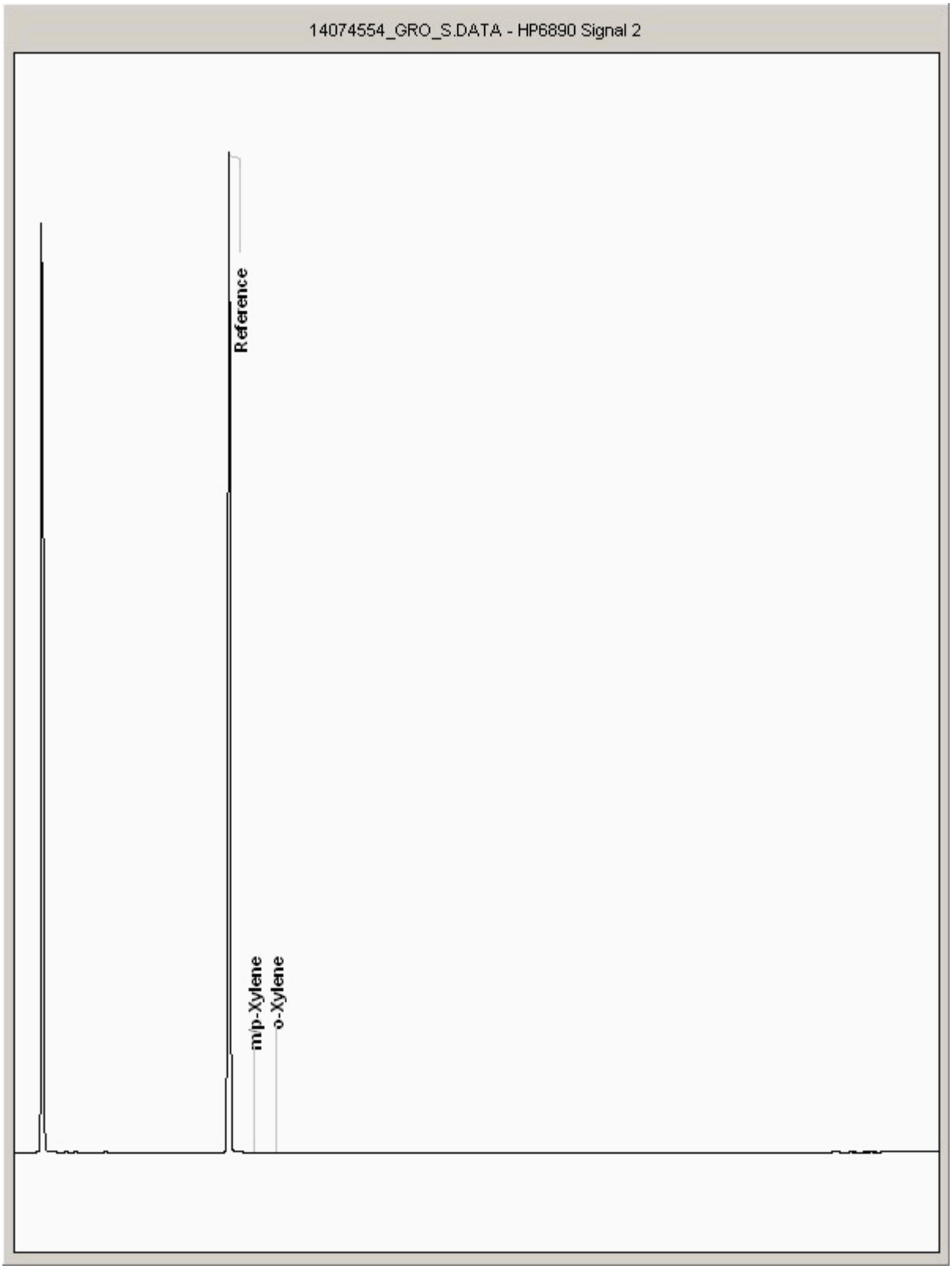
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14074554
Sample ID : BH205

Depth : 0.70



CERTIFICATE OF ANALYSIS

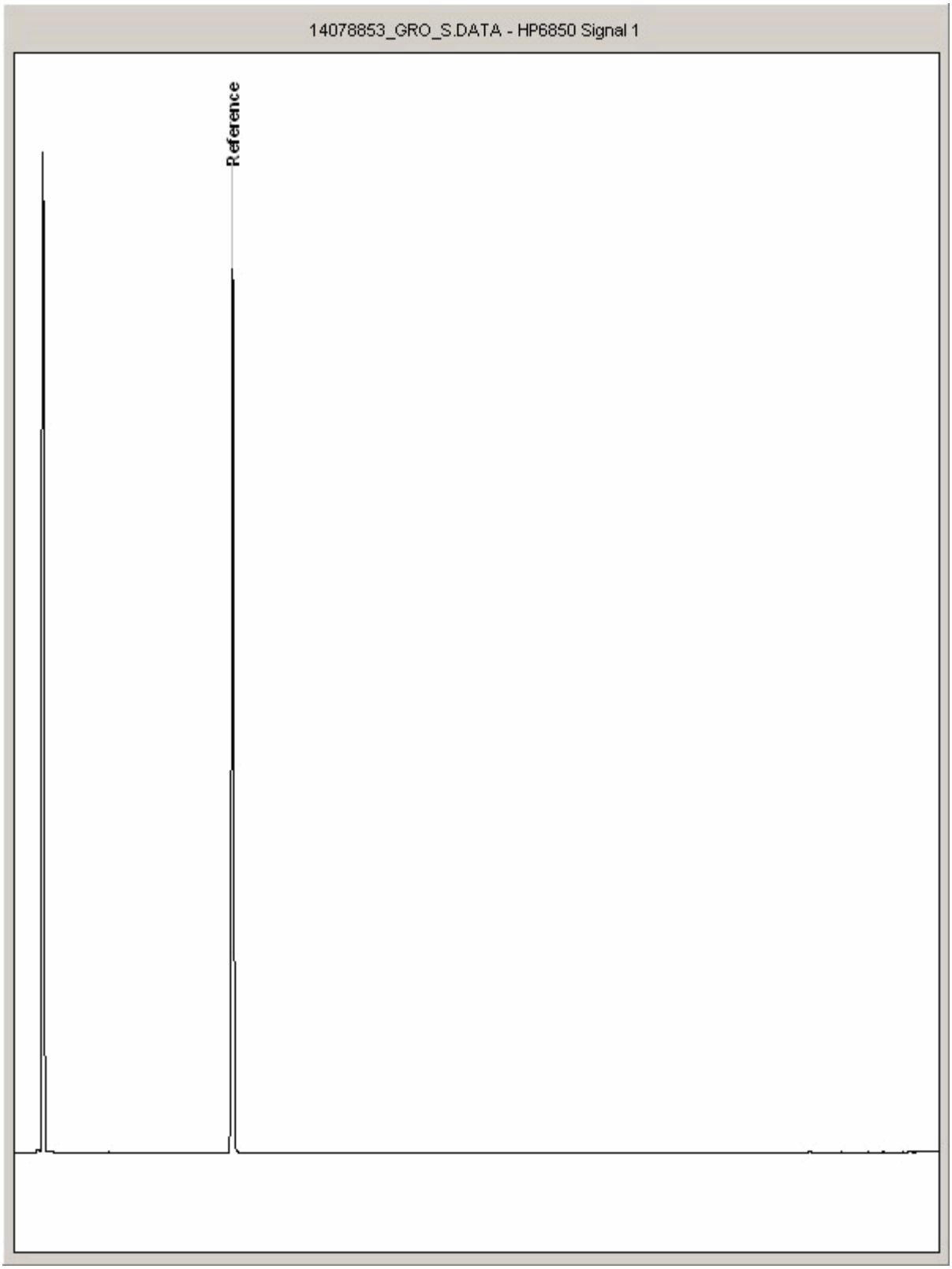
SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14078853
Sample ID : TP208

Depth : 2.30



SDG:	160817-66	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376235
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt . However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect .

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than : - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

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Website: www.alcontrol.com

WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Martin Weil

CERTIFICATE OF ANALYSIS

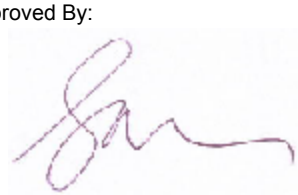
Date:	05 September 2016
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	160822-7
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	376392

We received 20 samples on Monday August 22, 2016 and 7 of these samples were scheduled for analysis which was completed on Monday September 05, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:



Sonia McWhan

Operations Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

ilac-MRA UKAS TESTING 1291

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14018803	BH203	ES	2.00	16/08/2016
14018874	BH203	ES	3.00	16/08/2016
14018892	BH203	ES	3.50	16/08/2016
14018900	BH203	ES	4.00	16/08/2016
14018908	BH203	ES	5.00	16/08/2016
14018915	BH205	ESES3	1.50	16/08/2016
14018924	BH205	ESES5	3.50	16/08/2016
14018931	BH205	ESES6	4.50	16/08/2016
14018939	BH208	ES	5.00	16/08/2016
14018814	BH208	ES	6.00	16/08/2016
14018818	HP204	ESES1	0.30	16/08/2016
14018825	HP204	ESES2	1.00	16/08/2016
14018831	TP212	ES	1.00	16/08/2016
14018838	TP212	ES	2.00	16/08/2016
14018847	TP213	ES	0.40	16/08/2016
14018853	WS209	ES	1.50	16/08/2016
14018862	WS209	ES	2.50	16/08/2016
14018868	WS209	ES	3.60	16/08/2016
14018882	WS210	ES	1.00	16/08/2016
14018884	WS210	ES	1.60	16/08/2016

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
14018803	BH203	ES	2.00	1kg TUB
				250g Amber Jar (AL
				60g VOC (ALE215)
14018931	BH205	ESES6	4.50	1kg TUB
				250g Amber Jar (AL
				60g VOC (ALE215)
14018818	HP204	ESES1	0.30	1kg TUB
				250g Amber Jar (AL
				60g VOC (ALE215)
14018825	HP204	ESES2	1.00	1kg TUB
				250g Amber Jar (AL
				60g VOC (ALE215)
14018831	TP212	ES	1.00	1kg TUB
				250g Amber Jar (AL
				60g VOC (ALE215)
14018847	TP213	ES	0.40	1kg TUB
				250g Amber Jar (AL
				60g VOC (ALE215)
14018882	WS210	ES	1.00	1kg TUB
				60g VOC (ALE215)

Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5							X			X			X			X			X				X
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1													X										
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1				X																			
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 7		X			X			X			X			X			X			X			X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 7		X			X			X			X			X			X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 7			X			X			X			X			X			X			X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 7	X			X			X			X			X			X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 7		X			X			X			X			X			X			X			X
PAH by GCMS	All	NDPs: 0 Tests: 7		X			X			X			X			X			X			X			X
pH	All	NDPs: 0 Tests: 7	X			X			X			X			X			X			X			X	
Sample description	All	NDPs: 0 Tests: 7		X			X			X			X			X			X			X			X
Total Organic Carbon	All	NDPs: 0 Tests: 1		X																					
TPH CWG GC (S)	All	NDPs: 0 Tests: 7		X			X			X			X			X			X			X			X
VOC MS (S)	All	NDPs: 0 Tests: 7			X			X			X			X			X			X			X	X	

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
14018803	BH203	2.00	Light Brown	Sand	0.063 - 2.00 mm	Stones	Vegetation
14018931	BH205	4.50	Red	Clay	<0.002 mm	N/A	N/A
14018818	HP204	0.30	Light Brown	Sand	0.063 - 2.00 mm	Stones	Brick
14018825	HP204	1.00	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14018831	TP212	1.00	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Brick
14018847	TP213	0.40	Light Brown	Sand	0.063 - 2.00 mm	Stones	Vegetation
14018882	WS210	1.00	Light Brown	Loamy Sand	0.063 - 2.00 mm	Vegetation	Crushed Brick

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH205	HP204	HP204	TP212	TP213
			Depth (m)	2.00	4.50	0.30	1.00	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	22/08/2016	22/08/2016	22/08/2016	22/08/2016	22/08/2016	22/08/2016
			SDG Ref	160822-7	160822-7	160822-7	160822-7	160822-7	160822-7
			Lab Sample No.(s)	14018803	14018931	14018818	14018825	14018831	14018847
			AGS Reference	ES	ESES6	ESES1	ESES2	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		2	15	7.5	7.4	9.4	7
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #					
pH	1 pH Units	TM133		8.5 M	7.93 M	8.03 M	8.14 M	8.46 M	6.33 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Complex (low level)	<0.5 mg/kg	TM153			<0.5				
Arsenic	<0.6 mg/kg	TM181		7.54 M	6.42 M	12.8 M	17.5 M	31.4 M	14.1 M
Cadmium	<0.02 mg/kg	TM181		0.038 M	<0.02 M	0.948 M	0.397 M	0.636 M	<0.02 M
Chromium	<0.9 mg/kg	TM181		8.31 M	34.1 M	21.7 M	12.2 M	21.9 M	19.8 M
Copper	<1.4 mg/kg	TM181		5.24 M	20.5 M	25.4 M	180 M	379 M	102 M
Lead	<0.7 mg/kg	TM181		16 M	22.2 M	109 M	1130 M	852 M	249 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	4.94 M	0.903 M
Nickel	<0.2 mg/kg	TM181		5.61 M	42.1 M	17.3 M	85.3 M	32.7 M	21.9 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	1.37 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		18.1 M	56.3 M	124 M	192 M	863 M	88 M

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	
			Depth (m)	1.00
			Sample Type	Soil/Solid
			Date Sampled	16/08/2016
			Sampled Time	.
			Date Received	22/08/2016
			SDG Ref	160822-7
			Lab Sample No.(s)	14018882
			AGS Reference	ES
Moisture Content Ratio (% of as received sample)	%	PM024	13	
pH	1 pH Units	TM133	7.9	M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#
Arsenic	<0.6 mg/kg	TM181	9.72	M
Cadmium	<0.02 mg/kg	TM181	0.145	M
Chromium	<0.9 mg/kg	TM181	24	M
Copper	<1.4 mg/kg	TM181	58.6	M
Lead	<0.7 mg/kg	TM181	217	M
Mercury	<0.14 mg/kg	TM181	<0.14	M
Nickel	<0.2 mg/kg	TM181	27.7	M
Selenium	<1 mg/kg	TM181	1.4	#
Zinc	<1.9 mg/kg	TM181	56.9	M

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH205	HP204	HP204	TP212	TP213
			Depth (m)	2.00	4.50	0.30	1.00	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	22/08/2016	22/08/2016	22/08/2016	22/08/2016	22/08/2016	22/08/2016
			SDG Ref	160822-7	160822-7	160822-7	160822-7	160822-7	160822-7
			Lab Sample No.(s)	14018803	14018931	14018818	14018825	14018831	14018847
			AGS Reference	ES	ESES6	ESES1	ESES2	ES	ES
Naphthalene-d8 % recovery**	%	TM218		96.7	110	107	107	102	96.6
Acenaphthene-d10 % recovery**	%	TM218		95.6	106	102	101	99	95.4
Phenanthrene-d10 % recovery**	%	TM218		95.1	103	101	100	99.6	94.3
Chrysene-d12 % recovery**	%	TM218		90.4	97.7	98.5	95.5	101	88.7
Perylene-d12 % recovery**	%	TM218		95.6	106	106	101	109	93.4
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M	0.0145 M	0.0314 M	0.552 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M	0.0764 M	0.0369 M	0.596 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	0.0906 M	0.0255 M	0.182 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	0.0529 M	0.0167 M	0.168 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		0.017 M	<0.015 M	0.646 M	0.263 M	3.04 M	0.0688 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	0.244 M	0.0655 M	1.4 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		0.0207 M	<0.017 M	1.57 M	0.588 M	11.1 M	0.106 M
Pyrene	<0.015 mg/kg	TM218		0.0167 M	<0.015 M	1.34 M	0.53 M	11 M	0.0891 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M	0.507 M	0.0759 M	4.94 M	0.0729 M
Chrysene	<0.01 mg/kg	TM218		0.0105 M	<0.01 M	0.569 M	0.306 M	5.31 M	0.0596 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0173 M	<0.015 M	1.03 M	0.536 M	13.7 M	0.109 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M	0.341 M	0.211 M	4.49 M	0.035 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	0.837 M	0.402 M	10.6 M	0.0693 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M	0.463 M	0.233 M	8.37 M	0.0428 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	0.132 M	0.0688 M	2.17 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M	0.529 M	0.267 M	9.92 M	0.054 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118	8.44	3.66	87.5	0.707

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	
			Depth (m)	1.00
			Sample Type	Soil/Solid
			Date Sampled	16/08/2016
			Sampled Time	.
			Date Received	22/08/2016
			SDG Ref	160822-7
			Lab Sample No.(s)	14018882
			AGS Reference	ES
Naphthalene-d8 % recovery**	%	TM218	100	
Acenaphthene-d10 % recovery**	%	TM218	98.1	
Phenanthrene-d10 % recovery**	%	TM218	98.9	
Chrysene-d12 % recovery**	%	TM218	97.8	
Perylene-d12 % recovery**	%	TM218	110	
Naphthalene	<0.009 mg/kg	TM218	<0.009 M	
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M	
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M	
Fluorene	<0.01 mg/kg	TM218	<0.01 M	
Phenanthrene	<0.015 mg/kg	TM218	0.0276 M	
Anthracene	<0.016 mg/kg	TM218	<0.016 M	
Fluoranthene	<0.017 mg/kg	TM218	0.0652 M	
Pyrene	<0.015 mg/kg	TM218	0.0572 M	
Benz(a)anthracene	<0.014 mg/kg	TM218	0.0334 M	
Chrysene	<0.01 mg/kg	TM218	0.0143 M	
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.0956 M	
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.0317 M	
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.0502 M	
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.0344 M	
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M	
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.0385 M	
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	0.448	

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH205	HP204	HP204	TP212	TP213
			Depth (m)	2.00	4.50	0.30	1.00	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	22/08/2016	22/08/2016	22/08/2016	22/08/2016	22/08/2016	22/08/2016
			SDG Ref	160822-7	160822-7	160822-7	160822-7	160822-7	160822-7
			Lab Sample No.(s)	14018803	14018931	14018818	14018825	14018831	14018847
			AGS Reference	ES	ESES6	ESES1	ESES2	ES	ES
GRO Surrogate % recovery**	%	TM089		110	115 @	125 @	101 @	23	112
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 @ M	<0.044 @ M	<0.044 @ M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	<0.1	1	<0.1	2.61	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	<0.1	3.19	<0.1	22.3	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173		2.14	0.887	30	3.76	199	3.56
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	6.03	<0.1	39.9	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		2.14	0.887	40.2	3.76	264	3.56
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01 @	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	<0.1	0.675	0.329	5	0.584
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.558	<0.1	6.53	1.63	42.3	2.22
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		3.5	1.05	37.7	10.9	298	14.8
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		1.67	<0.1	17	3.49	111	3.95
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		0.562	<0.1	6.52	1.14	37.6	1.08
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		5.73	1.05	61.9	16.4	456	21.5
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		7.88	1.94	102	20.1	720	25.1
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		4.06	1.05	44.2	12.6	340	17

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Customer Sample R	WS210
Depth (m)	1.00
Sample Type	Soil/Solid
Date Sampled	16/08/2016
Sampled Time	.
Date Received	22/08/2016
SDG Ref	160822-7
Lab Sample No.(s)	14018882
AGS Reference	ES

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	94 2
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089	<0.044 2 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01 2
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01 2
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01 2
Aliphatics >C10-C12	<0.01 mg/kg	TM089	<0.01 2
Aliphatics >C12-C16	<0.1 mg/kg	TM173	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173	0.968
Aliphatics >C35-C44	<0.1 mg/kg	TM173	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	0.968
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01 2
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01 2
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01 2
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	<0.01 2
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	0.589
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	3.44
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	0.723
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	<0.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	4.75
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	5.72
Aromatics >EC16-EC35	<0.1 mg/kg	TM173	4.03

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH205	HP204	HP204	TP212	TP213
			Depth (m)	2.00	4.50	0.30	1.00	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	22/08/2016	22/08/2016	22/08/2016	22/08/2016	22/08/2016	22/08/2016
			SDG Ref	160822-7	160822-7	160822-7	160822-7	160822-7	160822-7
			Lab Sample No.(s)	14018803	14018931	14018818	14018825	14018831	14018847
			AGS Reference	ES	ESES6	ESES1	ESES2	ES	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 @ M	<0.1 @ M	<0.1 @ M	<0.1 M	<0.1 M
Benzene	<0.009 mg/kg	TM116		<0.09 M	<0.09 @ M	<0.09 @ M	<0.09 @ M	<0.09 M	<0.09 M
Toluene	<0.007 mg/kg	TM116		<0.07 M	<0.07 @ M	<0.07 @ M	<0.07 @ M	<0.07 M	<0.07 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 M	<0.04 @ M	<0.04 @ M	<0.04 @ M	<0.04 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 @ #	<0.1 @ #	<0.1 @ #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 M	<0.1 @ M	<0.1 @ M	<0.1 @ M	<0.1 M	<0.1 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 @ #	<0.1 @ #	<0.1 @ #	<0.1 #	<0.1 #

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample R	WS210
Depth (m)	1.00
Sample Type	Soil/Solid
Date Sampled	16/08/2016
Sampled Time	.
Date Received	22/08/2016
SDG Ref	160822-7
Lab Sample No.(s)	14018882
AGS Reference	ES

Component	LOD/Units	Method	
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 2 M
Benzene	<0.009 mg/kg	TM116	<0.09 2 M
Toluene	<0.007 mg/kg	TM116	<0.07 2 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 2 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 2 #
o-Xylene	<0.01 mg/kg	TM116	<0.1 2 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 2 #

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP204 ES ES1 0.30 SOLID 16/08/2016 00:00:00 26/08/2016 11:48:48 160822-7 14018818 TM048	02/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP204 ES ES2 1.00 SOLID 16/08/2016 00:00:00 26/08/2016 11:51:43 160822-7 14018825 TM048	02/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP212 ES 1.00 SOLID 16/08/2016 00:00:00 22/08/2016 13:17:32 160822-7 14018831 TM048	25/08/16	Kevin Bowron	Loose fibres in soil	Not Detected (#)	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP213 ES 0.40 SOLID 16/08/2016 00:00:00 23/08/2016 09:10:27 160822-7 14018847 TM048	25/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS210 ES 1.00 SOLID 16/08/2016 00:00:00 23/08/2016 07:57:25 160822-7 14018882 TM048	25/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP212 ES 1.00 SOLID 16/08/2016 00:00:00 30/08/2016 13:51:36 160822-7 14018831 TM 304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	14018803	14018931	14018818	14018825	14018831	14018847	14018882
Customer Sample Ref.	BH203	BH205	HP204	HP204	TP212	TP213	WS210
AGS Ref.	ES	ESES6	ESES1	ESES2	ES	ES	ES
Depth	2.00	4.50	0.30	1.00	1.00	0.40	1.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples			02-Sep-2016	02-Sep-2016	26-Aug-2016	26-Aug-2016	26-Aug-2016
Asbestos Quantification - Full					05-Sep-2016		
Cyanide Comp/Free/Total/Thiocyanate		01-Sep-2016					
EPH CWG (Aliphatic) GC (S)	25-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016
EPH CWG (Aromatic) GC (S)	25-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016
GRO by GC-FID (S)	26-Aug-2016	02-Sep-2016	02-Sep-2016	02-Sep-2016	25-Aug-2016	25-Aug-2016	26-Aug-2016
Hexavalent Chromium (s)	26-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	26-Aug-2016	26-Aug-2016	26-Aug-2016
Metals in solid samples by OES	25-Aug-2016	01-Sep-2016	02-Sep-2016	02-Sep-2016	25-Aug-2016	25-Aug-2016	30-Aug-2016
PAH by GCMS	26-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	25-Aug-2016	26-Aug-2016	25-Aug-2016
pH	25-Aug-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016
Sample description	22-Aug-2016	26-Aug-2016	26-Aug-2016	26-Aug-2016	22-Aug-2016	22-Aug-2016	23-Aug-2016
Total Organic Carbon	26-Aug-2016						
TPH CWG GC (S)	26-Aug-2016	02-Sep-2016	02-Sep-2016	02-Sep-2016	25-Aug-2016	25-Aug-2016	26-Aug-2016
VOC MS (S)	26-Aug-2016	02-Sep-2016	02-Sep-2016	02-Sep-2016	25-Aug-2016	25-Aug-2016	26-Aug-2016

CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

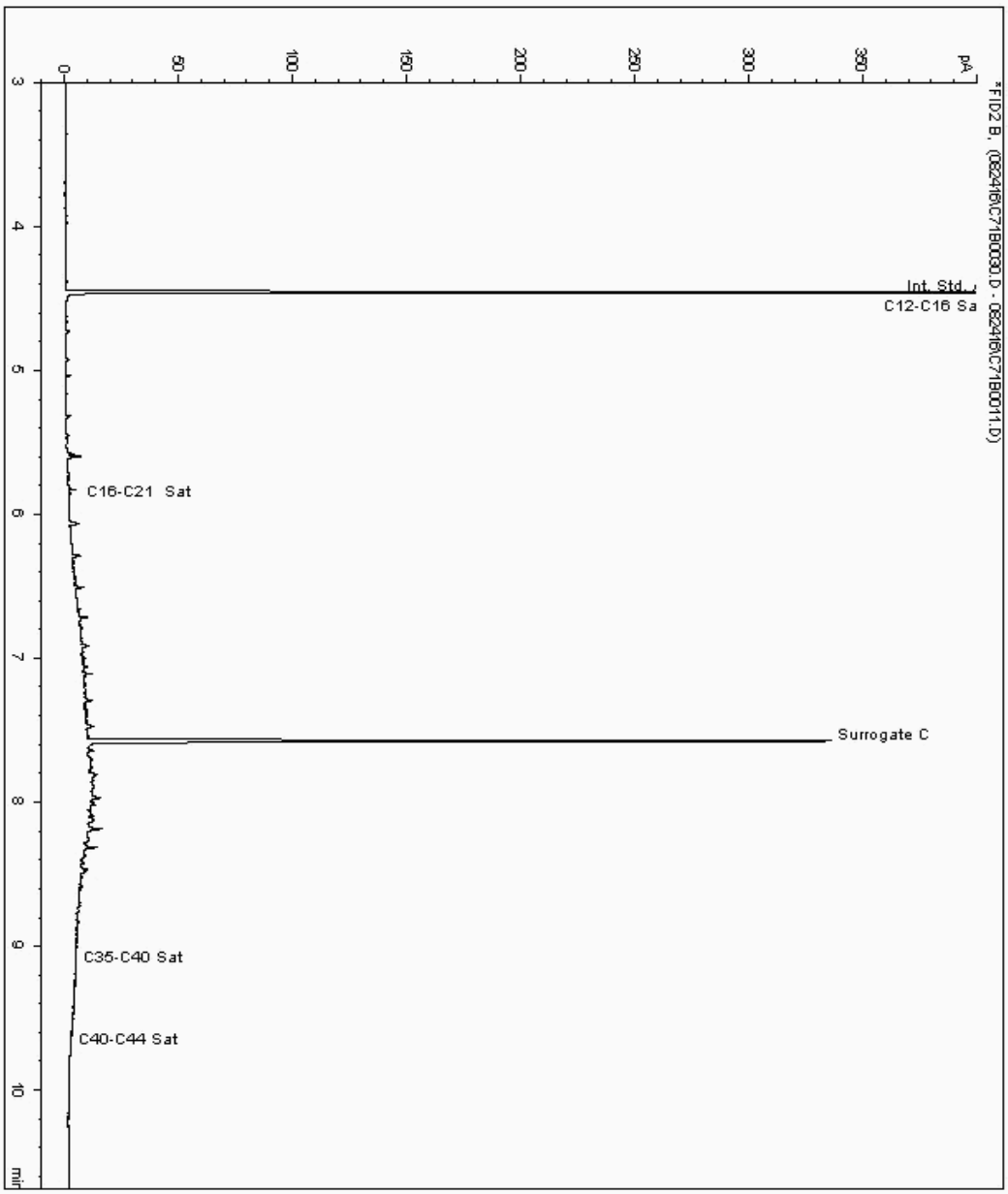
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14020029
Sample ID : TP212

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13174484-
Date Acquired : 25/08/2016 02:15:33 PM
Units : ppb
Dilution: TP212[1.00] ->



CERTIFICATE OF ANALYSIS

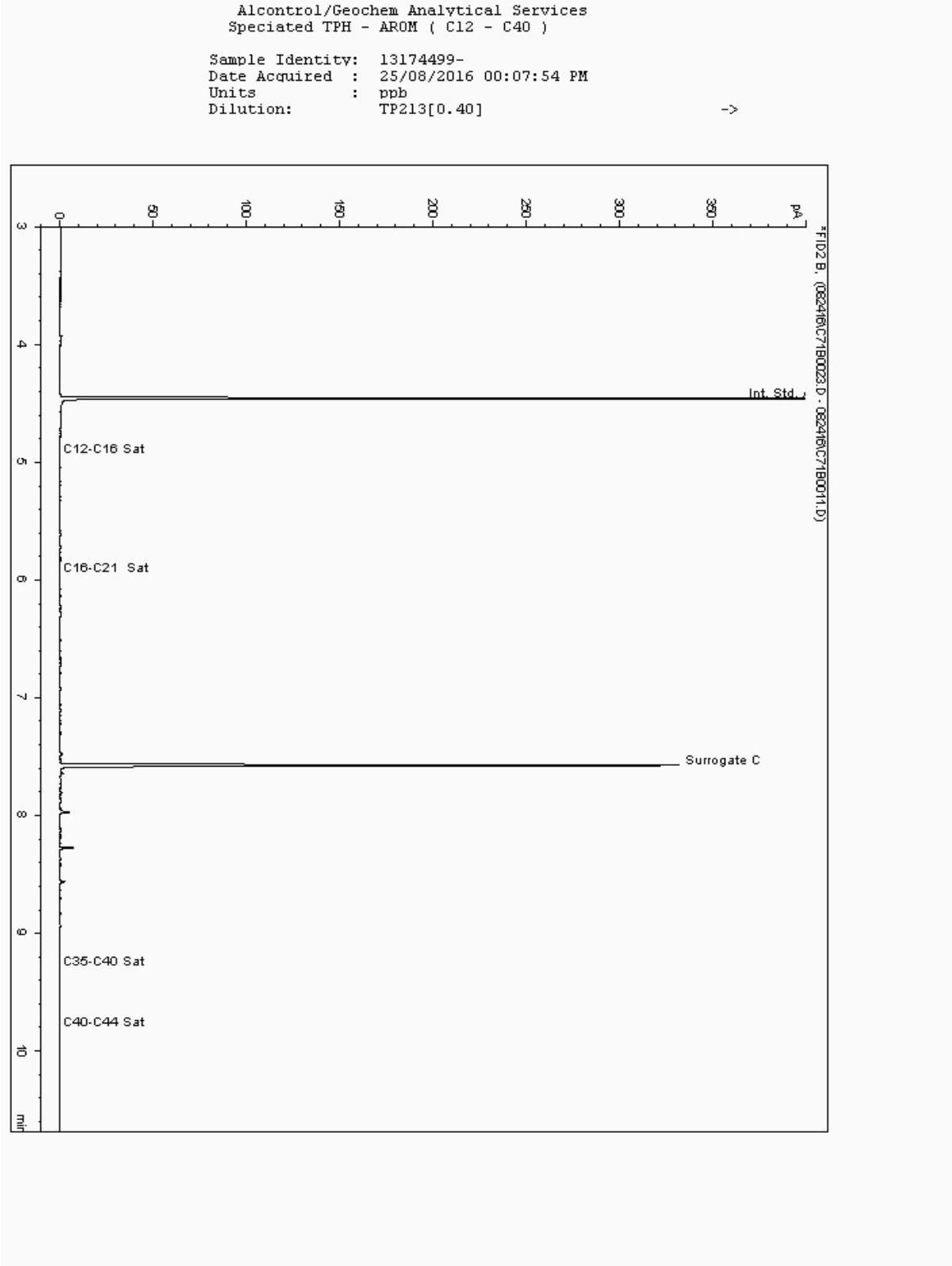
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14020083
Sample ID : TP213

Depth : 0.40



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

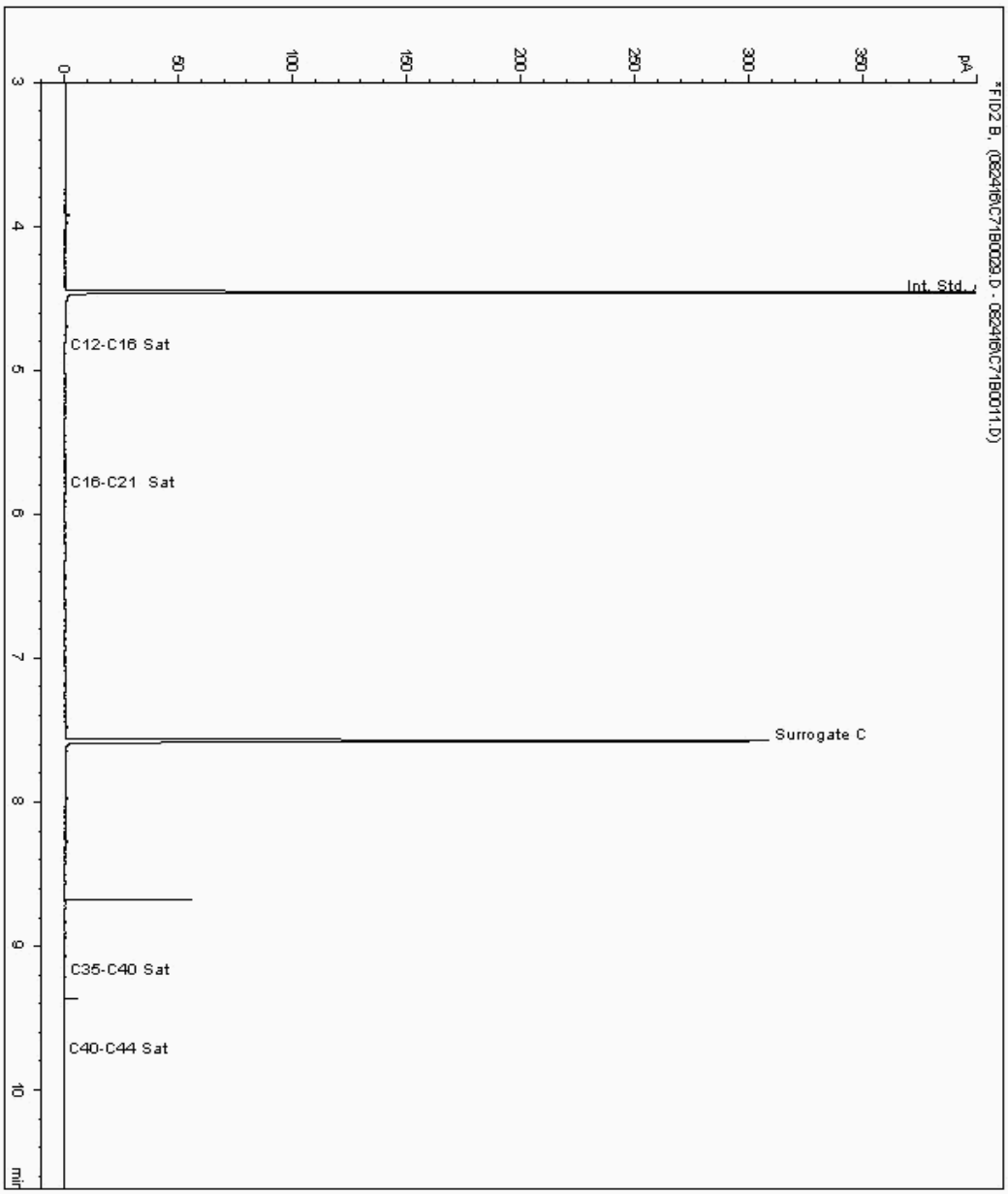
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14020369
Sample ID : BH203

Depth : 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13174470-
Date Acquired : 25/08/2016 01:54:53 PM
Units : ppb
Dilution: BH203[2.00] ->



CERTIFICATE OF ANALYSIS

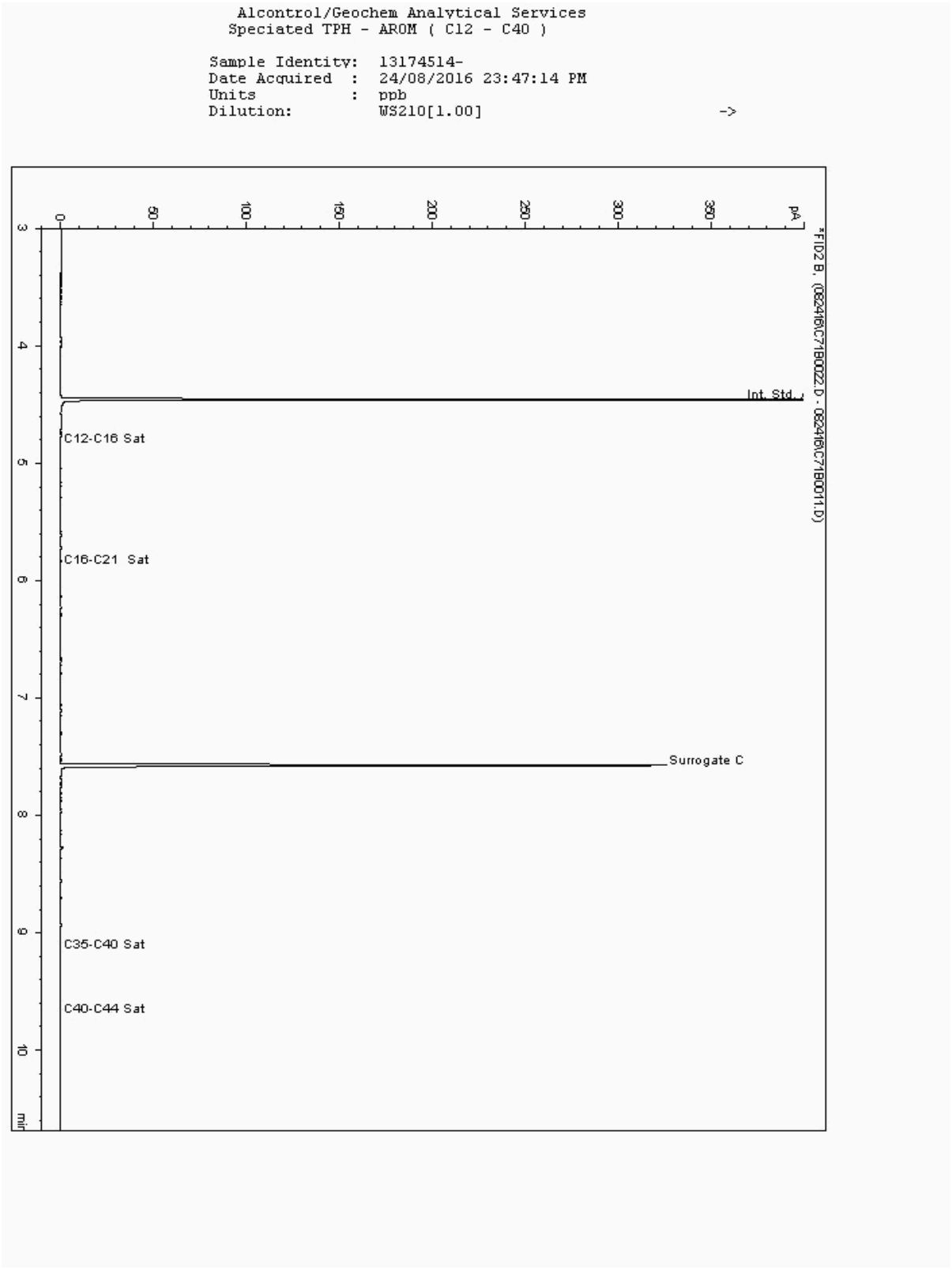
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14022946
Sample ID : WS210

Depth : 1.00



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

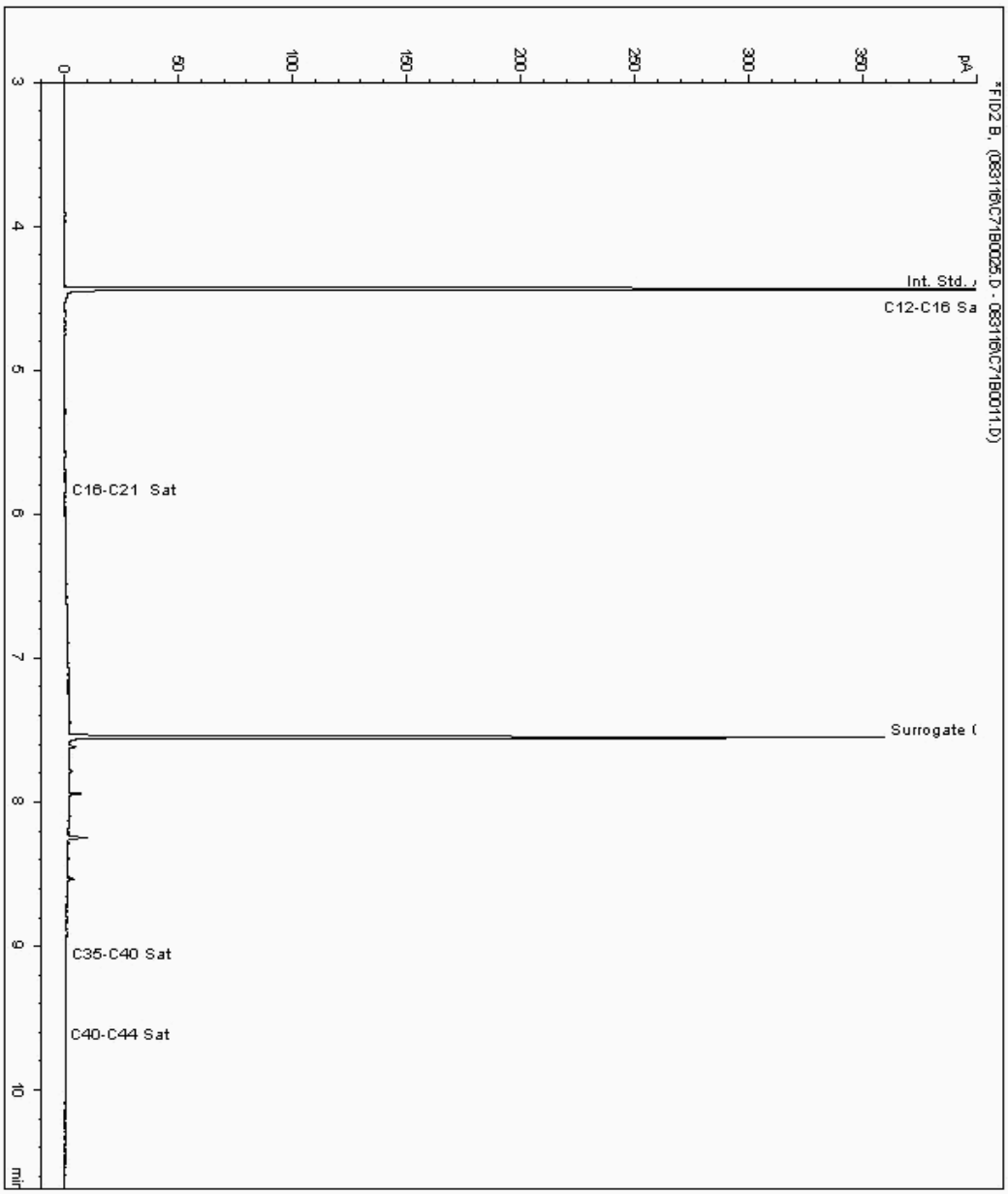
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14047780
Sample ID : HP204

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199651-
Date Acquired : 31/08/2016 21:41:24 PM
Units : ppb
Dilution: HP204[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

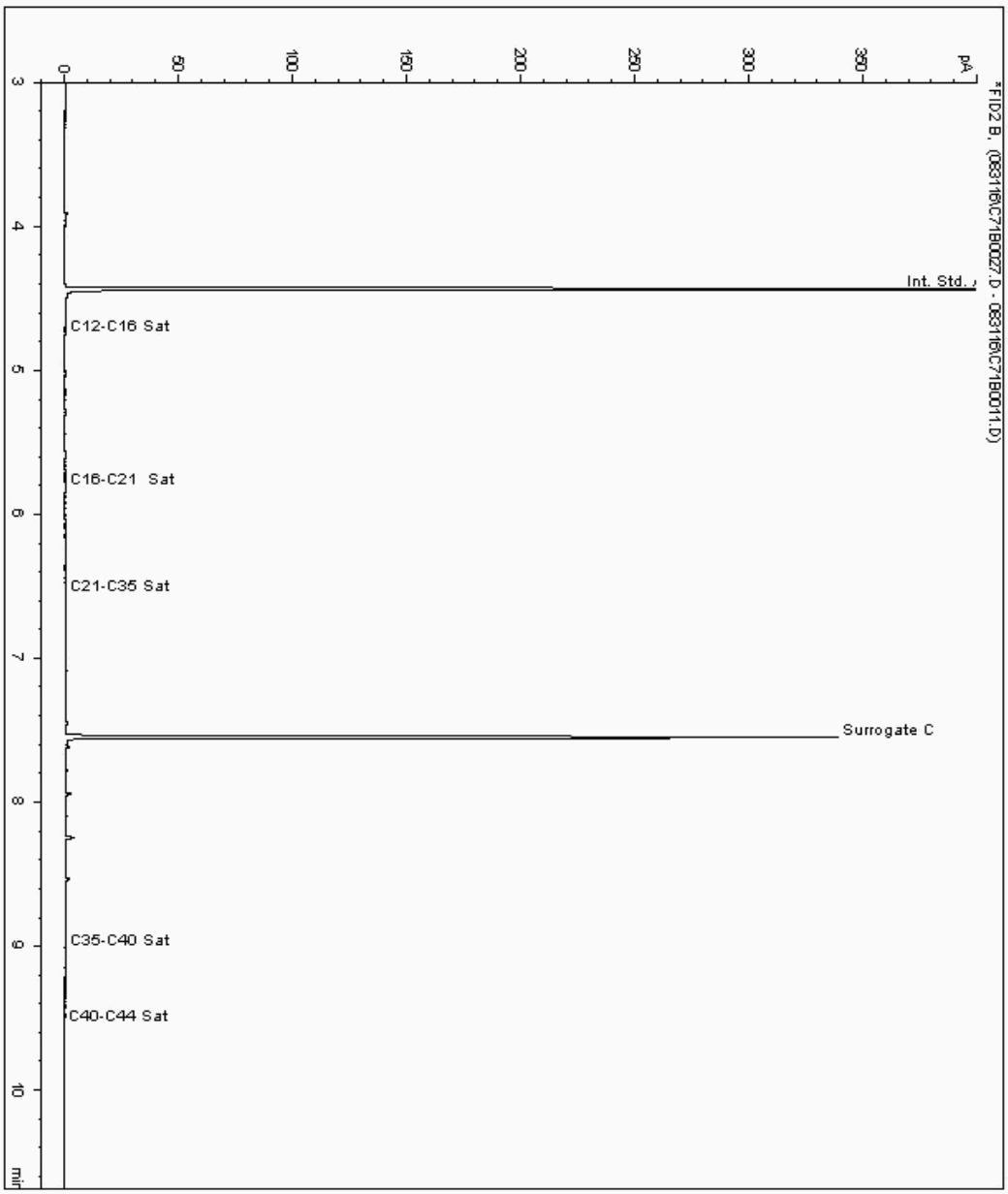
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14047921
Sample ID : HP204

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199675-
Date Acquired : 31/08/2016 22:14:18 PM
Units : ppb
Dilution: HP204[1.00] ->



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

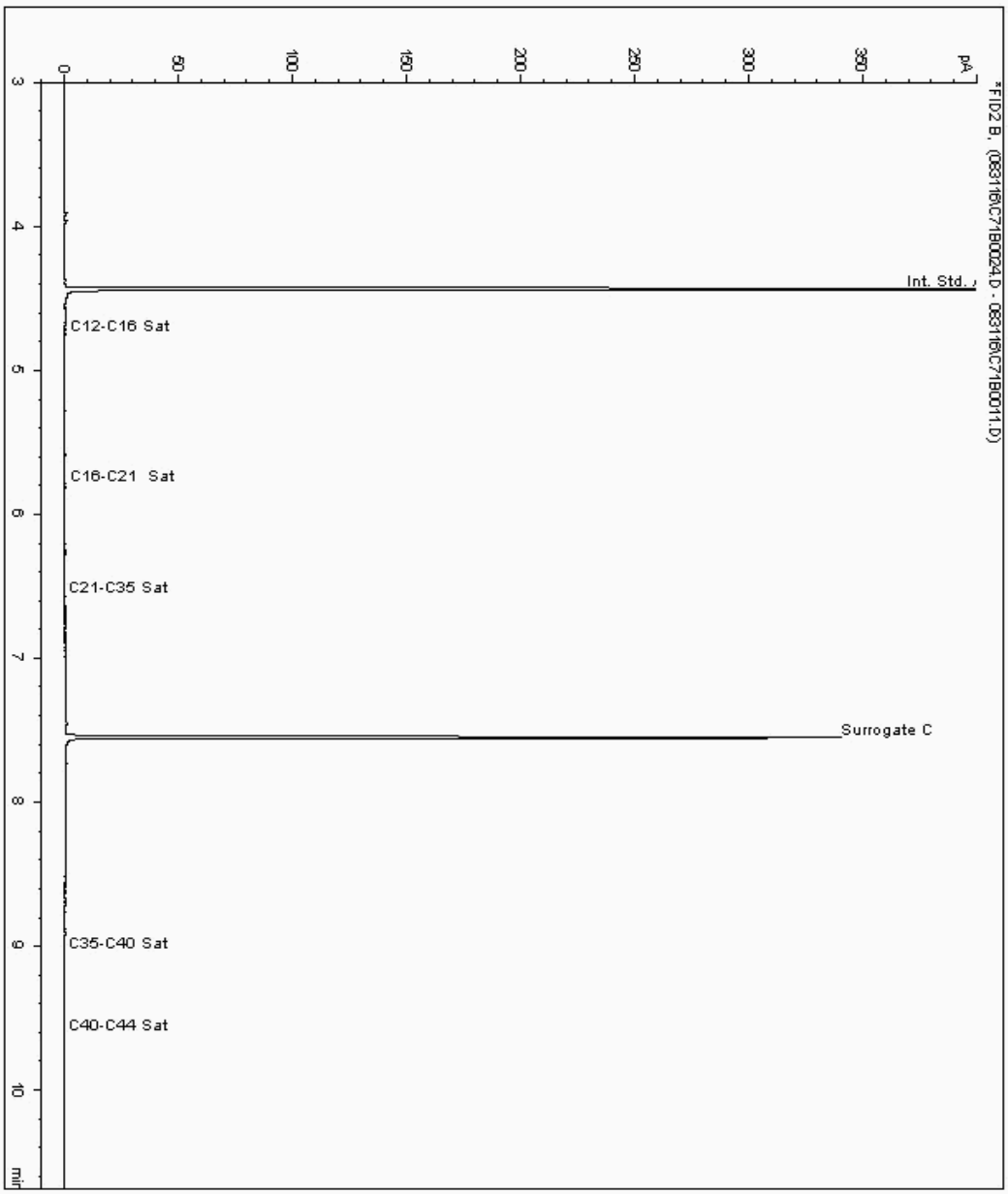
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14050283
Sample ID : BH205

Depth : 4.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199703-
Date Acquired : 31/08/2016 21:20:47 PM
Units : ppb
Dilution: BH205[4.50] ->



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

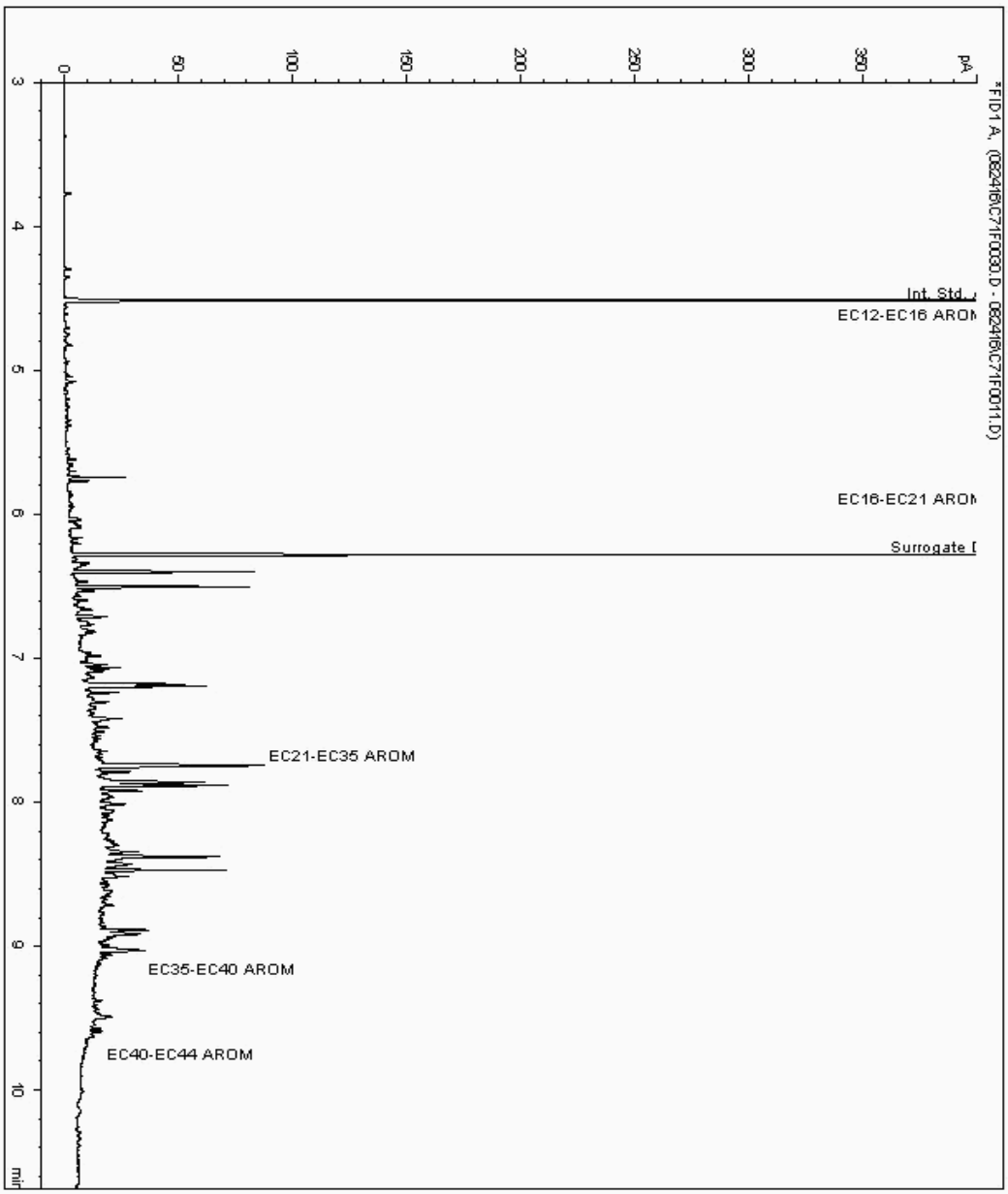
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14020029
Sample ID : TP212

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13174485-
Date Acquired : 25/08/2016 02:15:33 PM
Units : ppb
Dilution: TP212[1.00] ->



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

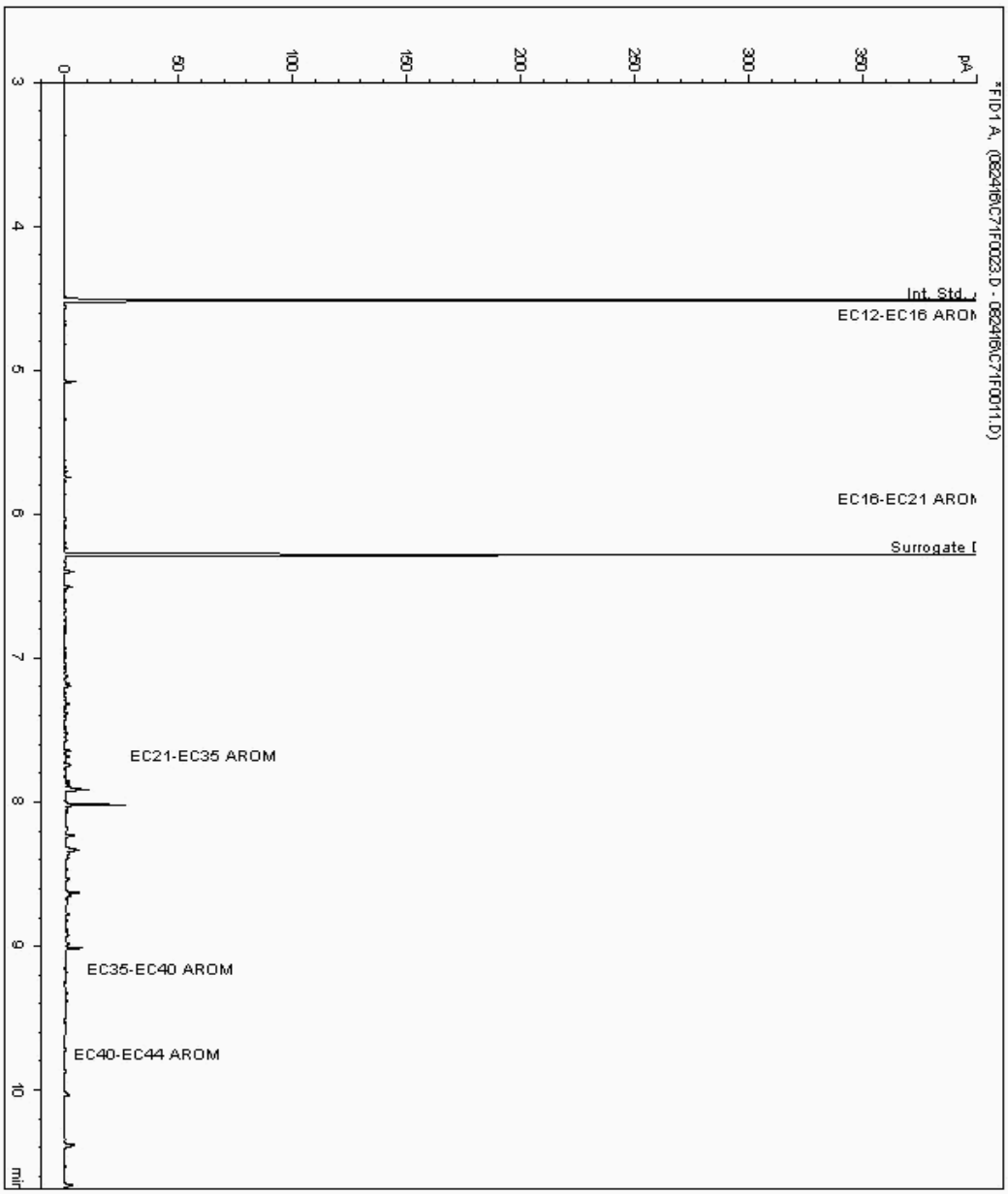
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14020083
Sample ID : TP213

Depth : 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13174500-
Date Acquired : 25/08/2016 00:07:54 PM
Units : ppb
Dilution: TP213[0.40] ->



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

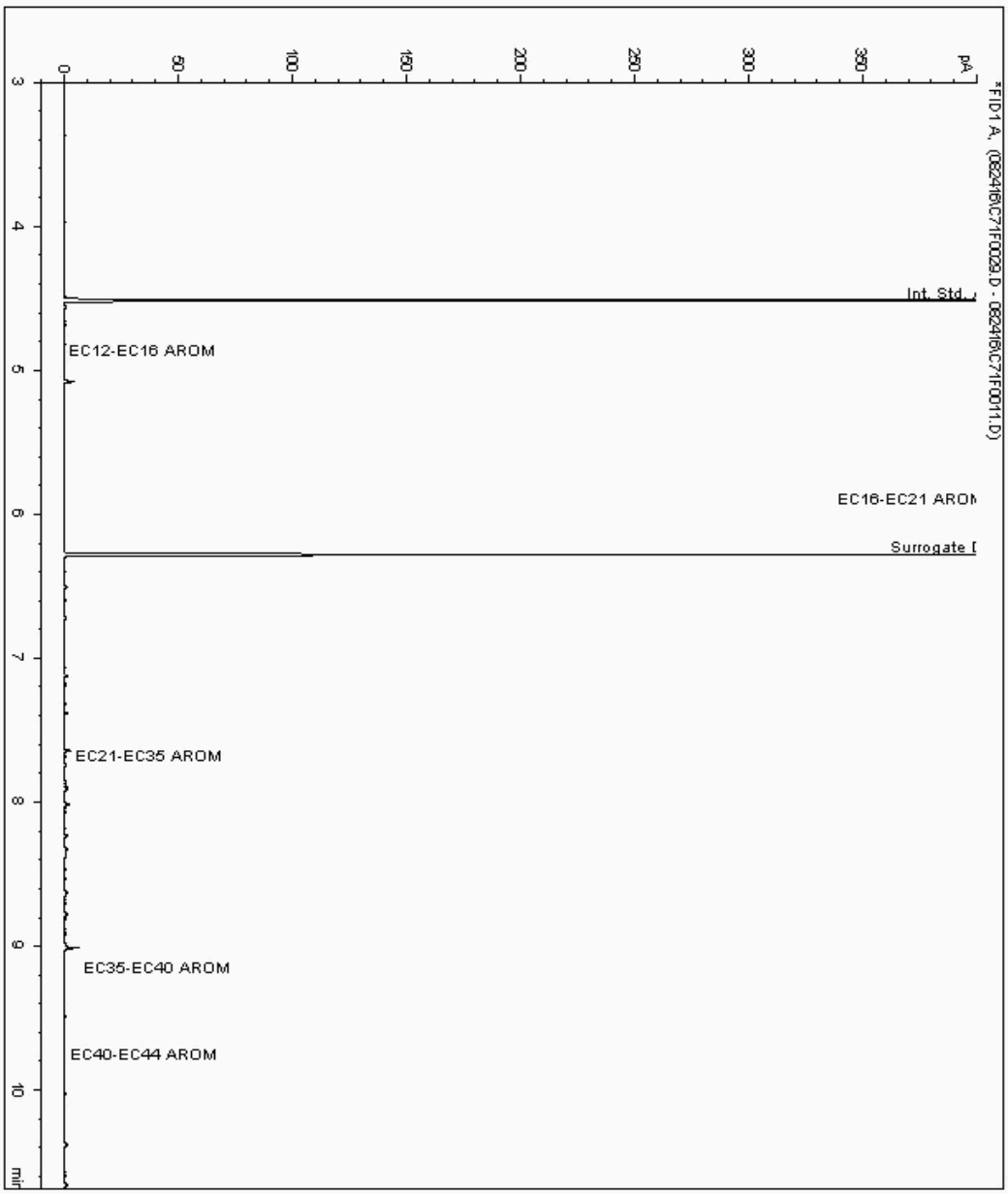
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14020369
Sample ID : BH203

Depth : 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13174471-
Date Acquired : 25/08/2016 01:54:53 PM
Units : ppb
Dilution: BH203[2.00] ->



CERTIFICATE OF ANALYSIS

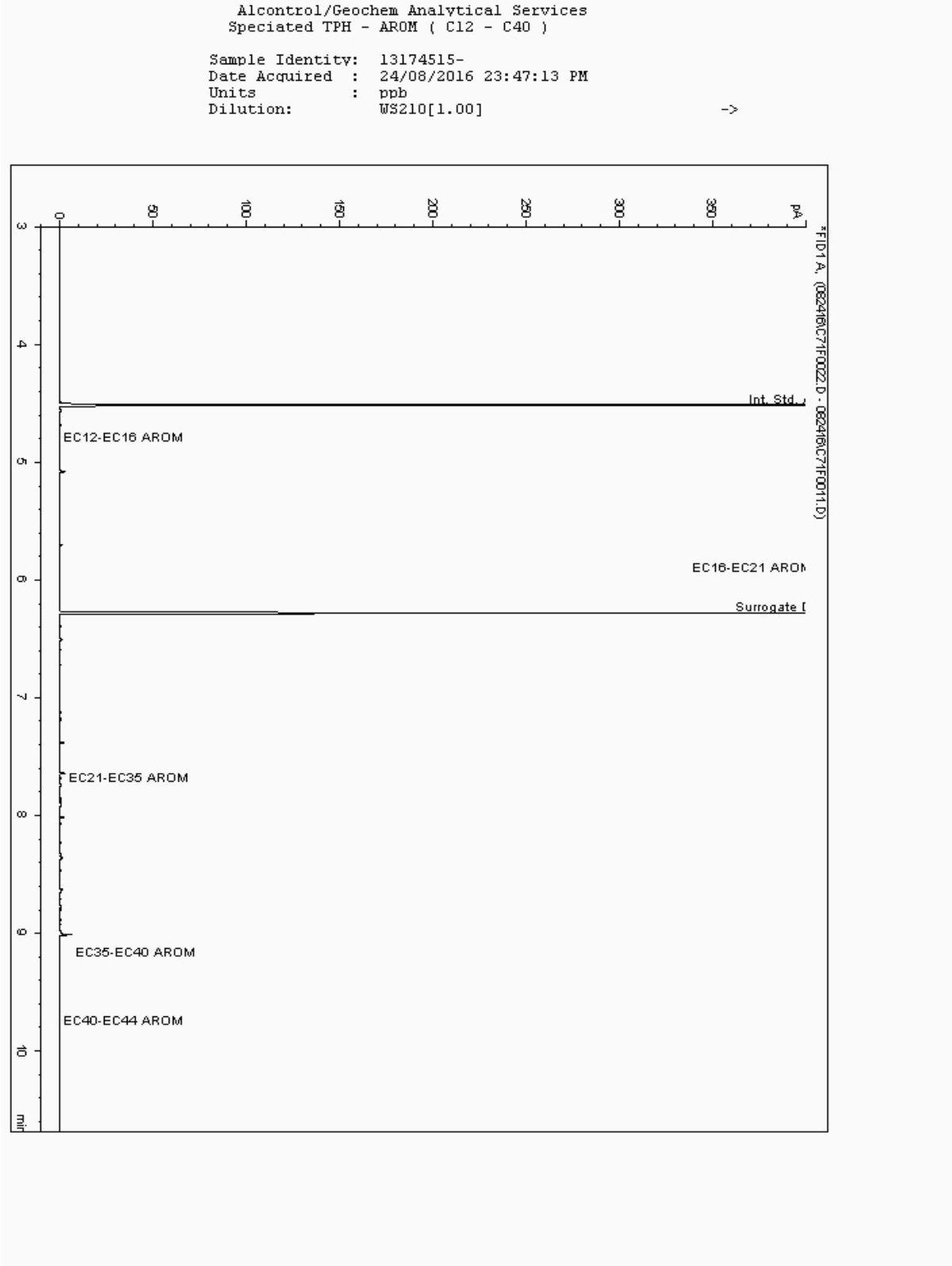
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14022946
Sample ID : WS210

Depth : 1.00



CERTIFICATE OF ANALYSIS

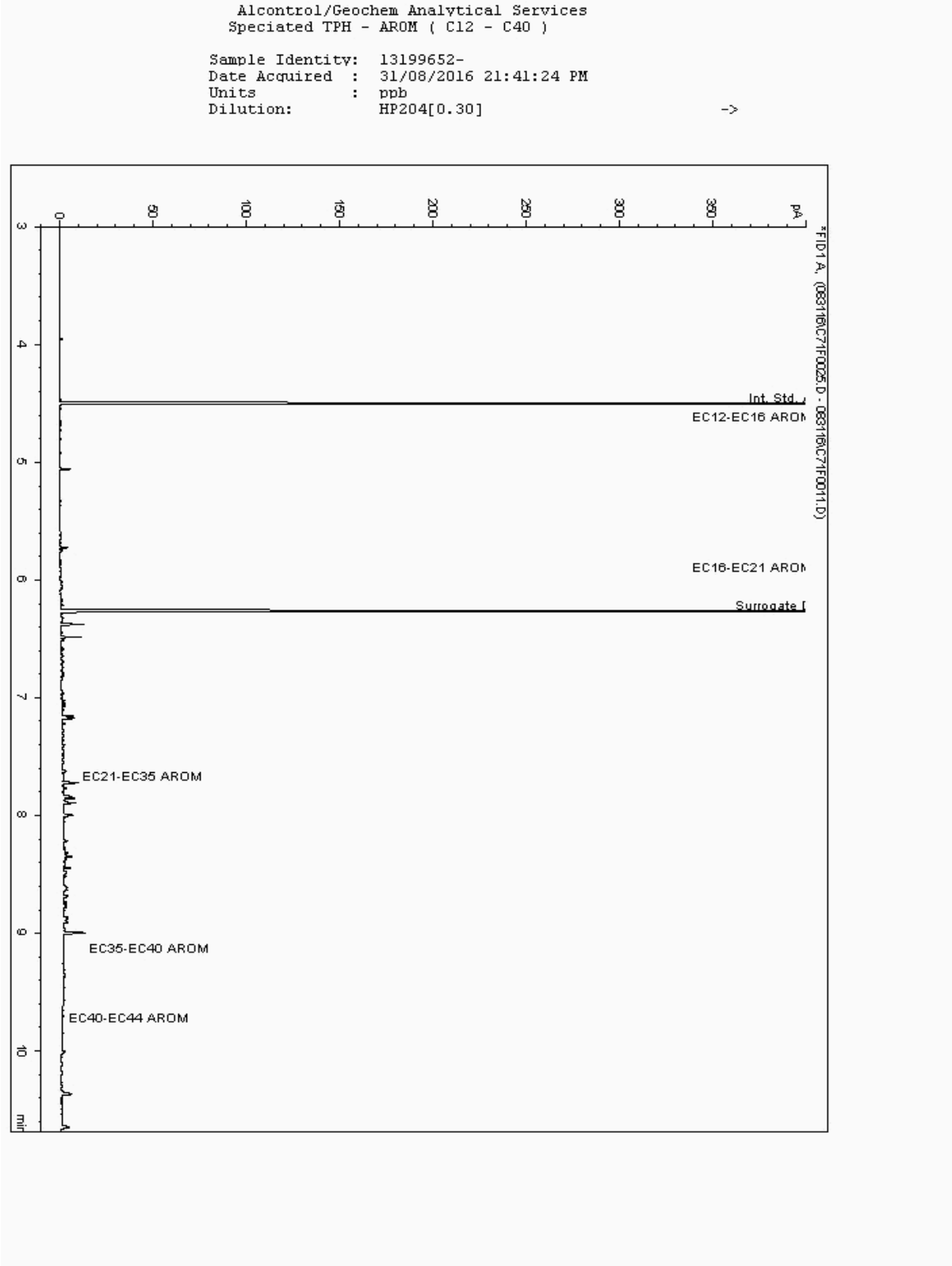
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14047780
Sample ID : HP204

Depth : 0.30



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

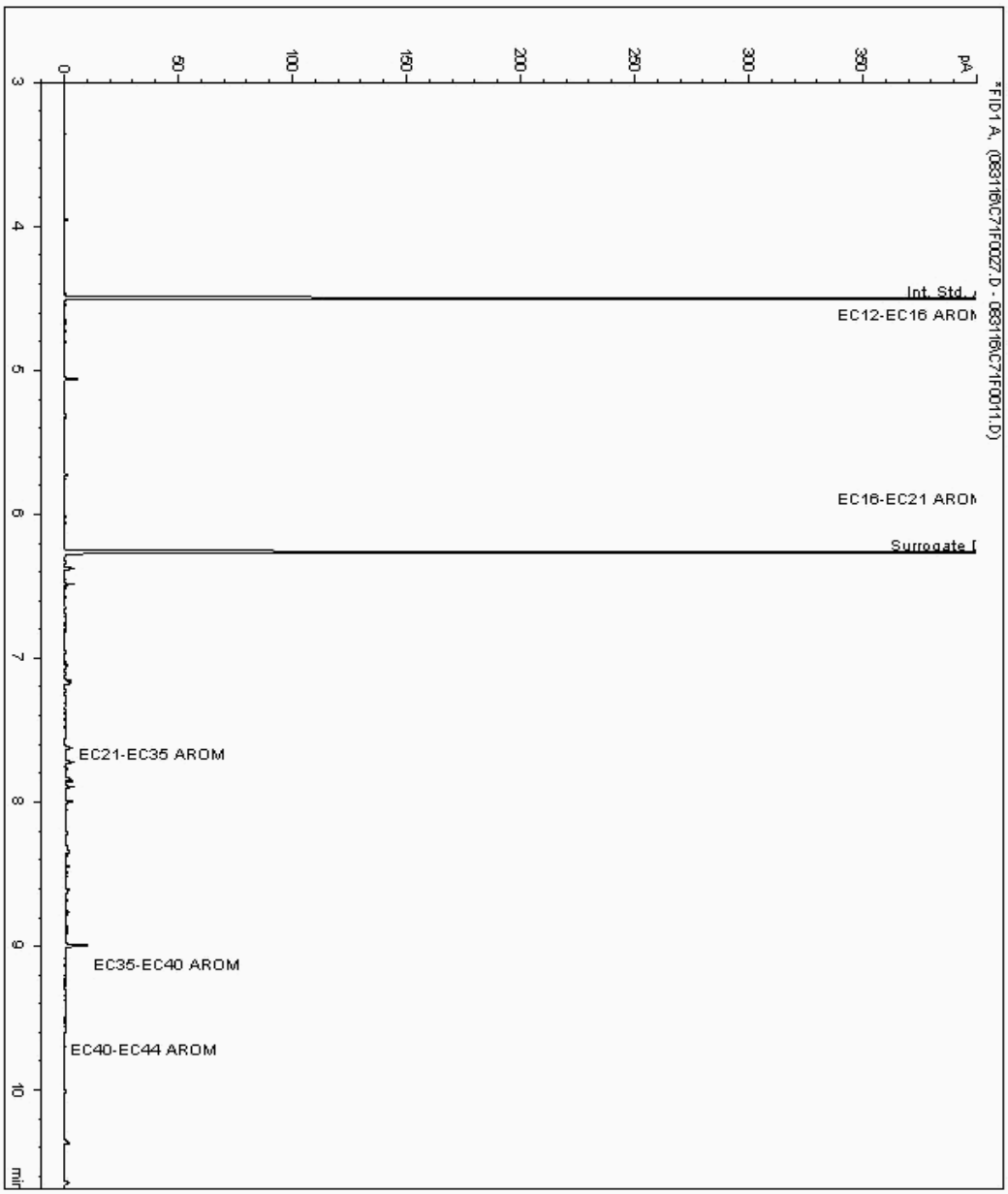
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14047921
Sample ID : HP204

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199676-
Date Acquired : 31/08/2016 22:14:18 PM
Units : ppb
Dilution: HP204[1.00] ->



CERTIFICATE OF ANALYSIS

SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

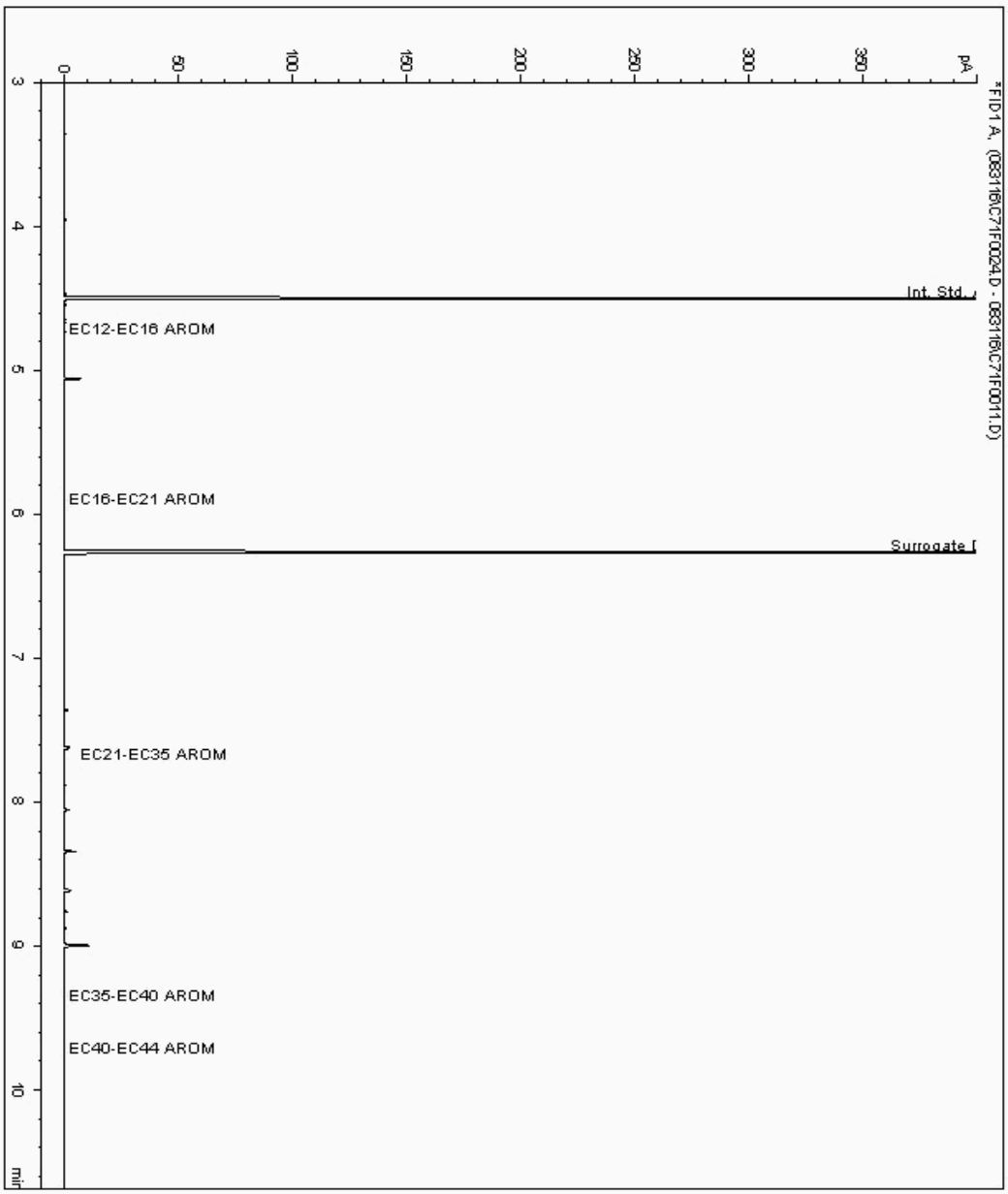
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14050283
Sample ID : BH205

Depth : 4.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199704-
Date Acquired : 31/08/2016 21:20:47 PM
Units : ppb
Dilution: BH205[4.50] ->



CERTIFICATE OF ANALYSIS

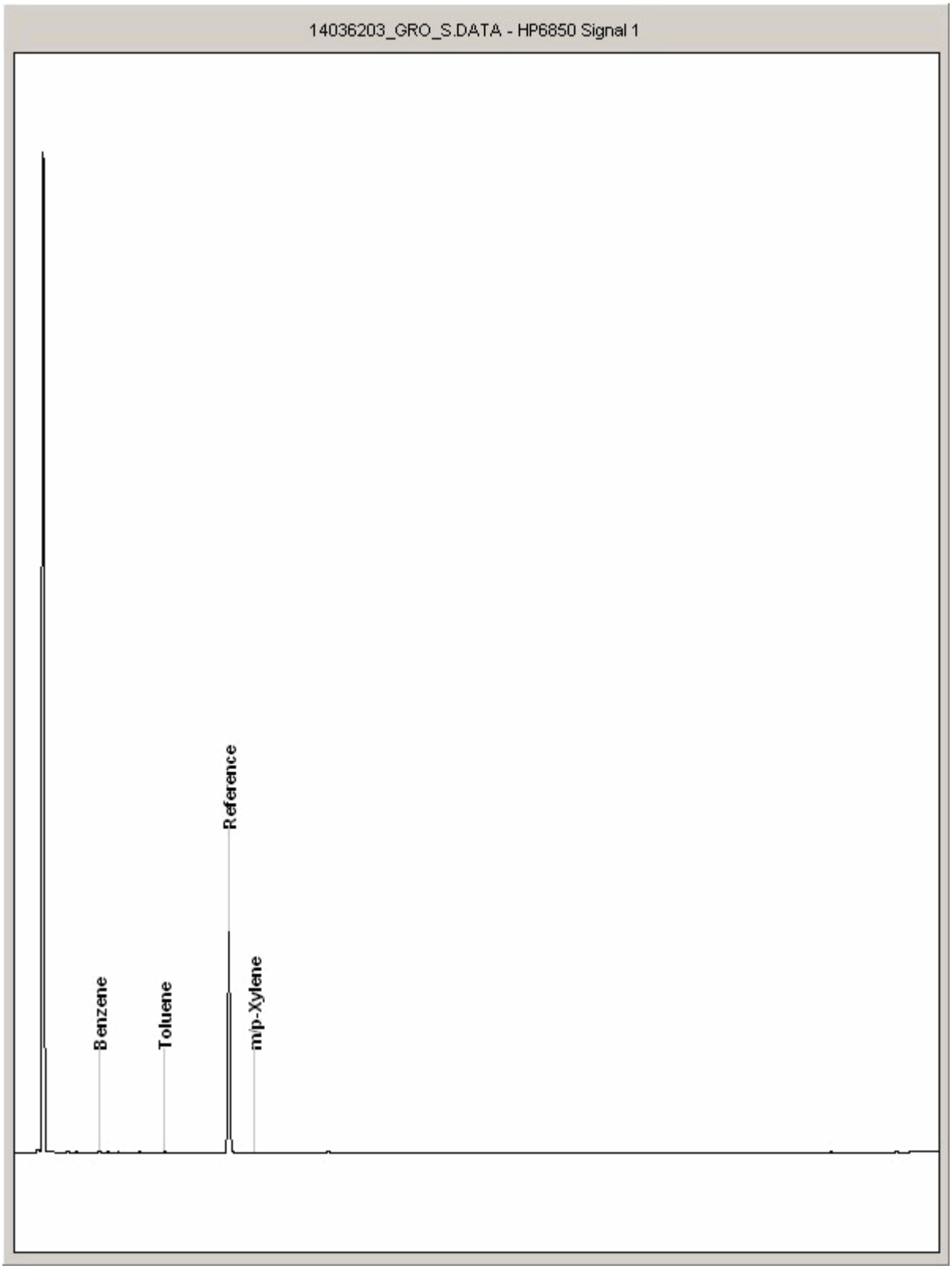
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14036203
Sample ID : TP212

Depth : 1.00



CERTIFICATE OF ANALYSIS

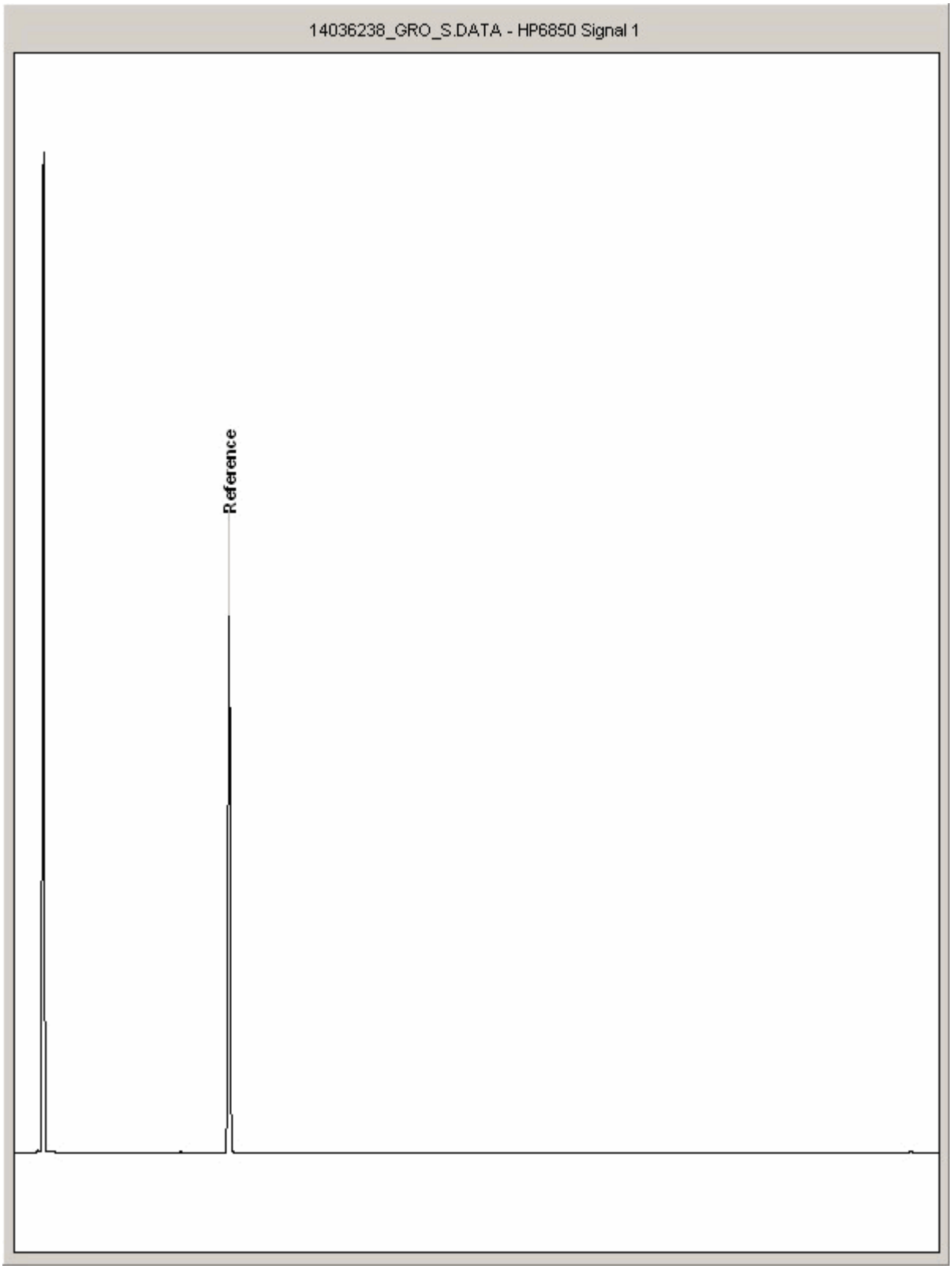
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14036238
Sample ID : TP213

Depth : 0.40



CERTIFICATE OF ANALYSIS

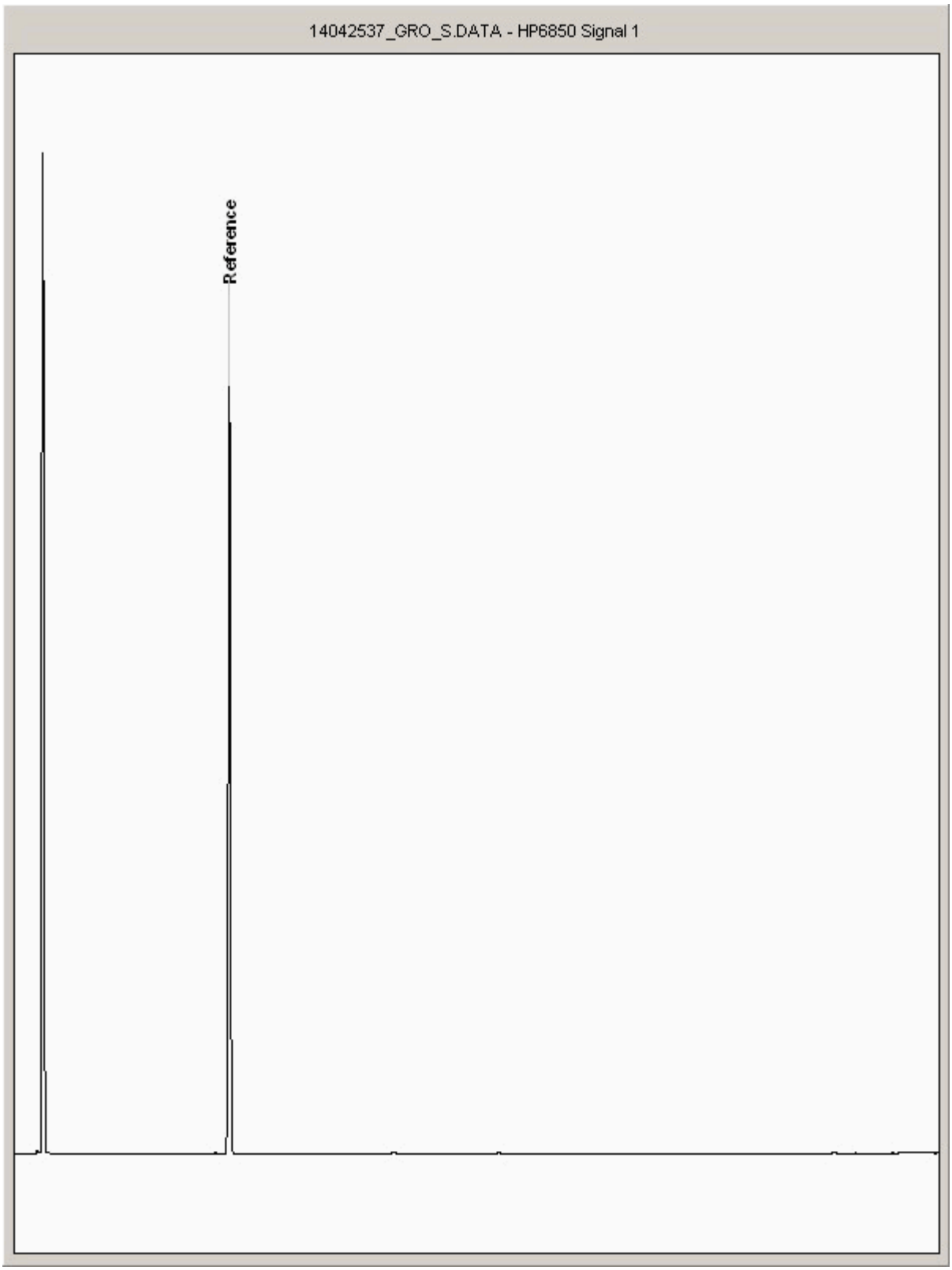
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14042537
Sample ID : BH203

Depth : 2.00



CERTIFICATE OF ANALYSIS

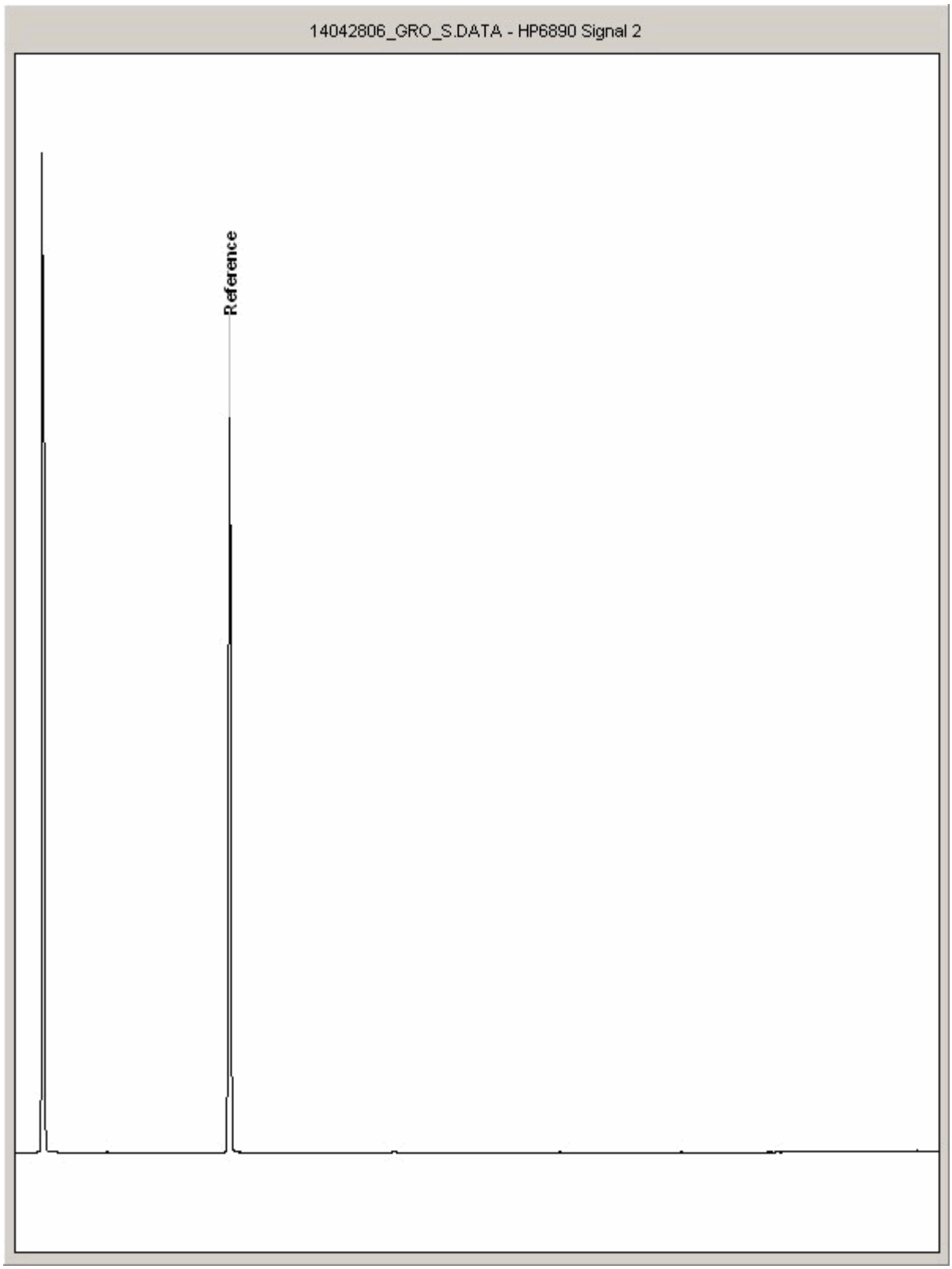
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14042806
Sample ID : WS210

Depth : 1.00



CERTIFICATE OF ANALYSIS

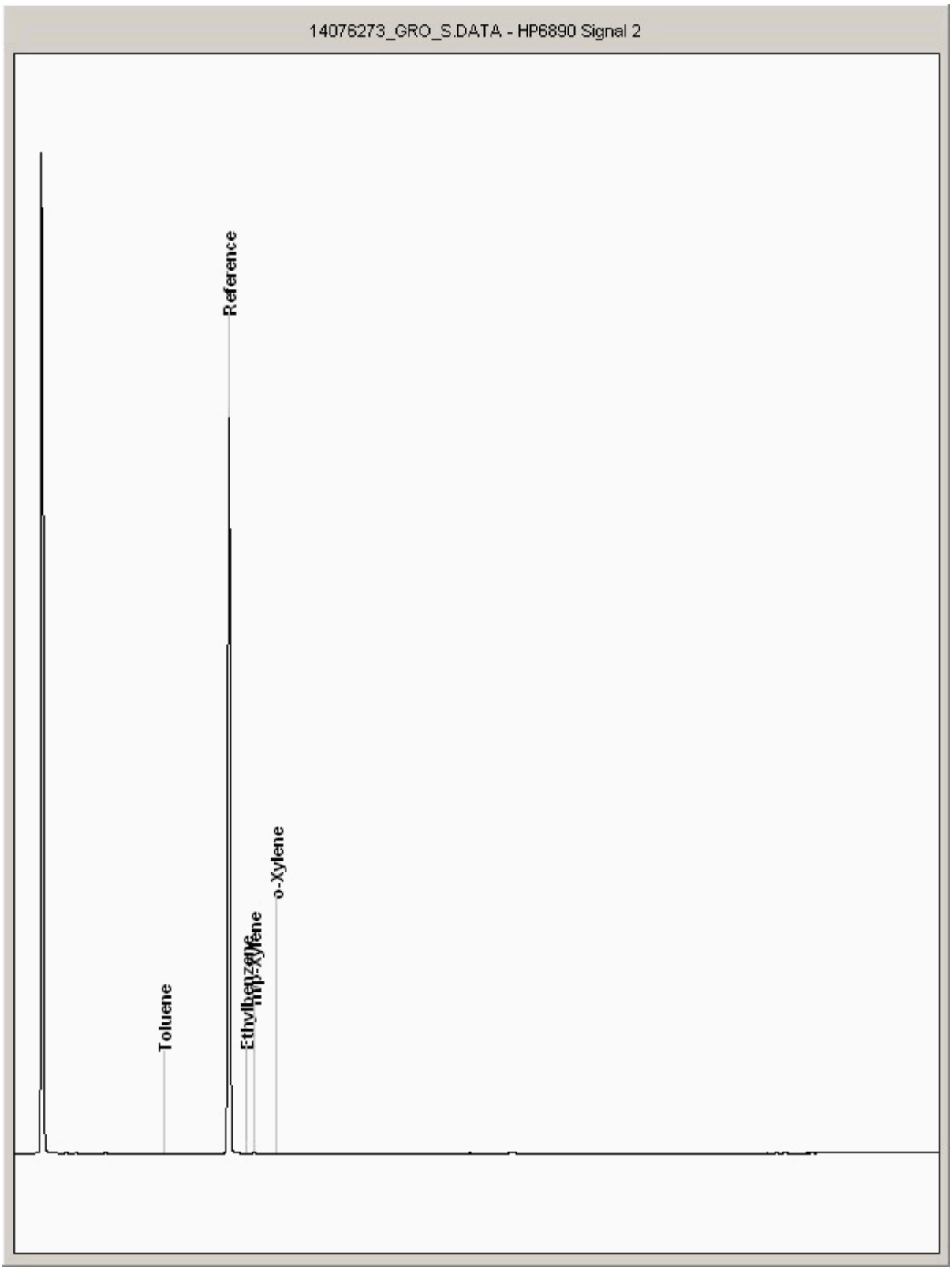
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14076273
Sample ID : HP204

Depth : 1.00



CERTIFICATE OF ANALYSIS

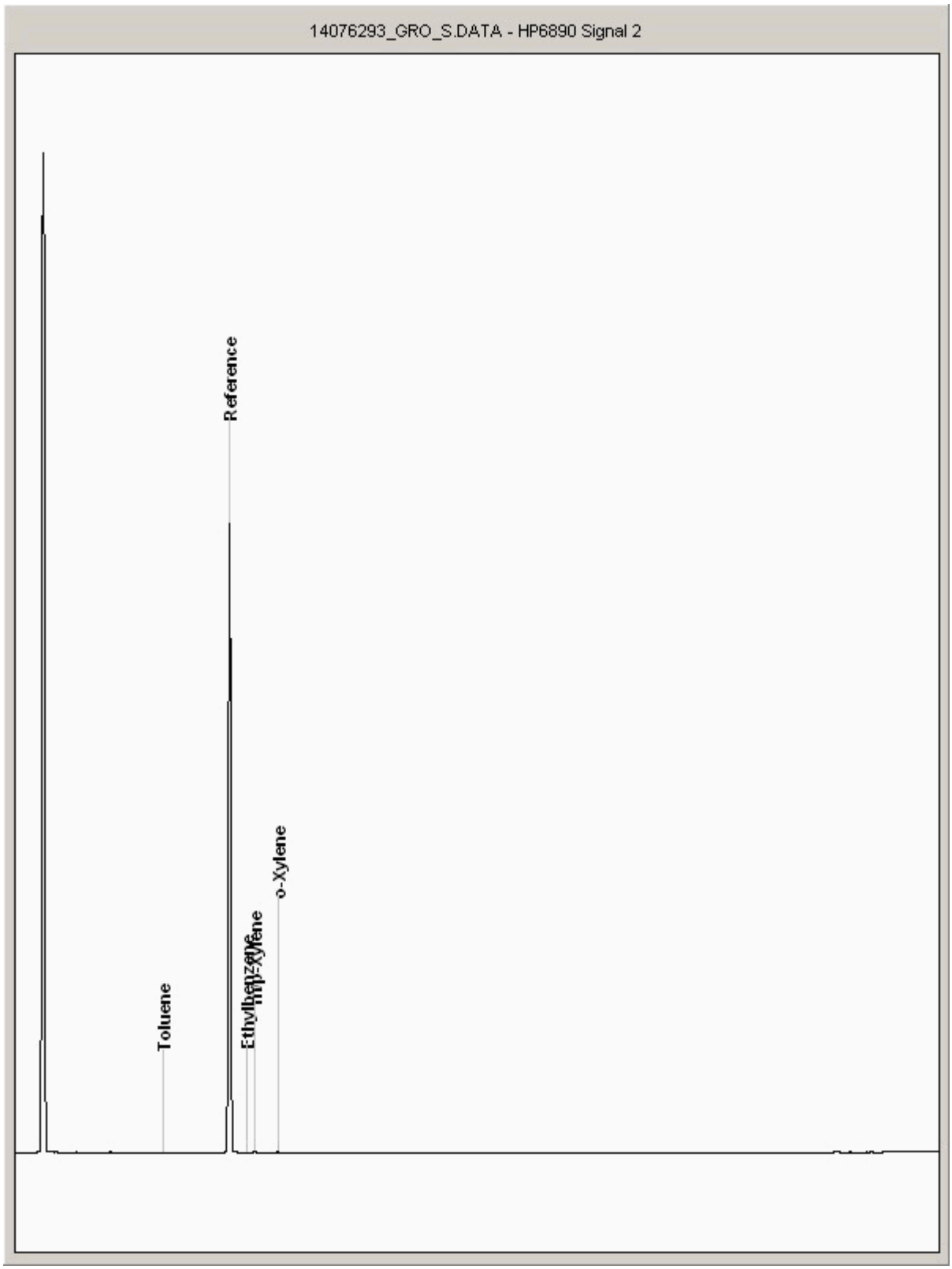
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14076293
Sample ID : HP204

Depth : 0.30



CERTIFICATE OF ANALYSIS

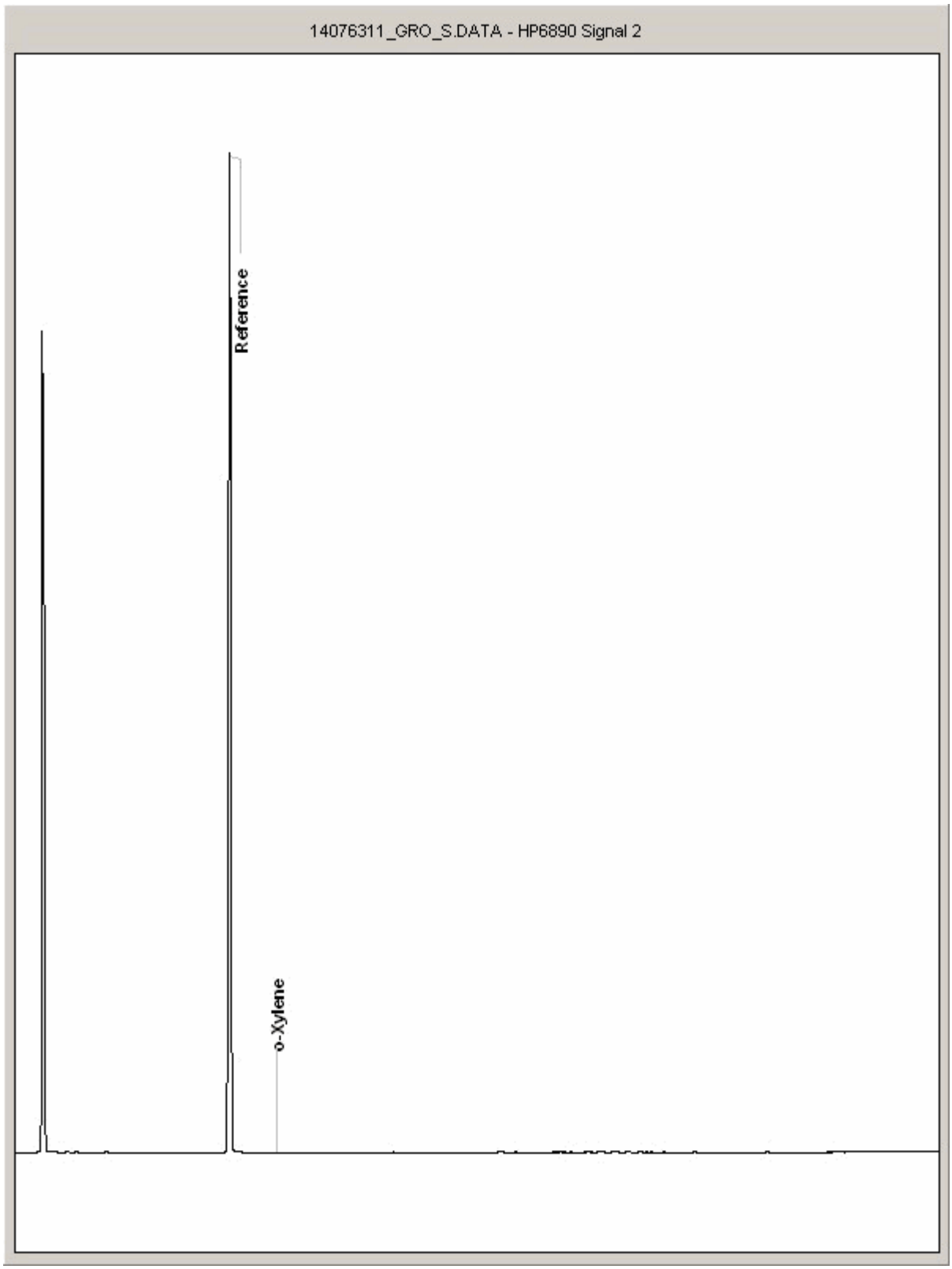
SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14076311
Sample ID : BH205

Depth : 4.50



SDG:	160822-7	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376392
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt . However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect .

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than : - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

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3rd Floor, Kings Orchard,
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BS2 0HQ

Attention: Martin Weil

CERTIFICATE OF ANALYSIS

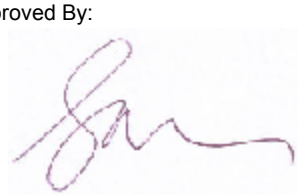
Date:	12 September 2016
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	160823-40
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	377359

We received 102 samples on Tuesday August 23, 2016 and 61 of these samples were scheduled for analysis which was completed on Monday September 12, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:



Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14026073	BH201	ES	0.30	19/08/2016
14026123	BH201	ES	1.00	19/08/2016
14026207	BH201	ES	1.80	17/08/2016
14026263	BH201	ES	3.00	17/08/2016
14026350	BH201	ES	5.00	17/08/2016
14026440	BH202	ES	0.30	19/08/2016
14026532	BH202	ES	1.00	19/08/2016
14026627	BH203	ES	8.00	18/08/2016
14026710	BH203	ES	9.50	18/08/2016
14026165	BH207	ESES1	0.30	17/08/2016
14026374	BH207	ESES2	0.70	17/08/2016
14026453	BH207	ESES3	1.50	17/08/2016
14026538	BH207	ESES4	2.50	17/08/2016
14026618	BH207	ESES5	3.80	17/08/2016
14026687	BH207	ESES7	4.70	17/08/2016
14026080	BH207	ESES7	5.30	17/08/2016
14026103	BH207	ESES8	5.60	17/08/2016
14026109	HP201	ES	0.20	19/08/2016
14026117	HP201	ES	0.90	19/08/2016
14026129	HP202	ES	0.30	19/08/2016
14026136	HP202	ES	0.70	19/08/2016
14026145	HP203	ES	0.15	19/08/2016
14026151	HP203	ES	0.70	19/08/2016
14026159	HP205	ES	0.40	19/08/2016
14026172	HP205	ES	0.70	19/08/2016
14026178	HP206	ES	0.30	19/08/2016
14026185	HP206	ES	0.80	19/08/2016
14026192	HP207	ESES1	0.30	19/08/2016
14026201	HP207	ESES2	0.60	19/08/2016
14026215	HP208	ES	0.15	19/08/2016
14026222	HP208	ES	0.80	19/08/2016
14064190	HP209		0.30	19/08/2016
14078539	HP209		0.65	18/08/2016
14065583	HP210		0.25	19/08/2016
14078541	HP210		0.75	18/08/2016
14026237	HP215	ES	0.20	19/08/2016
14026244	TP201	ES	0.30	17/08/2016
14026250	TP201	ES	1.00	17/08/2016
14026256	TP203	ES	0.40	17/08/2016
14026274	TP203	ES	1.20	17/08/2016
14026281	TP207	ES	0.50	18/08/2016
14026287	TP207	ES	0.85	18/08/2016
14026300	TP207	ES	1.50	18/08/2016
14026307	TP207	ES	2.10	18/08/2016
14026313	TP209	ES	0.40	17/08/2016
14026320	TP209	ES	1.00	17/08/2016
14026327	TP209	ES	2.00	17/08/2016
14026335	TP210	ES	0.20	18/08/2016
14026342	TP210	ES	0.80	18/08/2016
14026357	TP210	ES	1.90	18/08/2016

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14026367	TP211	ES	0.20	18/08/2016
14026382	TP211	ES	0.70	18/08/2016
14026389	TP211	ES	1.50	18/08/2016
14026396	TP211	ES	2.30	18/08/2016
14026402	TP213	ES	1.00	17/08/2016
14026413	TP213	ES	2.00	17/08/2016
14026420	TP214	ES	0.30	19/08/2016
14026427	TP214	ES	1.00	19/08/2016
14028420	TRIP BLANK			
14026433	WS202	ES	0.30	18/08/2016
14026446	WS202	ES	1.00	18/08/2016
14026461	WS202	ES	2.00	18/08/2016
14026467	WS202	ES	2.30	18/08/2016
14026475	WS202	ES	2.70	18/08/2016
14026484	WS203	ES	0.30	19/08/2016
14026496	WS203	ES	1.50	18/08/2016
14026503	WS203	ES	2.50	18/08/2016
14026512	WS203	ES	4.00	18/08/2016
14026519	WS203	ES	5.00	18/08/2016
14026525	WS204	ES	0.20	19/08/2016
14026545	WS204	ES	1.00	19/08/2016
14026553	WS204	ESES3	1.50	18/08/2016
14026559	WS204	ESES4	2.90	18/08/2016
14026566	WS204	ESES5	3.50	18/08/2016
14026572	WS205	ES	0.30	19/08/2016
14026580	WS205	ES	1.00	19/08/2016
14026588	WS206	ESES1	0.30	18/08/2016
14026596	WS206	ESES2	1.00	18/08/2016
14026604	WS206	ESES3	1.50	18/08/2016
14026611	WS206	ESES4	2.50	18/08/2016
14026635	WS206	ESES5	3.50	18/08/2016
14026642	WS206	ESES6	4.50	18/08/2016
14065582	WS207		0.20	19/08/2016
14026650	WS207	ES	0.30	18/08/2016
14081663	WS207		0.70	18/08/2016
14026656	WS207	ES	1.00	18/08/2016
14026663	WS207	ES	1.30	18/08/2016
14026671	WS207	ES	2.20	18/08/2016
14026681	WS207	ES	3.80	18/08/2016
14026697	WS207	ES	5.00	18/08/2016
14026722	WS208	ES	0.30	19/08/2016
14026738	WS208	ES	1.00	19/08/2016
14026752	WS209	ES	0.30	19/08/2016
14026763	WS209	ES	0.50	19/08/2016
14026770	WS209	ES	1.00	19/08/2016
14026775	WS211	ES	0.20	19/08/2016
14026782	WS211	ES	0.65	19/08/2016
14026789	WS212	ES	0.20	19/08/2016
14026087	WS212	ES	0.65	19/08/2016
14026096	WS212	ES	1.40	18/08/2016
14026230	WS212	ES	2.50	18/08/2016

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14026293	WS212	ES	3.50	18/08/2016

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

| | | | | |

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	14026073	14026123	14026207	14026263	14026440	14026532	14026165	14026374	14026453	14026109	14026117	14026129	14026136	14026145
Customer Sample Reference	BH201	BH201	BH201	BH201	BH202	BH202	BH207	BH207	BH207	HP201	HP201	HP202	HP202	HP203
AGS Reference	ES	ES	ES	ES	ES	ES	ESES1	ESES2	ESES3	ES	ES	ES	ES	ES
Depth (m)	0.30	1.00	1.80	3.00	0.30	1.00	0.30	0.70	1.50	0.20	0.90	0.30	0.70	0.15
Container	1kg TUB / 250g Amber Jar (AL) / 60g VOC (ALE215)													

			Lab Sample No(s)	14026073	14026123	14026207	14026263	14026440	14026532	14026165	14026374	14026453	14026109	14026117	14026129	14026136	14026145
			Customer Sample Reference	BH201	BH201	BH201	BH201	BH202	BH202	BH207	BH207	BH207	HP201	HP201	HP202	HP202	HP203
			AGS Reference	ES	ES	ES	ES	ES	ES	ESES1	ESES2	ESES3	ES	ES	ES	ES	ES
			Depth (m)	0.30	1.00	1.80	3.00	0.30	1.00	0.30	0.70	1.50	0.20	0.90	0.30	0.70	0.15
			Container	1kg TUB / 250g Amber Jar (AL) / 60g VOC (ALE215)													
Low Level Cyanide (W)	All	NDPs: 0 Tests: 6			X			X			X						
Mercury Dissolved	All	NDPs: 0 Tests: 6			X			X			X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 59		X		X		X

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			14026151	HP203	ES	0.70	1kg TUB
			14026159	HP205	ES	0.40	250g Amber Jar (AL
			14026172	HP205	ES	0.70	60g VOC (ALE215)
			14026178	HP206	ES	0.30	250g Amber Jar (AL
			14026185	HP206	ES	0.80	60g VOC (ALE215)
			14026192	HP207	ESES1	0.30	250g Amber Jar (AL
			14026201	HP207	ESES2	0.60	60g VOC (ALE215)
			14026215	HP208	ES	0.15	250g Amber Jar (AL
			14026222	HP208	ES	0.80	60g VOC (ALE215)
			14064190	HP209		0.30	1kg TUB
			14078539	HP209		0.65	250g Amber Jar (AL
			14065583	HP210		0.25	60g VOC (ALE215)
			14078541	HP210		0.75	250g Amber Jar (AL
			14026237	HP215	ES	0.20	60g VOC (ALE215)
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 54	X	X	X

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	14026237	14026244	14026250	14026256	14026281	14026287	14026313	14026320	14026335	14026342	14026382	14026402	14026420	14026420	14026433
Customer Sample Reference	HP215	TP201	TP201	TP203	TP207	TP207	TP209	TP209	TP210	TP210	TP211	TP213	TP214	TRIP BLANK	WS202
AGS Reference	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth (m)	0.20	0.30	1.00	0.40	0.50	0.85	0.40	1.00	0.20	0.80	0.70	1.00	0.30		0.30
Container	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	14026237	14026244	14026250	14026256	14026281	14026287	14026313	14026320	14026335	14026342	14026382	14026402	14026420	14028420	14026433
			Customer Sample Reference	HP215	TP201	TP201	TP203	TP207	TP207	TP209	TP209	TP210	TP210	TP211	TP213	TP214	TRIP BLANK	WS202
			AGS Reference	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		ES
			Depth (m)	0.20	0.30	1.00	0.40	0.50	0.85	0.40	1.00	0.20	0.80	0.70	1.00	0.30		0.30
			Container	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	14026433	14026446	14026484	14026496	14026525	14026545	14026572	14026580	14026588	14026596	14065582	14081663	14026722	14026738
Customer Sample Reference	WS202	WS202	WS203	WS203	WS204	WS204	WS205	WS205	WS206	WS206	WS207	WS207	WS208	WS208
AGS Reference	ES	ES	ES	ES	ES	ES	ES	ES	ESES1	ESES2			ES	ES
Depth (m)	0.30	1.00	0.30	1.50	0.20	1.00	0.30	1.00	0.30	1.00	0.20	0.70	0.30	1.00
Container	250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL	60g VOC (ALE215) 1kg TUB 250g Amber Jar (AL
Ammonium Low	All	NDPs: 0 Tests: 6				X		X								
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 54		X		X		X		X		X		X		X
Asbestos Quantification - Full	All	NDPs: 0 Tests: 6		X		X						X				
CEN Readings	All	NDPs: 0 Tests: 6		X				X								
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 21		X				X		X						
Dioxins/Furans (S)*	All	NDPs: 1 Tests: 6	X	N			X	X								
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6		X				X								
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5		X				X								
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 59	X	X		X		X		X		X		X		X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5		X				X								
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 59	X	X		X		X		X		X		X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 59		X		X		X		X		X		X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5		X				X								
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 59		X		X		X		X		X		X		X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 6		X				X								

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	14026433	14026446	14026484	14026496	14026525	14026545	14026572	14026580	14026588	14026596	14065582	14081663	14026722	14026738
Customer Sample Reference	WS202	WS202	WS203	WS203	WS204	WS204	WS205	WS205	WS206	WS206	WS207	WS207	WS208	WS208
AGS Reference	ES	ES	ES	ES	ES	ES	ES	ES	ESES1	ESES2			ES	ES
Depth (m)	0.30	1.00	0.30	1.50	0.20	1.00	0.30	1.00	0.30	1.00	0.20	0.70	0.30	1.00
Container	250g Amber Jar (AL)	60g VOC (ALE215) 1kg TUB	250g Amber Jar (AL)	60g VOC (ALE215) 1kg TUB	250g Amber Jar (AL)	60g VOC (ALE215) 1kg TUB	250g Amber Jar (AL)	60g VOC (ALE215) 1kg TUB	250g Amber Jar (AL)	60g VOC (ALE215) 1kg TUB	250g Amber Jar (AL)	60g VOC (ALE215) 1kg TUB	250g Amber Jar (AL)	60g VOC (ALE215) 1kg TUB	250g Amber Jar (AL)

Low Level Cyanide (W)	All	NDPs: 0 Tests: 6		X			X									
Mercury Dissolved	All	NDPs: 0 Tests: 6		X			X									
Metals in solid samples by OES	All	NDPs: 0 Tests: 59	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 59	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 6		X			X									
PCBs by GCMS	All	NDPs: 0 Tests: 5	X	X			X	X								
pH	All	NDPs: 0 Tests: 59		X	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 60	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 14	X	X			X	X								
Total Organic Carbon	All	NDPs: 0 Tests: 25	X	X			X	X	X				X	X	X	X
TPH CWG (W)	All	NDPs: 0 Tests: 5		X			X									
TPH CWG GC (S)	All	NDPs: 0 Tests: 59	X	X	X	X	X	X	X	X	X	X	X	X	X	X
VOC MS (S)	All	NDPs: 0 Tests: 60		X		X		X		X		X		X		X

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			14026738	WS208	ES	1.00	60g VOC (ALE215)
			14026763	WS209	ES	0.50	1kg TUB
			14026770	WS209	ES	1.00	250g Amber Jar (AL
			14026775	WS211	ES	0.20	60g VOC (ALE215)
			14026782	WS211	ES	0.65	1kg TUB
			14026789	WS212	ES	0.20	250g Amber Jar (AL
			14026087	WS212	ES	0.65	60g VOC (ALE215)
							1kg TUB
							250g Amber Jar (AL
Ammonium Low	All	NDPs: 0 Tests: 6					X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 54		X		X		X		X		X		X		X	
CEN Readings	All	NDPs: 0 Tests: 6														X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6														X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5														X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 59			X		X		X		X		X				X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5														X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 59			X		X		X		X		X				X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 59	X		X		X		X		X			X			X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5														X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 59		X		X		X		X		X		X			
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 6														X	
Low Level Cyanide (W)	All	NDPs: 0 Tests: 6														X	
Mercury Dissolved	All	NDPs: 0 Tests: 6														X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 59			X		X		X		X		X				X

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			14026738	WS208	ES	1.00	60g VOC (ALE215)
			14026763	WS209	ES	0.50	1kg TUB
			14026770	WS209	ES	1.00	250g Amber Jar (AL
			14026775	WS211	ES	0.20	60g VOC (ALE215)
			14026782	WS211	ES	0.65	1kg TUB
			14026789	WS212	ES	0.20	250g Amber Jar (AL
			14026087	WS212	ES	0.65	60g VOC (ALE215)
PAH by GCMS	All	NDPs: 0 Tests: 59					
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 6					
pH	All	NDPs: 0 Tests: 59					
Sample description	All	NDPs: 0 Tests: 60					
TPH CWG (W)	All	NDPs: 0 Tests: 5					
TPH CWG GC (S)	All	NDPs: 0 Tests: 59					
VOC MS (S)	All	NDPs: 0 Tests: 60					

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
14026073	BH201	0.30	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14026123	BH201	1.00	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Brick
14026263	BH201	3.00	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Crushed Brick
14026440	BH202	0.30	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14026532	BH202	1.00	Light Brown	Loamy Sand	0.063 - 2.00 mm	Stones	N/A
14026165	BH207	0.30	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Stones	Brick
14026374	BH207	0.70	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Tile/Insulation Board
14026453	BH207	1.50	Yellow	Sand	0.002 - 0.063 mm	N/A	N/A
14026109	HP201	0.20	Light Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14026117	HP201	0.90	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14026129	HP202	0.30	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Stones	Brick
14026136	HP202	0.70	Cream	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Crushed Brick
14026145	HP203	0.15	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Stones	Brick
14026151	HP203	0.70	Light Brown	Sand	0.063 - 2.00 mm	Vegetation	Stones
14026159	HP205	0.40	Light Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14026172	HP205	0.70	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Stones	Vegetation
14026178	HP206	0.30	Light Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14026185	HP206	0.80	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14026192	HP207	0.30	Dark Brown	Sandy Clay	0.063 - 2.00 mm	Stones	Vegetation
14026201	HP207	0.60	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14026215	HP208	0.15	Dark Brown	Sand	0.063 - 2.00 mm	Brick	Vegetation
14026222	HP208	0.80	Grey	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14064190	HP209	0.30	Light Brown	Dry Sample Received	2.00 - 60.00 mm	Stones	Vegetation
14078539	HP209	0.65	Light Brown	Sand	0.063 - 2.00 mm	Stones	None
14065583	HP210	0.25	Dark Brown	Gravel	2.00 - 60.00 mm	Vegetation	N/A
14078541	HP210	0.75	Dark Brown	Clay Loam	0.002 - 0.063 mm	Stones	Vegetation
14026237	HP215	0.20	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14026244	TP201	0.30	Light Brown	Sand	0.063 - 2.00 mm	Concrete/Aggregate	Stones
14026250	TP201	1.00	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Crushed Brick	Glass & Stones
14026256	TP203	0.40	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Concrete/Aggregate	Vegetation
14026281	TP207	0.50	Light Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14026287	TP207	0.85	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14026313	TP209	0.40	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Stones	Vegetation
14026320	TP209	1.00	Light Brown	N/A	2.00 - 60.00 mm	Stones	N/A
14026335	TP210	0.20	Light Brown	Loamy Sand	0.063 - 2.00 mm	Vegetation	N/A
14026342	TP210	0.80	Light Brown	Sandy Loam	0.063 - 2.00 mm	Stones	N/A
14026382	TP211	0.70	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Concrete/Aggregate	Brick
14026402	TP213	1.00	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

			Colour	Description	Grain size	Inclusions	Inclusions 2
14026420	TP214	0.30	Light Brown	Sand	0.063 - 2.00 mm	Stones	Vegetation
14028420	TRIP BLANK		Dark Brown	Sand	0.063 - 2.00 mm	None	None
14026433	WS202	0.30	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Plastic
14026446	WS202	1.00	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Stones	Brick
14026484	WS203	0.30	Dark Brown	Sand	0.063 - 2.00 mm	Crushed Brick	Stones
14026496	WS203	1.50	Light Brown	Sand	0.063 - 2.00 mm	Stones	Vegetation
14026525	WS204	0.20	Dark Brown	Sandy Clay	0.063 - 2.00 mm	Stones	Vegetation
14026545	WS204	1.00	Light Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14026572	WS205	0.30	Dark Brown	Sand	0.063 - 2.00 mm	Brick	Vegetation
14026580	WS205	1.00	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14026588	WS206	0.30	Dark Brown	Sand	0.063 - 2.00 mm	Stones	Plastic
14026596	WS206	1.00	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Brick	Tile/Insulation Board
14065582	WS207	0.20	Light Brown	Sandy Loam	0.063 - 2.00 mm	Vegetation	Stones
14081663	WS207	0.70	Light Brown	Sand	0.063 - 2.00 mm	Stones	Vegetation
14026722	WS208	0.30	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Vegetation	Stones
14026738	WS208	1.00	Dark Brown	Clay	<0.002 mm	Stones	N/A
14026763	WS209	0.50	Dark Brown	Sandy Silt Loam	0.002 - 0.063 mm	Vegetation	Stones
14026770	WS209	1.00	Dark Brown	Sandy Silt Loam	0.002 - 0.063 mm	Stones	Vegetation
14026775	WS211	0.20	Light Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
14026782	WS211	0.65	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14026087	WS212	0.65	Light Brown	Clay Loam	0.002 - 0.063 mm	Stones	Vegetation
14026789	WS212	0.20	Light Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH201	BH201	BH201	BH202	BH202	BH207
			Depth (m)	0.30	1.00	3.00	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	17/08/2016	19/08/2016	19/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026073	14026123	14026263	14026440	14026532	14026165
			AGS Reference	ES	ES	ES	ES	ES	ESES1
Moisture Content Ratio (% of as received sample)	%	PM024		8	9.6	9.4	16	15	7.7
Soil Organic Matter (SOM)	<0.35 %	TM132				0.978 #	1.54 #		3.95 #
pH	1 pH Units	TM133		8.4 M	8.36 M	8.15 M	8.44 M	8.34 M	8.14 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	
Arsenic	<0.6 mg/kg	TM181		11.1 M	10.2 M	11.7 M	9.78 M	18.7 M	11.6 M
Cadmium	<0.02 mg/kg	TM181		0.312 M	0.448 M	0.171 M	0.414 M	1.28 M	0.831 M
Chromium	<0.9 mg/kg	TM181		22.2 M	18.5 M	12.9 M	28.8 M	30 M	18.5 M
Copper	<1.4 mg/kg	TM181		44.6 M	34.7 M	10 M	28 M	182 M	65.9 M
Lead	<0.7 mg/kg	TM181		155 M	200 M	21 M	81.2 M	537 M	106 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		13.8 M	13.4 M	7.53 M	17.7 M	17.3 M	21.2 M
Selenium	<1 mg/kg	TM181		<1 #	1.12 #	<1 #	1.49 #	1.56 #	1.28 #
Zinc	<1.9 mg/kg	TM181		119 M	128 M	21.3 M	115 M	570 M	97.7 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH207	BH207	HP201	HP201	HP202	HP202
			Depth (m)	0.70	1.50	0.20	0.90	0.30	0.70
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/08/2016	17/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026374	14026453	14026109	14026117	14026129	14026136
			AGS Reference	ESES2	ESES3	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		9.3	15	5.3	13	7.2	9.9
Soil Organic Matter (SOM)	<0.35 %	TM132			<0.35 #				0.552 #
pH	1 pH Units	TM133		8.11 M	8.68 M	7.94 M	7.8 M	7.87 M	8.2 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153				<1 M			
Cyanide, Free	<1 mg/kg	TM153				<1 M			
Cyanide, Complex	<1 mg/kg	TM153				<1			
Arsenic	<0.6 mg/kg	TM181		14 M	1.58 M	14.7 M	9.69 M	12 M	6.65 M
Cadmium	<0.02 mg/kg	TM181		0.4 M	0.0232 M	0.421 M	0.217 M	0.42 M	0.253 M
Chromium	<0.9 mg/kg	TM181		19.2 M	3.55 M	17.4 M	11.4 M	19.9 M	28.1 M
Copper	<1.4 mg/kg	TM181		59.3 M	2.46 M	978 M	315 M	76 M	49.1 M
Lead	<0.7 mg/kg	TM181		235 M	2.71 M	12100 M	3330 M	91.9 M	31.8 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		19.6 M	3.24 M	325 M	93.3 M	14 M	52.4 M
Selenium	<1 mg/kg	TM181		1.27 #	<1 #	1.05 #	<1 #	1.3 #	1.68 #
Zinc	<1.9 mg/kg	TM181		92 M	6.99 M	66.9 M	119 M	110 M	130 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
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tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP203	HP203	HP205	HP205	HP206	HP206
			Depth (m)	0.15	0.70	0.40	0.70	0.30	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026145	14026151	14026159	14026172	14026178	14026185
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		5.8	5.6	7.9	7.9	6.6	16
Soil Organic Matter (SOM)	<0.35 %	TM132				3.09 #			4.02 #
pH	1 pH Units	TM133		7.86 M	8.29 M	8.07 M	8.13 M	8.21 M	11.4 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153			<1 M		<1 M		
Cyanide, Free	<1 mg/kg	TM153			<1 M		<1 M		
Cyanide, Complex	<1 mg/kg	TM153			<1		<1		
Arsenic	<0.6 mg/kg	TM181		14.4 M	5.11 M	10.7 M	12 M	12.7 M	9.56 M
Cadmium	<0.02 mg/kg	TM181		0.388 M	0.343 M	0.655 M	0.46 M	0.387 M	0.328 M
Chromium	<0.9 mg/kg	TM181		17.7 M	11.4 M	25.3 M	21.1 M	18.3 M	19.9 M
Copper	<1.4 mg/kg	TM181		25.6 M	12.9 M	38.6 M	10 M	20.7 M	162 M
Lead	<0.7 mg/kg	TM181		435 M	51 M	203 M	15 M	44 M	184 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		14.4 M	13.1 M	24.9 M	21.6 M	14.5 M	20.4 M
Selenium	<1 mg/kg	TM181		1.16 #	<1 #	1.58 #	1.43 #	<1 #	1.1 #
Zinc	<1.9 mg/kg	TM181		63.5 M	46.5 M	76 M	49.6 M	79.1 M	364 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
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*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP207	HP207	HP208	HP208	HP209	HP209
			Depth (m)	0.30	0.60	0.15	0.80	0.30	0.65
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026192	14026201	14026215	14026222	14064190	14078539
			AGS Reference	ESES1	ESES2	ES	ES		
Moisture Content Ratio (% of as received sample)	%	PM024		10	9.7	5.1	11	8.4	6.6
Soil Organic Matter (SOM)	<0.35 %	TM132							0.609 #
pH	1 pH Units	TM133		7.7 M	8.24 M	7.61 M	8.01 M	11.6 #	10.5 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M					<1 @ M
Cyanide, Free	<1 mg/kg	TM153		<1 M					<1 @ M
Cyanide, Complex	<1 mg/kg	TM153		<1					<1
Arsenic	<0.6 mg/kg	TM181		11.4 M	10.7 M	6.53 M	5.76 M	9 #	7.26 M
Cadmium	<0.02 mg/kg	TM181		0.335 M	0.39 M	<0.02 M	0.351 M	0.228 #	0.185 M
Chromium	<0.9 mg/kg	TM181		27.5 M	27.9 M	6.85 M	8.06 M	15 #	8.32 M
Copper	<1.4 mg/kg	TM181		16.4 M	16.2 M	10.1 M	10.5 M	7.27 #	6.28 M
Lead	<0.7 mg/kg	TM181		53.1 M	36.8 M	60.9 M	45.7 M	12.8 #	22.5 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 #	<0.14 M
Nickel	<0.2 mg/kg	TM181		20.6 M	22.2 M	8.15 M	8.1 M	11.8 #	7.42 M
Selenium	<1 mg/kg	TM181		1.19 #	1.26 #	<1 #	<1 #	1.19 #	<1 #
Zinc	<1.9 mg/kg	TM181		56.5 M	57.3 M	32.8 M	42.5 M	28 #	37.9 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP210	HP210	HP215	TP201	TP201	TP203
			Depth (m)	0.25	0.75	0.20	0.30	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	17/08/2016	17/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14065583	14078541	14026237	14026244	14026250	14026256
			AGS Reference			ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		7	15	10	3.9	3	6.8
Soil Organic Matter (SOM)	<0.35 %	TM132			2.22 #	3.81 #			3.74 #
pH	1 pH Units	TM133		8.07 #	8.71 M	6.69 M	8.44 M	8.47 M	8.52 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153			<1 @ M		<1 M	<1 @ M	
Cyanide, Free	<1 mg/kg	TM153			<1 @ M		<1 M	<1 @ M	
Cyanide, Complex	<1 mg/kg	TM153			<1		<1	<1	
Arsenic	<0.6 mg/kg	TM181		22.9 #	25.3 M	14.8 M	11.8 M	8.22 M	11.1 M
Cadmium	<0.02 mg/kg	TM181		0.595 #	0.0651 M	0.561 M	0.138 M	0.325 M	0.17 M
Chromium	<0.9 mg/kg	TM181		14.9 #	22 M	15.8 M	21.5 M	12.9 M	16.3 M
Copper	<1.4 mg/kg	TM181		16.7 #	22.2 M	195 M	106 M	63.4 M	54 M
Lead	<0.7 mg/kg	TM181		114 #	132 M	2750 M	1370 M	482 M	559 M
Mercury	<0.14 mg/kg	TM181		<1.4 #	<0.14 M	0.277 M	0.236 M	<0.14 M	0.447 M
Nickel	<0.2 mg/kg	TM181		16.9 #	13 M	12.9 M	20.1 M	21.7 M	14.5 M
Selenium	<1 mg/kg	TM181		<10 #	1.12 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		200 #	81.5 M	4600 M	357 M	73.3 M	230 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP207	TP207	TP209	TP209	TP210	TP210
			Depth (m)	0.50	0.85	0.40	1.00	0.20	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	18/08/2016	17/08/2016	17/08/2016	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026281	14026287	14026313	14026320	14026335	14026342
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		5.3	9.4	11	4.8	7.5	13
Soil Organic Matter (SOM)	<0.35 %	TM132		0.565 #	1.35 #		<0.35		0.4 #
pH	1 pH Units	TM133		8.58 M	8.31 M	7.57 M	8	6.68 M	7.74 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M				<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M				<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1	<1				<1
PCB congener 118	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 81	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 77	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 123	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 114	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 105	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 126	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 167	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 156	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 157	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 169	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 189	<0.003 mg/kg	TM168			<0.003 M				
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168			<0.036				
Arsenic	<0.6 mg/kg	TM181		14.1 M	15.5 M	7.64 M	14.1	14 M	12.1 M
Cadmium	<0.02 mg/kg	TM181		0.159 M	0.586 M	0.195 M	0.194	0.429 M	0.207 M
Chromium	<0.9 mg/kg	TM181		15.2 M	19.8 M	20.8 M	12.9	20.2 M	35.3 M
Copper	<1.4 mg/kg	TM181		24.1 M	67.3 M	27.2 M	6.65	46.2 M	11.4 M
Lead	<0.7 mg/kg	TM181		316 M	251 M	80.9 M	9.02	200 M	14.8 M
Mercury	<0.14 mg/kg	TM181		1.05 M	0.674 M	<0.14 M	<0.14	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		13.2 M	21.6 M	11.7 M	15	16.6 M	18.7 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1	1.55 #	2.01 #
Zinc	<1.9 mg/kg	TM181		120 M	1010 M	44.6 M	24.4	107 M	47.2 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP211	TP213	TP214	TRIP BLANK	WS202	WS202
			Depth (m)	0.70	1.00	0.30	.	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	17/08/2016	19/08/2016	-	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026382	14026402	14026420	14028420	14026433	14026446
			AGS Reference	ES	ES	ES		ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		7.1	8.6	2.6	5 §	7.6	6.3
Soil Organic Matter (SOM)	<0.35 %	TM132			<0.35 #			0.922 #	3.53 #
pH	1 pH Units	TM133		8.15 M	7.23 M	7.97 M		7.74 M	8.24 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #		<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153						<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153						<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153						<1	<1
PCB congener 118	<0.003 mg/kg	TM168						<0.003 M	0.0124 M
PCB congener 81	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 77	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 123	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 114	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 105	<0.003 mg/kg	TM168						<0.003 M	0.0047 M
PCB congener 126	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 167	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 156	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 157	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 169	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
PCB congener 189	<0.003 mg/kg	TM168						<0.003 M	<0.003 M
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168						<0.036	<0.036
Arsenic	<0.6 mg/kg	TM181		13.5 M	<0.6 M	29.1 M		7.19 M	11.1 M
Cadmium	<0.02 mg/kg	TM181		<0.02 M	<0.02 M	0.29 M		0.287 M	0.241 M
Chromium	<0.9 mg/kg	TM181		17.5 M	7.3 M	15.2 M		14.9 M	15.7 M
Copper	<1.4 mg/kg	TM181		175 M	1.98 M	12.2 M		9.01 M	458 M
Lead	<0.7 mg/kg	TM181		361 M	<0.7 M	23.3 M		28.7 M	2290 M
Mercury	<0.14 mg/kg	TM181		0.549 M	<0.14 M	<0.14 M		<0.14 M	<1.4 M
Nickel	<0.2 mg/kg	TM181		15.5 M	0.266 M	8.82 M		12.8 M	21.7 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	1.75 #		1.16 #	<10 #
Zinc	<1.9 mg/kg	TM181		227 M	<1.9 M	35.2 M		43.7 M	159 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS203	WS203	WS204	WS204	WS205	WS205
			Depth (m)	0.30	1.50	0.20	1.00	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026484	14026496	14026525	14026545	14026572	14026580
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		6.8	2.3	10	10	5.3	12
Soil Organic Matter (SOM)	<0.35 %	TM132				5.17 #	1.36 #	2.93 #	
pH	1 pH Units	TM133		7.96 M	7.73 M	8.26 M	8.36 M	8.04 M	8 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153				<1 M	<1 M		
Cyanide, Free	<1 mg/kg	TM153				<1 M	<1 M		
Cyanide, Complex	<1 mg/kg	TM153				<1	<1		
PCB congener 118	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 81	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 77	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 123	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 114	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 105	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 126	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 167	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 156	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 157	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 169	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 189	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168				<0.036	<0.036		
Arsenic	<0.6 mg/kg	TM181		12.1 M	2.59 M	9.48 M	8.16 M	16.1 M	10.8 M
Cadmium	<0.02 mg/kg	TM181		0.403 M	0.029 M	0.0384 M	0.409 M	0.663 M	0.378 M
Chromium	<0.9 mg/kg	TM181		15.2 M	2.1 M	20.9 M	24.5 M	25.4 M	19.5 M
Copper	<1.4 mg/kg	TM181		105 M	3.96 M	25.7 M	21 M	224 M	26.7 M
Lead	<0.7 mg/kg	TM181		551 M	6.35 M	83.9 M	46.9 M	402 M	94.3 M
Mercury	<0.14 mg/kg	TM181		0.649 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		38.6 M	2.34 M	18.9 M	19.5 M	45.8 M	16 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	1.01 #	1.2 #	1.6 #
Zinc	<1.9 mg/kg	TM181		545 M	9.37 M	128 M	75.1 M	240 M	72.9 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS206	WS206	WS207	WS207	WS208	WS208
			Depth (m)	0.30	1.00	0.20	0.70	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	18/08/2016	19/08/2016	18/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026588	14026596	14065582	14081663	14026722	14026738
			AGS Reference	ESES1	ESES2			ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		9.1	20	8.9	5.3	8.5	9.4
Soil Organic Matter (SOM)	<0.35 %	TM132				10.3 #	0.855 #	2.43 #	<0.35 #
pH	1 pH Units	TM133		7.65 M	8.15 M	7.76 M	8.72 M	7.12 M	8.4 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153			<1 M				
Cyanide, Free	<1 mg/kg	TM153			<1 M				
Cyanide, Complex	<1 mg/kg	TM153			<1				
Arsenic	<0.6 mg/kg	TM181		13.7 M	15.8 M	13.7 M	13.7 M	10.5 M	16.8 M
Cadmium	<0.02 mg/kg	TM181		0.575 M	0.308 M	0.517 M	0.38 M	0.207 M	0.18 M
Chromium	<0.9 mg/kg	TM181		19.1 M	17.9 M	20 M	12.6 M	17.5 M	20.7 M
Copper	<1.4 mg/kg	TM181		47.2 M	74.3 M	30.1 M	14.1 M	21.1 M	5 M
Lead	<0.7 mg/kg	TM181		176 M	297 M	212 M	93.4 M	116 M	10.1 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	0.26 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		16.2 M	21 M	17.3 M	16.1 M	9.69 M	10.9 M
Selenium	<1 mg/kg	TM181		1.32 #	1.56 #	1.26 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		163 M	94.6 M	93.6 M	91.6 M	52.1 M	20.4 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS209	WS209	WS211	WS211	WS212	WS212
			Depth (m)	0.50	1.00	0.20	0.65	0.20	0.65
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026763	14026770	14026775	14026782	14026789	14026087
			AGS Reference	ES	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		6.5	8.1	5.1	21	8.9	14
pH	1 pH Units	TM133		6.55 M	7.69 M	8.15 M	7.36 M	6.15 M	7.77 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		9.58 M	11.4 M	5.03 M	23.5 M	11.9 M	13.3 M
Cadmium	<0.02 mg/kg	TM181		<0.02 M	<0.02 M	0.0974 M	<0.02 M	<0.02 M	<0.02 M
Chromium	<0.9 mg/kg	TM181		15.8 M	25.4 M	7.82 M	11.7 M	16.8 M	28.7 M
Copper	<1.4 mg/kg	TM181		26.9 M	13.8 M	146 M	252 M	92.8 M	11.9 M
Lead	<0.7 mg/kg	TM181		121 M	18.3 M	659 M	392 M	329 M	28.2 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M	<0.14 M	0.163 M	0.845 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		16 M	21.1 M	10.8 M	16.8 M	18.4 M	16 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		59.9 M	47.4 M	35.4 M	204 M	96.6 M	42.9 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Dioxins/Furans (S)*

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH202	TP203	TP207	WS202	WS204	WS204
			Depth (m)	1.00	0.40	0.85	0.30	0.20	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	17/08/2016	18/08/2016	18/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026532	14026256	14026287	14026433	14026525	14026545
			AGS Reference	ES	ES	ES	ES	ES	ES
1,2,3,4,6,7,8 HpCDD*	mg/kg	SUB		0.000092	0.0002	0.000087	0.000021	0.000019	0.000022
1,2,3,4,6,7,8 HpCDF*	mg/kg	SUB		0.00013	0.000019	0.000057	0.000011	0.000014	0.000009
1,2,3,4,7,8 HxCDD*	mg/kg	SUB		0.000007	<0.000002	0.000004	<0.000002	<0.000002	<0.000002
1,2,3,4,7,8 HxCDF*	mg/kg	SUB		0.000029	0.000003	0.000017	<0.000002	<0.000002	<0.000002
1,2,3,4,7,8,9 HpCDF*	mg/kg	SUB		0.000008	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
1,2,3,6,7,8 HxCDD*	mg/kg	SUB		0.000012	0.000003	0.000012	0.000002	0.000003	<0.000002
1,2,3,6,7,8 HxCDF*	mg/kg	SUB		0.000028	0.000003	0.000013	<0.000002	<0.000002	<0.000002
1,2,3,7,8 PeCDD*	mg/kg	SUB		0.000015	<0.000002	0.000007	<0.000002	0.000002	<0.000002
1,2,3,7,8 PeCDF*	mg/kg	SUB		0.000021	<0.000002	0.000014	<0.000002	<0.000002	<0.000002
1,2,3,7,8,9 HxCDD*	mg/kg	SUB		0.000009	0.000002	0.000005	<0.000002	0.000002	<0.000002
1,2,3,7,8,9 HxCDF*	mg/kg	SUB		<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
2,3,4,6,7,8 HxCDF*	mg/kg	SUB		0.000031	0.000005	0.00001	<0.000002	<0.000002	<0.000002
2,3,4,7,8 PeCDF*	mg/kg	SUB		0.000037	0.000003	0.000015	<0.000002	<0.000002	<0.000002
2,3,7,8 TCDD*	mg/kg	SUB		0.000003	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
2,3,7,8, TCDF*	mg/kg	SUB		0.000034	0.000016	0.000014	<0.000002	<0.000002	0.000028
OCDD*	mg/kg	SUB		0.00028	0.0013	0.00022	0.0001	0.000084	0.00021
OCDF*	mg/kg	SUB		0.000095	0.000013	0.000038	0.000014	<0.00001	0.000017
I-PCDD/F-TEQ Lower Bound*	mg/kg	SUB		0.000047	0.000008	0.00002	0.000001	0.000003	0.000003
I-PCDD/F-TEQ Upper Bound*	mg/kg	SUB		0.000046	0.000012	0.000023	0.000006	0.000007	0.000009

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH201	BH201	BH201	BH202	BH202	BH207
			Depth (m)	0.30	1.00	3.00	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	17/08/2016	19/08/2016	19/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026073	14026123	14026263	14026440	14026532	14026165
			AGS Reference	ES	ES	ES	ES	ES	ESES1
Naphthalene-d8 % recovery**	%	TM218		93.5	99.2	84.1	91.7	90.8	91.9
Acenaphthene-d10 % recovery**	%	TM218		92.4	97.1	85.2	91.6	93.5	91.9
Phenanthrene-d10 % recovery**	%	TM218		90.3	97.7	82.9	89.2	90.7	90.3
Chrysene-d12 % recovery**	%	TM218		85.9	95.6	76.7	88.4	81.5	88.6
Perylene-d12 % recovery**	%	TM218		94.1	104	83.5	97	90.2	96.6
Naphthalene	<0.009 mg/kg	TM218		0.0109 M	0.0318 M	<0.009 M	0.0458 M	0.0453 M	0.26 M
Acenaphthylene	<0.012 mg/kg	TM218		0.025 M	0.0664 M	<0.012 M	0.0544 M	0.0223 M	0.109 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	0.0213 M	<0.008 M	0.0511 M	0.00984 M	0.0395 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	0.0212 M	<0.01 M	0.0485 M	0.0143 M	0.0349 M
Phenanthrene	<0.015 mg/kg	TM218		0.0664 M	0.303 M	<0.015 M	0.667 M	0.277 M	0.669 M
Anthracene	<0.016 mg/kg	TM218		0.0331 M	0.133 M	<0.016 M	0.158 M	0.0639 M	0.195 M
Fluoranthene	<0.017 mg/kg	TM218		0.283 M	1.3 M	<0.017 M	1.79 M	0.504 M	1.35 M
Pyrene	<0.015 mg/kg	TM218		0.278 M	1.32 M	<0.015 M	1.55 M	0.419 M	1.25 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.215 M	0.456 M	<0.014 M	0.488 M	0.13 M	0.81 M
Chrysene	<0.01 mg/kg	TM218		0.191 M	0.585 M	<0.01 M	0.981 M	0.203 M	0.657 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.491 M	1.42 M	<0.015 M	1.81 M	0.447 M	1.15 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.152 M	0.549 M	<0.014 M	0.692 M	0.168 M	0.375 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.346 M	1.23 M	<0.015 M	1.33 M	0.325 M	0.952 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.229 M	0.753 M	<0.018 M	0.746 M	0.248 M	0.531 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0591 M	0.197 M	<0.023 M	0.237 M	0.077 M	0.149 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.309 M	0.854 M	<0.024 M	0.834 M	0.317 M	0.642 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		2.69	9.24	<0.118	11.5	3.27	9.17

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH207	BH207	HP201	HP201	HP202	HP202
			Depth (m)	0.70	1.50	0.20	0.90	0.30	0.70
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/08/2016	17/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026374	14026453	14026109	14026117	14026129	14026136
			AGS Reference	ESES2	ESES3	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		89.3	97.3	97.2	95.1	91.4	93.2
Acenaphthene-d10 % recovery**	%	TM218		87.1	98.9	94.6	91.2	90.5	93.3
Phenanthrene-d10 % recovery**	%	TM218		85.1	97.5	93.5	90.2	88.7	90.4
Chrysene-d12 % recovery**	%	TM218		87.4	90.3	90.2	86.4	83.9	84.5
Perylene-d12 % recovery**	%	TM218		91.8	95.4	96	93.2	92.8	93.4
Naphthalene	<0.009 mg/kg	TM218		0.0513 M	<0.009 M	<0.009 M	<0.009 M	0.0137 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		0.171 M	<0.012 M	0.0198 M	<0.012 M	0.0249 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		0.0215 M	<0.008 M	<0.008 M	<0.008 M	<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		0.0528 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		0.859 M	<0.015 M	0.0354 M	0.0226 M	0.0722 M	0.0202 M
Anthracene	<0.016 mg/kg	TM218		0.259 M	<0.016 M	0.0194 M	<0.016 M	0.0261 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		1.91 M	<0.017 M	0.135 M	0.0498 M	0.283 M	0.0426 M
Pyrene	<0.015 mg/kg	TM218		1.68 M	<0.015 M	0.132 M	0.0465 M	0.258 M	0.0368 M
Benz(a)anthracene	<0.014 mg/kg	TM218		1.26 M	<0.014 M	0.0589 M	0.027 M	0.208 M	0.0219 M
Chrysene	<0.01 mg/kg	TM218		0.961 M	<0.01 M	0.0922 M	0.0285 M	0.187 M	0.022 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		1.66 M	<0.015 M	0.22 M	0.0699 M	0.326 M	0.0412 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.553 M	<0.014 M	0.0814 M	0.0266 M	0.12 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		1.34 M	<0.015 M	0.139 M	0.0444 M	0.254 M	0.0342 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.676 M	<0.018 M	0.0983 M	0.0372 M	0.14 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.201 M	<0.023 M	0.033 M	<0.023 M	0.0416 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.738 M	<0.024 M	0.106 M	0.0424 M	0.176 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		12.4	<0.118	1.17	0.395	2.13	0.219

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP203	HP203	HP205	HP205	HP206	HP206
			Depth (m)	0.15	0.70	0.40	0.70	0.30	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026145	14026151	14026159	14026172	14026178	14026185
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		91.7	87.3	95.1	100	98	95.1
Acenaphthene-d10 % recovery**	%	TM218		91.7	84.1	92	98.7	95.2	93.2
Phenanthrene-d10 % recovery**	%	TM218		90.3	82.3	92.5	96.3	95.4	92.6
Chrysene-d12 % recovery**	%	TM218		87.4	82.3	88.9	89.8	92.9	89.1
Perylene-d12 % recovery**	%	TM218		97.2	85.7	96.5	97.8	100	96.3
Naphthalene	<0.009 mg/kg	TM218		0.0482 M	<0.009 M	0.0152 M	<0.009 M	0.0164 M	0.0182 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0295 M	<0.012 M	0.0339 M	<0.012 M	0.0293 M	0.0186 M
Acenaphthene	<0.008 mg/kg	TM218		0.263 M	<0.008 M	0.013 M	0.0111 M	0.0184 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		0.192 M	<0.01 M	0.0184 M	<0.01 M	0.027 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		2.06 M	0.0327 M	0.125 M	0.0748 M	0.356 M	0.198 M
Anthracene	<0.016 mg/kg	TM218		0.35 M	<0.016 M	0.0593 M	0.0199 M	0.112 M	0.0288 M
Fluoranthene	<0.017 mg/kg	TM218		2.36 M	0.0782 M	0.407 M	0.123 M	0.728 M	0.299 M
Pyrene	<0.015 mg/kg	TM218		1.87 M	0.0689 M	0.477 M	0.0876 M	0.671 M	0.253 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.861 M	0.0689 M	0.156 M	0.06 M	0.0905 M	0.0562 M
Chrysene	<0.01 mg/kg	TM218		0.805 M	0.0479 M	0.258 M	0.0585 M	0.379 M	0.0932 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		1.14 M	0.0857 M	0.789 M	0.0955 M	0.63 M	0.235 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.436 M	0.025 M	0.253 M	0.0354 M	0.207 M	0.0923 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.924 M	0.063 M	0.641 M	0.0633 M	0.537 M	0.179 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.483 M	0.0396 M	0.419 M	0.0379 M	0.296 M	0.11 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.128 M	<0.023 M	0.115 M	<0.023 M	0.0828 M	0.0325 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.577 M	0.0487 M	0.534 M	0.0448 M	0.353 M	0.13 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		12.5	0.559	4.32	0.712	4.53	1.74

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP207	HP207	HP208	HP208	HP209	HP209
			Depth (m)	0.30	0.60	0.15	0.80	0.30	0.65
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026192	14026201	14026215	14026222	14064190	14078539
			AGS Reference	ESES1	ESES2	ES	ES		
Naphthalene-d8 % recovery**	%	TM218		89.7	91.6	101	101	96.7	97.7
Acenaphthene-d10 % recovery**	%	TM218		89.1	91.1	99	98.4	94.6	95.3
Phenanthrene-d10 % recovery**	%	TM218		87	88.3	97.8	97.4	93.8	94.8
Chrysene-d12 % recovery**	%	TM218		82.3	82.7	97.8	98.5	92	90
Perylene-d12 % recovery**	%	TM218		88.9	90.7	103	103	98.7	93.7
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M	0.0192 M	0.0135 M	<0.009 #	<0.009 @ M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M	0.0141 M	<0.012 M	<0.012 #	<0.012 @ M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	0.0326 M	<0.008 M	<0.008 #	<0.008 @ M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	0.0222 M	<0.01 M	<0.01 #	<0.01 @ M
Phenanthrene	<0.015 mg/kg	TM218		0.0243 M	0.0206 M	0.243 M	0.0753 M	<0.015 #	0.017 @ M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	0.0427 M	<0.016 M	<0.016 #	<0.016 @ M
Fluoranthene	<0.017 mg/kg	TM218		0.0702 M	0.0348 M	0.338 M	0.146 M	<0.017 #	0.0666 @ M
Pyrene	<0.015 mg/kg	TM218		0.0635 M	0.0325 M	0.298 M	0.123 M	<0.015 #	0.069 @ M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0501 M	0.0246 M	0.194 M	0.105 M	<0.014 #	0.0825 @ M
Chrysene	<0.01 mg/kg	TM218		0.0452 M	0.0243 M	0.175 M	0.0978 M	<0.01 #	0.0629 @ M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0838 M	0.0468 M	0.246 M	0.153 M	<0.015 #	0.113 @ M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0305 M	0.0193 M	0.0757 M	0.048 M	<0.014 #	0.0388 @ M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0622 M	0.0357 M	0.191 M	0.114 M	<0.015 #	0.091 @ M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0392 M	0.0238 M	0.101 M	0.0664 M	<0.018 #	0.052 @ M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	0.0259 M	<0.023 M	<0.023 #	<0.023 @ M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0492 M	0.0316 M	0.116 M	0.0828 M	<0.024 #	0.0686 @ M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.518	0.294	2.13	1.02	<0.118	0.662

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP210	HP210	HP215	TP201	TP201	TP203
			Depth (m)	0.25	0.75	0.20	0.30	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	17/08/2016	17/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14065583	14078541	14026237	14026244	14026250	14026256
			AGS Reference			ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		96.2	97.4	89.3	90.9	91.9	112
Acenaphthene-d10 % recovery**	%	TM218		93.5	96.6	89.7	89.8	91.2	113
Phenanthrene-d10 % recovery**	%	TM218		93.1	96.1	86.7	87.9	89.1	114
Chrysene-d12 % recovery**	%	TM218		94.3	94.3	82.2	83.4	86.1	110
Perylene-d12 % recovery**	%	TM218		102	98.4	89	90.8	92.8	117
Naphthalene	<0.009 mg/kg	TM218		0.0719 #	0.235 @ M	0.0167 M	<0.009 M	0.0387 M	0.227 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0343 #	0.0582 @ M	<0.012 M	<0.012 M	0.0416 M	0.739 M
Acenaphthene	<0.008 mg/kg	TM218		0.106 #	0.287 @ M	<0.008 M	0.00974 M	0.0219 M	0.0957 M
Fluorene	<0.01 mg/kg	TM218		0.0775 #	0.181 @ M	<0.01 M	<0.01 M	0.0225 M	0.312 M
Phenanthrene	<0.015 mg/kg	TM218		0.719 #	1.61 @ M	0.12 M	0.0688 M	0.372 M	4.89 M
Anthracene	<0.016 mg/kg	TM218		0.203 #	0.421 @ M	0.0203 M	0.0191 M	0.0765 M	3.06 M
Fluoranthene	<0.017 mg/kg	TM218		1.48 #	2.94 @ M	0.194 M	0.122 M	0.871 M	10.2 M
Pyrene	<0.015 mg/kg	TM218		1.27 #	2.5 @ M	0.167 M	0.11 M	0.816 M	8.62 M
Benz(a)anthracene	<0.014 mg/kg	TM218		1.14 #	2.1 @ M	0.143 M	0.0901 M	0.461 M	2 M
Chrysene	<0.01 mg/kg	TM218		1 #	2.01 @ M	0.139 M	0.0738 M	0.434 M	4.61 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		1.64 #	3.03 @ M	0.282 M	0.159 M	0.867 M	5.94 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.512 #	1.07 @ M	0.078 M	0.0616 M	0.293 M	1.98 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		1.31 #	2.48 @ M	0.173 M	0.117 M	0.63 M	4.9 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.667 #	1.31 @ M	0.107 M	0.0783 M	0.419 M	2.47 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.219 #	0.428 @ M	0.0344 M	<0.023 M	0.112 M	0.77 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.763 #	1.43 @ M	0.136 M	0.101 M	0.497 M	2.83 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		11.2	22.1	1.61	1.01	5.97	53.6

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP207	TP207	TP209	TP209	TP210	TP210
			Depth (m)	0.50	0.85	0.40	1.00	0.20	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	18/08/2016	17/08/2016	17/08/2016	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026281	14026287	14026313	14026320	14026335	14026342
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		94.6	120	93.6	92.1	90.5	93.8
Acenaphthene-d10 % recovery**	%	TM218		91.3	116	89.1	93.2	92.5	95.7
Phenanthrene-d10 % recovery**	%	TM218		91.4	118	87.7	93.1	92.7	94.1
Chrysene-d12 % recovery**	%	TM218		87.1	119	84.5	84.7	85.9	86.4
Perylene-d12 % recovery**	%	TM218		93.4	122	89.5	89.4	91.6	91.6
Naphthalene	<0.009 mg/kg	TM218		0.021 M	0.18 M	<0.009 M	<0.009	<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0158 M	0.257 M	<0.012 M	<0.012	<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		0.0115 M	0.21 M	<0.008 M	<0.008	<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		0.0182 M	0.23 M	<0.01 M	<0.01	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		0.259 M	4.91 M	0.0377 M	<0.015	0.0799 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		0.0291 M	1.84 M	<0.016 M	<0.016	0.0234 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		0.368 M	12.7 M	0.0977 M	<0.017	0.207 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		0.316 M	10.6 M	0.0747 M	<0.015	0.176 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0768 M	4.01 M	<0.014 M	<0.014	0.0703 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		0.0949 M	5.2 M	0.0402 M	<0.01	0.114 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.27 M	11.2 M	0.0787 M	<0.015	0.197 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.09 M	3.87 M	0.0252 M	<0.014	0.0788 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.185 M	9.88 M	0.0585 M	<0.015	0.139 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.116 M	6.26 M	0.0315 M	<0.018	0.0778 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0364 M	1.73 M	<0.023 M	<0.023	0.0274 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.145 M	7.41 M	0.0358 M	<0.024	0.0938 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		2.05	80.6	0.48	<0.118	1.28	<0.118

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP211	TP213	TP214	WS202	WS202	WS203
			Depth (m)	0.70	1.00	0.30	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	17/08/2016	19/08/2016	18/08/2016	18/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026382	14026402	14026420	14026433	14026446	14026484
			AGS Reference	ES	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		87.1	92.4	106	97.7	95.8	99.7
Acenaphthene-d10 % recovery**	%	TM218		85.5	89.7	103	96.4	91.9	98.9
Phenanthrene-d10 % recovery**	%	TM218		84.3	89	101	94.9	92.6	97
Chrysene-d12 % recovery**	%	TM218		84.3	83.6	95.4	94.5	92.6	97.3
Perylene-d12 % recovery**	%	TM218		87	80.6	103	97.2	82.5	97.9
Naphthalene	<0.009 mg/kg	TM218		0.0421 M	<0.009 M	<0.009 M	0.0115 M	0.151 M	0.0764 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0543 M	<0.012 M	<0.012 M	<0.012 M	0.413 M	0.026 M
Acenaphthene	<0.008 mg/kg	TM218		0.00893 M	<0.008 M	<0.008 M	0.011 M	0.25 M	0.0126 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M	<0.01 M	0.221 M	0.0131 M
Phenanthrene	<0.015 mg/kg	TM218		0.269 M	<0.015 M	0.0237 M	0.095 M	3.18 M	0.236 M
Anthracene	<0.016 mg/kg	TM218		0.0618 M	<0.016 M	<0.016 M	0.027 M	1.42 M	0.0494 M
Fluoranthene	<0.017 mg/kg	TM218		0.696 M	<0.017 M	<0.017 M	0.185 M	12 M	0.453 M
Pyrene	<0.015 mg/kg	TM218		0.602 M	<0.015 M	0.0287 M	0.174 M	12.5 M	0.423 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.46 M	<0.014 M	<0.014 M	0.161 M	3.92 M	0.354 M
Chrysene	<0.01 mg/kg	TM218		0.478 M	<0.01 M	0.0116 M	0.138 M	6.05 M	0.363 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.771 M	<0.015 M	0.0226 M	0.205 M	11.1 M	0.566 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.242 M	<0.014 M	<0.014 M	0.064 M	4.65 M	0.166 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.554 M	<0.015 M	0.0207 M	0.161 M	9.24 M	0.392 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.324 M	<0.018 M	<0.018 M	0.092 M	6.5 M	0.209 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0956 M	<0.023 M	<0.023 M	0.027 M	1.85 M	0.0677 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.359 M	<0.024 M	<0.024 M	0.104 M	8.43 M	0.267 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		5.02	<0.118	<0.118	1.46	81.9	3.67

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS203	WS204	WS204	WS205	WS205	WS206
			Depth (m)	1.50	0.20	1.00	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026496	14026525	14026545	14026572	14026580	14026588
			AGS Reference	ES	ES	ES	ES	ES	ESES1
Naphthalene-d8 % recovery**	%	TM218		85.9	96	90.6	93.6	87.9	112
Acenaphthene-d10 % recovery**	%	TM218		88.2	96.1	90.7	90.7	86	113
Phenanthrene-d10 % recovery**	%	TM218		85.1	93.9	88.7	92.3	84.4	108
Chrysene-d12 % recovery**	%	TM218		70.7	93.2	87.1	91.8	82.5	85.3
Perylene-d12 % recovery**	%	TM218		77.5	102	95.3	90.1	84.3	89.5
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	0.0241 M	<0.009 M	0.433 M	0.0234 M	0.0947 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	0.0414 M	0.0226 M	0.0834 M	0.0147 M	0.0915 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	0.154 M	0.0288 M	0.777 M	<0.008 M	0.0538 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	0.159 M	0.0358 M	0.46 M	<0.01 M	0.0617 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	1.97 M	0.522 M	7.42 M	0.132 M	0.763 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	0.468 M	0.121 M	1.44 M	0.0239 M	0.183 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	3.44 M	1.16 M	10.7 M	0.274 M	1.52 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	2.76 M	0.942 M	9.1 M	0.235 M	1.27 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	1.56 M	0.601 M	3.06 M	0.167 M	0.392 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	1.27 M	0.494 M	3.49 M	0.174 M	0.786 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	1.79 M	0.806 M	4.84 M	0.252 M	1.41 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	0.787 M	0.304 M	1.91 M	0.0711 M	0.493 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	1.56 M	0.663 M	3.57 M	0.175 M	0.884 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	0.764 M	0.352 M	2.21 M	0.0981 M	0.638 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	0.229 M	0.0965 M	0.67 M	0.0283 M	0.212 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	0.924 M	0.443 M	2.81 M	0.11 M	0.863 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	17.9	6.59	52.9	1.78	9.72

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS206	WS207	WS207	WS208	WS208	WS209
			Depth (m)	1.00	0.20	0.70	0.30	1.00	0.50
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	19/08/2016	18/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026596	14065582	14081663	14026722	14026738	14026763
			AGS Reference	ESES2			ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		91.2	95.7	96.9	93.2	93.9	92.7
Acenaphthene-d10 % recovery**	%	TM218		93.5	93.5	95.2	92.9	94.7	89.4
Phenanthrene-d10 % recovery**	%	TM218		90.4	94.3	94.5	93.4	94.9	89.3
Chrysene-d12 % recovery**	%	TM218		77.6	103	89.6	85.6	90.3	85.8
Perylene-d12 % recovery**	%	TM218		84.4	109	93.8	93.4	97.8	83.7
Naphthalene	<0.009 mg/kg	TM218		0.0345 M	0.633 M	0.0132 @ M	<0.009 M	<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	0.0432 M	0.0143 @ M	0.0141 M	<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	1.58 M	<0.008 @ M	<0.008 M	<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	0.917 M	<0.01 @ M	<0.01 M	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		0.154 M	11.5 M	0.0938 @ M	0.0908 M	<0.015 M	0.0682 M
Anthracene	<0.016 mg/kg	TM218		0.0217 M	2.94 M	0.0263 @ M	0.023 M	<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		0.23 M	25.9 M	0.246 @ M	0.365 M	<0.017 M	0.112 M
Pyrene	<0.015 mg/kg	TM218		0.194 M	21.9 M	0.228 @ M	0.293 M	<0.015 M	0.0951 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.107 M	19 M	0.187 @ M	0.167 M	<0.014 M	0.0347 M
Chrysene	<0.01 mg/kg	TM218		0.141 M	16.4 M	0.176 @ M	0.251 M	<0.01 M	0.0363 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.27 M	25.1 M	0.287 @ M	0.4 M	<0.015 M	0.0857 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0851 M	8.69 M	0.101 @ M	0.16 M	<0.014 M	0.0332 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.152 M	20.3 M	0.224 @ M	0.297 M	<0.015 M	0.0546 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.107 M	10.2 M	0.138 @ M	0.163 M	<0.018 M	0.0411 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0377 M	3.4 M	0.034 @ M	0.0558 M	<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.132 M	10.2 M	0.172 @ M	0.183 M	<0.024 M	0.0574 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		1.66	179	1.94	2.46	<0.118	0.618

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS209	WS211	WS211	WS212	WS212
			Depth (m)	1.00	0.20	0.65	0.20	0.65
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026770	14026775	14026782	14026789	14026087
			AGS Reference	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		109	92.5	98.6	91.4	92
Acenaphthene-d10 % recovery**	%	TM218		110	91.9	98	91.2	89.5
Phenanthrene-d10 % recovery**	%	TM218		110	89	96	88	88.9
Chrysene-d12 % recovery**	%	TM218		103	84.2	93.6	84.1	86.3
Perylene-d12 % recovery**	%	TM218		111	91.6	102	91.1	83.3
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M	0.023 M	0.0317 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M	0.0183 M	<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	0.0189 M	<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	0.031 M	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	0.407 M	0.143 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	0.114 M	<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	0.0325 M	0.681 M	0.189 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	0.0294 M	0.595 M	0.161 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	0.0159 M	0.412 M	0.135 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	0.021 M	0.348 M	0.125 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	0.0401 M	0.569 M	0.242 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	0.0174 M	0.204 M	0.0729 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	0.0318 M	0.421 M	0.137 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	0.021 M	0.231 M	0.0816 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	0.0698 M	0.0291 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	0.0265 M	0.285 M	0.104 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	0.235	4.43	1.45	<0.118

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH201	BH201	BH202	BH202	TP201	TP201
			Depth (m)	0.30	1.00	0.30	1.00	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	17/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026073	14026123	14026440	14026532	14026244	14026250
			AGS Reference	ES	ES	ES	ES	ES	ES
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbazole	<0.1 mg/kg	TM157		<0.1	0.157	<0.1	<0.1	<0.1	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH201	BH201	BH202	BH202	TP201	TP201
			Depth (m)	0.30	1.00	0.30	1.00	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	17/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026073	14026123	14026440	14026532	14026244	14026250
			AGS Reference	ES	ES	ES	ES	ES	ES
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	<0.1 mg/kg	TM157		<0.1	0.112	<0.1	<0.1	<0.1	<0.1
Anthracene	<0.1 mg/kg	TM157		<0.1	0.406	<0.1	<0.1	<0.1	0.12
Benzo(a)anthracene	<0.1 mg/kg	TM157		0.223	1.1	0.387	<0.1	0.121	0.765
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		0.37	1.02	0.372	<0.1	0.116	0.655
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		0.348	0.972	0.372	<0.1	0.124	0.709
Benzo(a)pyrene	<0.1 mg/kg	TM157		0.476	1.24	0.449	<0.1	0.147	0.829
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		0.381	0.833	0.336	<0.1	<0.1	0.498
Chrysene	<0.1 mg/kg	TM157		0.28	1.13	0.459	<0.1	0.131	0.794
Fluoranthene	<0.1 mg/kg	TM157		0.29	2.31	0.833	<0.1	0.201	1.76
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		0.381	0.883	0.347	<0.1	<0.1	0.544
Phenanthrene	<0.1 mg/kg	TM157		<0.1	1.47	0.385	<0.1	<0.1	0.373
Pyrene	<0.1 mg/kg	TM157		0.313	1.87	0.722	<0.1	0.174	1.47
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	0.192	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP203	TP207	TP207	TP214	WS202	WS202
			Depth (m)	0.40	0.50	0.85	0.30	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/08/2016	18/08/2016	18/08/2016	19/08/2016	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026256	14026281	14026287	14026420	14026433	14026446
			AGS Reference	ES	ES	ES	ES	ES	ES
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	0.245	<0.1	<0.1	<0.1
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1	0.17	<0.1	<0.1	0.165
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP203	TP207	TP207	TP214	WS202	WS202
			Depth (m)	0.40	0.50	0.85	0.30	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/08/2016	18/08/2016	18/08/2016	19/08/2016	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026256	14026281	14026287	14026420	14026433	14026446
			AGS Reference	ES	ES	ES	ES	ES	ES
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	0.14	<0.1	<0.1	<0.1
Acenaphthylene	<0.1 mg/kg	TM157		0.209	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	0.168
Anthracene	<0.1 mg/kg	TM157		0.599	<0.1	0.644	<0.1	0.225	0.518
Benzo(a)anthracene	<0.1 mg/kg	TM157		1.4	0.16	2.59	<0.1	0.633	5.01
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		0.996	0.153	3.49	<0.1	0.452	4.94
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		1.13	0.142	3.24	<0.1	0.385	4.54
Benzo(a)pyrene	<0.1 mg/kg	TM157		1.44	0.184	4.42	<0.1	0.585	5.65
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		0.889	0.152	3.79	<0.1	0.423	2.97
Chrysene	<0.1 mg/kg	TM157		1.56	0.215	2.75	<0.1	0.639	4.99
Fluoranthene	<0.1 mg/kg	TM157		2.61	0.237	4.16	<0.1	1.4	7.27
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		0.995	0.13	3.8	<0.1	0.432	3.27
Phenanthrene	<0.1 mg/kg	TM157		0.95	0.15	1.86	<0.1	0.881	1.47
Pyrene	<0.1 mg/kg	TM157		2.39	0.267	3.56	<0.1	1.09	7.37
Naphthalene	<0.1 mg/kg	TM157		0.126	<0.1	0.218	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		0.157	<0.1	0.743	<0.1	<0.1	0.643
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS204	WS204				
			Depth (m)	0.20	1.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	19/08/2016	19/08/2016				
			Sampled Time	.	.				
			Date Received	23/08/2016	23/08/2016				
			SDG Ref	160823-40	160823-40				
			Lab Sample No.(s)	14026525	14026545				
			AGS Reference	ES	ES				
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1				
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1				
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1				
Carbazole	<0.1 mg/kg	TM157		0.124	<0.1				
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1				
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1				
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS204	WS204				
			Depth (m)	0.20	1.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	19/08/2016	19/08/2016				
			Sampled Time	.	.				
			Date Received	23/08/2016	23/08/2016				
			SDG Ref	160823-40	160823-40				
			Lab Sample No.(s)	14026525	14026545				
			AGS Reference	ES	ES				
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Anthracene	<0.1 mg/kg	TM157		0.169	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157		1.16	0.449				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		1.23	0.405				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		1.07	0.44				
Benzo(a)pyrene	<0.1 mg/kg	TM157		1.47	0.503				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		0.989	0.356				
Chrysene	<0.1 mg/kg	TM157		1.36	0.527				
Fluoranthene	<0.1 mg/kg	TM157		1.93	0.992				
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		1.09	0.418				
Phenanthrene	<0.1 mg/kg	TM157		0.837	0.447				
Pyrene	<0.1 mg/kg	TM157		1.79	0.907				
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		0.187	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH201	BH201	BH201	BH202	BH202	BH207
			Depth (m)	0.30	1.00	3.00	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	17/08/2016	19/08/2016	19/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026073	14026123	14026263	14026440	14026532	14026165
			AGS Reference	ES	ES	ES	ES	ES	ESES1
GRO Surrogate % recovery**	%	TM089		97	65	92	92	59	57
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	0.628	<0.1	<0.1	0.415	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		0.202	3.97	<0.1	1.48	2.33	0.901
Aliphatics >C21-C35	<0.1 mg/kg	TM173		8.08	77.6	0.703	11.6	16.2	7.03
Aliphatics >C35-C44	<0.1 mg/kg	TM173		1.43	24	<0.1	2.41	11.1	0.222
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		9.71	106	0.703	15.4	30	8.15
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		0.249	0.604	<0.1	0.901	1.5	1.43
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		5.67	4.44	<0.1	5.42	7.47	6.5
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		39.6	46.1	2.3	24.1	44.6	29.9
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		15.2	32.1	<0.1	11.7	26.1	11.9
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		5.26	13.1	<0.1	4.56	10.2	4.12
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		60.7	83.2	2.3	42.2	79.7	49.7
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		70.4	189	3	57.6	110	57.9
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		45.2	50.5	2.3	29.5	52.1	36.4

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH207	BH207	HP201	HP201	HP202	HP202
			Depth (m)	0.70	1.50	0.20	0.90	0.30	0.70
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/08/2016	17/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026374	14026453	14026109	14026117	14026129	14026136
			AGS Reference	ESES2	ESES3	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		95	105	74	77	72	76
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		1.33	<0.1	<0.1	0.413	<0.1	0.405
Aliphatics >C16-C21	<0.1 mg/kg	TM173		1.95	<0.1	<0.1	0.526	0.392	0.478
Aliphatics >C21-C35	<0.1 mg/kg	TM173		8.14	<0.1	4.8	8.38	5.32	0.805
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	0.172	0.765	<0.1	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		11.4	<0.1	4.97	10.1	5.72	1.69
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		3.36	<0.1	<0.1	<0.1	0.591	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		20.4	<0.1	1.74	0.62	1.75	2.12
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		63.8	<0.1	13.5	14.7	14.6	11.8
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		17.8	<0.1	4.14	6	4.42	3.89
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		5.73	<0.1	1.28	0.931	1.38	1.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		105	<0.1	19.4	21.4	21.4	17.8
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		117	<0.1	24.4	31.5	27.1	19.5
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		84.2	<0.1	15.2	15.4	16.4	13.9

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP203	HP203	HP205	HP205	HP206	HP206
			Depth (m)	0.15	0.70	0.40	0.70	0.30	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026145	14026151	14026159	14026172	14026178	14026185
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		100	59	76	89	80	77
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.204	<0.1	<0.1	0.18	<0.1	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		0.123	<0.1	<0.1	0.522	0.899	0.664
Aliphatics >C21-C35	<0.1 mg/kg	TM173		8.2	3.01	12.6	2.81	33.8	8.18
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	7.29	<0.1	5.08	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		8.53	3.01	19.9	3.51	39.8	8.85
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		0.556	<0.1	0.296	<0.1	0.773	0.422
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		4.5	0.487	3.05	0.896	5.11	2.09
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		26.5	6.97	30.8	9.69	32	17.7
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		9.45	1.87	15.6	2.34	14	3.9
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		3.2	0.423	6.06	0.543	5.11	0.985
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		41	9.33	49.8	12.9	51.9	24.1
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		49.5	12.3	69.7	16.4	91.7	33
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		31	7.46	33.9	10.6	37.1	19.8

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP207	HP207	HP208	HP208	HP209	HP209
			Depth (m)	0.30	0.60	0.15	0.80	0.30	0.65
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026192	14026201	14026215	14026222	14064190	14078539
			AGS Reference	ESES1	ESES2	ES	ES		
GRO Surrogate % recovery**	%	TM089		81	82	69	83	102 @	103 @
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 @ #	<0.044 @ M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01 @	<0.01 @
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01 @	<0.01 @
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01 @	<0.01 @
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01 @	<0.01 @
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	<0.1	0.279	<0.1	<0.1	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		0.382	<0.1	0.607	<0.1	2.1	2.07
Aliphatics >C21-C35	<0.1 mg/kg	TM173		4.12	2.65	6.06	3.87	30.5	24.7
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	<0.1	0.344	<0.1	2.27	1.29
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		4.51	2.65	7.29	3.87	34.9	28
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01 @	<0.01 @
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01 @	<0.01 @
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01 @	<0.01 @
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01 @	<0.01 @
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	<0.1	0.534	<0.1	<0.1	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.749	0.506	2.63	1.74	0.19	<0.1
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		5.71	4.27	17.2	11.2	5.03	6.51
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		1.55	1.24	6.27	3.45	0.95	2.13
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		0.396	0.29	2.03	1.24	0.253	0.855
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		8.01	6.02	26.6	16.4	6.17	8.64
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		12.5	8.67	33.9	20.3	41.1	36.7
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		6.46	4.78	19.8	13	5.22	6.51

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP210	HP210	HP215	TP201	TP201	TP203
			Depth (m)	0.25	0.75	0.20	0.30	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	17/08/2016	17/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14065583	14078541	14026237	14026244	14026250	14026256
			AGS Reference			ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		65 @	92 @	65	92	63	74
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 @ #	<0.044 @ M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	2.93	0.371	<0.1	0.601	0.534
Aliphatics >C16-C21	<0.1 mg/kg	TM173		0.26	11.4	0.788	<0.1	3.85	3.22
Aliphatics >C21-C35	<0.1 mg/kg	TM173		15	52.4	12.6	1.23	14.3	16.3
Aliphatics >C35-C44	<0.1 mg/kg	TM173		6.14	15.1	1.51	<0.1	1.9	2.4
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		21.4	81.8	15.3	1.23	20.7	22.4
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		2.09	11.5	0.315	<0.1	1.75	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		10.4	92.3	3.38	1.02	6.97	13.8
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		55.8	269	30.8	6.22	41.9	45.4
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		19.6	82.9	13.1	0.437	20.2	15
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		6.36	29.6	5.23	<0.1	7.15	4.85
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		87.8	456	47.7	7.68	70.9	74.1
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		109	538	63	8.91	91.6	96.6
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		66.2	362	34.2	7.24	48.9	59.1

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP207	TP207	TP209	TP209	TP210	TP210
			Depth (m)	0.50	0.85	0.40	1.00	0.20	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	18/08/2016	17/08/2016	17/08/2016	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026281	14026287	14026313	14026320	14026335	14026342
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		77	20	79	85	80	156
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	0.569	<0.1	<0.1	0.239	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		0.417	6.19	<0.1	<0.1	0.777	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173		17.6	78.6	2.14	<0.1	7.09	<0.1
Aliphatics >C35-C44	<0.1 mg/kg	TM173		8.15	18.4	<0.1	<0.1	0.21	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		26.1	104	2.14	<0.1	8.31	<0.1
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		2.02	4.18	<0.1	<0.1	0.315	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		8.39	35.2	1.22	<0.1	4.46	0.412
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		43.8	269	7.17	<0.1	27.7	0.766
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		33.2	112	0.649	<0.1	9.78	<0.1
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		14.9	42.6	0.101	<0.1	3.54	<0.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		87.4	420	9.04	<0.1	42.3	1.18
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		114	524	11.2	<0.1	50.6	1.18
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		52.2	304	8.39	<0.1	32.2	1.18

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP211	TP213	TP214	WS202	WS202	WS203
			Depth (m)	0.70	1.00	0.30	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	17/08/2016	19/08/2016	18/08/2016	18/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026382	14026402	14026420	14026433	14026446	14026484
			AGS Reference	ES	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		87	93	125	47	40	36
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		4.41	<0.1	<0.1	<0.1	1.34	3.17
Aliphatics >C16-C21	<0.1 mg/kg	TM173		7.57	<0.1	<0.1	<0.1	13.3	3.96
Aliphatics >C21-C35	<0.1 mg/kg	TM173		23.8	<0.1	<0.1	2.67	65.2	26.5
Aliphatics >C35-C44	<0.1 mg/kg	TM173		5.37	<0.1	<0.1	0.573	10.6	7
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		41.1	<0.1	<0.1	3.24	90.4	40.7
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		3.01	<0.1	<0.1	<0.1	3.27	3.53
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		11.1	<0.1	<0.1	0.222	47.4	9.15
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		55.7	<0.1	<0.1	4.76	276	35.1
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		26.1	<0.1	<0.1	1.93	83.9	13
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		10.6	<0.1	<0.1	0.577	31.4	4.56
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		95.9	<0.1	<0.1	6.91	411	60.8
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		137	<0.1	<0.1	10.2	501	101
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		66.8	<0.1	<0.1	4.98	324	44.2

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS203	WS204	WS204	WS205	WS205	WS206
			Depth (m)	1.50	0.20	1.00	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026496	14026525	14026545	14026572	14026580	14026588
			AGS Reference	ES	ES	ES	ES	ES	ESES1
GRO Surrogate % recovery**	%	TM089		115	88	116	73	89	54
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	<0.1	<0.1	0.469	0.267	1.19
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	0.264	1.21	1.41	0.885	2.43
Aliphatics >C21-C35	<0.1 mg/kg	TM173		<0.1	11.4	8.32	18.9	4.21	49.6
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	0.455	0.352	3.16	<0.1	27.2
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		<0.1	12.1	9.88	23.9	5.36	80.4
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	0.394	0.202	4.42	1.21	2.89
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		<0.1	7.86	7.28	35.3	5.97	11
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		<0.1	46.8	32.6	107	23.4	92.6
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		<0.1	17.9	15.9	36.6	7.78	80.5
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		<0.1	6.87	6.71	12.3	2.4	37.6
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		<0.1	72.9	56	183	38.4	187
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		<0.1	85	65.9	207	43.7	267
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		<0.1	54.7	39.9	142	29.4	104

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS206	WS207	WS207	WS208	WS208	WS209
			Depth (m)	1.00	0.20	0.70	0.30	1.00	0.50
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	19/08/2016	18/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026596	14065582	14081663	14026722	14026738	14026763
			AGS Reference	ESES2			ES	ES	ES
GRO Surrogate % recovery**	%	TM089		44	56 @	107 @	85	115	70
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		0.145 M	<0.044 @ M	<0.044 @ M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0138	<0.01 @	<0.01 @	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0388	<0.01 @	<0.01 @	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		0.0338	<0.01 @	<0.01 @	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		0.266	0.886	<0.1	<0.1	<0.1	0.439
Aliphatics >C16-C21	<0.1 mg/kg	TM173		1.1	2.2	<0.1	0.44	<0.1	1.02
Aliphatics >C21-C35	<0.1 mg/kg	TM173		5.52	31.9	8.72	7.68	<0.1	8.43
Aliphatics >C35-C44	<0.1 mg/kg	TM173		0.285	38.5	1.54	0.903	<0.1	0.67
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		7.16	73.5	10.3	9.03	<0.1	10.6
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01 @	<0.01 @	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.03	<0.01 @	<0.01 @	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		0.0225	<0.01 @	<0.01 @	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		0.295	2.1	<0.1	0.105	<0.1	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		3.59	27.6	0.792	2.66	<0.1	1.68
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		20	192	12	20	<0.1	17.1
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		7.19	126	10.9	7.41	<0.1	3
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		2.28	56.8	4.7	2.57	<0.1	0.781
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		31.1	347	23.7	30.1	<0.1	21.8
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		38.4	420	33.9	39.2	<0.1	32.4
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		23.6	219	12.8	22.6	<0.1	18.8

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS209	WS211	WS211	WS212	WS212
			Depth (m)	1.00	0.20	0.65	0.20	0.65
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026770	14026775	14026782	14026789	14026087
			AGS Reference	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		105	104	52	111	88
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	<0.044 M	<0.088 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.02	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.02	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.02	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.02	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1	<0.1	<0.1	0.842	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1	0.204	0.345	1.22	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173		0.425	10.4	6.26	7.02	0.708
Aliphatics >C35-C44	<0.1 mg/kg	TM173		<0.1	0.256	0.263	0.358	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		0.425	10.8	6.86	9.44	0.708
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.02	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.02	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.02	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	<0.01	<0.02	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1	2.34	1.32	0.386	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		<0.1	11.5	5.16	4.03	0.433
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		0.314	56.6	28.5	26.4	1.75
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		<0.1	16.4	7.67	9.79	0.13
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		<0.1	4.84	2.74	3.94	<0.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		0.314	86.8	42.7	40.6	2.31
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		0.741	97.7	49.6	50	3.02
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		0.314	68.1	33.7	30.4	2.18

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH201	BH201	BH201	BH202	BH202	BH207
			Depth (m)	0.30	1.00	3.00	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	17/08/2016	19/08/2016	19/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026073	14026123	14026263	14026440	14026532	14026165
			AGS Reference	ES	ES	ES	ES	ES	ESES1
Dibromofluoromethane**	%	TM116		107	106		112	112	
Toluene-d8**	%	TM116		97.9	98.5		102	99.1	
4-Bromofluorobenzene**	%	TM116		94.2	92.9		87.3	95.5	
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.006 M	<0.006 M		<0.06 M	<0.006 M	
Chloromethane	<0.007 mg/kg	TM116		<0.007 #	<0.007 #		<0.07 #	<0.007 #	
Vinyl Chloride	<0.006 mg/kg	TM116		<0.006 M	<0.006 M		<0.06 M	<0.006 M	
Bromomethane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Chloroethane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.006 M	<0.006 M		<0.06 M	<0.006 M	
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.01 #	<0.01 #		<0.1 #	<0.01 #	
Carbon Disulphide	<0.007 mg/kg	TM116		<0.007 M	<0.007 M		<0.07 M	<0.007 M	
Dichloromethane	<0.01 mg/kg	TM116		<0.01 #	<0.01 #		<0.1 #	<0.01 #	
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.1 M	<0.1 M	<0.01 M	<0.1 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.008 M	<0.008 M		<0.08 M	<0.008 M	
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.006 M	<0.006 M		<0.06 M	<0.006 M	
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Bromochloromethane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Chloroform	<0.008 mg/kg	TM116		<0.008 M	<0.008 M		<0.08 M	<0.008 M	
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.007 M	<0.007 M		<0.07 M	<0.007 M	
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Carbontetrachloride	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.005 M	<0.005 M		<0.05 M	<0.005 M	
Benzene	<0.009 mg/kg	TM116		<0.009 M	<0.009 M	<0.09 M	<0.09 M	0.0109 M	<0.09 M
Trichloroethene	<0.009 mg/kg	TM116		<0.009 #	<0.009 #		<0.09 #	<0.009 #	
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Dibromomethane	<0.009 mg/kg	TM116		<0.009 M	<0.009 M		<0.09 M	<0.009 M	
Bromodichloromethane	<0.007 mg/kg	TM116		<0.007 M	<0.007 M		<0.07 M	<0.007 M	
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Toluene	<0.007 mg/kg	TM116		<0.007 M	<0.007 M	<0.07 M	<0.07 M	<0.007 M	<0.07 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.01	<0.01		<0.1	<0.01	
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH201	BH201	BH201	BH202	BH202	BH207
			Depth (m)	0.30	1.00	3.00	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	17/08/2016	19/08/2016	19/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026073	14026123	14026263	14026440	14026532	14026165
			AGS Reference	ES	ES	ES	ES	ES	ESES1
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.007 M	<0.007 M		<0.07 M	<0.007 M	
Tetrachloroethene	<0.005 mg/kg	TM116		<0.005 M	<0.005 M		<0.05 M	0.00741 M	
Dibromochloromethane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Chlorobenzene	<0.005 mg/kg	TM116		<0.005 M	<0.005 M		<0.05 M	<0.005 M	
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Ethylbenzene	<0.004 mg/kg	TM116		<0.004 M	<0.004 M	<0.04 M	<0.04 M	<0.004 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.01 #	<0.01 #	<0.1 #	<0.1 #	<0.01 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.1 M	<0.1 M	<0.01 M	<0.1 M
Styrene	<0.01 mg/kg	TM116		<0.01 #	<0.01 #		<0.1 #	<0.01 #	
Bromoform	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Isopropylbenzene	<0.005 mg/kg	TM116		<0.005 #	<0.005 #		<0.05 #	<0.005 #	
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.016 M	<0.016 M		<0.16 M	<0.016 M	
Bromobenzene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
Propylbenzene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.009 M	<0.009 M		<0.09 M	<0.009 M	
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.008 M	<0.008 M		<0.08 M	<0.008 M	
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.014 M	<0.014 M		<0.14 M	<0.014 M	
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.009 #	<0.009 #		<0.09 #	<0.009 #	
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.008 M	<0.008 M		<0.08 M	<0.008 M	
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.005 M	<0.005 M		<0.05 M	<0.005 M	
n-Butylbenzene	<0.011 mg/kg	TM116		<0.011	<0.011		<0.11	<0.011	
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M		<0.1 M	<0.01 M	
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.014 M	<0.014 M		<0.14 M	<0.014 M	
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.01 #	<0.01 #	<0.1 #	<0.1 #	<0.01 #	<0.1 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.02	<0.02		<0.2	<0.02	
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.02	<0.02		<0.2	<0.02	
Naphthalene	<0.013 mg/kg	TM116		<0.013 M	<0.013 M		<0.13 M	<0.013 M	

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH201	BH201	BH201	BH202	BH202	BH207
			Depth (m)	0.30	1.00	3.00	0.30	1.00	0.30
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	17/08/2016	19/08/2016	19/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026073	14026123	14026263	14026440	14026532	14026165
			AGS Reference	ES	ES	ES	ES	ES	ESES1
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.02 #	<0.02 #		<0.2 #	<0.02 #	

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH207	BH207	HP201	HP201	HP202	HP202
			Depth (m)	0.70	1.50	0.20	0.90	0.30	0.70
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	17/08/2016	17/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026374	14026453	14026109	14026117	14026129	14026136
			AGS Reference	ESES2	ESES3	ES	ES	ES	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Benzene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M
Toluene	<0.007 mg/kg	TM116		<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP203	HP203	HP205	HP205	HP206	HP206
			Depth (m)	0.15	0.70	0.40	0.70	0.30	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026145	14026151	14026159	14026172	14026178	14026185
			AGS Reference	ES	ES	ES	ES	ES	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Benzene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M
Toluene	<0.007 mg/kg	TM116		<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP207	HP207	HP208	HP208	HP209	HP209
			Depth (m)	0.30	0.60	0.15	0.80	0.30	0.65
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026192	14026201	14026215	14026222	14064190	14078539
			AGS Reference	ESES1	ESES2	ES	ES		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.1 M	<0.1 M	<0.1 @ #	<0.1 @ M
Benzene	<0.009 mg/kg	TM116		<0.009 M	<0.009 M	<0.09 M	<0.09 M	<0.09 @ #	<0.09 @ M
Toluene	<0.007 mg/kg	TM116		<0.007 M	<0.007 M	<0.07 M	<0.07 M	<0.07 @ #	<0.07 @ M
Ethylbenzene	<0.004 mg/kg	TM116		<0.004 M	<0.004 M	<0.04 M	<0.04 M	<0.04 @ #	<0.04 @ M
p/m-Xylene	<0.01 mg/kg	TM116		<0.01 #	<0.01 #	<0.1 #	<0.1 #	<0.1 @ #	<0.1 @ #
o-Xylene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.1 M	<0.1 M	<0.1 @ #	<0.1 @ M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.01 #	<0.01 #	<0.1 #	<0.1 #	<0.1 @ #	<0.1 @ #

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP210	HP210	HP215	TP201	TP201	TP203
			Depth (m)	0.25	0.75	0.20	0.30	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	17/08/2016	17/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14065583	14078541	14026237	14026244	14026250	14026256
			AGS Reference			ES	ES	ES	ES
Dibromofluoromethane**	%	TM116					107	110	106
Toluene-d8**	%	TM116					106	102	99
4-Bromofluorobenzene**	%	TM116					89.4	79.6	95.6
Dichlorodifluoromethane	<0.006 mg/kg	TM116					<0.06 M	<0.06 M	<0.06 M
Chloromethane	<0.007 mg/kg	TM116					<0.07 #	<0.07 #	<0.07 #
Vinyl Chloride	<0.006 mg/kg	TM116					<0.06 M	<0.06 M	<0.06 M
Bromomethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Chloroethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Trichlorofluorormethane	<0.006 mg/kg	TM116					<0.06 M	<0.06 M	<0.06 M
1,1-Dichloroethene	<0.01 mg/kg	TM116					<0.1 #	<0.1 #	<0.1 #
Carbon Disulphide	<0.007 mg/kg	TM116					<0.07 M	<0.07 M	<0.07 M
Dichloromethane	<0.01 mg/kg	TM116					<0.1 #	<0.1 #	<0.1 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 @ #	<0.1 @ M	<0.01 M	<0.1 M	<0.1 M	<0.1 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
1,1-Dichloroethane	<0.008 mg/kg	TM116					<0.08 M	<0.08 M	<0.08 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116					<0.06 M	<0.06 M	<0.06 M
2,2-Dichloropropane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Bromochloromethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Chloroform	<0.008 mg/kg	TM116					<0.08 M	<0.08 M	<0.08 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116					<0.07 M	<0.07 M	<0.07 M
1,1-Dichloropropene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Carbontetrachloride	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
1,2-Dichloroethane	<0.005 mg/kg	TM116					<0.05 M	<0.05 M	<0.05 M
Benzene	<0.009 mg/kg	TM116		<0.09 @ #	<0.09 @ M	<0.009 M	<0.09 M	<0.09 M	<0.09 M
Trichloroethene	<0.009 mg/kg	TM116					<0.09 #	<0.09 #	<0.09 #
1,2-Dichloropropane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Dibromomethane	<0.009 mg/kg	TM116					<0.09 M	<0.09 M	<0.09 M
Bromodichloromethane	<0.007 mg/kg	TM116					<0.07 M	<0.07 M	<0.07 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Toluene	<0.007 mg/kg	TM116		<0.07 @ #	<0.07 @ M	<0.007 M	<0.07 M	<0.07 M	<0.07 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.1	<0.1	<0.1
1,1,2-Trichloroethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP210	HP210	HP215	TP201	TP201	TP203
			Depth (m)	0.25	0.75	0.20	0.30	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	17/08/2016	17/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14065583	14078541	14026237	14026244	14026250	14026256
			AGS Reference			ES	ES	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116					<0.07 M	<0.07 M	<0.07 M
Tetrachloroethene	<0.005 mg/kg	TM116					<0.05 M	<0.05 M	<0.05 M
Dibromochloromethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
1,2-Dibromoethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Chlorobenzene	<0.005 mg/kg	TM116					<0.05 M	<0.05 M	<0.05 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 @ #	<0.04 @ M		<0.004 M	<0.04 M	<0.04 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 @ #	<0.1 @ #		<0.01 #	<0.1 #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116	<0.1 @ #	<0.1 @ M		<0.01 M	<0.1 M	<0.1 M	<0.1 M
Styrene	<0.01 mg/kg	TM116					<0.1 #	<0.1 #	<0.1 #
Bromoform	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Isopropylbenzene	<0.005 mg/kg	TM116					<0.05 #	<0.05 #	<0.05 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
1,2,3-Trichloropropane	<0.016 mg/kg	TM116					<0.16 M	<0.16 M	<0.16 M
Bromobenzene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
Propylbenzene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
2-Chlorotoluene	<0.009 mg/kg	TM116					<0.09 M	<0.09 M	<0.09 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116					<0.08 M	<0.08 M	<0.08 M
4-Chlorotoluene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
tert-Butylbenzene	<0.014 mg/kg	TM116					<0.14 M	<0.14 M	<0.14 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116					<0.09 #	<0.09 #	<0.09 #
sec-Butylbenzene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
4-Isopropyltoluene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116					<0.08 M	<0.08 M	<0.08 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116					<0.05 M	<0.05 M	<0.05 M
n-Butylbenzene	<0.011 mg/kg	TM116					<0.11	<0.11	<0.11
1,2-Dichlorobenzene	<0.01 mg/kg	TM116					<0.1 M	<0.1 M	<0.1 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116					<0.14 M	<0.14 M	<0.14 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 @ #	<0.1 @ #		<0.01 #	<0.1 #	<0.1 #	<0.1 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116					<0.2	<0.2	<0.2
Hexachlorobutadiene	<0.02 mg/kg	TM116					<0.2	<0.2	<0.2
Naphthalene	<0.013 mg/kg	TM116					<0.13 M	<0.13 M	<0.13 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	HP210	HP210	HP215	TP201	TP201	TP203
			Depth (m)	0.25	0.75	0.20	0.30	1.00	0.40
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	17/08/2016	17/08/2016	17/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14065583	14078541	14026237	14026244	14026250	14026256
			AGS Reference			ES	ES	ES	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116					<0.2 #	<0.2 #	<0.2 #

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP207	TP207	TP209	TP209	TP210	TP210
			Depth (m)	0.50	0.85	0.40	1.00	0.20	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	18/08/2016	17/08/2016	17/08/2016	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026281	14026287	14026313	14026320	14026335	14026342
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116		106	112				
Toluene-d8**	%	TM116		99.5	92.1				
4-Bromofluorobenzene**	%	TM116		95.2	73.5				
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.06 M	<0.06 M				
Chloromethane	<0.007 mg/kg	TM116		<0.07 #	<0.07 #				
Vinyl Chloride	<0.006 mg/kg	TM116		<0.06 M	<0.06 M				
Bromomethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Chloroethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.06 M	<0.06 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #				
Carbon Disulphide	<0.007 mg/kg	TM116		<0.07 M	<0.07 M				
Dichloromethane	<0.01 mg/kg	TM116		<0.1 #	<0.1 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M	<0.1	<0.1 M	<0.1 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.08 M	<0.08 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.06 M	<0.06 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Bromochloromethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Chloroform	<0.008 mg/kg	TM116		<0.08 M	<0.08 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.07 M	<0.07 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Carbontetrachloride	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.05 M	<0.05 M				
Benzene	<0.009 mg/kg	TM116		<0.09 M	0.194 M	<0.09 M	<0.09	<0.09 M	<0.09 M
Trichloroethene	<0.009 mg/kg	TM116		<0.09 #	<0.09 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Dibromomethane	<0.009 mg/kg	TM116		<0.09 M	<0.09 M				
Bromodichloromethane	<0.007 mg/kg	TM116		<0.07 M	<0.07 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Toluene	<0.007 mg/kg	TM116		<0.07 M	0.147 M	<0.07 M	<0.07	<0.07 M	<0.07 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.1	<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP207	TP207	TP209	TP209	TP210	TP210
			Depth (m)	0.50	0.85	0.40	1.00	0.20	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	18/08/2016	17/08/2016	17/08/2016	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026281	14026287	14026313	14026320	14026335	14026342
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.07 M	<0.07 M				
Tetrachloroethene	<0.005 mg/kg	TM116		<0.05 M	<0.05 M				
Dibromochloromethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Chlorobenzene	<0.005 mg/kg	TM116		<0.05 M	<0.05 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 M	<0.04 M	<0.04 M	<0.04	<0.04 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M	<0.1	<0.1 M	<0.1 M
Styrene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #				
Bromoform	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Isopropylbenzene	<0.005 mg/kg	TM116		<0.05 #	<0.05 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.16 M	<0.16 M				
Bromobenzene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
Propylbenzene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.08 M	<0.08 M				
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.14 M	<0.14 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.09 #	<0.09 #				
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.08 M	<0.08 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.05 M	<0.05 M				
n-Butylbenzene	<0.011 mg/kg	TM116		<0.11	<0.11				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.14 M	<0.14 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #	<0.1	<0.1 #	<0.1 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2	<0.2				
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.2	<0.2				
Naphthalene	<0.013 mg/kg	TM116		<0.13 M	<0.13 M				

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP207	TP207	TP209	TP209	TP210	TP210
			Depth (m)	0.50	0.85	0.40	1.00	0.20	0.80
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	18/08/2016	17/08/2016	17/08/2016	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026281	14026287	14026313	14026320	14026335	14026342
			AGS Reference	ES	ES	ES	ES	ES	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.2 #	<0.2 #				

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP211	TP213	TP214	TRIP BLANK	WS202	WS202
			Depth (m)	0.70	1.00	0.30	.	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	17/08/2016	19/08/2016	-	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026382	14026402	14026420	14028420	14026433	14026446
			AGS Reference	ES	ES	ES		ES	ES
Dibromofluoromethane**	%	TM116				106	110 §	106	104
Toluene-d8**	%	TM116				101	99.9 §	97.2	97.7
4-Bromofluorobenzene**	%	TM116				97.8	98.5 §	91.1	90.9
Dichlorodifluoromethane	<0.006 mg/kg	TM116				<0.06 M	<0.006 § M	<0.006 M	<0.06 M
Chloromethane	<0.007 mg/kg	TM116				<0.07 #	<0.007 § #	<0.007 #	<0.07 #
Vinyl Chloride	<0.006 mg/kg	TM116				<0.06 M	<0.006 § M	<0.006 M	<0.06 M
Bromomethane	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Chloroethane	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Trichlorofluorormethane	<0.006 mg/kg	TM116				<0.06 M	<0.006 § M	<0.006 M	<0.06 M
1,1-Dichloroethene	<0.01 mg/kg	TM116				<0.1 #	<0.01 § #	<0.01 #	<0.1 #
Carbon Disulphide	<0.007 mg/kg	TM116				<0.07 M	<0.007 § M	<0.007 M	<0.07 M
Dichloromethane	<0.01 mg/kg	TM116				<0.1 #	<0.01 § #	<0.01 #	<0.1 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M	<0.1 M		<0.1 M	<0.01 § M	<0.01 M	<0.1 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
1,1-Dichloroethane	<0.008 mg/kg	TM116				<0.08 M	<0.008 § M	<0.008 M	<0.08 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116				<0.06 M	<0.006 § M	<0.006 M	<0.06 M
2,2-Dichloropropane	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Bromochloromethane	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Chloroform	<0.008 mg/kg	TM116				<0.08 M	<0.008 § M	<0.008 M	<0.08 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116				<0.07 M	<0.007 § M	<0.007 M	<0.07 M
1,1-Dichloropropene	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Carbontetrachloride	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
1,2-Dichloroethane	<0.005 mg/kg	TM116				<0.05 M	<0.005 § M	<0.005 M	<0.05 M
Benzene	<0.009 mg/kg	TM116	<0.09 M	<0.09 M		<0.09 M	<0.009 § M	<0.009 M	<0.09 M
Trichloroethene	<0.009 mg/kg	TM116				<0.09 #	<0.009 § #	<0.009 #	<0.09 #
1,2-Dichloropropane	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Dibromomethane	<0.009 mg/kg	TM116				<0.09 M	<0.009 § M	<0.009 M	<0.09 M
Bromodichloromethane	<0.007 mg/kg	TM116				<0.07 M	<0.007 § M	<0.007 M	<0.07 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Toluene	<0.007 mg/kg	TM116	<0.07 M	<0.07 M		<0.07 M	<0.007 § M	<0.007 M	<0.07 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.1	<0.01 §	<0.01	<0.1
1,1,2-Trichloroethane	<0.01 mg/kg	TM116				<0.1 M	<0.01 § M	<0.01 M	<0.1 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP211	TP213	TP214	TRIP BLANK	WS202	WS202
			Depth (m)	0.70	1.00	0.30	.	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	17/08/2016	19/08/2016	-	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026382	14026402	14026420	14028420	14026433	14026446
			AGS Reference	ES	ES	ES		ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116			<0.07 M	<0.007 § M	<0.007 M	<0.07 M
Tetrachloroethene	<0.005 mg/kg	TM116			<0.05 M	<0.005 § M	<0.005 M	<0.05 M
Dibromochloromethane	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
1,2-Dibromoethane	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Chlorobenzene	<0.005 mg/kg	TM116			<0.05 M	<0.005 § M	<0.005 M	<0.05 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M	<0.04 M	<0.04 M	<0.004 § M	<0.004 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.01 § #	<0.01 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M	<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Styrene	<0.01 mg/kg	TM116			<0.1 #	<0.01 § #	<0.01 #	<0.1 #
Bromoform	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Isopropylbenzene	<0.005 mg/kg	TM116			<0.05 #	<0.005 § #	<0.005 #	<0.05 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
1,2,3-Trichloropropane	<0.016 mg/kg	TM116			<0.16 M	<0.016 § M	<0.016 M	<0.16 M
Bromobenzene	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
Propylbenzene	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
2-Chlorotoluene	<0.009 mg/kg	TM116			<0.09 M	<0.009 § M	<0.009 M	<0.09 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116			<0.08 M	<0.008 § M	<0.008 M	<0.08 M
4-Chlorotoluene	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
tert-Butylbenzene	<0.014 mg/kg	TM116			<0.14 M	<0.014 § M	<0.014 M	<0.14 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116			<0.09 #	<0.009 § #	<0.009 #	<0.09 #
sec-Butylbenzene	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
4-Isopropyltoluene	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116			<0.08 M	<0.008 § M	<0.008 M	<0.08 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116			<0.05 M	<0.005 § M	<0.005 M	<0.05 M
n-Butylbenzene	<0.011 mg/kg	TM116			<0.11	<0.011 §	<0.011	<0.11
1,2-Dichlorobenzene	<0.01 mg/kg	TM116			<0.1 M	<0.01 § M	<0.01 M	<0.1 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116			<0.14 M	<0.014 § M	<0.014 M	<0.14 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #	<0.1 #	<0.01 § #	<0.01 #	<0.1 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116			<0.2	<0.02 §	<0.02	<0.2
Hexachlorobutadiene	<0.02 mg/kg	TM116			<0.2	<0.02 §	<0.02	<0.2
Naphthalene	<0.013 mg/kg	TM116			<0.13 M	<0.013 § M	<0.013 M	<0.13 M

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP211	TP213	TP214	TRIP BLANK	WS202	WS202
			Depth (m)	0.70	1.00	0.30	.	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	17/08/2016	19/08/2016	-	18/08/2016	18/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026382	14026402	14026420	14028420	14026433	14026446
			AGS Reference	ES	ES	ES		ES	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116				<0.2 #	<0.02 § #	<0.02 #	<0.2 #

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS203	WS203	WS204	WS204	WS205	WS205
			Depth (m)	0.30	1.50	0.20	1.00	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026484	14026496	14026525	14026545	14026572	14026580
			AGS Reference	ES	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116				99.8	109		
Toluene-d8**	%	TM116				97.3	103		
4-Bromofluorobenzene**	%	TM116				80.3	92.7		
Dichlorodifluoromethane	<0.006 mg/kg	TM116				<0.006 M	<0.06 M		
Chloromethane	<0.007 mg/kg	TM116				<0.007 #	<0.07 #		
Vinyl Chloride	<0.006 mg/kg	TM116				<0.006 M	<0.06 M		
Bromomethane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Chloroethane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116				<0.006 M	<0.06 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116				<0.01 #	<0.1 #		
Carbon Disulphide	<0.007 mg/kg	TM116				<0.007 M	<0.07 M		
Dichloromethane	<0.01 mg/kg	TM116				<0.01 #	<0.1 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.01 M	<0.1 M	<0.1 M	<0.1 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116				<0.008 M	<0.08 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116				<0.006 M	<0.06 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Bromochloromethane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Chloroform	<0.008 mg/kg	TM116				<0.008 M	<0.08 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116				<0.007 M	<0.07 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Carbontetrachloride	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116				<0.005 M	<0.05 M		
Benzene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M	<0.009 M	<0.09 M	<0.09 M	<0.09 M
Trichloroethene	<0.009 mg/kg	TM116				<0.009 #	<0.09 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Dibromomethane	<0.009 mg/kg	TM116				<0.009 M	<0.09 M		
Bromodichloromethane	<0.007 mg/kg	TM116				<0.007 M	<0.07 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Toluene	<0.007 mg/kg	TM116		<0.07 M	<0.07 M	<0.007 M	<0.07 M	<0.07 M	<0.07 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.01	<0.1		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS203	WS203	WS204	WS204	WS205	WS205
			Depth (m)	0.30	1.50	0.20	1.00	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026484	14026496	14026525	14026545	14026572	14026580
			AGS Reference	ES	ES	ES	ES	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116				<0.007 M	<0.07 M		
Tetrachloroethene	<0.005 mg/kg	TM116				<0.005 M	<0.05 M		
Dibromochloromethane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Chlorobenzene	<0.005 mg/kg	TM116				<0.005 M	<0.05 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M	<0.04 M		<0.004 M	<0.04 M	<0.04 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #		<0.01 #	<0.1 #	<0.1 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M		<0.01 M	<0.1 M	<0.1 M	<0.1 M
Styrene	<0.01 mg/kg	TM116				<0.01 #	<0.1 #		
Bromoform	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Isopropylbenzene	<0.005 mg/kg	TM116				<0.005 #	<0.05 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116				<0.016 M	<0.16 M		
Bromobenzene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
Propylbenzene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
2-Chlorotoluene	<0.009 mg/kg	TM116				<0.009 M	<0.09 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116				<0.008 M	<0.08 M		
4-Chlorotoluene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
tert-Butylbenzene	<0.014 mg/kg	TM116				<0.014 M	<0.14 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116				<0.009 #	<0.09 #		
sec-Butylbenzene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
4-Isopropyltoluene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116				<0.008 M	<0.08 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116				<0.005 M	<0.05 M		
n-Butylbenzene	<0.011 mg/kg	TM116				<0.011	<0.11		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116				<0.01 M	<0.1 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116				<0.014 M	<0.14 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #		<0.01 #	<0.1 #	<0.1 #	<0.1 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116				<0.02	<0.2		
Hexachlorobutadiene	<0.02 mg/kg	TM116				<0.02	<0.2		
Naphthalene	<0.013 mg/kg	TM116				<0.013 M	<0.13 M		

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS203	WS203	WS204	WS204	WS205	WS205
			Depth (m)	0.30	1.50	0.20	1.00	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	18/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026484	14026496	14026525	14026545	14026572	14026580
			AGS Reference	ES	ES	ES	ES	ES	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116				<0.02 #	<0.2 #		

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS206	WS206	WS207	WS207	WS208	WS208
			Depth (m)	0.30	1.00	0.20	0.70	0.30	1.00
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	18/08/2016	18/08/2016	19/08/2016	18/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026588	14026596	14065582	14081663	14026722	14026738
			AGS Reference	ESES1	ESES2			ES	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 @ M	<0.1 @ M	<0.01 M	<0.01 M
Benzene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M	<0.09 @ M	<0.09 @ M	<0.009 M	<0.009 M
Toluene	<0.007 mg/kg	TM116		<0.07 M	<0.07 M	<0.07 @ M	<0.07 @ M	<0.007 M	<0.007 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 M	<0.04 M	<0.04 @ M	<0.04 @ M	<0.004 M	<0.004 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 @ #	<0.1 @ #	<0.01 #	<0.01 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 @ M	<0.1 @ M	<0.01 M	<0.01 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 @ #	<0.1 @ #	<0.01 #	<0.01 #

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	WS209	WS209	WS211	WS211	WS212	WS212
			Depth (m)	0.50	1.00	0.20	0.65	0.20	0.65
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016	19/08/2016
			Sampled Time	.	.	.	.	.	.
			Date Received	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016	23/08/2016
			SDG Ref	160823-40	160823-40	160823-40	160823-40	160823-40	160823-40
			Lab Sample No.(s)	14026763	14026770	14026775	14026782	14026789	14026087
			AGS Reference	ES	ES	ES	ES	ES	ES
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.01 M	<0.1 M	<0.01 M	<0.1 M
Benzene	<0.009 mg/kg	TM116		<0.09 M	<0.09 M	<0.009 M	<0.09 M	<0.009 M	<0.09 M
Toluene	<0.007 mg/kg	TM116		<0.07 M	<0.07 M	<0.007 M	<0.07 M	<0.007 M	<0.07 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 M	<0.04 M	<0.004 M	<0.04 M	<0.004 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.01 #	<0.1 #	<0.01 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.1 M	<0.1 M	<0.01 M	<0.1 M	<0.01 M	<0.1 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 #	<0.1 #	<0.01 #	<0.1 #	<0.01 #	<0.1 #

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH201 ES 0.30 SOLID 19/08/2016 00:00:00 25/08/2016 08:21:36 160823-40 14026073 TM048	31/08/16	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH201 ES 1.00 SOLID 19/08/2016 00:00:00 25/08/2016 08:27:46 160823-40 14026123 TM048	31/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH201 ES 1.80 SOLID 17/08/2016 00:00:00 25/08/2016 12:40:56 160823-40 14026207 TM048	31/08/16	Kevin Bowron	Loose fibres in soil	Not Detected (#)	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH201 ES 3.00 SOLID 17/08/2016 00:00:00 25/08/2016 12:33:17 160823-40 14026263 TM048	31/08/16	Kevin Bowron	Loose fibres in soil	**Detected (#)**	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH202 ES 0.30 SOLID 19/08/2016 00:00:00 25/08/2016 12:44:44 160823-40 14026440 TM048	31/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH202 ES 1.00 SOLID 19/08/2016 00:00:00 25/08/2016 10:23:32 160823-40 14026532 TM048	31/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH207 ES ES1 0.30 SOLID 17/08/2016 00:00:00 25/08/2016 08:39:47 160823-40 14026165 TM048	31/08/16	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH207 ES ES2 0.70 SOLID 17/08/2016 00:00:00 25/08/2016 08:43:07 160823-40 14026374 TM048	31/08/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP201 ES 0.20 SOLID 19/08/2016 00:00:00 25/08/2016 08:28:25 160823-40 14026109 TM048	31/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP201 ES 0.90 SOLID 19/08/2016 00:00:00 25/08/2016 12:52:44 160823-40 14026117 TM048	31/08/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP202 ES 0.30 SOLID 19/08/2016 00:00:00 25/08/2016 12:26:29 160823-40 14026129 TM048	31/08/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP202 ES 0.70 SOLID 19/08/2016 00:00:00 25/08/2016 11:45:54 160823-40 14026136 TM048	31/08/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP203 ES 0.15 SOLID 19/08/2016 00:00:00 25/08/2016 11:39:23 160823-40 14026145 TM048	31/08/16	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP203 ES 0.70 SOLID 19/08/2016 00:00:00 25/08/2016 10:07:08 160823-40 14026151 TM048	31/08/16	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP205 ES 0.40 SOLID 19/08/2016 00:00:00 25/08/2016 12:25:37 160823-40 14026159 TM048	31/08/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP205 ES 0.70 SOLID 19/08/2016 00:00:00 24/08/2016 13:10:34 160823-40 14026172 TM048	31/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP206 ES 0.30 SOLID 19/08/2016 00:00:00 25/08/2016 08:25:40 160823-40 14026178 TM048	31/08/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP206 ES 0.80 SOLID 19/08/2016 00:00:00 25/08/2016 08:34:31 160823-40 14026185 TM048	31/08/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP207 ES ES1 0.30 SOLID 19/08/2016 00:00:00 25/08/2016 09:56:04 160823-40 14026192 TM048	31/08/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP207 ES ES2 0.60 SOLID 19/08/2016 00:00:00 25/08/2016 07:42:24 160823-40 14026201 TM048	31/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP208 ES 0.15 SOLID 19/08/2016 00:00:00 26/08/2016 08:17:34 160823-40 14026215 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP208 ES 0.80 SOLID 19/08/2016 00:00:00 26/08/2016 07:57:54 160823-40 14026222 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP209 0.30 SOLID 19/08/2016 00:00:00 31/08/2016 12:52:57 160823-40 14064190 TM048	06/09/16	Neville Mann	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	**Detected**

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP209 0.65 SOLID 18/08/2016 00:00:00 05/09/2016 10:29:25 160823-40 14078539 TM048	07/09/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP210 0.25 SOLID 19/08/2016 00:00:00 31/08/2016 12:47:56 160823-40 14065583 TM048	06/09/16	Neville Mann	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	**Detected**
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP210 0.75 SOLID 18/08/2016 00:00:00 05/09/2016 10:24:13 160823-40 14078541 TM048	07/09/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	HP215 ES 0.20 SOLID 19/08/2016 00:00:00 25/08/2016 08:34:21 160823-40 14026237 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP201 ES 0.30 SOLID 17/08/2016 00:00:00 26/08/2016 08:33:15 160823-40 14026244 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP201 ES 1.00 SOLID 17/08/2016 00:00:00 26/08/2016 08:23:58 160823-40 14026250 TM048	01/09/16	Chris Swindells	Loose fibres in soil	Not Detected (#)	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP203 ES 0.40 SOLID 17/08/2016 00:00:00 26/08/2016 07:13:03 160823-40 14026256 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP207 ES 0.50 SOLID 18/08/2016 00:00:00 26/08/2016 10:56:14 160823-40 14026281 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP207 ES 0.85 SOLID 18/08/2016 00:00:00 26/08/2016 11:00:58 160823-40 14026287 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP209 ES 0.40 SOLID 17/08/2016 00:00:00 25/08/2016 10:12:42 160823-40 14026313 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP211 ES 0.70 SOLID 18/08/2016 00:00:00 26/08/2016 07:22:00 160823-40 14026382 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP213 ES 1.00 SOLID 17/08/2016 00:00:00 26/08/2016 08:56:25 160823-40 14026402 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP214 ES 0.30 SOLID 19/08/2016 00:00:00 27/08/2016 10:44:39 160823-40 14026420 TM048	01/09/16	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS202 ES 0.30 SOLID 18/08/2016 00:00:00 25/08/2016 10:17:19 160823-40 14026433 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS202 ES 1.00 SOLID 18/08/2016 00:00:00 26/08/2016 08:50:19 160823-40 14026446 TM048	01/09/16	Chris Swindells	Loose fibres in soil	**Detected (#)**	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS203 ES 0.30 SOLID 19/08/2016 00:00:00 26/08/2016 08:01:54 160823-40 14026484 TM048	01/09/16	Chris Swindells	Loose fibres in soil	Not Detected (#)	Not Detected (#)	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS203 ES 1.50 SOLID 18/08/2016 00:00:00 26/08/2016 07:40:11 160823-40 14026496 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS204 ES 0.20 SOLID 19/08/2016 00:00:00 25/08/2016 09:40:25 160823-40 14026525 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS204 ES 1.00 SOLID 19/08/2016 00:00:00 25/08/2016 09:43:33 160823-40 14026545 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS205 ES 0.30 SOLID 19/08/2016 00:00:00 26/08/2016 08:13:22 160823-40 14026572 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS205 ES 1.00 SOLID 19/08/2016 00:00:00 26/08/2016 08:09:29 160823-40 14026580 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS206 ES ES1 0.30 SOLID 18/08/2016 00:00:00 25/08/2016 07:09:25 160823-40 14026588 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS206 ES ES2 1.00 SOLID 18/08/2016 00:00:00 25/08/2016 10:28:41 160823-40 14026596 TM048	01/09/16	Chris Swindells	Loose fibres in soil	Not Detected (#)	Not Detected (#)	**Detected (#)**	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS207 0.20 SOLID 19/08/2016 00:00:00 31/08/2016 12:58:42 160823-40 14065582 TM048	06/09/16	Neville Mann	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	**Detected**

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS207 0.70 SOLID 18/08/2016 00:00:00 05/09/2016 10:33:27 160823-40 14081663 TM048	07/09/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS209 ES 0.50 SOLID 19/08/2016 00:00:00 24/08/2016 13:06:01 160823-40 14026763 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS209 ES 1.00 SOLID 19/08/2016 00:00:00 24/08/2016 13:16:11 160823-40 14026770 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS211 ES 0.20 SOLID 19/08/2016 00:00:00 25/08/2016 07:32:21 160823-40 14026775 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS211 ES 0.65 SOLID 19/08/2016 00:00:00 25/08/2016 09:39:19 160823-40 14026782 TM048	01/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS212 ES 0.20 SOLID 19/08/2016 00:00:00 25/08/2016 09:52:24 160823-40 14026789 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS212 ES 0.65 SOLID 19/08/2016 00:00:00 25/08/2016 09:48:47 160823-40 14026087 TM048	01/09/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Asbestos Quantification - Full

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH201 ES 1.80 SOLID 17/08/2016 00:00:00 05/09/2016 06:25:48 160823-40 14026207 TM 304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH201 ES 3.00 SOLID 17/08/2016 00:00:00 05/09/2016 06:23:45 160823-40 14026263 TM 304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP201 ES 1.00 SOLID 17/08/2016 00:00:00 06/09/2016 06:43:23 160823-40 14026250 TM 304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS202 ES 1.00 SOLID 18/08/2016 00:00:00 06/09/2016 06:37:59 160823-40 14026446 TM 304	None (#)	ACM debris typical of asbestos insulation material found during gravimetric analysis	0.3540 (#)	0.0045 (#)	0.3585 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS203 ES 0.30 SOLID 19/08/2016 00:00:00 06/09/2016 07:06:30 160823-40 14026484 TM 304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS206 ES ES2 1.00 SOLID 18/08/2016 00:00:00 06/09/2016 06:40:25 160823-40 14026596 TM 304	Chrysotile (#)	Debris typical of asbestos cement found during gravimetric analysis	0.1625 (#)	<0.001 (#)	0.1625 (#)

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.104	**Natural Moisture Content (%)**	16.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026087
Sampled Date	19-Aug-2016
Customer Sample Ref.	WS212 ESZ
Depth (m)	0.65

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Ammoniacal Nitrogen as N	0.0371	<0.01	0.371	<0.1	-	-	-
Arsenic	<0.00051	<0.00051	<0.0051	<0.0051	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00121	<0.0012	0.0121	<0.012	-	-	-
Copper	<0.00085	<0.00085	<0.0085	<0.0085	-	-	-
Lead	0.000401	<0.0001	0.00401	<0.001	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00207	<0.0013	0.0207	<0.013	-	-	-
PAH Spec MS - Aqueous (W)							
Naphthalene by GCMS	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Acenaphthylene by GCMS	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene by GCMS	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Anthracene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Phenanthrene by GCMS	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene by GCMS	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Pyrene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benz(a)anthracene by GCMS	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene by GCMS	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene by GCMS	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Benzo(a)pyrene by GCMS	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Dibenzo(ah)anthracene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(ghi)perylene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(123cd)pyrene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
PAH 16 EPA Total by GCMS	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	6.34
Conductivity (µS/cm)	18.00
Temperature (°C)	12.10
Volume Leachant (Litres)	0.885

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.104	**Natural Moisture Content (%)**	16.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026087
Sampled Date	19-Aug-2016
Customer Sample Ref.	WS212 ESZ
Depth (m)	0.65

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
MTBE GC-FID	<0.003	<0.003	<0.03	<0.03	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Benzene by GC	<0.007	<0.007	<0.07	<0.07	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Toluene by GC	<0.004	<0.004	<0.04	<0.04	-	-	-
Ethylbenzene by GC	<0.005	<0.005	<0.05	<0.05	-	-	-
m & p Xylene by GC	<0.008	<0.008	<0.08	<0.08	-	-	-
o Xylene by GC	<0.003	<0.003	<0.03	<0.03	-	-	-
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.11	<0.11	-	-	-
Sum of BTEX by GC	<0.028	<0.028	<0.28	<0.28	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	6.34
Conductivity (µS/cm)	18.00
Temperature (ºC)	12.10
Volume Leachant (Litres)	0.885

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	10.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.4
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026123
Sampled Date	19-Aug-2016
Customer Sample Ref.	BH201 ESZ
Depth (m)	1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Ammoniacal Nitrogen as N	0.0182	<0.01	0.182	<0.1	-	-	-
Arsenic	0.000663	<0.00051	0.00663	<0.0051	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00122	<0.0012	0.0122	<0.012	-	-	-
Copper	0.00197	<0.00085	0.0197	<0.0085	-	-	-
Lead	0.00192	<0.0001	0.0192	<0.001	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00303	<0.0013	0.0303	<0.013	-	-	-
PAH Spec MS - Aqueous (W)							
Naphthalene by GCMS	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene by GCMS	0.0000279	<0.000015	0.000279	<0.00015	-	-	-
Acenaphthylene by GCMS	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene by GCMS	0.0000253	<0.000017	0.000253	<0.00017	-	-	-
Anthracene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Phenanthrene by GCMS	0.0000594	<0.000022	0.000594	<0.00022	-	-	-
Fluorene by GCMS	0.0000148	<0.000014	0.000148	<0.00014	-	-	-
Chrysene by GCMS	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Pyrene by GCMS	0.0000172	<0.000015	0.000172	<0.00015	-	-	-
Benz(a)anthracene by GCMS	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene by GCMS	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene by GCMS	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Benzo(a)pyrene by GCMS	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Dibenzo(ah)anthracene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(ghi)perylene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(123cd)pyrene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
PAH 16 EPA Total by GCMS	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.46
Conductivity (µS/cm)	105.00
Temperature (ºC)	18.00
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	10.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.7
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026374
Sampled Date	17-Aug-2016
Customer Sample Ref.	BH207 ESES2
Depth (m)	0.70

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	0.0000129	<0.00001	0.000129	<0.0001	-	-	-
Ammoniacal Nitrogen as N	0.021	<0.01	0.21	<0.1	-	-	-
Arsenic	0.000724	<0.00051	0.00724	<0.0051	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Copper	0.00596	<0.00085	0.0596	<0.0085	-	-	-
Lead	0.00153	<0.0001	0.0153	<0.001	-	-	-
Nickel	0.000729	<0.00044	0.00729	<0.0044	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.0017	<0.0013	0.017	<0.013	-	-	-
PAH Spec MS - Aqueous (W)							
Naphthalene by GCMS	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Acenaphthylene by GCMS	0.0000129	<0.000011	0.000129	<0.00011	-	-	-
Fluoranthene by GCMS	0.0000525	<0.000017	0.000525	<0.00017	-	-	-
Anthracene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Phenanthrene by GCMS	0.0000991	<0.000022	0.000991	<0.00022	-	-	-
Fluorene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene by GCMS	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Pyrene by GCMS	0.0000407	<0.000015	0.000407	<0.00015	-	-	-
Benz(a)anthracene by GCMS	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene by GCMS	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene by GCMS	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Benzo(a)pyrene by GCMS	0.00000932	<0.000009	0.0000932	<0.00009	-	-	-
Dibenzo(ah)anthracene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(ghi)perylene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(123cd)pyrene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
PAH 16 EPA Total by GCMS	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.49
Conductivity (µS/cm)	108.00
Temperature (ºC)	19.90
Volume Leachant (Litres)	0.891

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	10.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.7
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026374
Sampled Date	17-Aug-2016
Customer Sample Ref.	BH207 ESES2
Depth (m)	0.70

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
MTBE GC-FID	<0.003	<0.003	<0.03	<0.03	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Benzene by GC	<0.007	<0.007	<0.07	<0.07	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Toluene by GC	<0.004	<0.004	<0.04	<0.04	-	-	-
Ethylbenzene by GC	<0.005	<0.005	<0.05	<0.05	-	-	-
m & p Xylene by GC	<0.008	<0.008	<0.08	<0.08	-	-	-
o Xylene by GC	<0.003	<0.003	<0.03	<0.03	-	-	-
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.11	<0.11	-	-	-
Sum of BTEX by GC	<0.028	<0.028	<0.28	<0.28	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.49
Conductivity (µS/cm)	108.00
Temperature (ºC)	19.90
Volume Leachant (Litres)	0.891

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026440
Sampled Date	19-Aug-2016
Customer Sample Ref.	BH202 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Ammoniacal Nitrogen as N	0.0212	<0.01	0.212	<0.1	-	-	-
Arsenic	<0.00051	<0.00051	<0.0051	<0.0051	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Copper	0.000938	<0.00085	0.00938	<0.0085	-	-	-
Lead	0.000148	<0.0001	0.00148	<0.001	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	<0.0013	<0.0013	<0.013	<0.013	-	-	-
PAH Spec MS - Aqueous (W)							
Naphthalene by GCMS	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Acenaphthylene by GCMS	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene by GCMS	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Anthracene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Phenanthrene by GCMS	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene by GCMS	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Pyrene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benz(a)anthracene by GCMS	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene by GCMS	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene by GCMS	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Benzo(a)pyrene by GCMS	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Dibenzo(ah)anthracene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(ghi)perylene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(123cd)pyrene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
PAH 16 EPA Total by GCMS	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.10
Conductivity (µS/cm)	119.00
Temperature (ºC)	17.30
Volume Leachant (Litres)	0.883

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026440
Sampled Date	19-Aug-2016
Customer Sample Ref.	BH202 ESZ
Depth (m)	0.30

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
MTBE GC-FID	<0.003	<0.003	<0.03	<0.03	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Benzene by GC	<0.007	<0.007	<0.07	<0.07	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Toluene by GC	<0.004	<0.004	<0.04	<0.04	-	-	-
Ethylbenzene by GC	<0.005	<0.005	<0.05	<0.05	-	-	-
m & p Xylene by GC	<0.008	<0.008	<0.08	<0.08	-	-	-
o Xylene by GC	<0.003	<0.003	<0.03	<0.03	-	-	-
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.11	<0.11	-	-	-
Sum of BTEX by GC	<0.028	<0.028	<0.28	<0.28	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.10
Conductivity (µS/cm)	119.00
Temperature (ºC)	17.30
Volume Leachant (Litres)	0.883

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.72
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.7
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026446
Sampled Date	18-Aug-2016
Customer Sample Ref.	WS202 ESZ
Depth (m)	1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Ammoniacal Nitrogen as N	0.0258	<0.01	0.258	<0.1	-	-	-
Arsenic	0.000986	<0.00051	0.00986	<0.0051	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Copper	0.0203	<0.00085	0.203	<0.0085	-	-	-
Lead	0.00879	<0.0001	0.0879	<0.001	-	-	-
Nickel	0.00129	<0.00044	0.0129	<0.0044	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00266	<0.0013	0.0266	<0.013	-	-	-
PAH Spec MS - Aqueous (W)							
Naphthalene by GCMS	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene by GCMS	0.0000424	<0.000015	0.000424	<0.00015	-	-	-
Acenaphthylene by GCMS	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene by GCMS	0.000165	<0.000017	0.00165	<0.00017	-	-	-
Anthracene by GCMS	0.0000447	<0.000015	0.000447	<0.00015	-	-	-
Phenanthrene by GCMS	0.000202	<0.000022	0.00202	<0.00022	-	-	-
Fluorene by GCMS	0.0000233	<0.000014	0.000233	<0.00014	-	-	-
Chrysene by GCMS	0.0000148	<0.000013	0.000148	<0.00013	-	-	-
Pyrene by GCMS	0.000119	<0.000015	0.00119	<0.00015	-	-	-
Benz(a)anthracene by GCMS	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene by GCMS	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene by GCMS	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Benzo(a)pyrene by GCMS	0.0000103	<0.000009	0.000103	<0.00009	-	-	-
Dibenzo(ah)anthracene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(ghi)perylene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(123cd)pyrene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
PAH 16 EPA Total by GCMS	0.000622	<0.000344	0.00622	<0.00344	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.55
Conductivity (µS/cm)	104.00
Temperature (ºC)	18.80
Volume Leachant (Litres)	0.894

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.72
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.7
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026446
Sampled Date	18-Aug-2016
Customer Sample Ref.	WS202 ESZ
Depth (m)	1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
MTBE GC-FID	<0.003	<0.003	<0.03	<0.03	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Benzene by GC	<0.007	<0.007	<0.07	<0.07	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Toluene by GC	<0.004	<0.004	<0.04	<0.04	-	-	-
Ethylbenzene by GC	<0.005	<0.005	<0.05	<0.05	-	-	-
m & p Xylene by GC	<0.008	<0.008	<0.08	<0.08	-	-	-
o Xylene by GC	<0.003	<0.003	<0.03	<0.03	-	-	-
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.11	<0.11	-	-	-
Sum of BTEX by GC	<0.028	<0.028	<0.28	<0.28	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.55
Conductivity (µS/cm)	104.00
Temperature (ºC)	18.80
Volume Leachant (Litres)	0.894

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026525
Sampled Date	19-Aug-2016
Customer Sample Ref.	WS204 ESZ
Depth (m)	0.20

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide - Low Level	<0.0025	<0.0025	<0.025	<0.025	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Ammoniacal Nitrogen as N	0.0353	<0.01	0.353	<0.1	-	-	-
Arsenic	0.000611	<0.00051	0.00611	<0.0051	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Copper	0.00169	<0.00085	0.0169	<0.0085	-	-	-
Lead	0.000289	<0.0001	0.00289	<0.001	-	-	-
Nickel	0.000604	<0.00044	0.00604	<0.0044	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00223	<0.0013	0.0223	<0.013	-	-	-
PAH Spec MS - Aqueous (W)							
Naphthalene by GCMS	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Acenaphthene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Acenaphthylene by GCMS	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene by GCMS	0.0000182	<0.000017	0.000182	<0.00017	-	-	-
Anthracene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Phenanthrene by GCMS	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene by GCMS	<0.000013	<0.000013	<0.00013	<0.00013	-	-	-
Pyrene by GCMS	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Benz(a)anthracene by GCMS	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene by GCMS	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene by GCMS	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Benzo(a)pyrene by GCMS	<0.000009	<0.000009	<0.00009	<0.00009	-	-	-
Dibenzo(ah)anthracene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Benzo(ghi)perylene by GCMS	<0.000016	<0.000016	<0.00016	<0.00016	-	-	-
Indeno(123cd)pyrene by GCMS	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
PAH 16 EPA Total by GCMS	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.37
Conductivity (µS/cm)	101.00
Temperature (ºC)	19.10
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90
Particle Size <4mm	>95%		

Case	
SDG	160823-40
Lab Sample Number(s)	14026525
Sampled Date	19-Aug-2016
Customer Sample Ref.	WS204 ESZ
Depth (m)	0.20

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
MTBE GC-FID	<0.003	<0.003	<0.03	<0.03	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Benzene by GC	<0.007	<0.007	<0.07	<0.07	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Toluene by GC	<0.004	<0.004	<0.04	<0.04	-	-	-
Ethylbenzene by GC	<0.005	<0.005	<0.05	<0.05	-	-	-
m & p Xylene by GC	<0.008	<0.008	<0.08	<0.08	-	-	-
o Xylene by GC	<0.003	<0.003	<0.03	<0.03	-	-	-
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.11	<0.11	-	-	-
Sum of BTEX by GC	<0.028	<0.028	<0.28	<0.28	-	-	-

Leach Test Information

Date Prepared	27-Aug-2016
pH (pH Units)	8.37
Conductivity (µS/cm)	101.00
Temperature (ºC)	19.10
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

12/09/2016 09:37:24

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 23/08/2016 12:25:24

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
14026446	WS202 ESZ	1.00	Dioxins/Furans (S)*	Unsuitable sample for analysis

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
SUB		Subcontracted Test		
TM 304				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM279		Determination of Low Level Easily Liberatable (Free) Cyanides and Total Cyanides in Waters using the Skalar SANS+ System Segmented Flow Analyser		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	14026073	14026123	14026207	14026263	14026440	14026532	14026165	14026374	14026453	14026109
Customer Sample Ref.	BH201	BH201	BH201	BH201	BH202	BH202	BH207	BH207	BH207	HP201
AGS Ref.	ES	ES	ES	ES	ES	ES	ESES1	ESES2	ESES3	ES
Depth	0.30	1.00	1.80	3.00	0.30	1.00	0.30	0.70	1.50	0.20
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Low		01-Sep-2016			01-Sep-2016			01-Sep-2016		
Asbestos ID in Solid Samples	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016		31-Aug-2016
Asbestos Quantification - Full			07-Sep-2016	07-Sep-2016						
CEN 10:1 Leachate (1 Stage)		27-Aug-2016			27-Aug-2016			27-Aug-2016		
CEN Readings		30-Aug-2016			30-Aug-2016			30-Aug-2016		
Cyanide Comp/Free/Total/Thiocyanate	31-Aug-2016	31-Aug-2016		31-Aug-2016	31-Aug-2016	31-Aug-2016				30-Aug-2016
Dioxins/Furans (S)*						12-Sep-2016				
Dissolved Metals by ICP-MS		01-Sep-2016			01-Sep-2016			01-Sep-2016		
EPH CWG (Aliphatic) Aqueous GC (W)					01-Sep-2016			01-Sep-2016		
EPH CWG (Aliphatic) GC (S)	30-Aug-2016	30-Aug-2016		30-Aug-2016	01-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
EPH CWG (Aromatic) Aqueous GC (W)					01-Sep-2016			01-Sep-2016		
EPH CWG (Aromatic) GC (S)	30-Aug-2016	30-Aug-2016		30-Aug-2016	01-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
GRO by GC-FID (S)	30-Aug-2016	30-Aug-2016		31-Aug-2016	31-Aug-2016	30-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
GRO by GC-FID (W)					31-Aug-2016			31-Aug-2016		
Hexavalent Chromium (s)	31-Aug-2016	31-Aug-2016		31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Hexavalent Chromium (w)		31-Aug-2016			31-Aug-2016			31-Aug-2016		
Low Level Cyanide (W)		02-Sep-2016			02-Sep-2016			02-Sep-2016		
Mercury Dissolved		30-Aug-2016			30-Aug-2016			30-Aug-2016		
Metals in solid samples by OES	31-Aug-2016	31-Aug-2016		31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
PAH by GCMS	30-Aug-2016	28-Aug-2016		30-Aug-2016	31-Aug-2016	28-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	28-Aug-2016
PAH Spec MS - Aqueous (W)		01-Sep-2016			01-Sep-2016			01-Sep-2016		
pH	26-Aug-2016	26-Aug-2016		30-Aug-2016	26-Aug-2016	26-Aug-2016	26-Aug-2016	26-Aug-2016	30-Aug-2016	26-Aug-2016
Sample description	25-Aug-2016	25-Aug-2016		25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	24-Aug-2016	25-Aug-2016
Semi Volatile Organic Compounds	31-Aug-2016	31-Aug-2016			31-Aug-2016	31-Aug-2016				
Total Organic Carbon				31-Aug-2016	31-Aug-2016		31-Aug-2016		31-Aug-2016	
TPH CWG (W)					01-Sep-2016			01-Sep-2016		
TPH CWG GC (S)	30-Aug-2016	30-Aug-2016		31-Aug-2016	01-Sep-2016	30-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
VOC MS (S)	30-Aug-2016	30-Aug-2016		30-Aug-2016	31-Aug-2016	30-Aug-2016	30-Aug-2016	31-Aug-2016	30-Aug-2016	30-Aug-2016

Lab Sample No(s)	14026117	14026129	14026136	14026145	14026151	14026159	14026172	14026178	14026185	14026192
Customer Sample Ref.	HP201	HP202	HP202	HP203	HP203	HP205	HP205	HP206	HP206	HP207
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ESES1
Depth	0.90	0.30	0.70	0.15	0.70	0.40	0.70	0.30	0.80	0.30
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Cyanide Comp/Free/Total/Thiocyanate					31-Aug-2016		31-Aug-2016			31-Aug-2016
EPH CWG (Aliphatic) GC (S)	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
EPH CWG (Aromatic) GC (S)	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
GRO by GC-FID (S)	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	30-Aug-2016
Hexavalent Chromium (s)	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Metals in solid samples by OES	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
PAH by GCMS	28-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	28-Aug-2016	30-Aug-2016	28-Aug-2016	28-Aug-2016	30-Aug-2016
pH	26-Aug-2016	30-Aug-2016	26-Aug-2016	30-Aug-2016	30-Aug-2016	26-Aug-2016	26-Aug-2016	26-Aug-2016	26-Aug-2016	26-Aug-2016
Sample description	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016
Total Organic Carbon			31-Aug-2016			31-Aug-2016			31-Aug-2016	
TPH CWG GC (S)	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	30-Aug-2016
VOC MS (S)	30-Aug-2016	30-Aug-2016	30-Aug-2016	31-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Lab Sample No(s)	14026201	14026215	14026222	14064190	14078539	14065583	14078541	14026237	14026244	14026250
Customer Sample Ref.	HP207	HP208	HP208	HP209	HP209	HP210	HP210	HP215	TP201	TP201
AGS Ref.	ESES2	ES	ES					ES	ES	ES
Depth	0.60	0.15	0.80	0.30	0.65	0.25	0.75	0.20	0.30	1.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	31-Aug-2016	01-Sep-2016	01-Sep-2016	06-Sep-2016	08-Sep-2016	06-Sep-2016	08-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Asbestos Quantification - Full										09-Sep-2016
Cyanide Comp/Free/Total/Thiocyanate					07-Sep-2016		07-Sep-2016		31-Aug-2016	01-Sep-2016
EPH CWG (Aliphatic) GC (S)	30-Aug-2016	30-Aug-2016	30-Aug-2016	06-Sep-2016	07-Sep-2016	06-Sep-2016	08-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
EPH CWG (Aromatic) GC (S)	30-Aug-2016	30-Aug-2016	30-Aug-2016	06-Sep-2016	07-Sep-2016	06-Sep-2016	08-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
GRO by GC-FID (S)	30-Aug-2016	01-Sep-2016	01-Sep-2016	06-Sep-2016	07-Sep-2016	06-Sep-2016	06-Sep-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Hexavalent Chromium (s)	31-Aug-2016	01-Sep-2016	31-Aug-2016	05-Sep-2016	07-Sep-2016	06-Sep-2016	07-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Metals in solid samples by OES	31-Aug-2016	01-Sep-2016	01-Sep-2016	06-Sep-2016	07-Sep-2016	06-Sep-2016	07-Sep-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016
PAH by GCMS	30-Aug-2016	31-Aug-2016	31-Aug-2016	05-Sep-2016	08-Sep-2016	05-Sep-2016	08-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
pH	26-Aug-2016	31-Aug-2016	31-Aug-2016	05-Sep-2016	07-Sep-2016	05-Sep-2016	07-Sep-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Sample description	25-Aug-2016	26-Aug-2016	26-Aug-2016	31-Aug-2016	05-Sep-2016	31-Aug-2016	05-Sep-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016
Semi Volatile Organic Compounds									31-Aug-2016	31-Aug-2016
Total Organic Carbon					08-Sep-2016		08-Sep-2016	01-Sep-2016		
TPH CWG GC (S)	30-Aug-2016	01-Sep-2016	01-Sep-2016	06-Sep-2016	07-Sep-2016	06-Sep-2016	08-Sep-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
VOC MS (S)	30-Aug-2016	01-Sep-2016	01-Sep-2016	05-Sep-2016	08-Sep-2016	05-Sep-2016	08-Sep-2016	31-Aug-2016	30-Aug-2016	30-Aug-2016

Lab Sample No(s)	14026256	14026281	14026287	14026313	14026320	14026335	14026342	14026382	14026402	14026420
Customer Sample Ref.	TP203	TP207	TP207	TP209	TP209	TP210	TP210	TP211	TP213	TP214
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.40	0.50	0.85	0.40	1.00	0.20	0.80	0.70	1.00	0.30
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016				01-Sep-2016	01-Sep-2016	02-Sep-2016
Cyanide Comp/Free/Total/Thiocyanate		01-Sep-2016	31-Aug-2016				31-Aug-2016			
Dioxins/Furans (S)*	09-Sep-2016		09-Sep-2016							
EPH CWG (Aliphatic) GC (S)	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	02-Sep-2016
EPH CWG (Aromatic) GC (S)	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	02-Sep-2016
GRO by GC-FID (S)	01-Sep-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	02-Sep-2016
Hexavalent Chromium (s)	01-Sep-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	02-Sep-2016
Metals in solid samples by OES	01-Sep-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	02-Sep-2016
PAH by GCMS	31-Aug-2016	28-Aug-2016	28-Aug-2016	31-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016
PCBs by GCMS			31-Aug-2016							
pH	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016
Sample description	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	25-Aug-2016	25-Aug-2016	27-Aug-2016
Semi Volatile Organic Compounds	31-Aug-2016	31-Aug-2016	31-Aug-2016							02-Sep-2016
Total Organic Carbon	01-Sep-2016	01-Sep-2016	01-Sep-2016		01-Sep-2016		01-Sep-2016		01-Sep-2016	
TPH CWG GC (S)	01-Sep-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	02-Sep-2016
VOC MS (S)	01-Sep-2016	01-Sep-2016	01-Sep-2016	30-Aug-2016	30-Aug-2016	31-Aug-2016	31-Aug-2016	30-Aug-2016	30-Aug-2016	02-Sep-2016

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Lab Sample No(s)	14028420	14026433	14026446	14026484	14026496	14026525	14026545	14026572	14026580	14026588
Customer Sample Ref.	TRIP BLANK	WS202	WS202	WS203	WS203	WS204	WS204	WS205	WS205	WS206
AGS Ref.		ES	ES	ES	ES	ES	ES	ES	ES	ESES1
Depth		0.30	1.00	0.30	1.50	0.20	1.00	0.30	1.00	0.30
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Low			01-Sep-2016			01-Sep-2016				
Asbestos ID in Solid Samples		01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Asbestos Quantification - Full			09-Sep-2016	09-Sep-2016						
CEN 10:1 Leachate (1 Stage)			27-Aug-2016			27-Aug-2016				
CEN Readings			30-Aug-2016			30-Aug-2016				
Cyanide Comp/Free/Total/Thiocyanate		31-Aug-2016	31-Aug-2016			01-Sep-2016	31-Aug-2016			
Dioxins/Furans (S)*		09-Sep-2016				09-Sep-2016	09-Sep-2016			
Dissolved Metals by ICP-MS			01-Sep-2016			01-Sep-2016				
EPH CWG (Aliphatic) Aqueous GC (W)			01-Sep-2016			01-Sep-2016				
EPH CWG (Aliphatic) GC (S)		01-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
EPH CWG (Aromatic) Aqueous GC (W)			01-Sep-2016			01-Sep-2016				
EPH CWG (Aromatic) GC (S)		01-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
GRO by GC-FID (S)		01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
GRO by GC-FID (W)			31-Aug-2016			31-Aug-2016				
Hexavalent Chromium (s)		01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Hexavalent Chromium (w)			31-Aug-2016			31-Aug-2016				
Low Level Cyanide (W)			02-Sep-2016			02-Sep-2016				
Mercury Dissolved			30-Aug-2016			30-Aug-2016				
Metals in solid samples by OES		01-Sep-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	01-Sep-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
PAH by GCMS		31-Aug-2016	31-Aug-2016	31-Aug-2016	28-Aug-2016	30-Aug-2016	30-Aug-2016	31-Aug-2016	31-Aug-2016	28-Aug-2016
PAH Spec MS - Aqueous (W)			01-Sep-2016			01-Sep-2016				
PCBs by GCMS		31-Aug-2016	31-Aug-2016			31-Aug-2016	31-Aug-2016			
pH		31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Sample description	31-Aug-2016	25-Aug-2016	25-Aug-2016	26-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	26-Aug-2016	26-Aug-2016	25-Aug-2016
Semi Volatile Organic Compounds		01-Sep-2016	31-Aug-2016			31-Aug-2016	31-Aug-2016			
Total Organic Carbon		01-Sep-2016	01-Sep-2016			01-Sep-2016	01-Sep-2016	01-Sep-2016		
TPH CWG (W)			01-Sep-2016			01-Sep-2016				
TPH CWG GC (S)		01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
VOC MS (S)	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016

Lab Sample No(s)	14026596	14065582	14081663	14026738	14026763	14026770	14026775	14026782	14026087	14026789
Customer Sample Ref.	WS206	WS207	WS207	WS208	WS209	WS209	WS211	WS211	WS212	WS212
AGS Ref.	ESES2			ES	ES	ES	ES	ES	ES	ES
Depth	1.00	0.20	0.70	1.00	0.50	1.00	0.20	0.65	0.65	0.20
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Low									31-Aug-2016	
Asbestos ID in Solid Samples	01-Sep-2016	06-Sep-2016	08-Sep-2016		01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Asbestos Quantification - Full	09-Sep-2016									
CEN 10:1 Leachate (1 Stage)									27-Aug-2016	
CEN Readings									30-Aug-2016	
Cyanide Comp/Free/Total/Thiocyanate	31-Aug-2016									
Dissolved Metals by ICP-MS									01-Sep-2016	
EPH CWG (Aliphatic) Aqueous GC (W)									01-Sep-2016	
EPH CWG (Aliphatic) GC (S)	30-Aug-2016	06-Sep-2016	07-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
EPH CWG (Aromatic) Aqueous GC (W)									01-Sep-2016	
EPH CWG (Aromatic) GC (S)	30-Aug-2016	06-Sep-2016	07-Sep-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
GRO by GC-FID (S)	01-Sep-2016	06-Sep-2016	06-Sep-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016
GRO by GC-FID (W)									31-Aug-2016	
Hexavalent Chromium (s)	01-Sep-2016	06-Sep-2016	07-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Hexavalent Chromium (w)									31-Aug-2016	
Low Level Cyanide (W)									02-Sep-2016	
Mercury Dissolved									30-Aug-2016	
Metals in solid samples by OES	01-Sep-2016	06-Sep-2016	07-Sep-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
PAH by GCMS	28-Aug-2016	05-Sep-2016	08-Sep-2016	01-Sep-2016	31-Aug-2016	31-Aug-2016	30-Aug-2016	30-Aug-2016	31-Aug-2016	30-Aug-2016
PAH Spec MS - Aqueous (W)									01-Sep-2016	
pH	31-Aug-2016	05-Sep-2016	07-Sep-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Sample description	25-Aug-2016	31-Aug-2016	05-Sep-2016	24-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016	25-Aug-2016
Total Organic Carbon		06-Sep-2016	08-Sep-2016	01-Sep-2016						
TPH CWG (W)									01-Sep-2016	
TPH CWG GC (S)	01-Sep-2016	06-Sep-2016	07-Sep-2016	31-Aug-2016	31-Aug-2016	01-Sep-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016
VOC MS (S)	01-Sep-2016	05-Sep-2016	08-Sep-2016	31-Aug-2016	30-Aug-2016	01-Sep-2016	31-Aug-2016	01-Sep-2016	01-Sep-2016	31-Aug-2016

CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

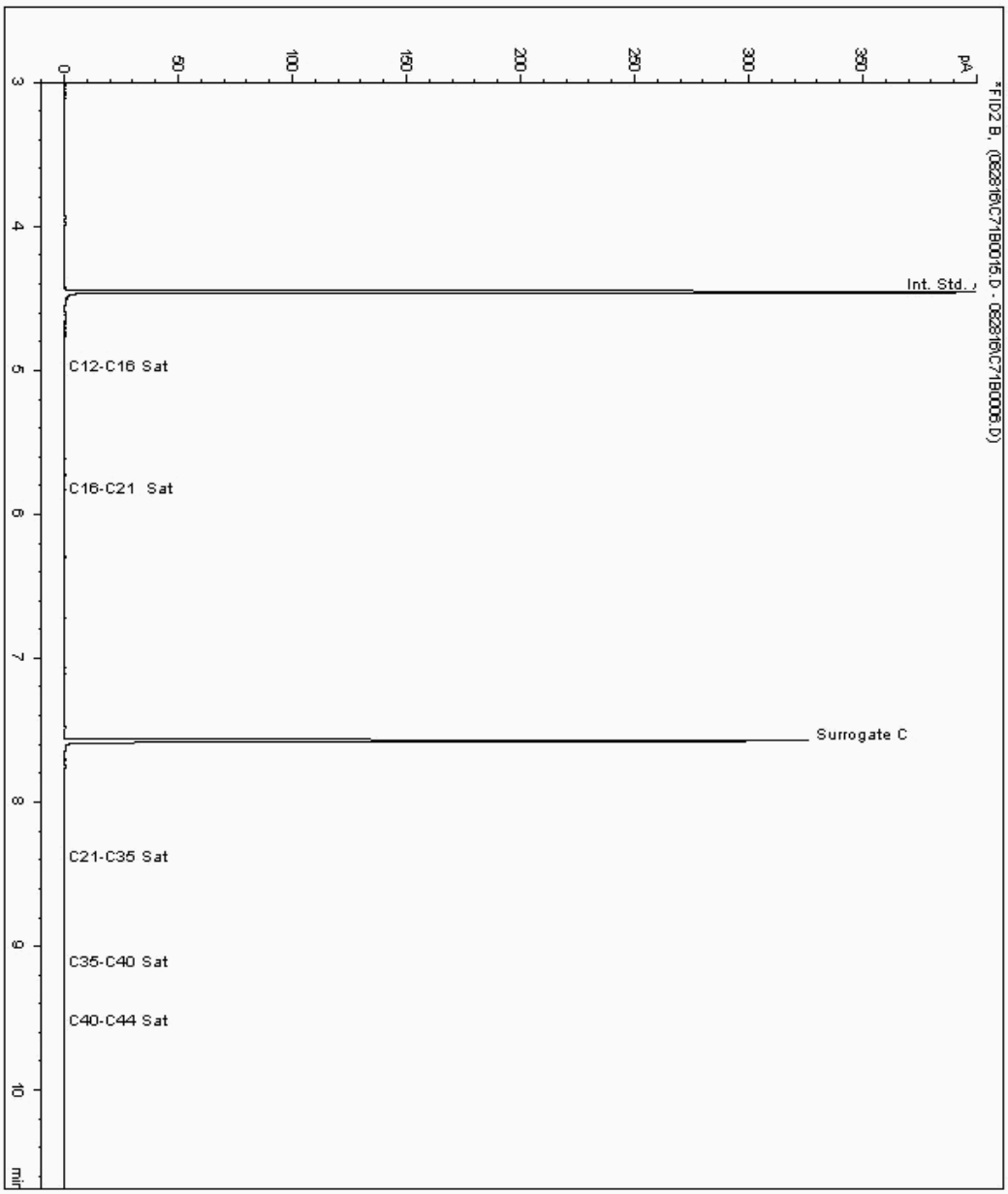
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14029052
Sample ID : BH207

Depth : 1.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182183-
Date Acquired : 28/08/2016 18:57:48 PM
Units : ppb
Dilution: BH207[1.50] ->



CERTIFICATE OF ANALYSIS

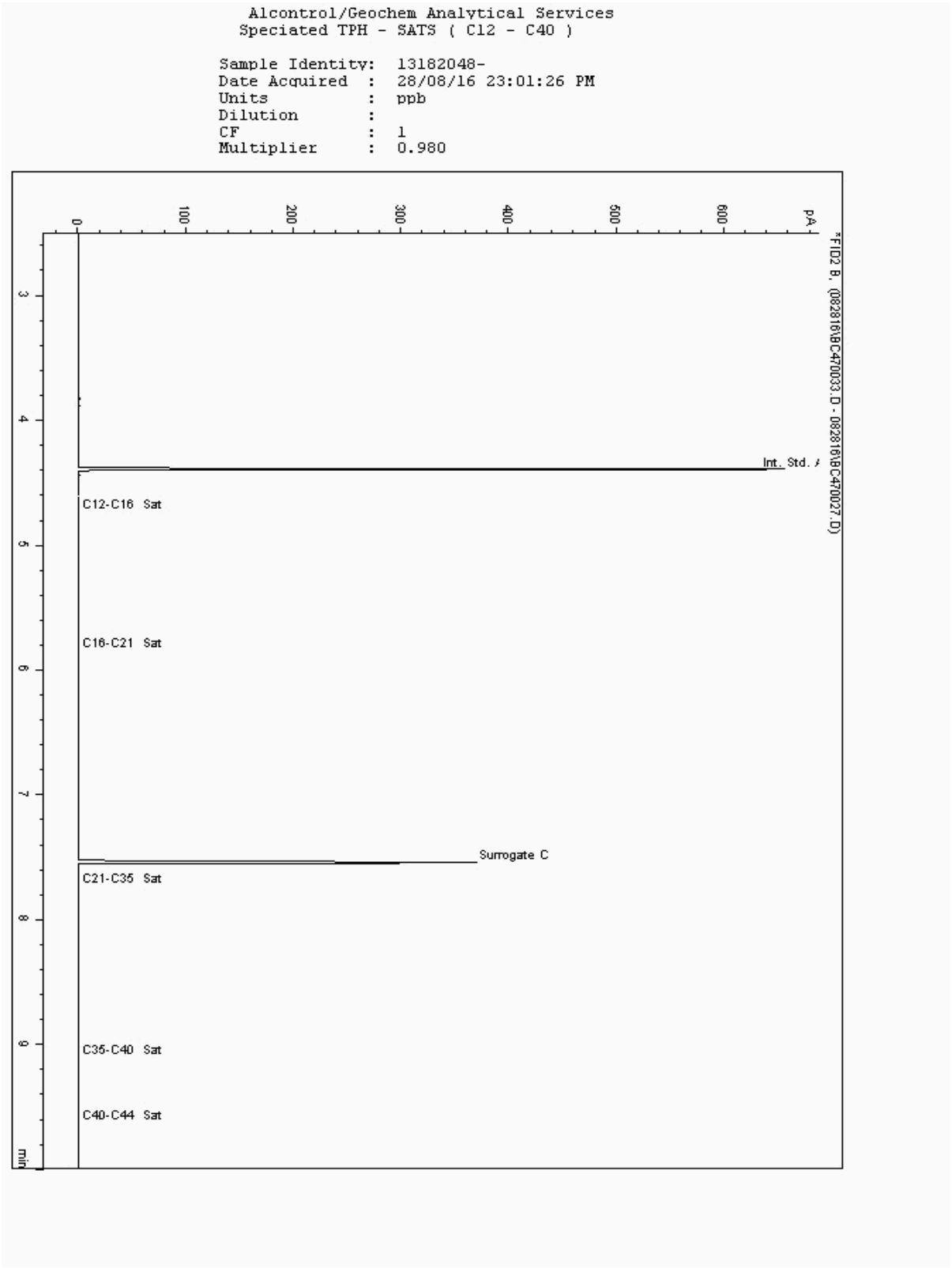
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14032027
Sample ID : TP210

Depth : 0.80



CERTIFICATE OF ANALYSIS

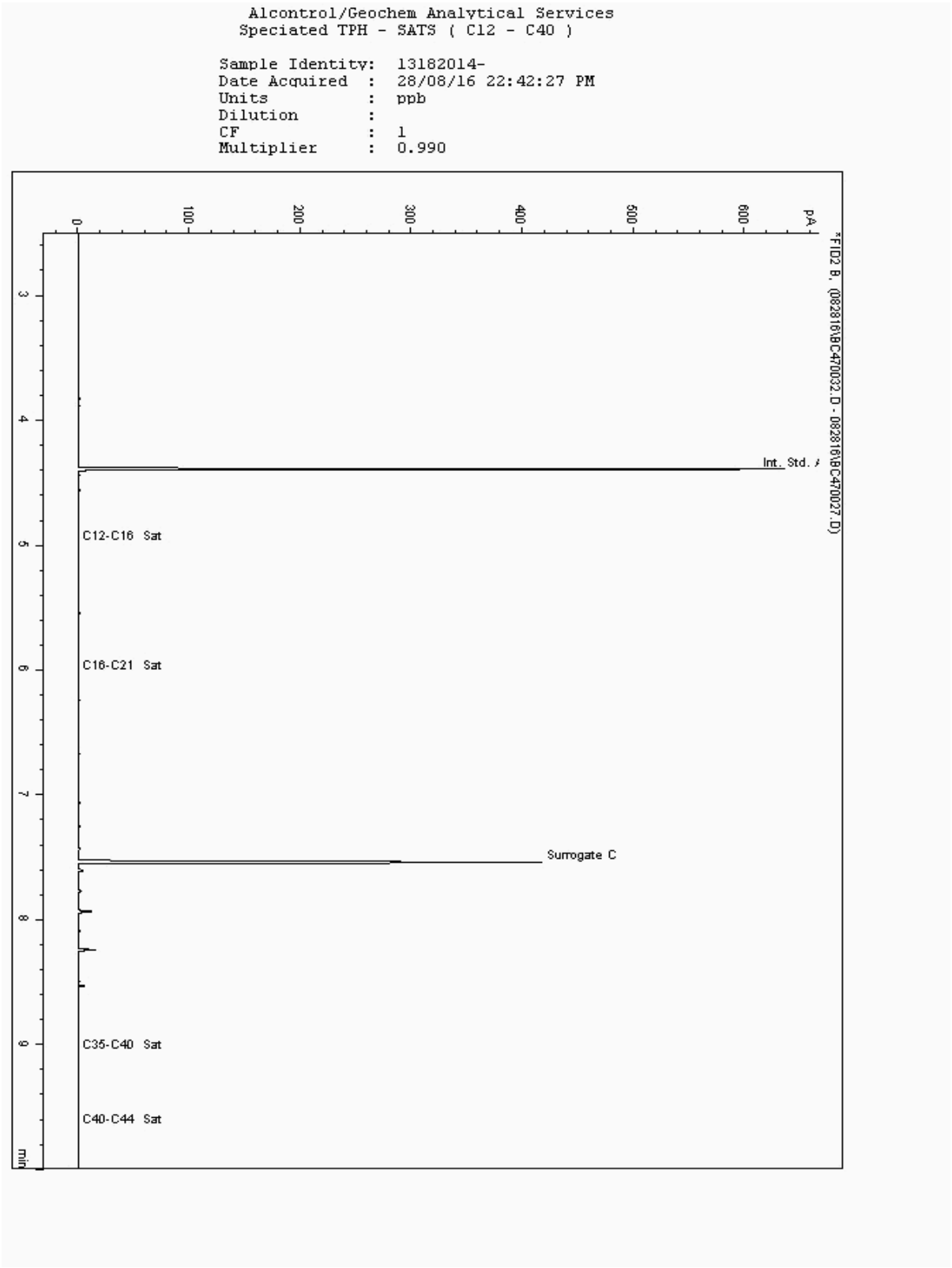
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14032111
Sample ID : TP210

Depth : 0.20



CERTIFICATE OF ANALYSIS

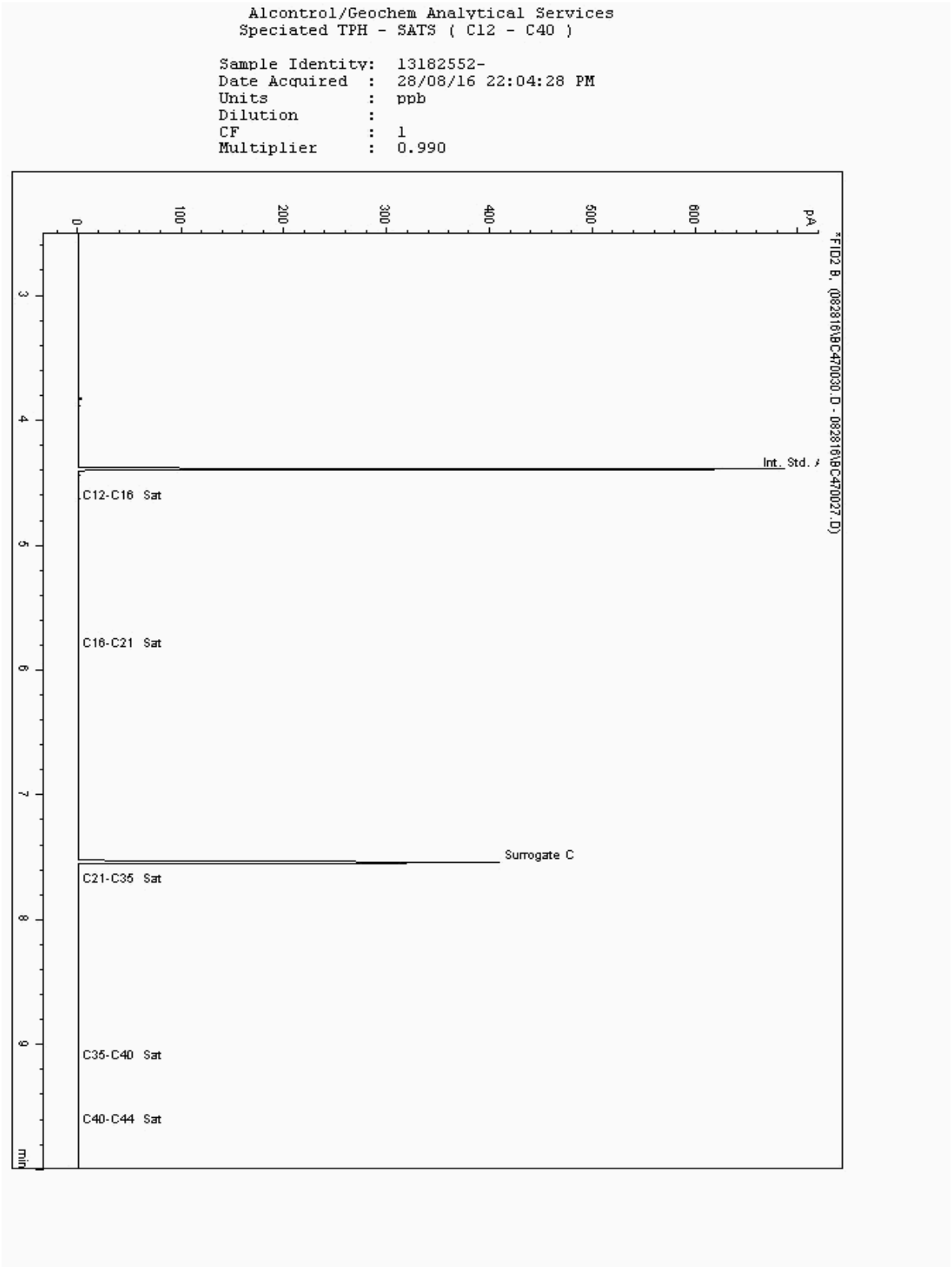
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14032319
Sample ID : WS208

Depth : 1.00



CERTIFICATE OF ANALYSIS

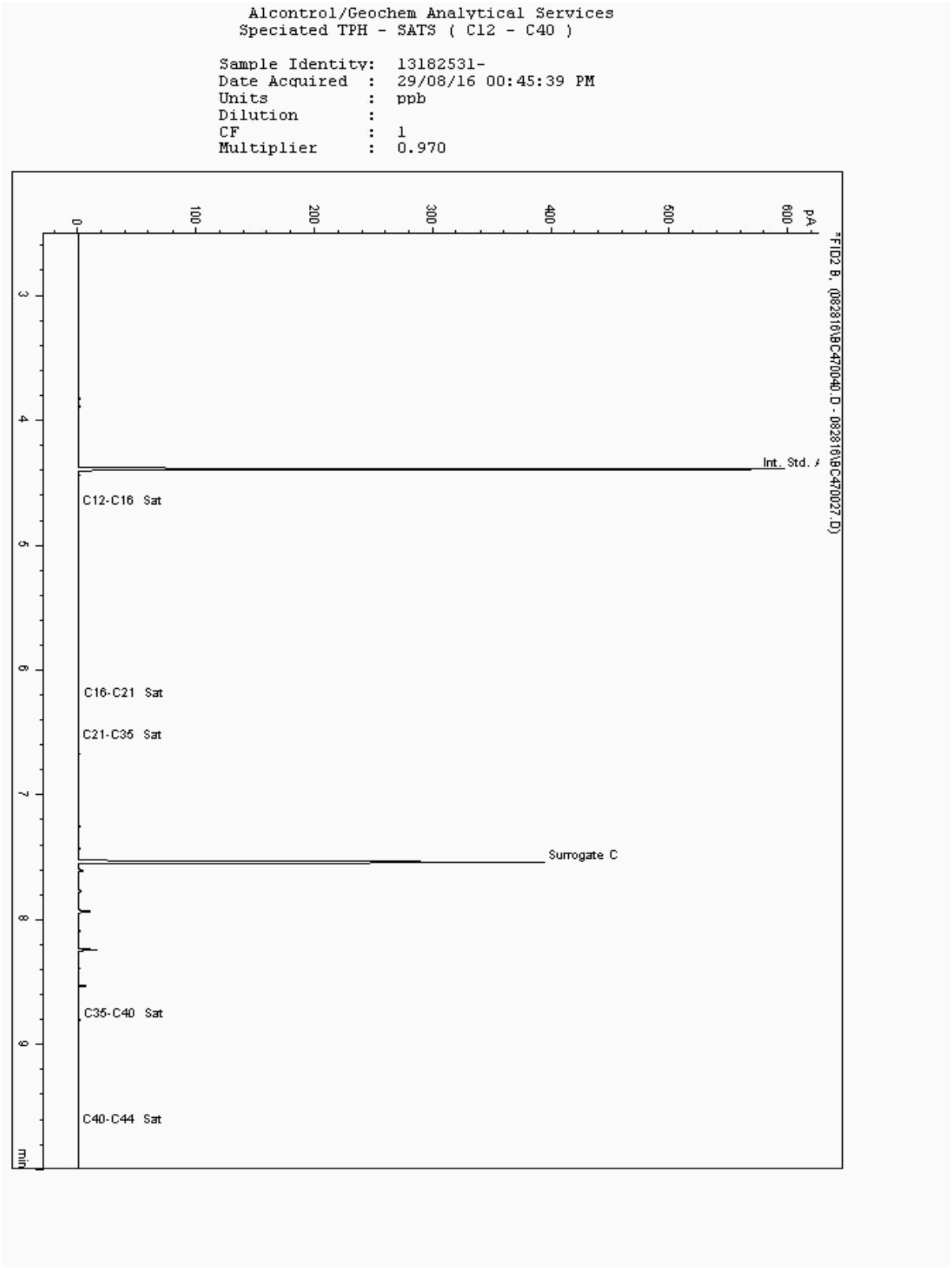
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14032364
Sample ID : WS208

Depth : 0.30



CERTIFICATE OF ANALYSIS

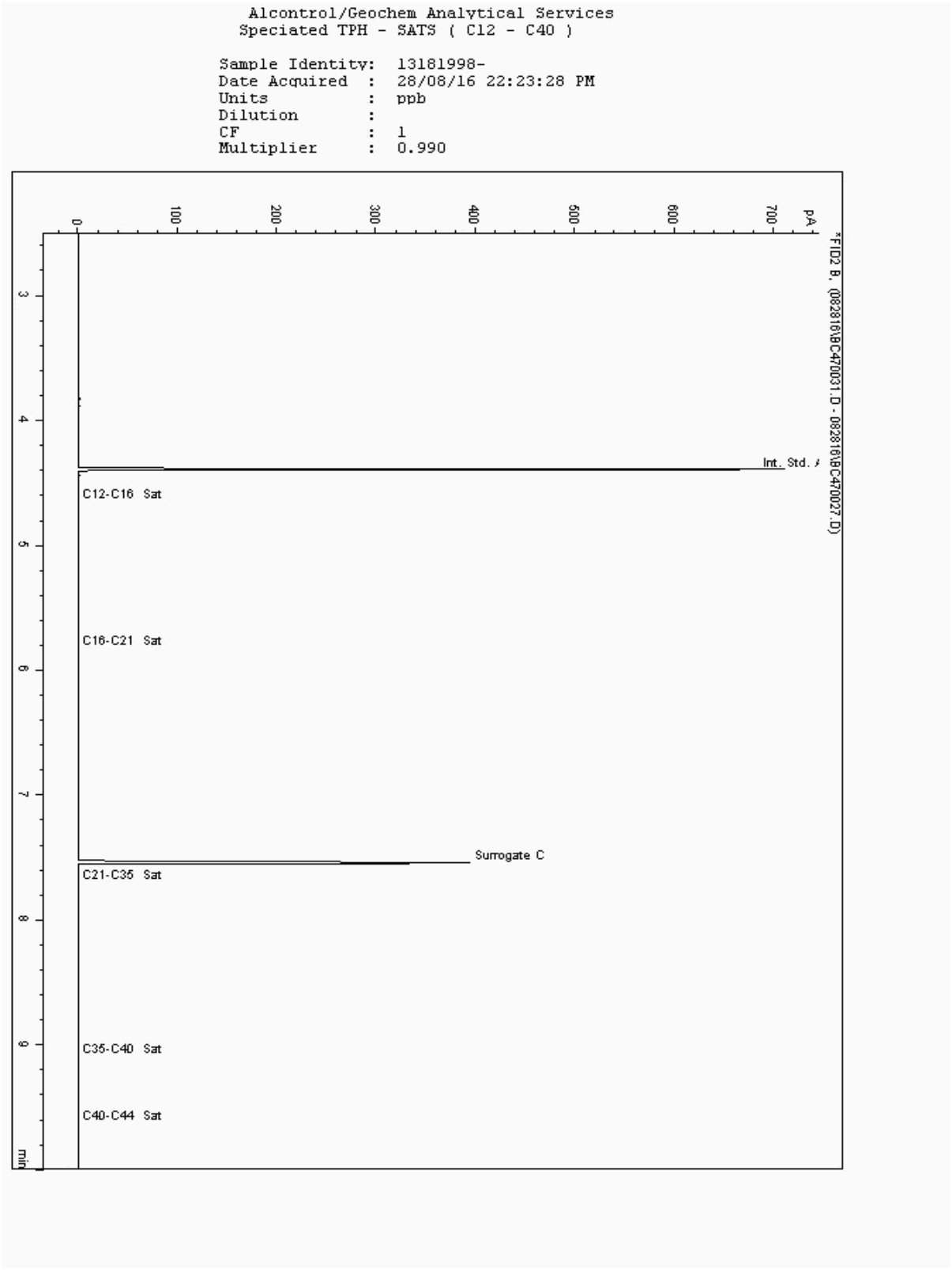
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14033032
Sample ID : TP209

Depth : 1.00



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

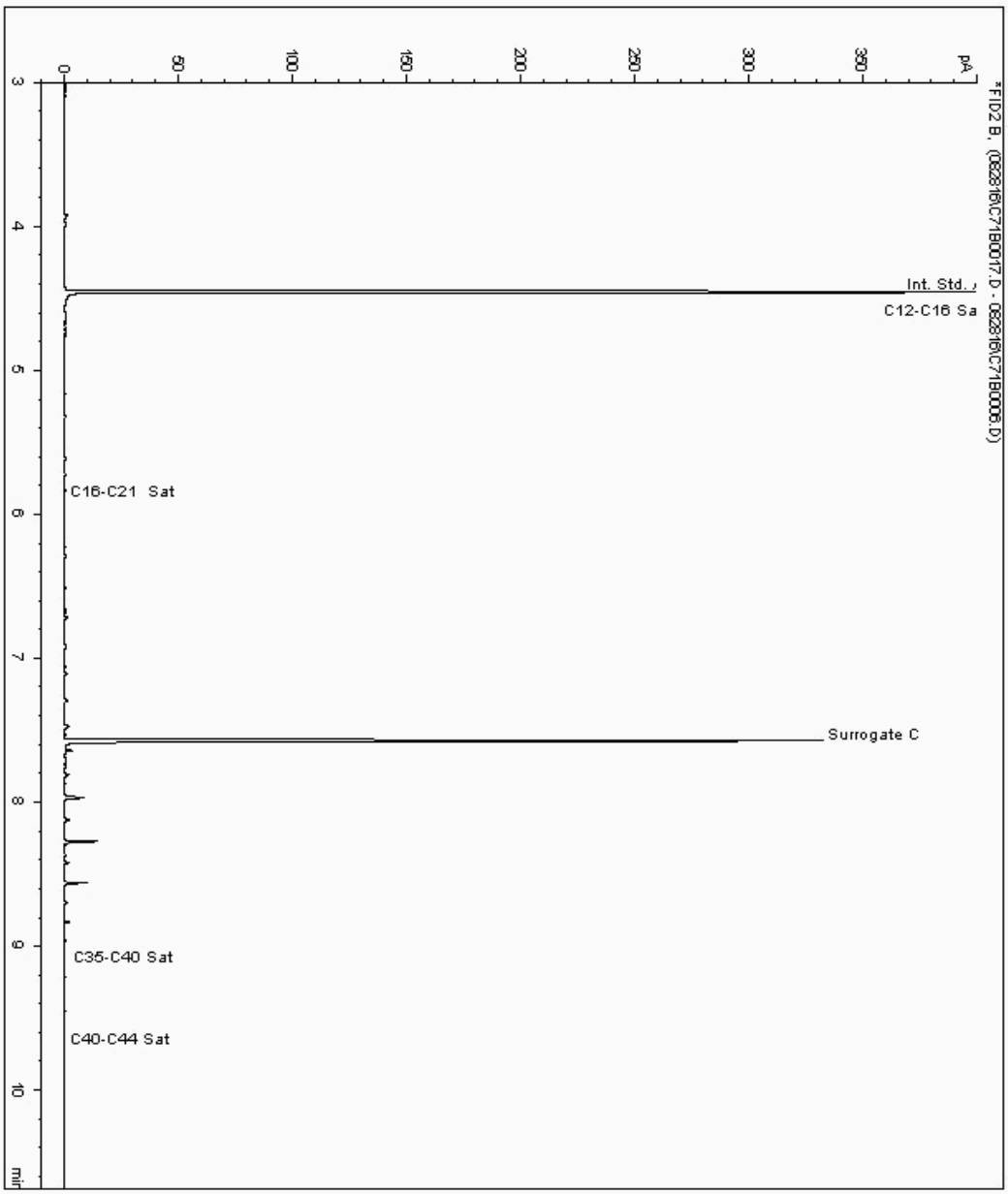
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035393
Sample ID : HP201

Depth : 0.90

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181406-
Date Acquired : 28/08/2016 19:38:52 PM
Units : ppb
Dilution: HP201[0.90] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

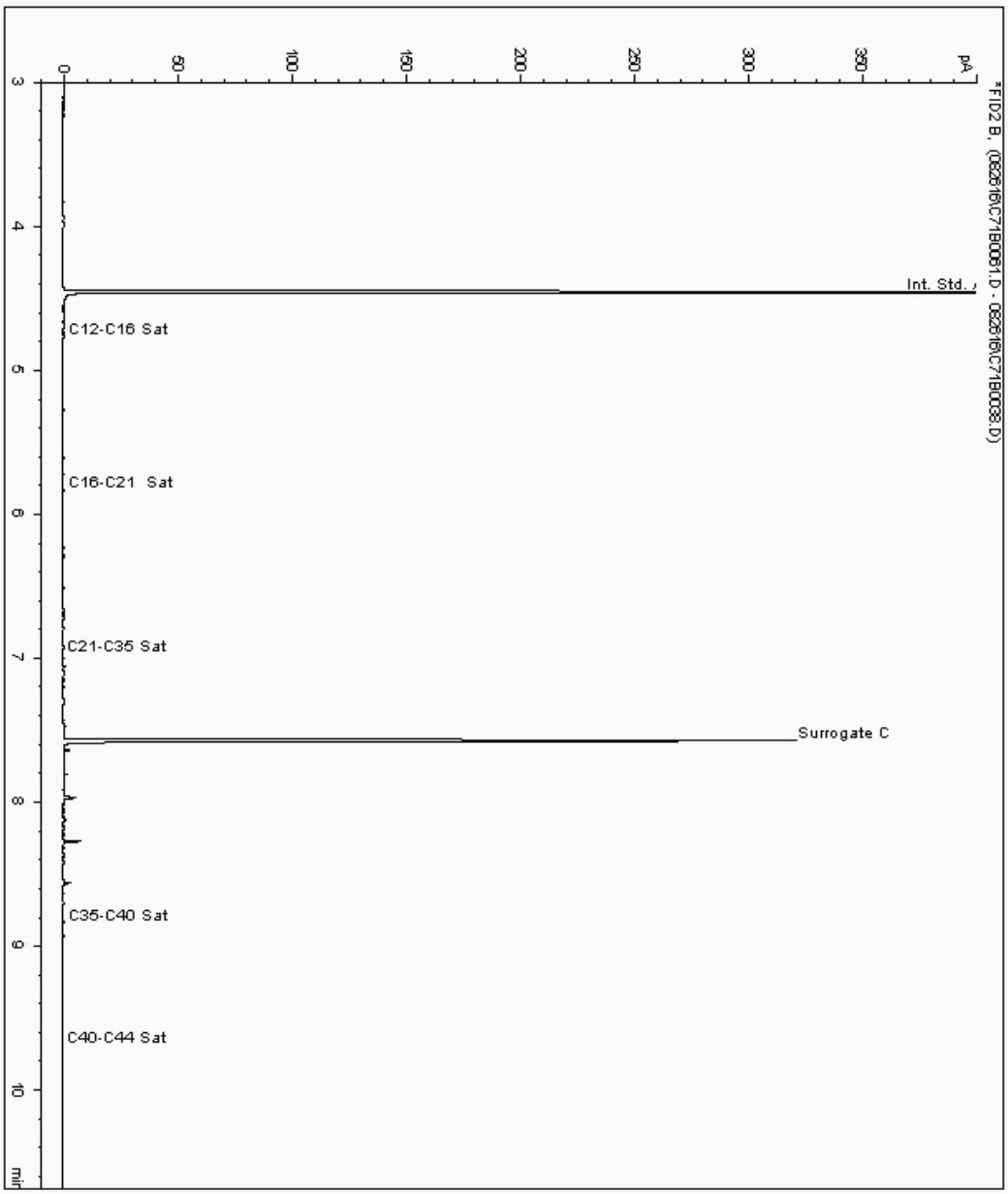
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035539
Sample ID : HP201

Depth : 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181390-
Date Acquired : 27/08/2016 11:32:47 PM
Units : ppb
Dilution: HP201[0.20] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

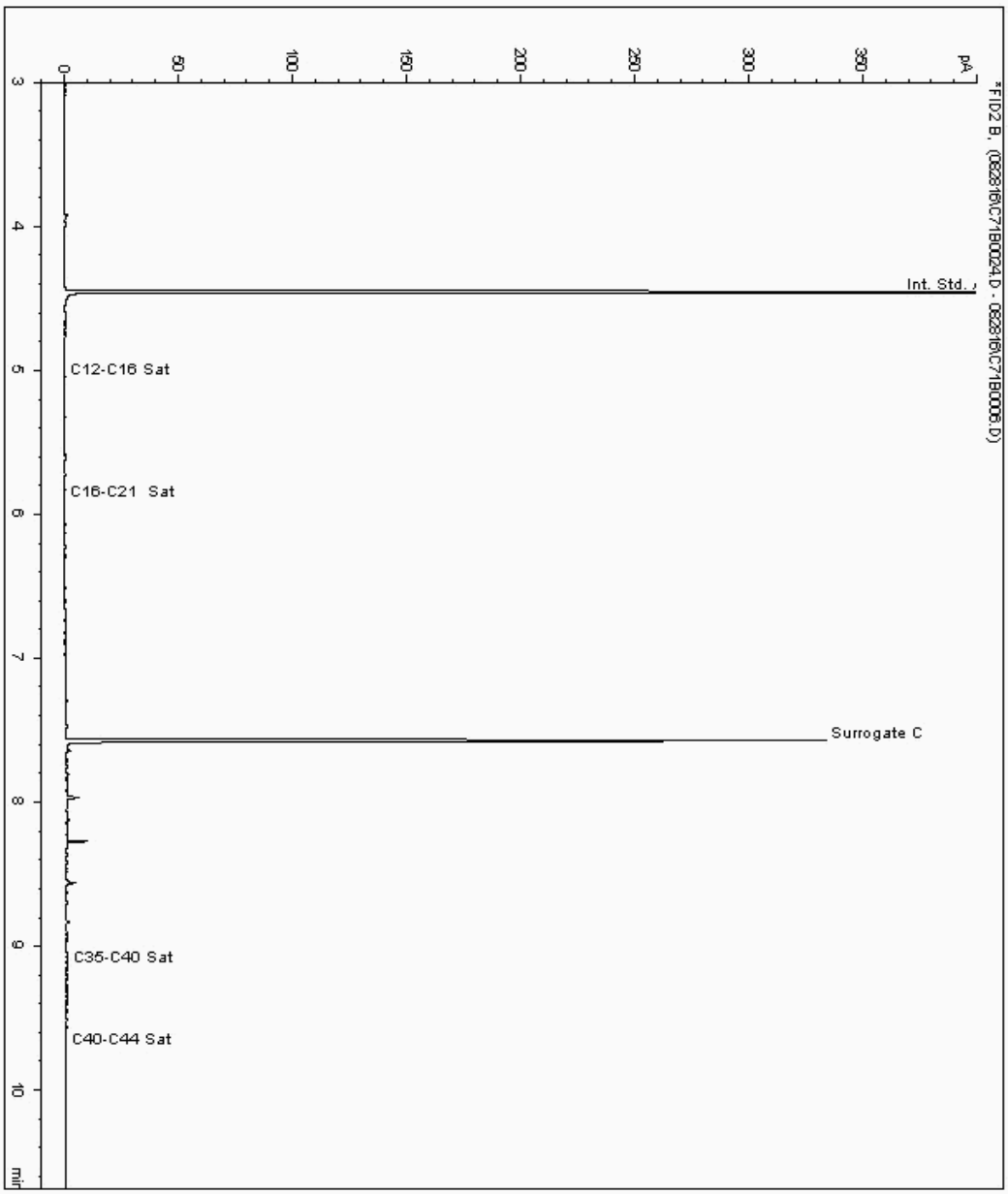
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035588
Sample ID : HP205

Depth : 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181501-
Date Acquired : 28/08/2016 22:02:35 PM
Units : ppb
Dilution: HP205[0.40] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

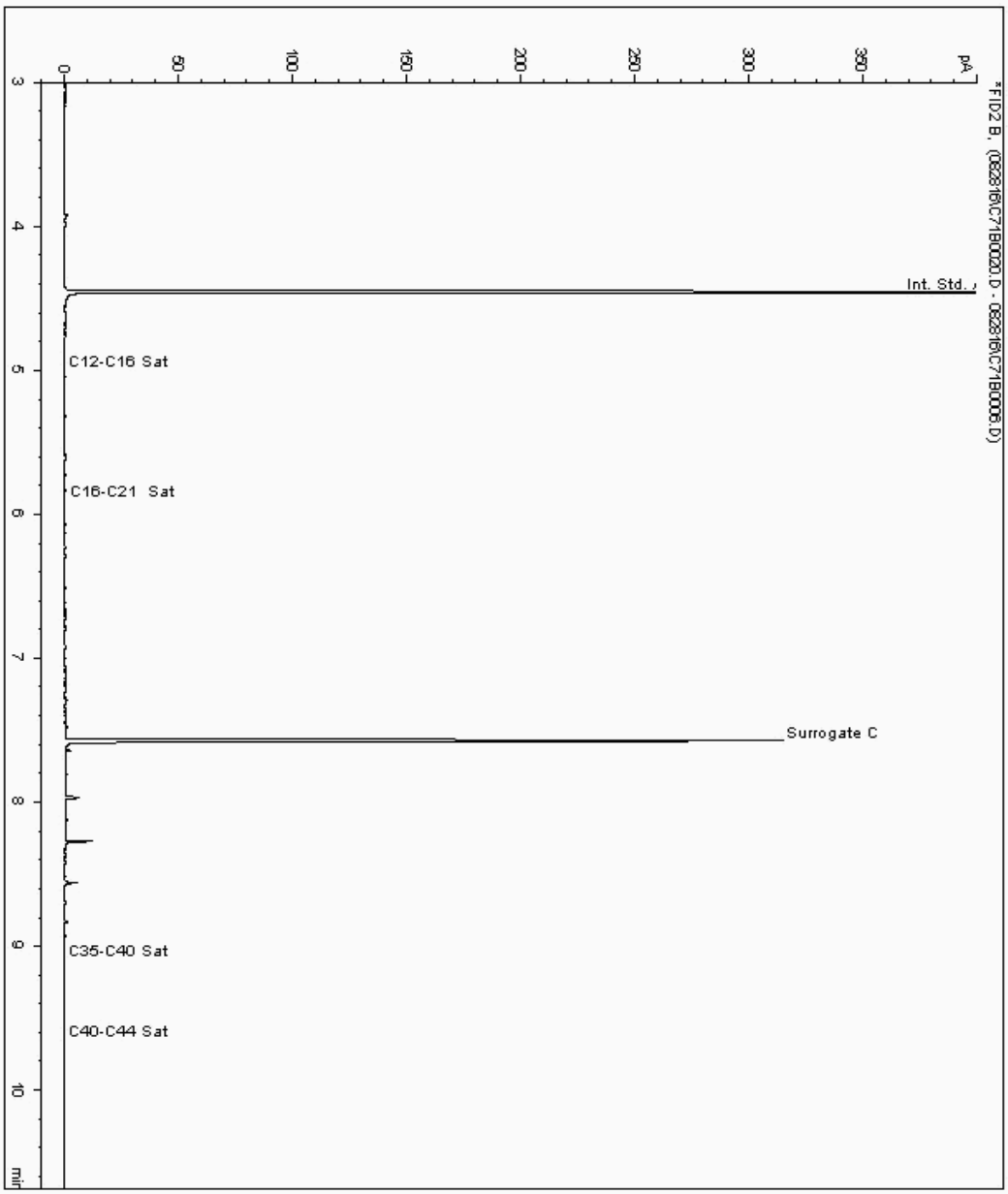
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035615
Sample ID : HP206

Depth : 0.80

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181567-
Date Acquired : 28/08/2016 20:40:29 PM
Units : ppb
Dilution: HP206[0.80] ->



CERTIFICATE OF ANALYSIS

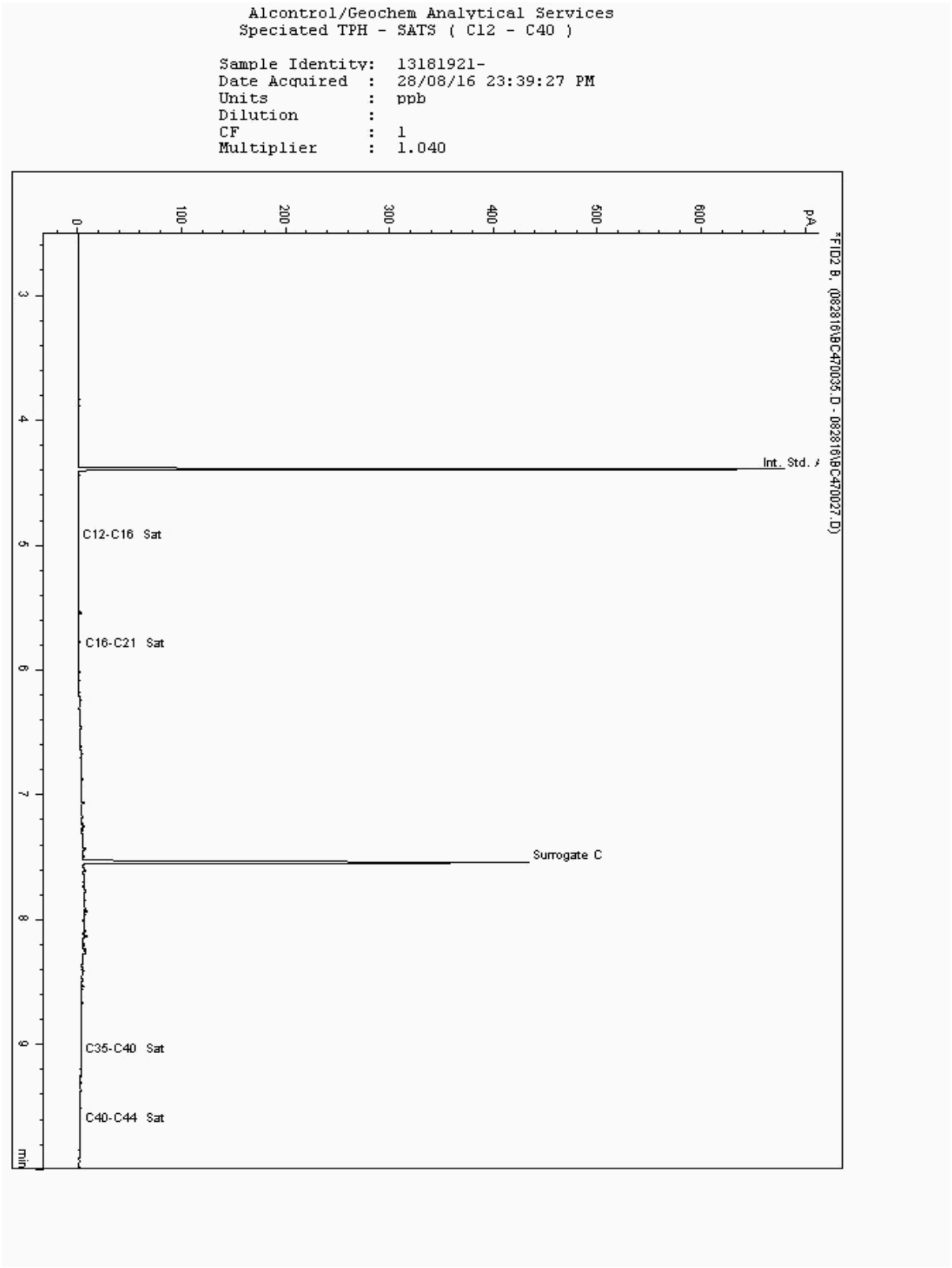
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035678
Sample ID : TP207

Depth : 0.85



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

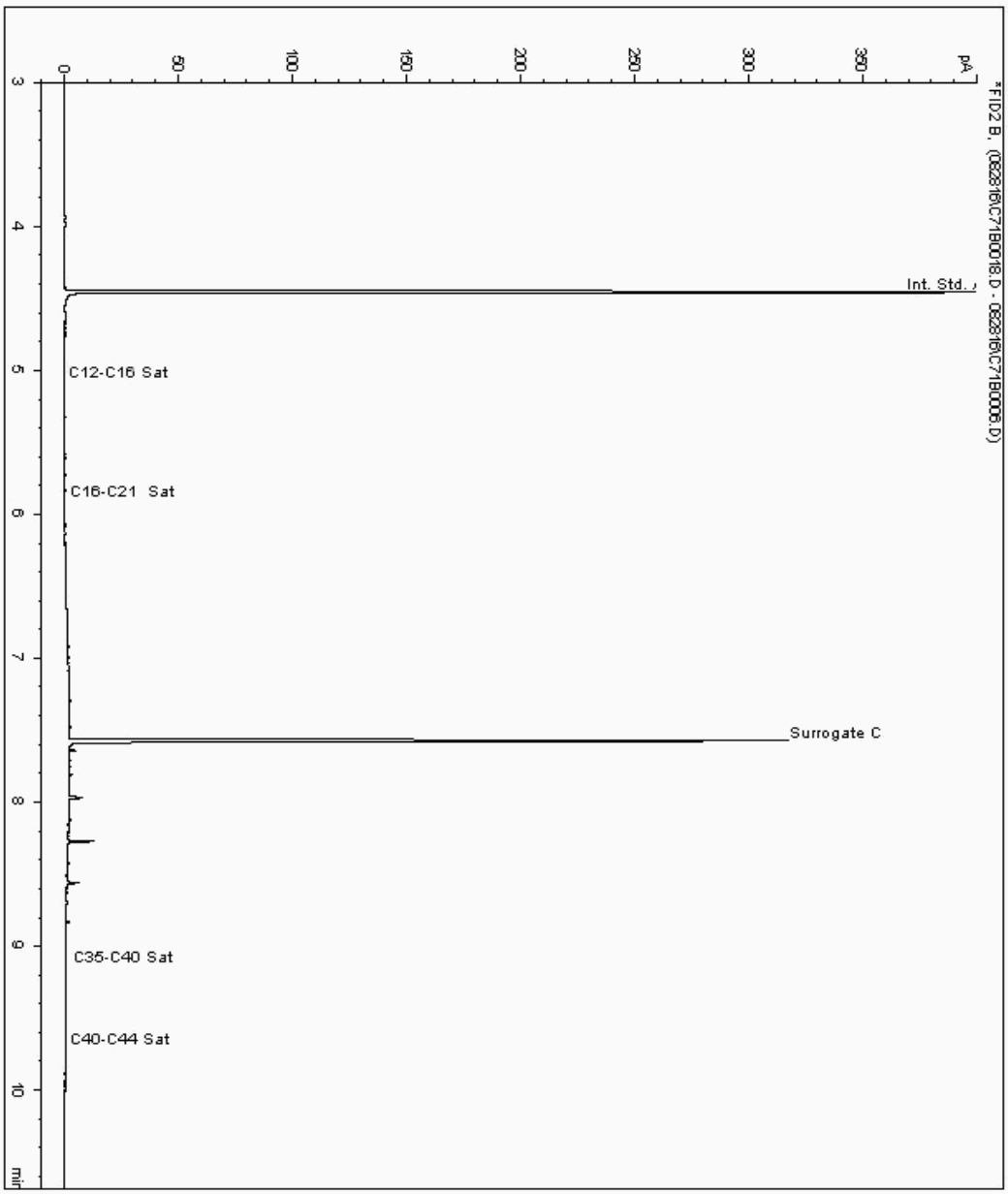
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035709
Sample ID : HP206

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181551-
Date Acquired : 28/08/2016 19:59:18 PM
Units : ppb
Dilution: HP206[0.30] ->



CERTIFICATE OF ANALYSIS

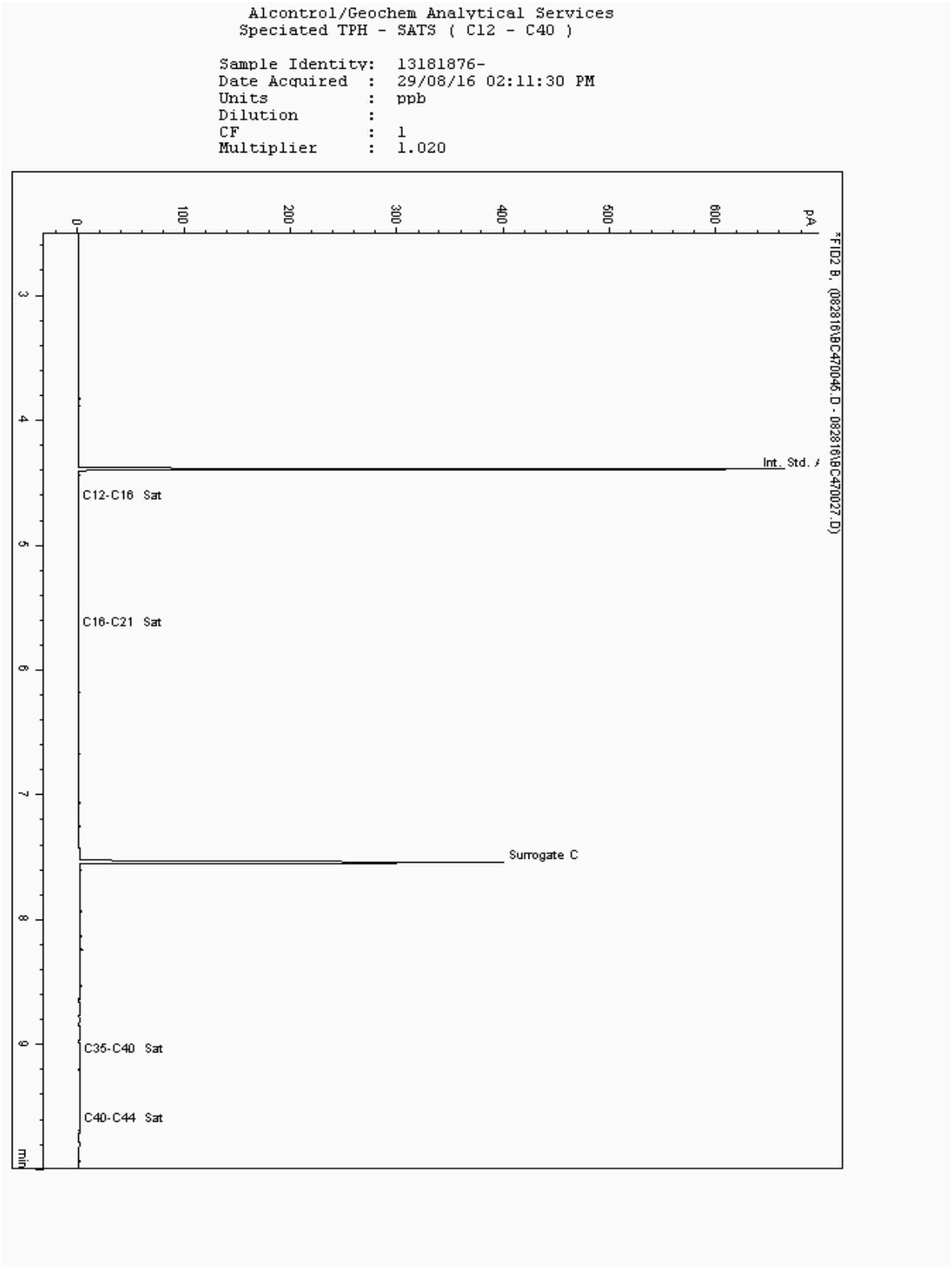
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035822
Sample ID : TP207

Depth : 0.50



CERTIFICATE OF ANALYSIS

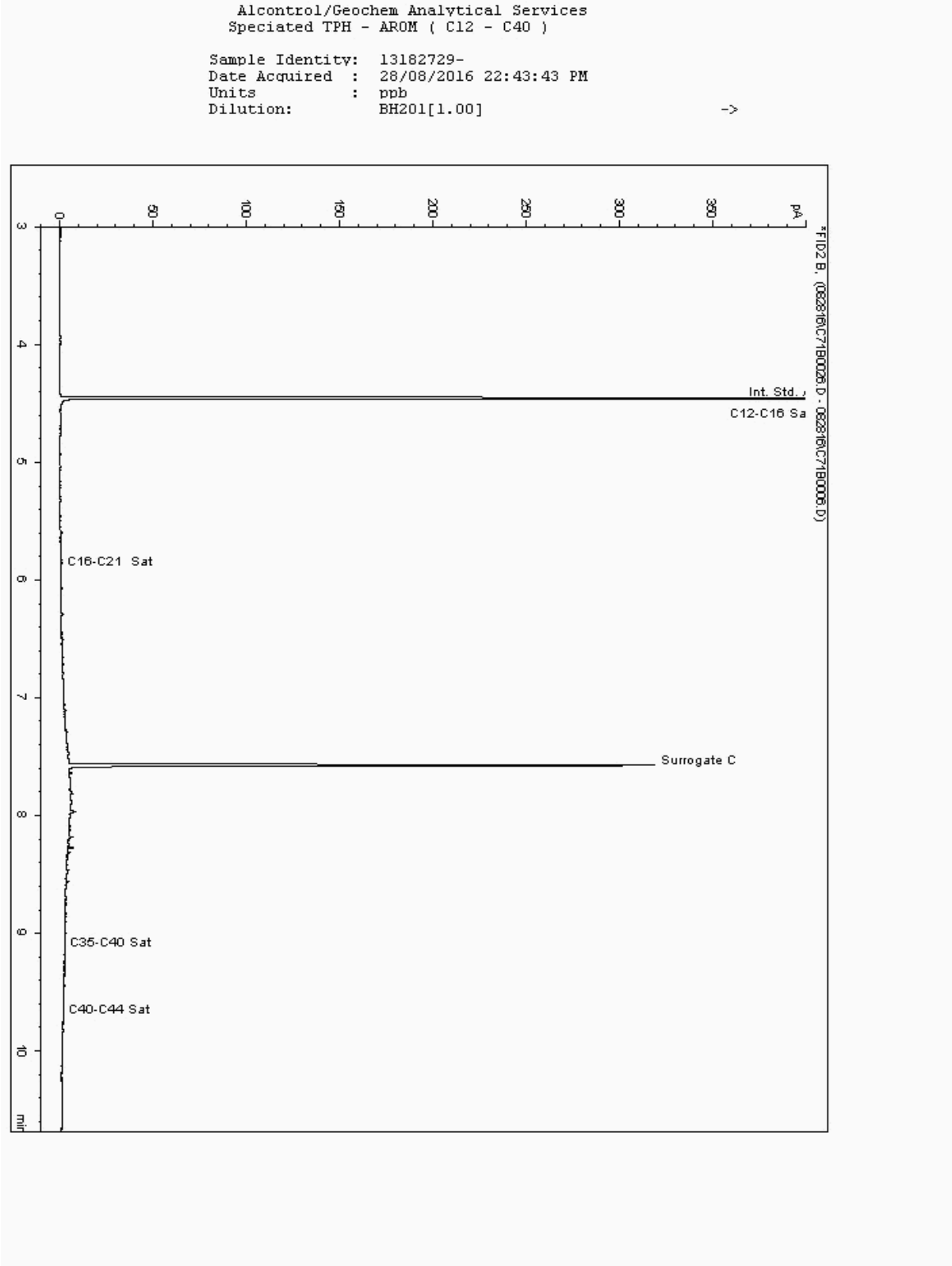
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035881
Sample ID : BH201

Depth : 1.00



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

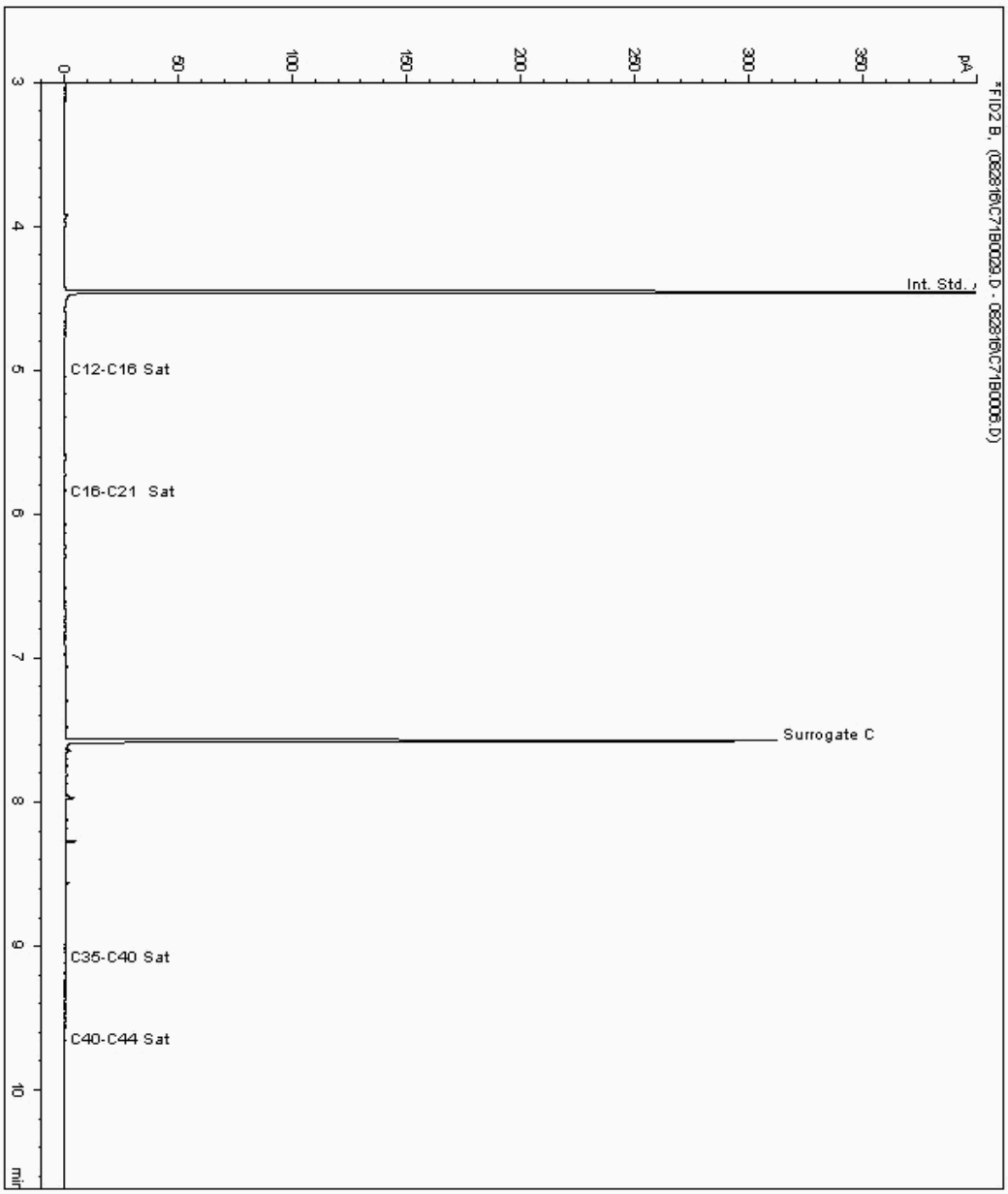
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14035930
Sample ID : BH201

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181367-
Date Acquired : 28/08/2016 23:45:18 PM
Units : ppb
Dilution: BH201[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

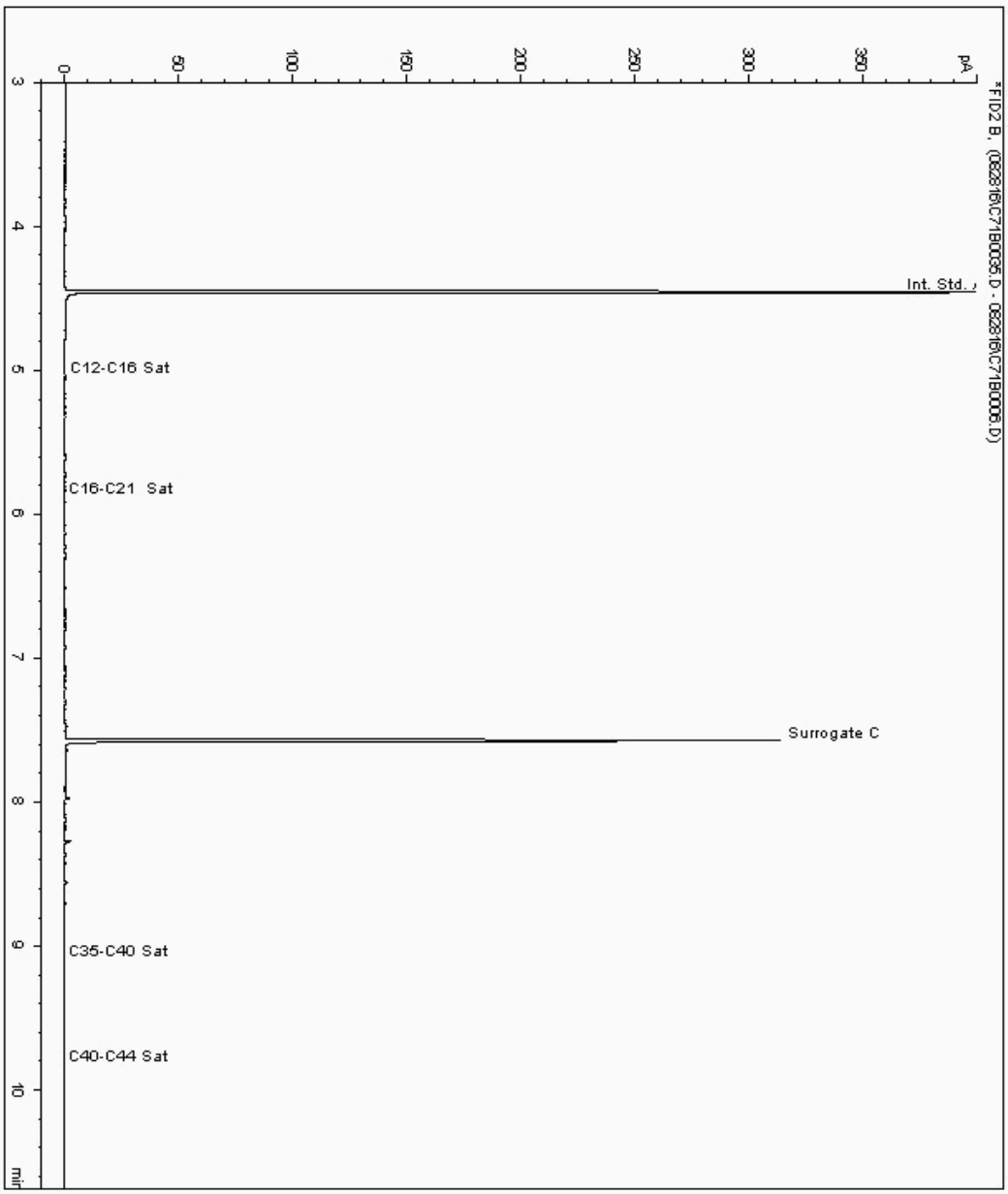
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14036024
Sample ID : HP207

Depth : 0.60

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181608-
Date Acquired : 29/08/2016 01:48:27 PM
Units : ppb
Dilution: HP207[0.60] ->



CERTIFICATE OF ANALYSIS

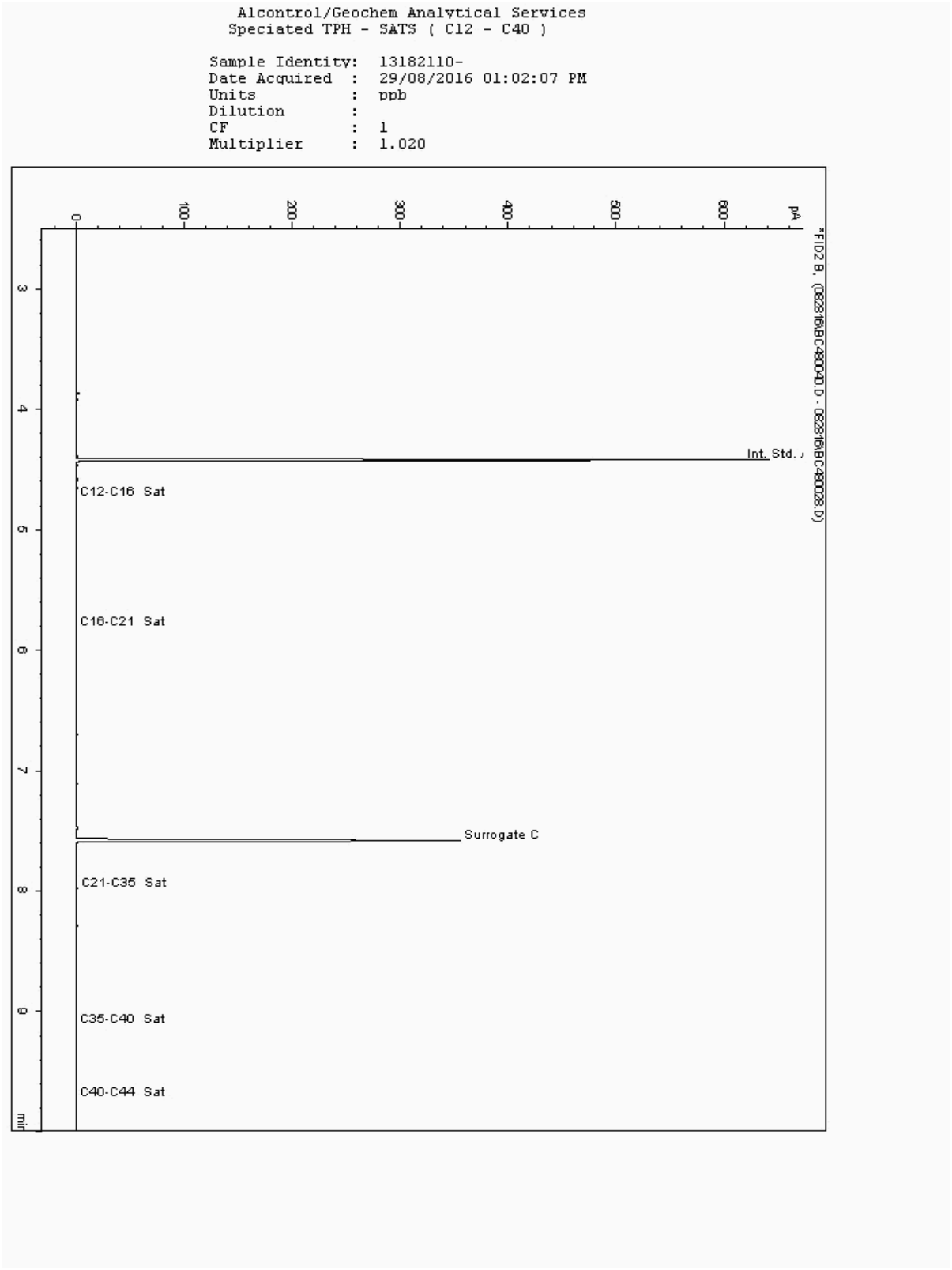
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14036888
Sample ID : TP213

Depth : 1.00



CERTIFICATE OF ANALYSIS

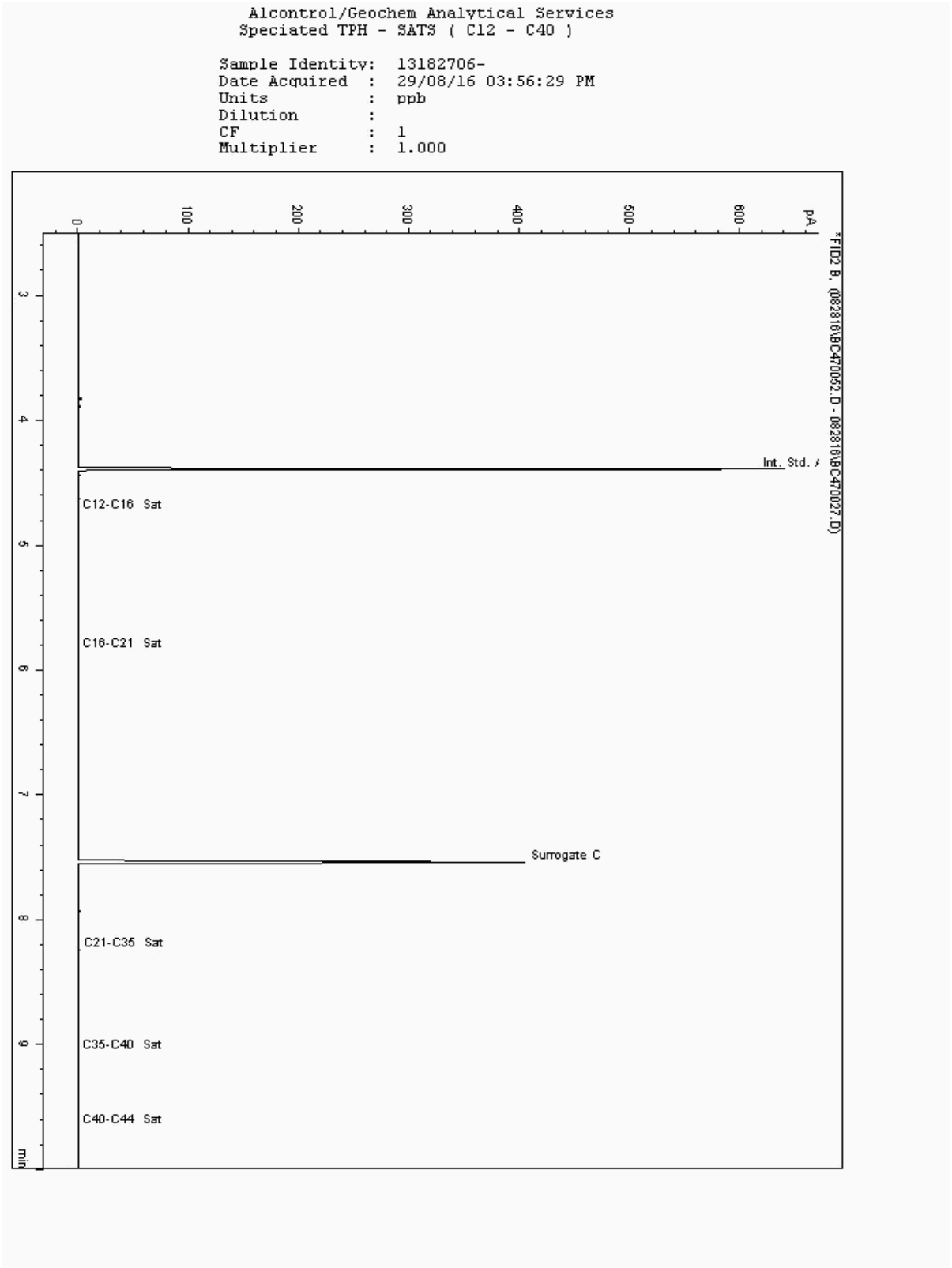
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14036957
Sample ID : WS212

Depth : 0.65



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

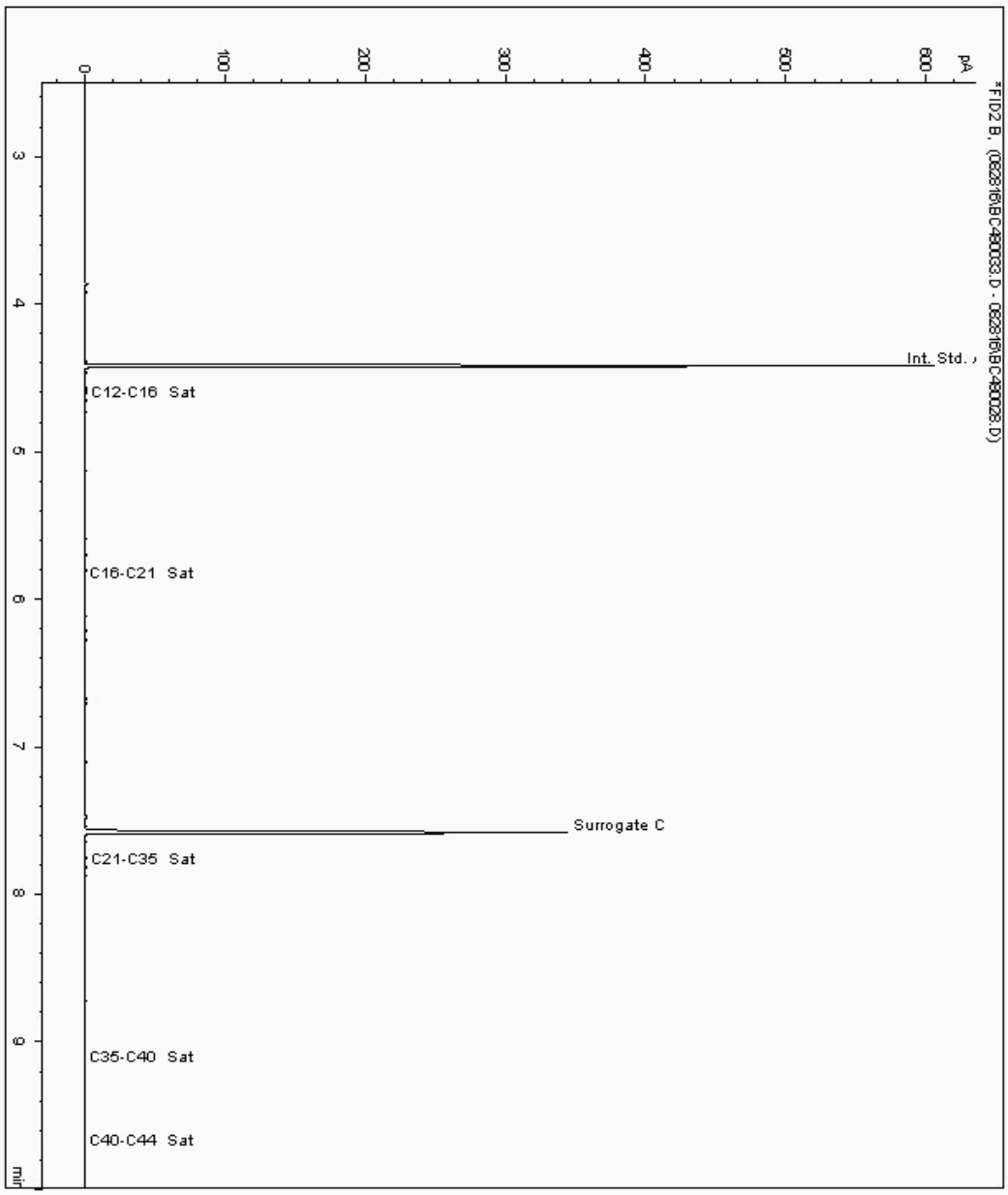
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14036960
Sample ID : WS203

Depth : 1.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13182235-
Date Acquired : 28/08/2016 23:06:37 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.020



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

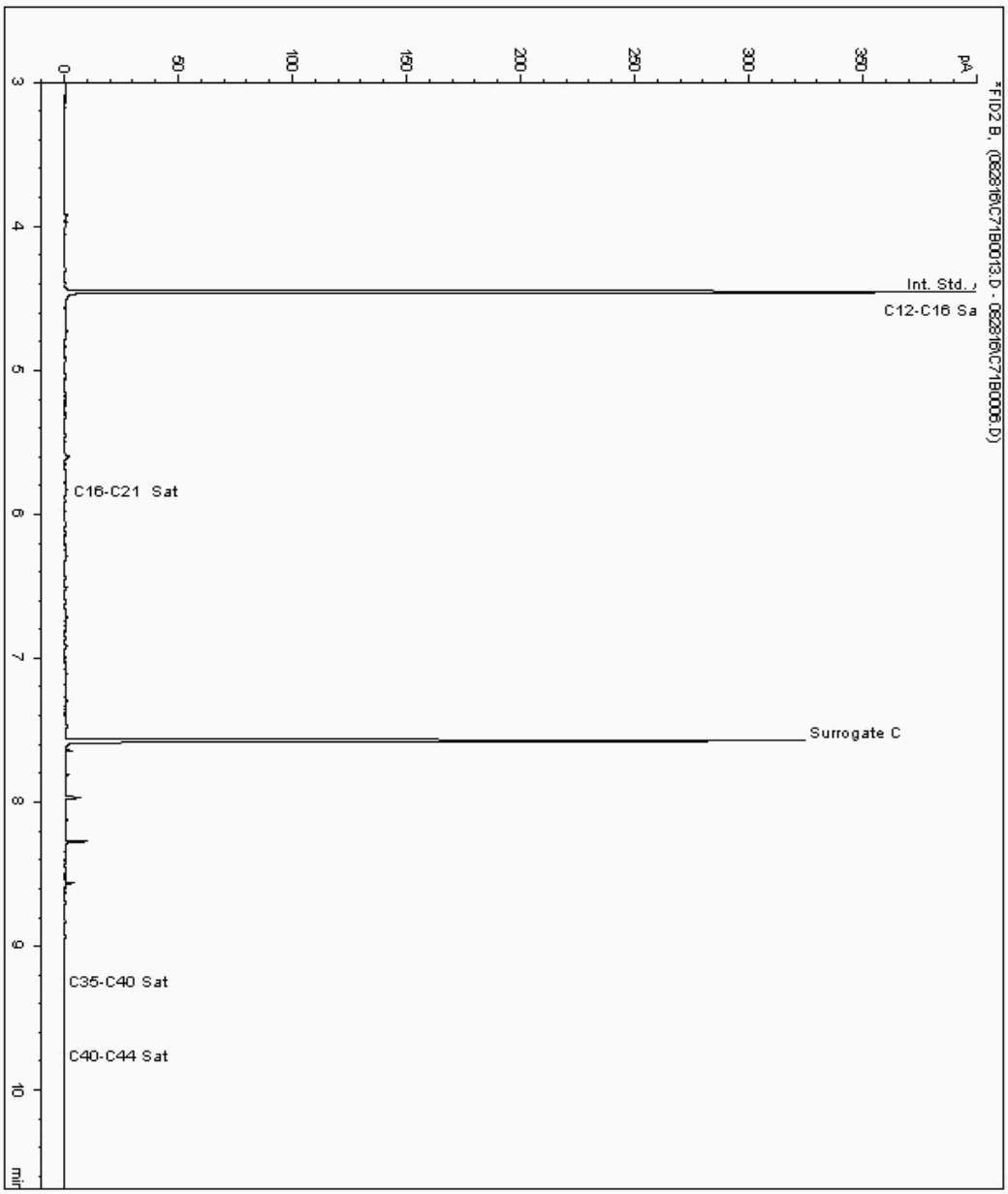
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037028
Sample ID : BH207

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182754-
Date Acquired : 28/08/2016 18:16:38 PM
Units : ppb
Dilution: BH207[0.70] ->



CERTIFICATE OF ANALYSIS

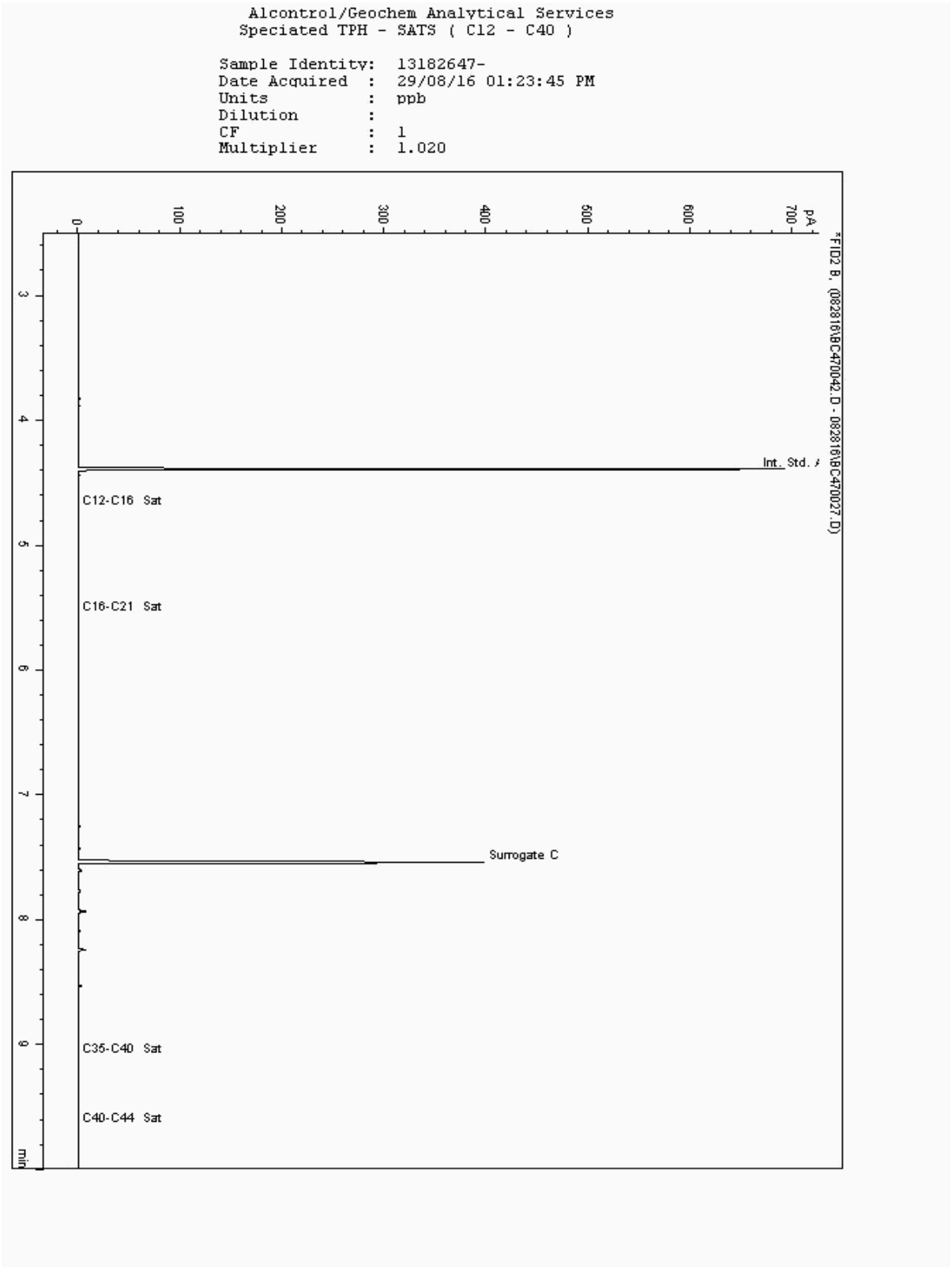
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037035
Sample ID : WS211

Depth : 0.65



CERTIFICATE OF ANALYSIS

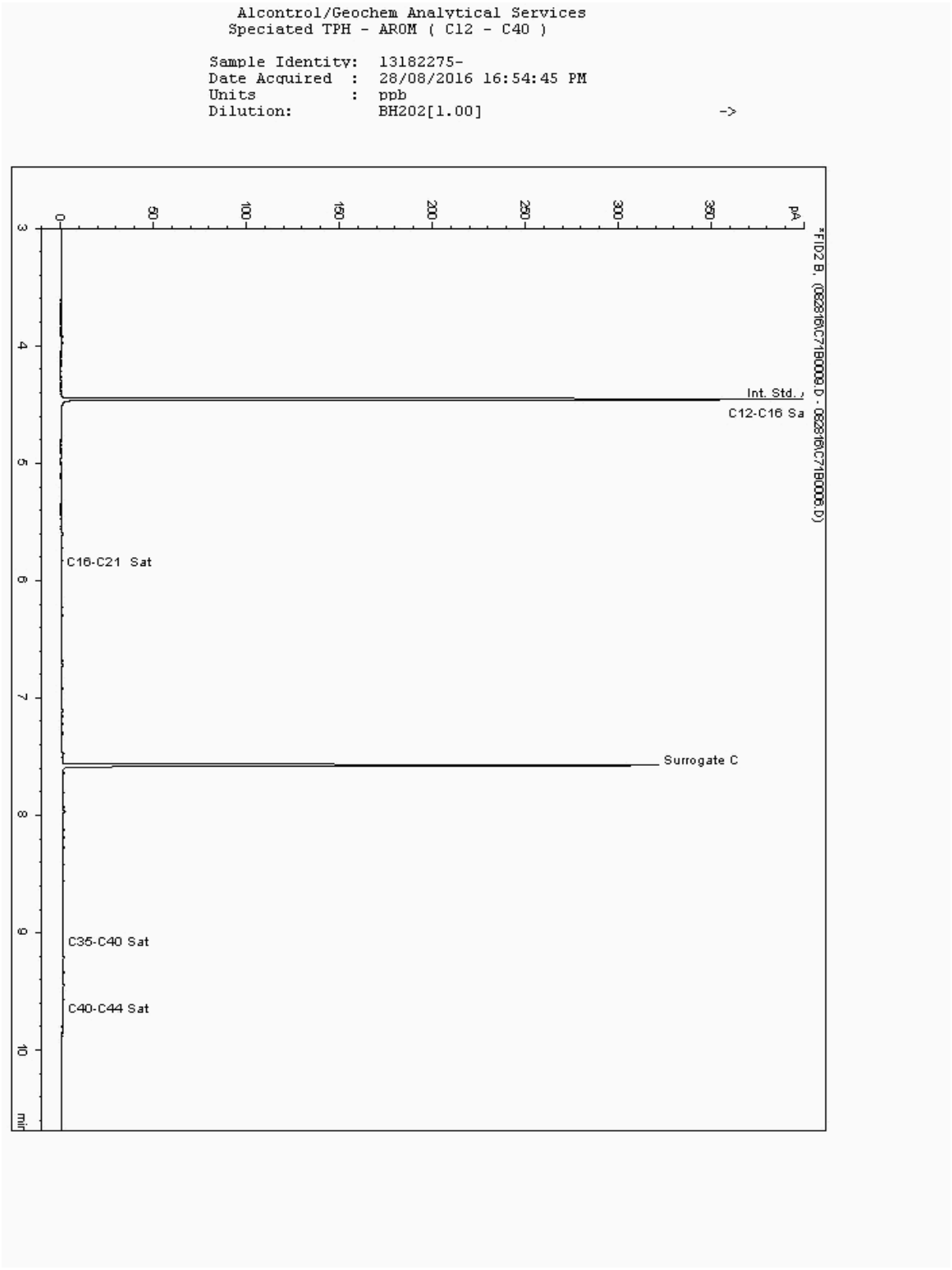
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037057
Sample ID : BH202

Depth : 1.00



CERTIFICATE OF ANALYSIS

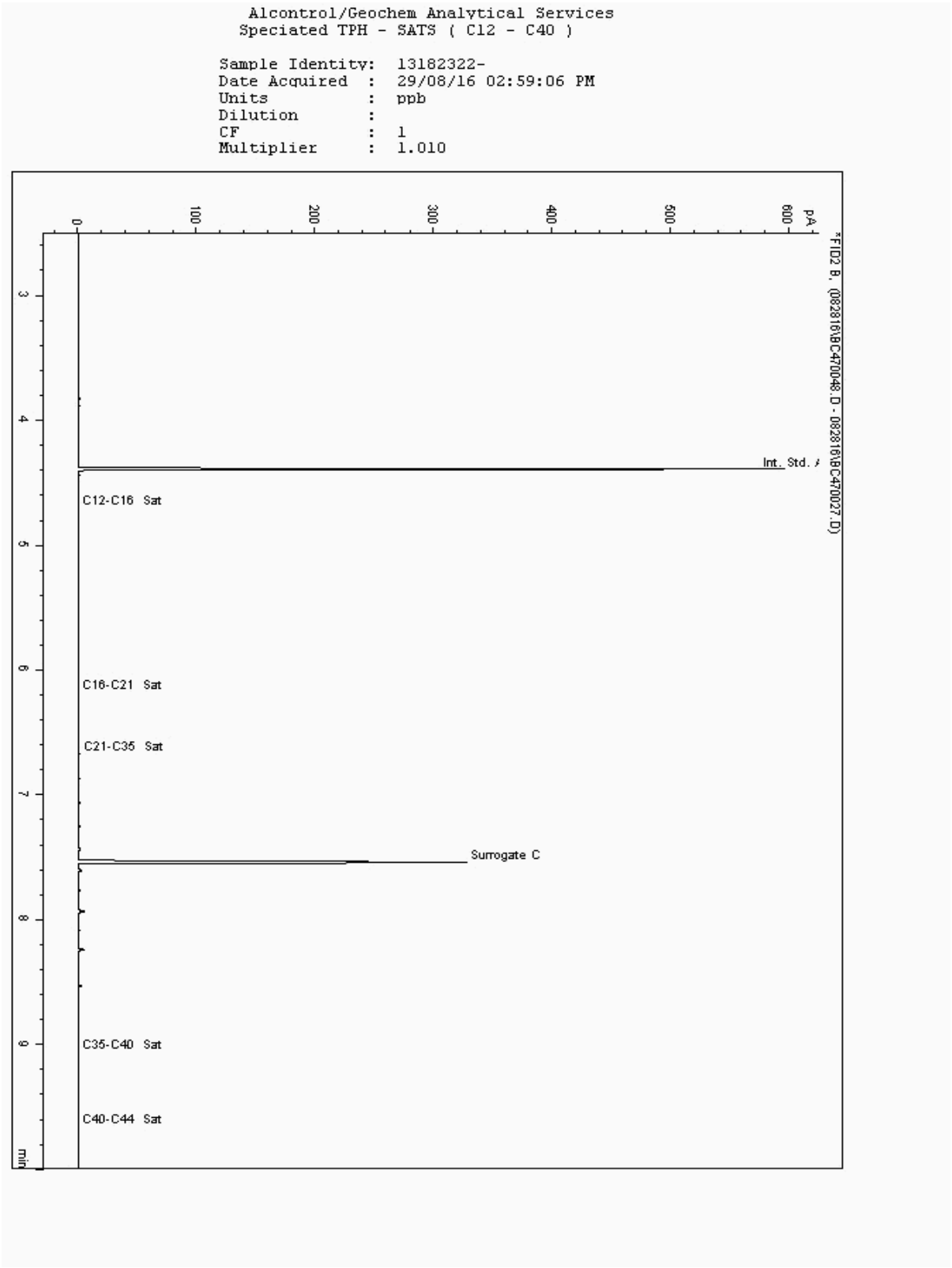
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037077
Sample ID : WS204

Depth : 1.00



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

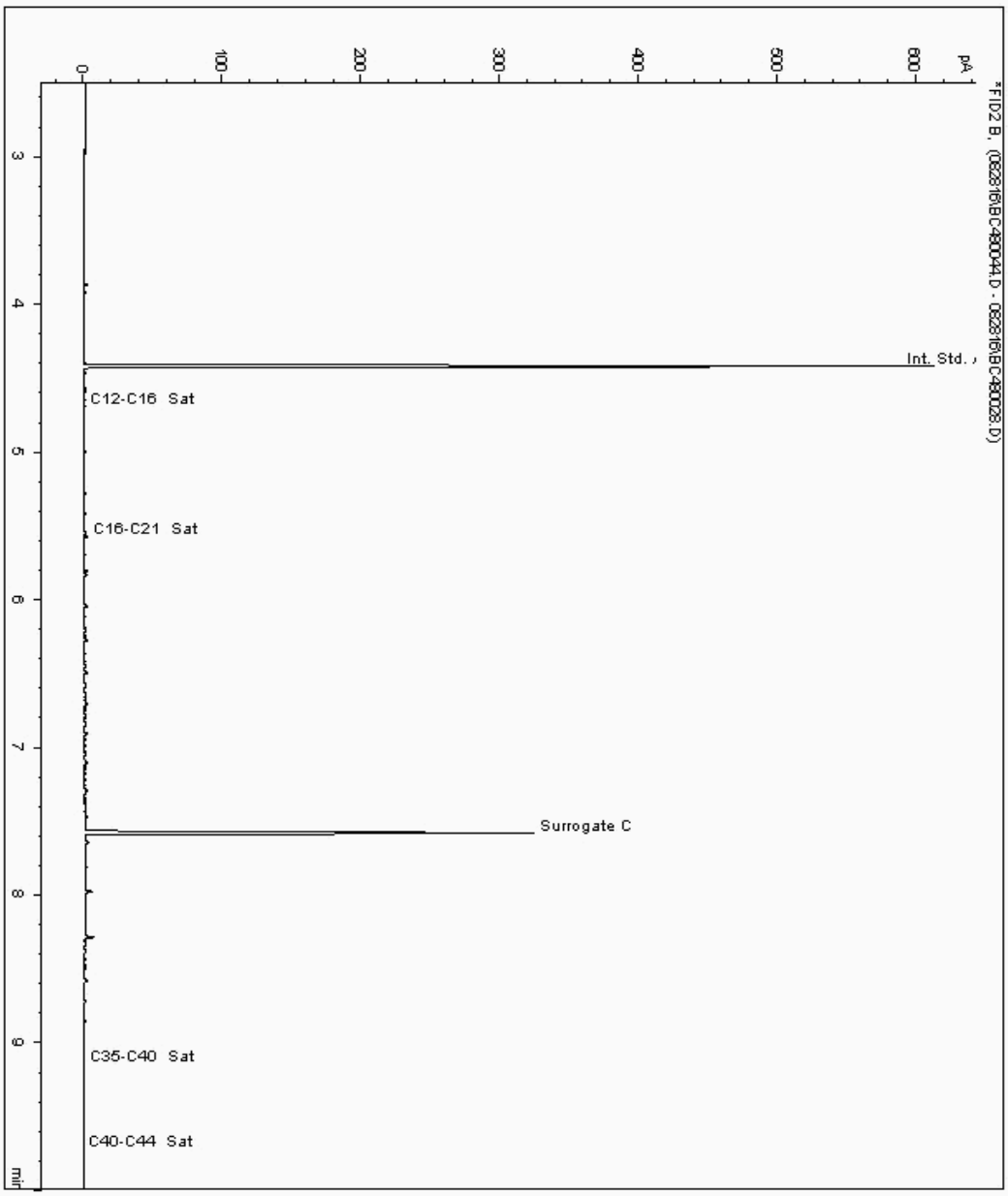
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037100
Sample ID : TP201

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13181754-
Date Acquired : 29/08/2016 02:09:30 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

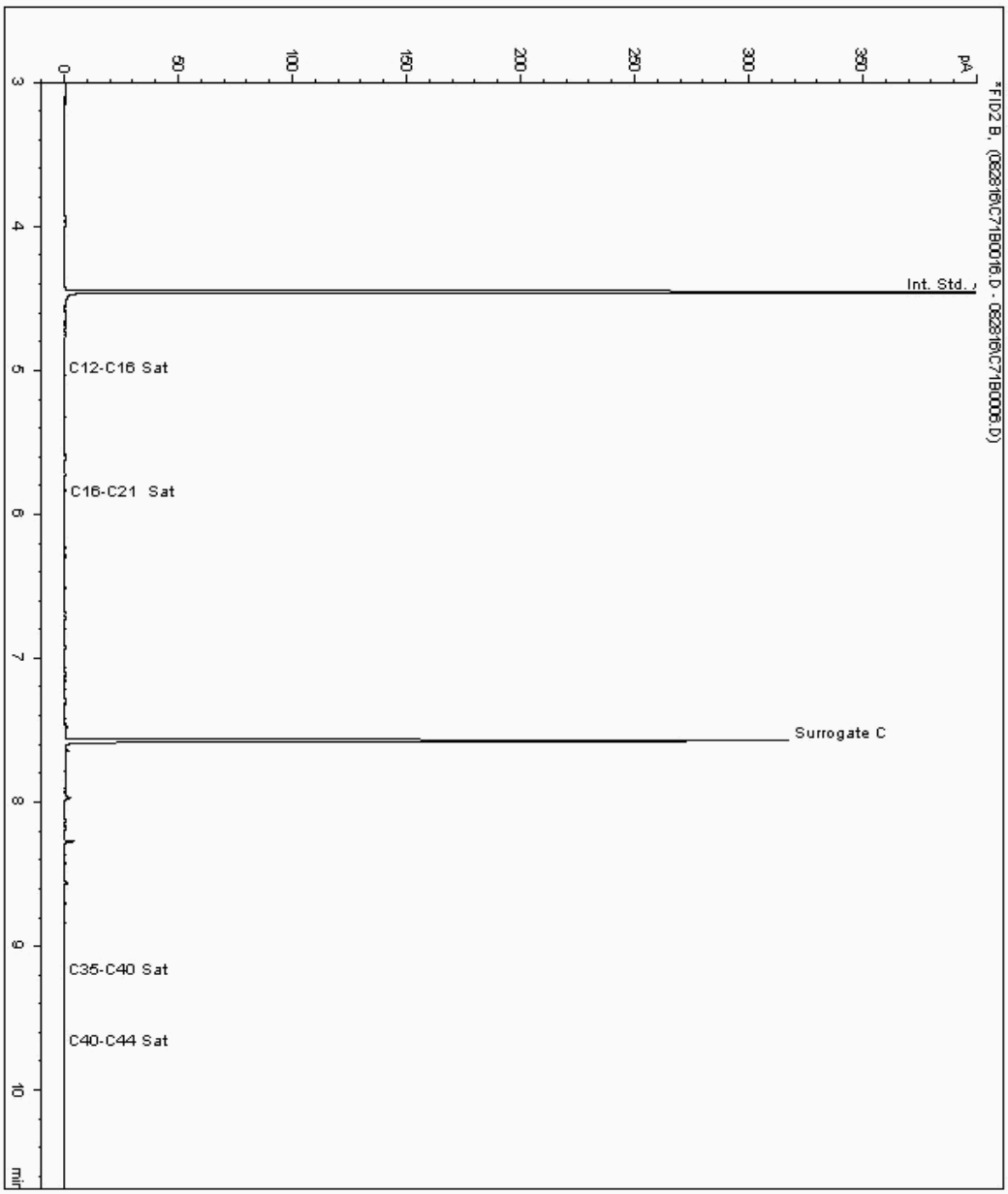
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037150
Sample ID : HP207

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181591-
Date Acquired : 28/08/2016 19:18:14 PM
Units : ppb
Dilution: HP207[0.30] ->



CERTIFICATE OF ANALYSIS

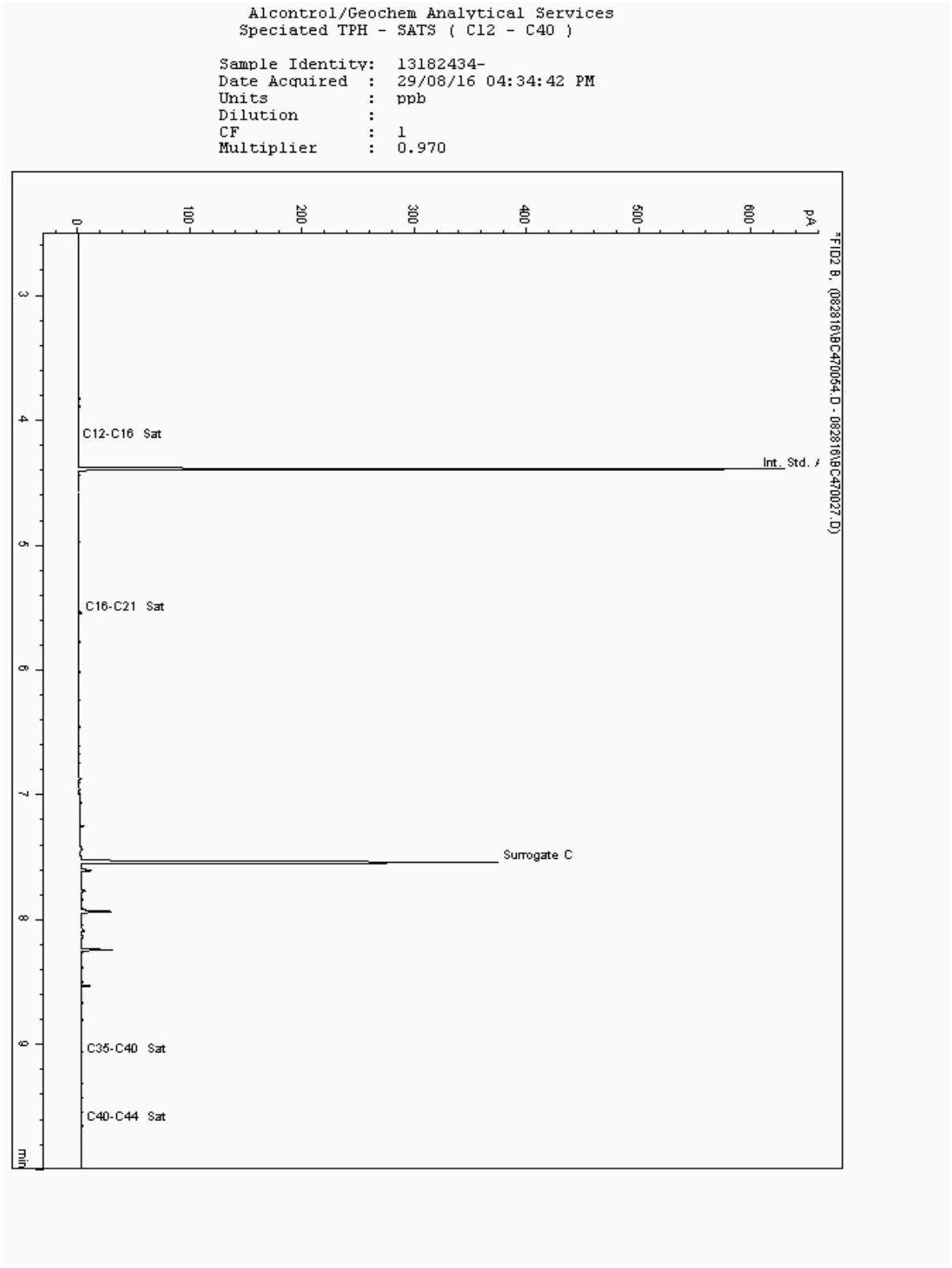
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037182
Sample ID : WS206

Depth : 0.30



CERTIFICATE OF ANALYSIS

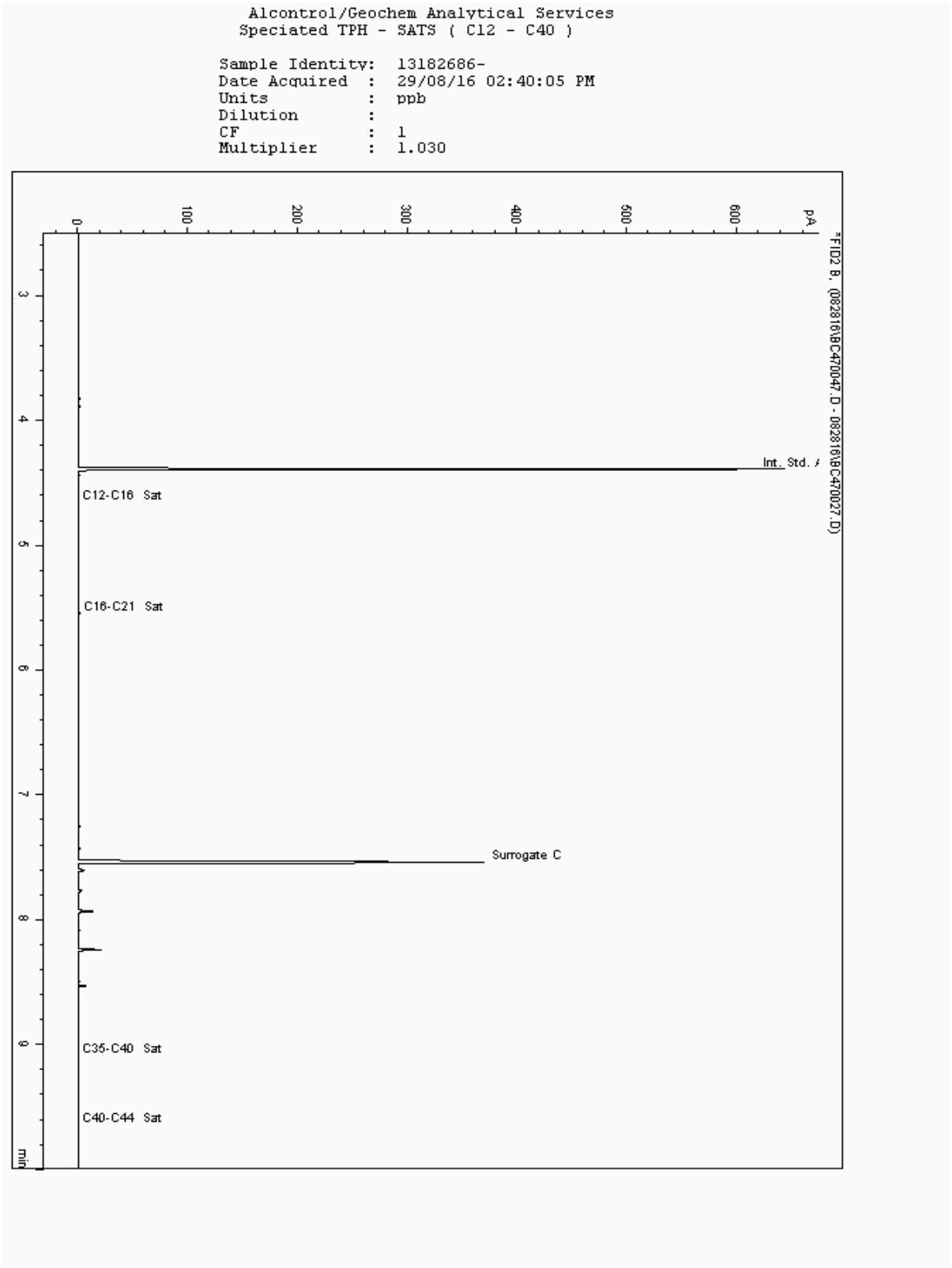
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037264
Sample ID : WS212

Depth : 0.20



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

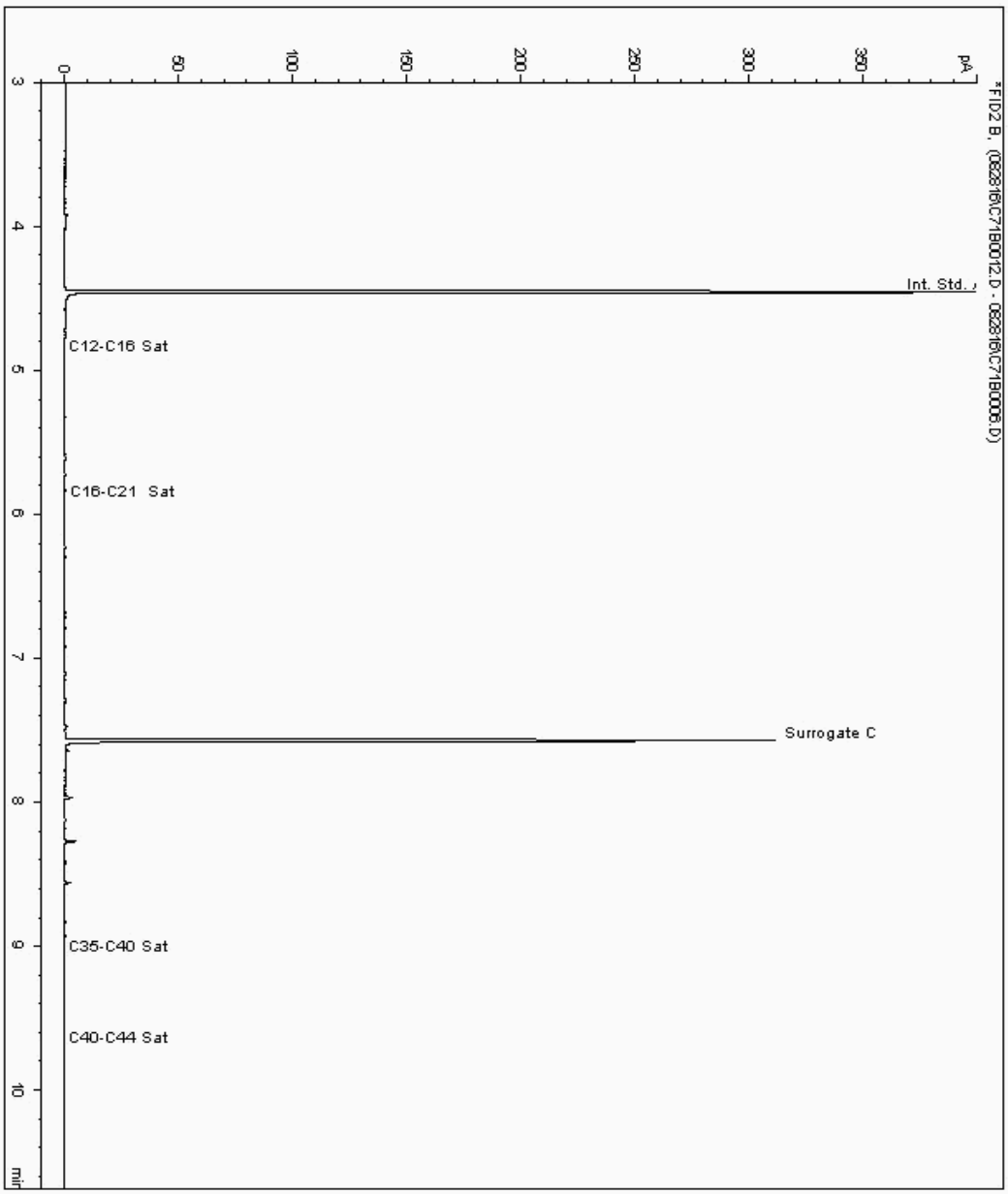
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037289
Sample ID : HP203

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181484-
Date Acquired : 28/08/2016 17:56:13 PM
Units : ppb
Dilution: HP203[0.70] ->



CERTIFICATE OF ANALYSIS

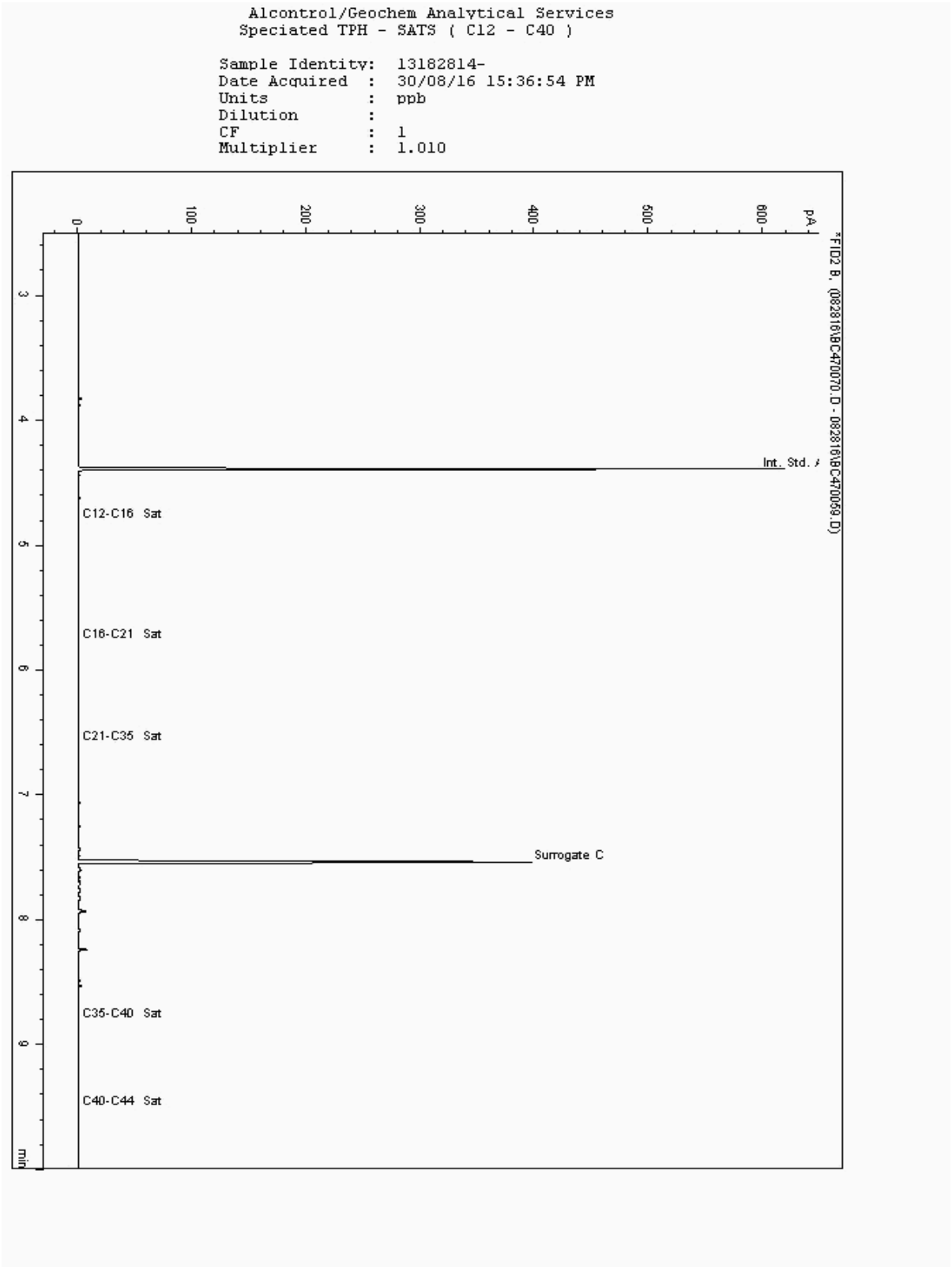
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037353
Sample ID : WS204

Depth : 0.20



CERTIFICATE OF ANALYSIS

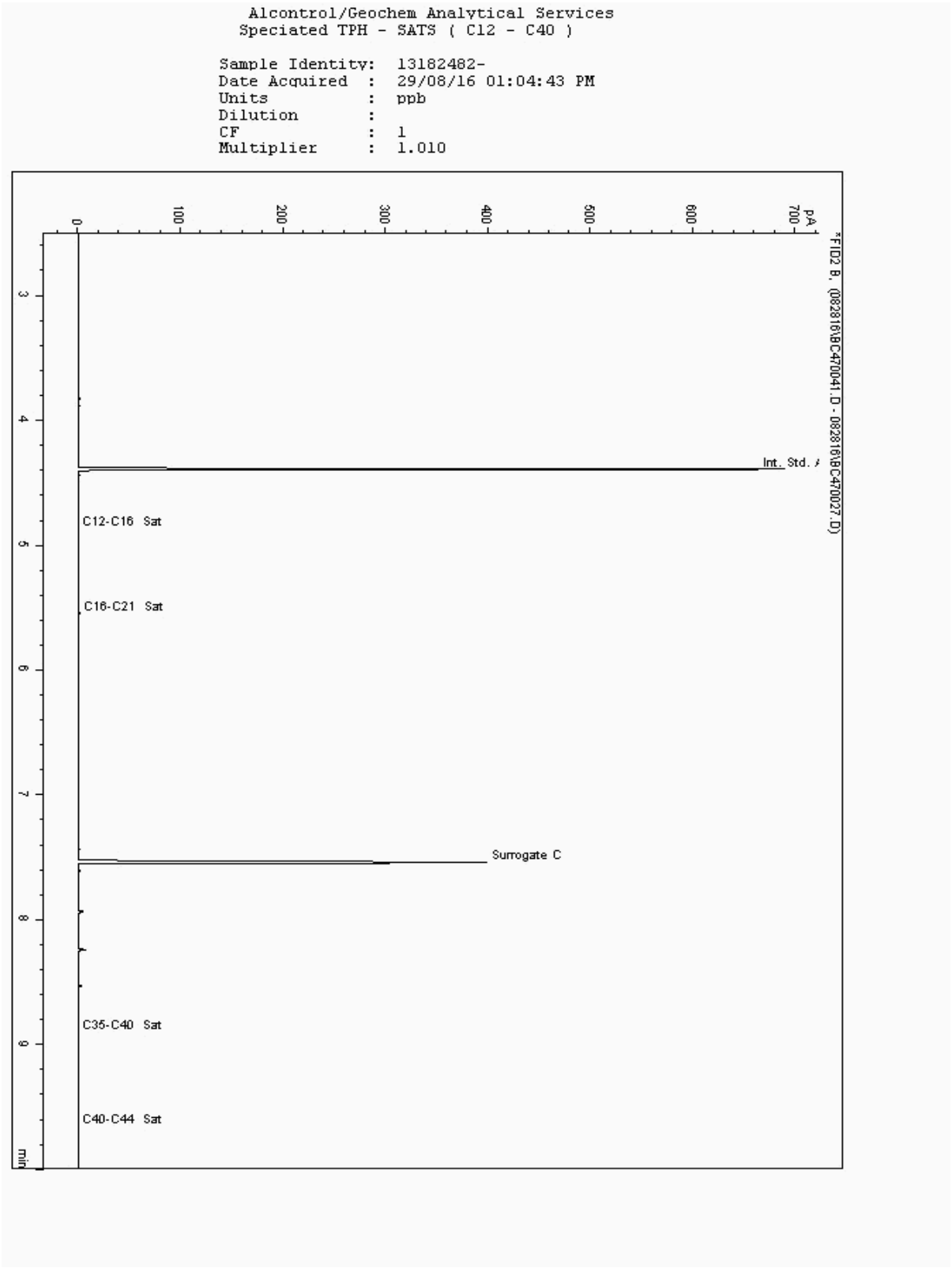
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037381
Sample ID : WS206

Depth : 1.00



CERTIFICATE OF ANALYSIS

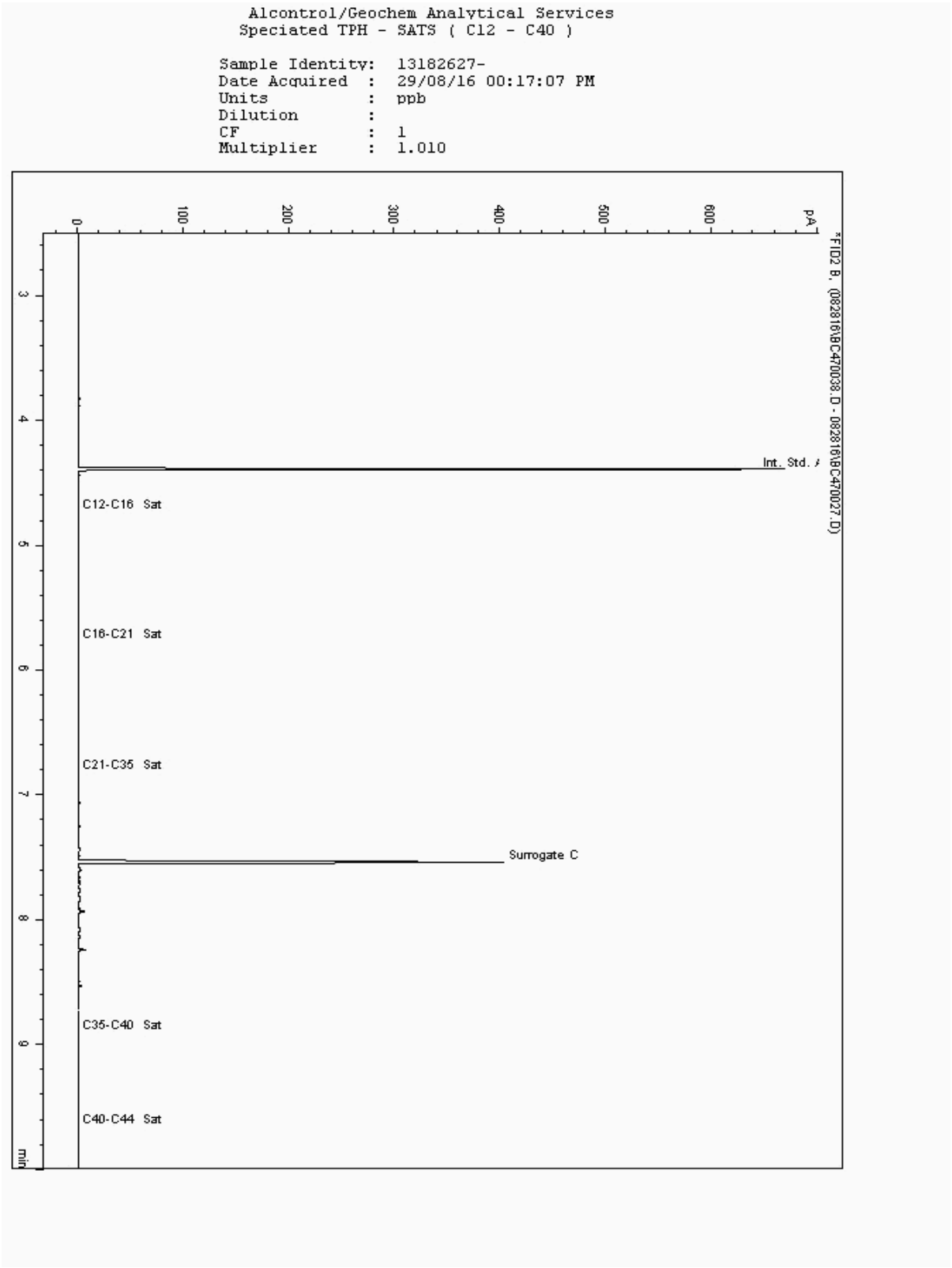
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037418
Sample ID : WS211

Depth : 0.20



CERTIFICATE OF ANALYSIS

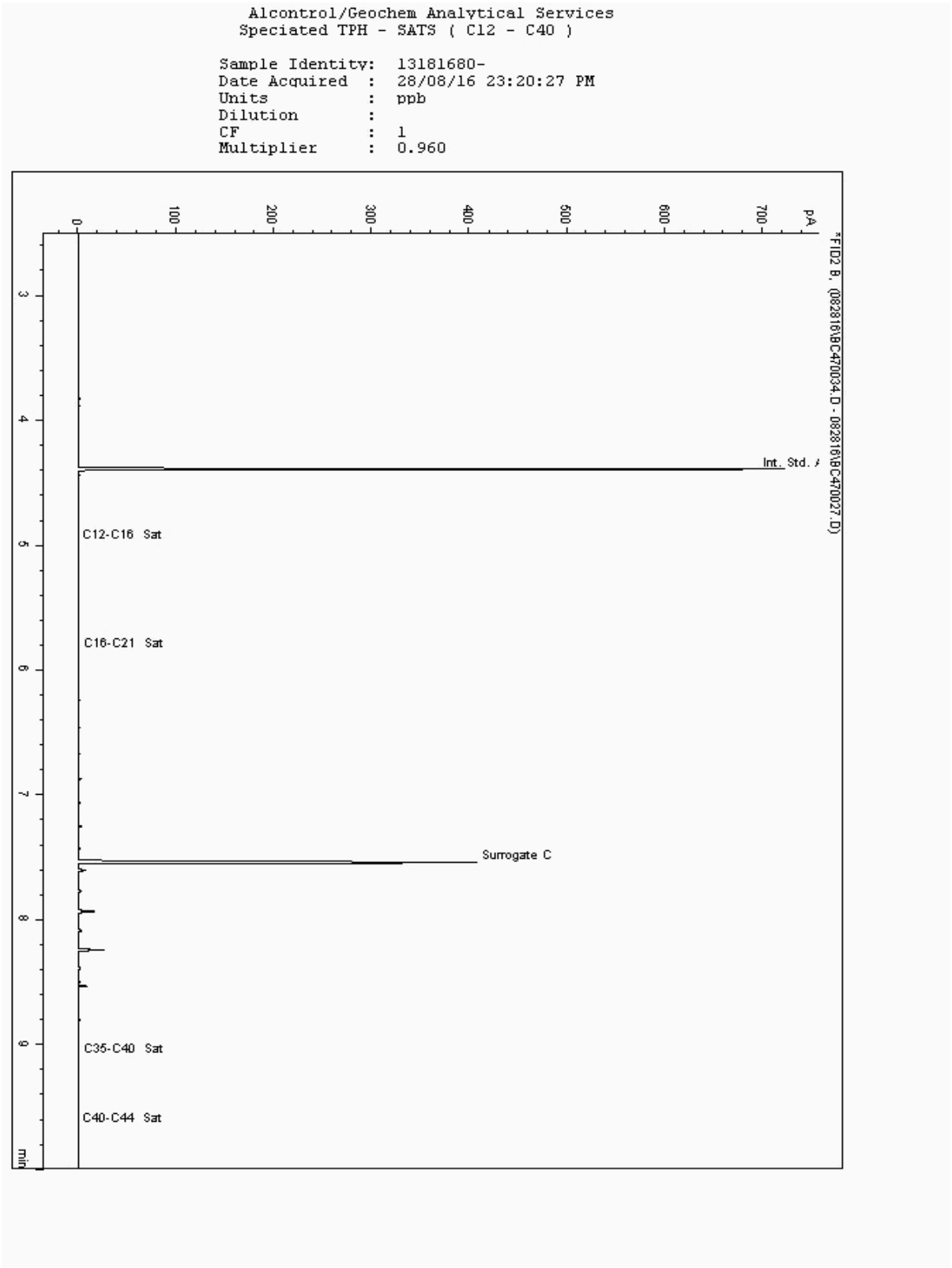
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037497
Sample ID : HP215

Depth : 0.20



CERTIFICATE OF ANALYSIS

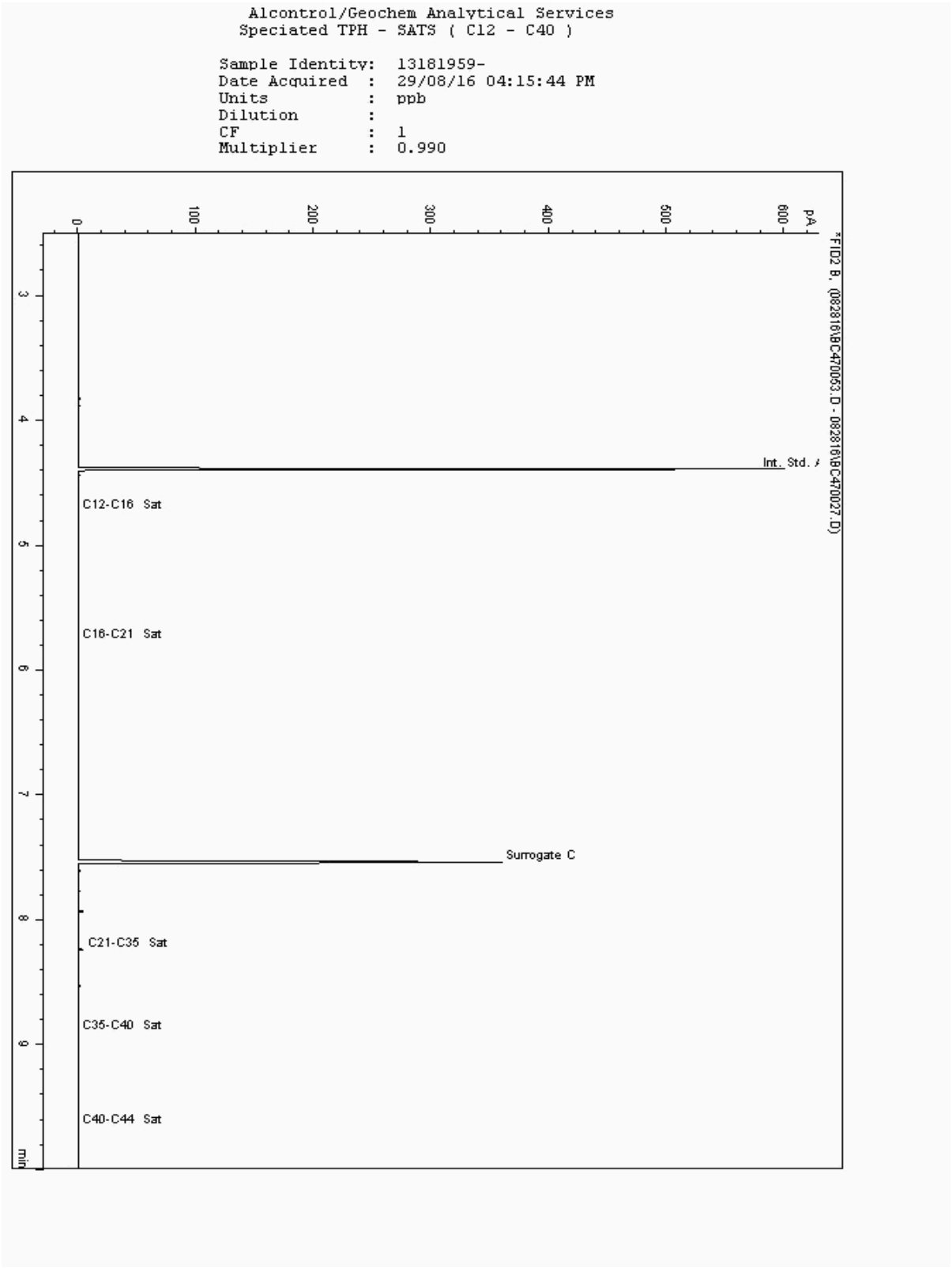
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037656
Sample ID : TP209

Depth : 0.40



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

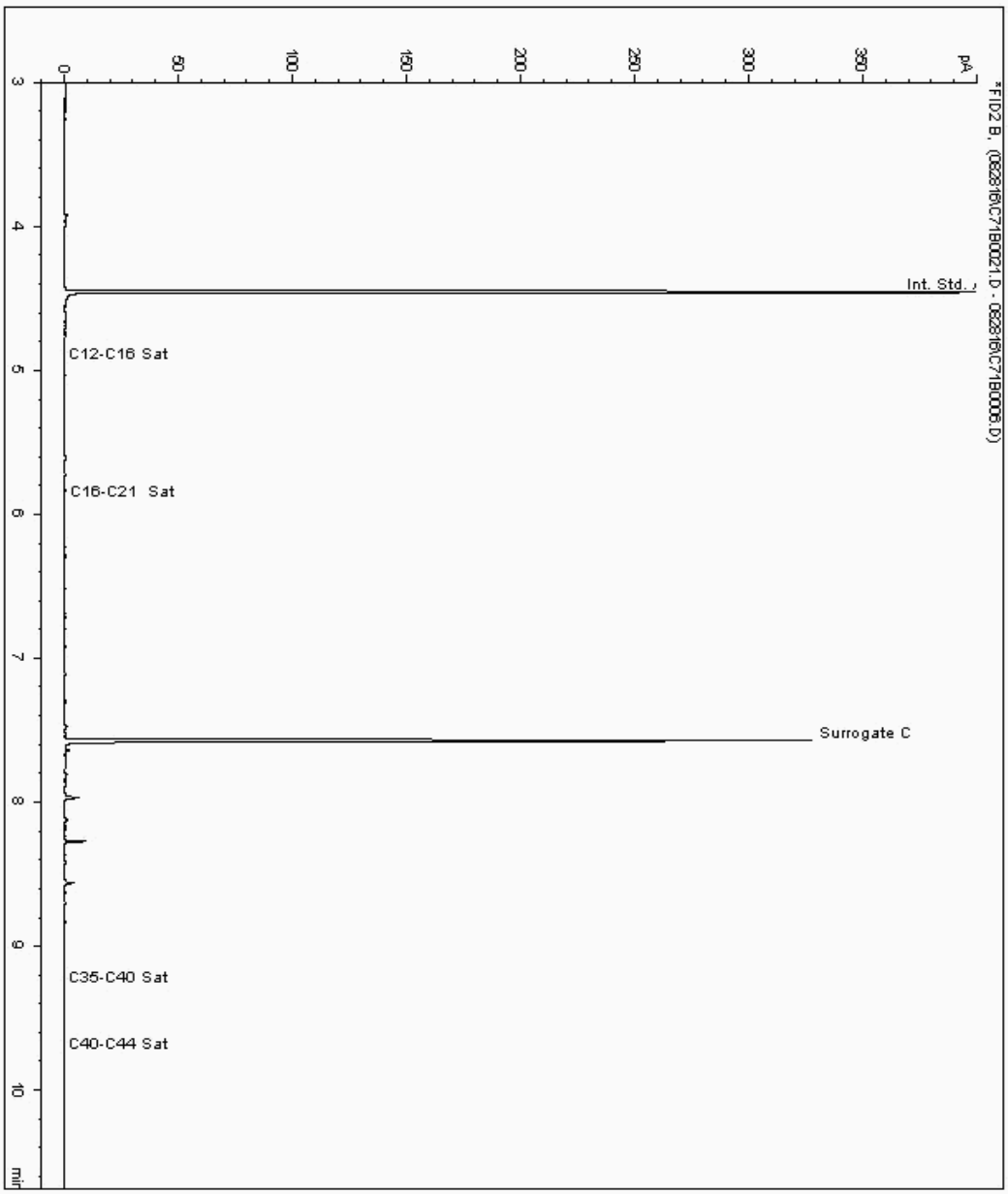
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14037725
Sample ID : HP202

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181424-
Date Acquired : 28/08/2016 21:00:56 PM
Units : ppb
Dilution: HP202[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

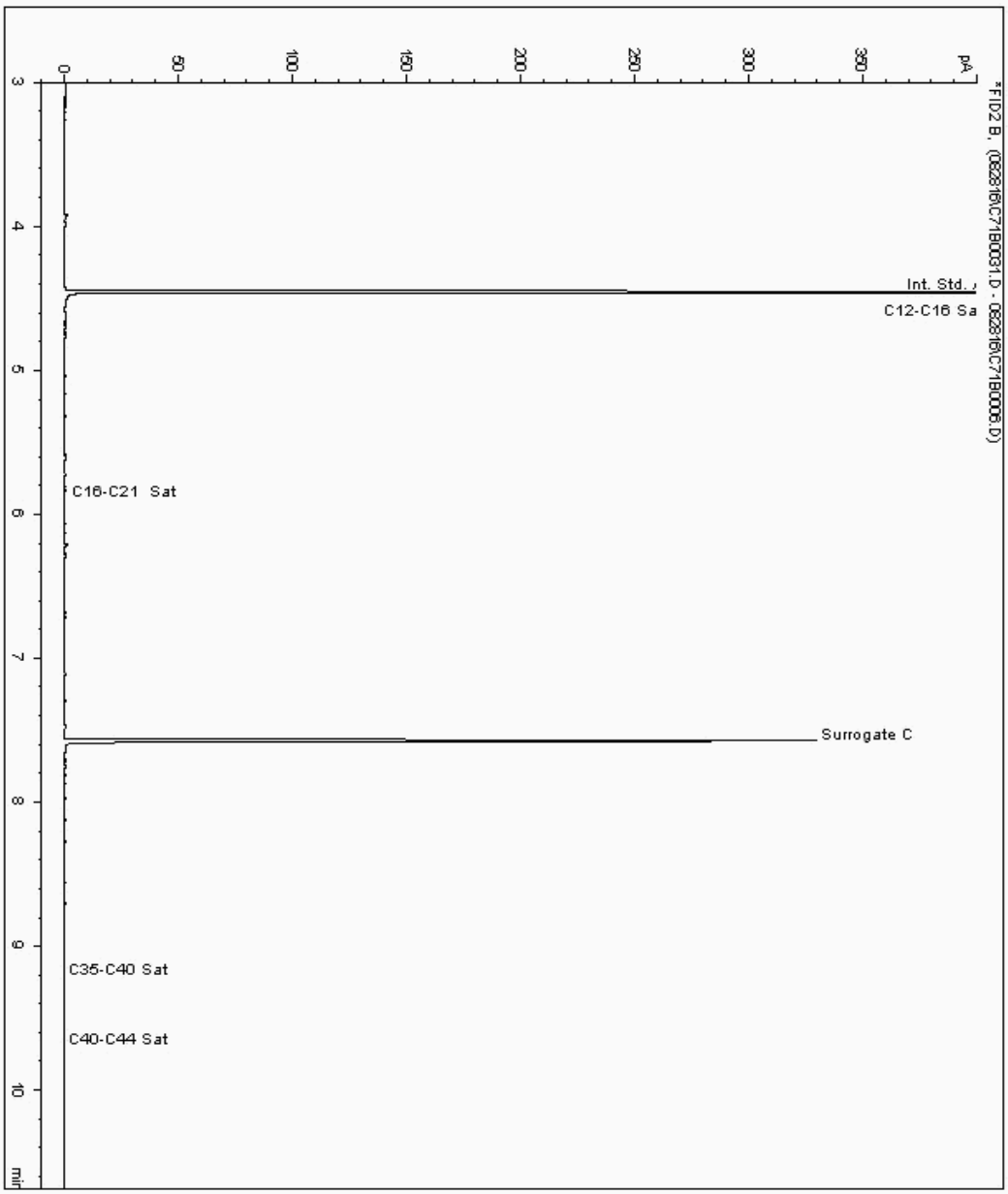
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038027
Sample ID : HP202

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181449-
Date Acquired : 29/08/2016 00:26:12 PM
Units : ppb
Dilution: HP202[0.70] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

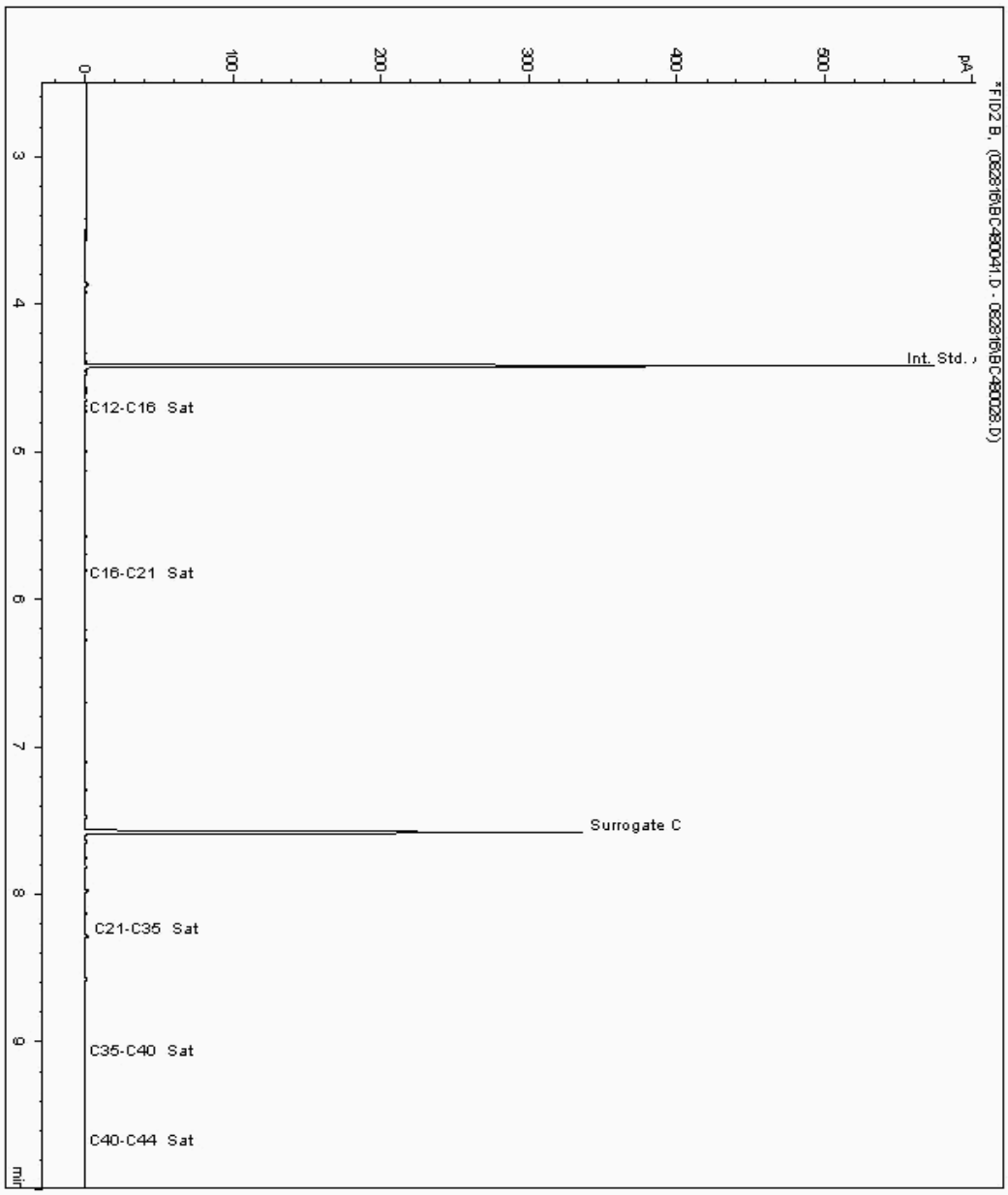
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038062
Sample ID : TP201

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13181714-
Date Acquired : 29/08/2016 01:21:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

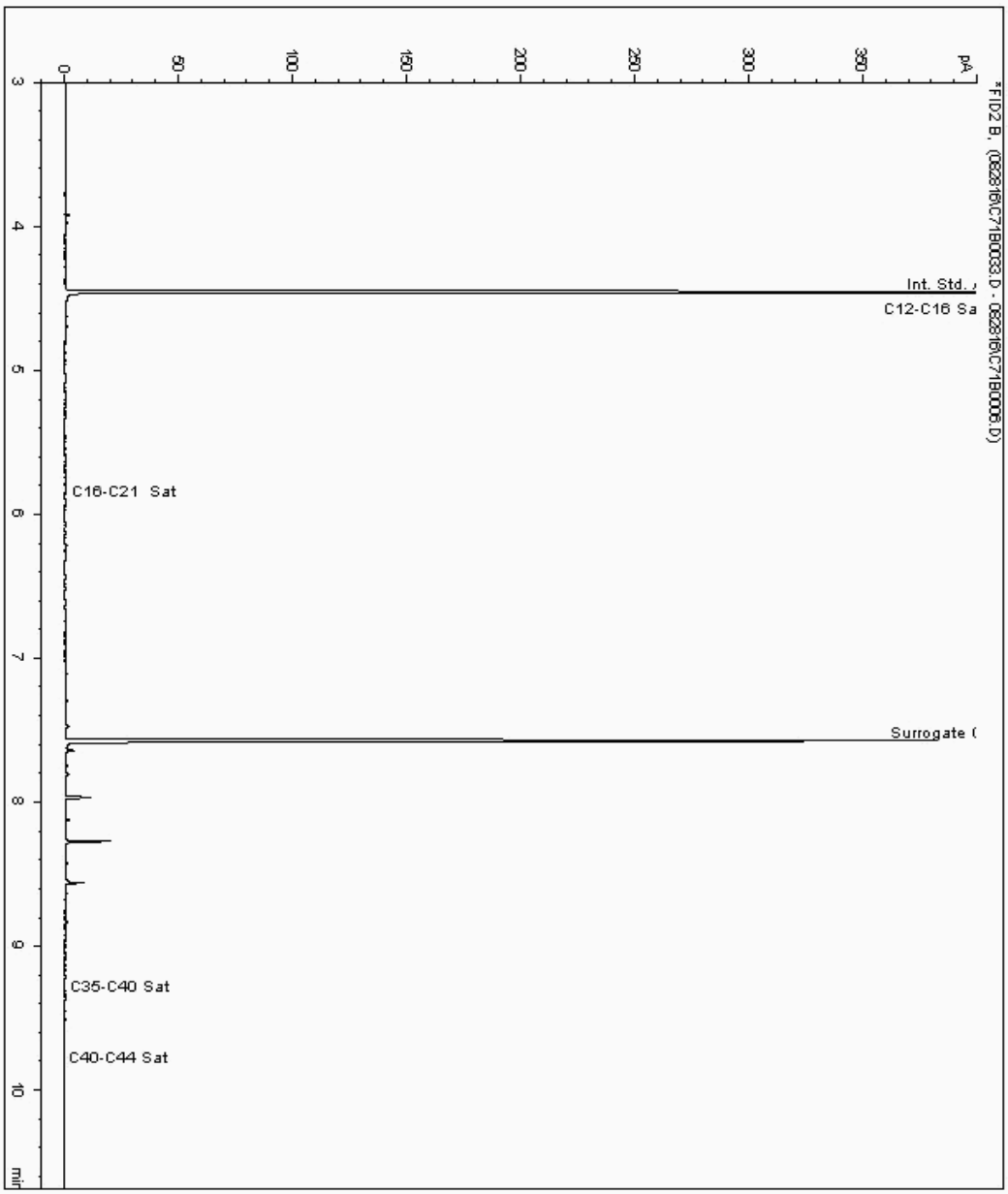
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038091
Sample ID : HP203

Depth : 0.15

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181468-
Date Acquired : 29/08/2016 01:07:20 PM
Units : ppb
Dilution: HP203[0.15] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

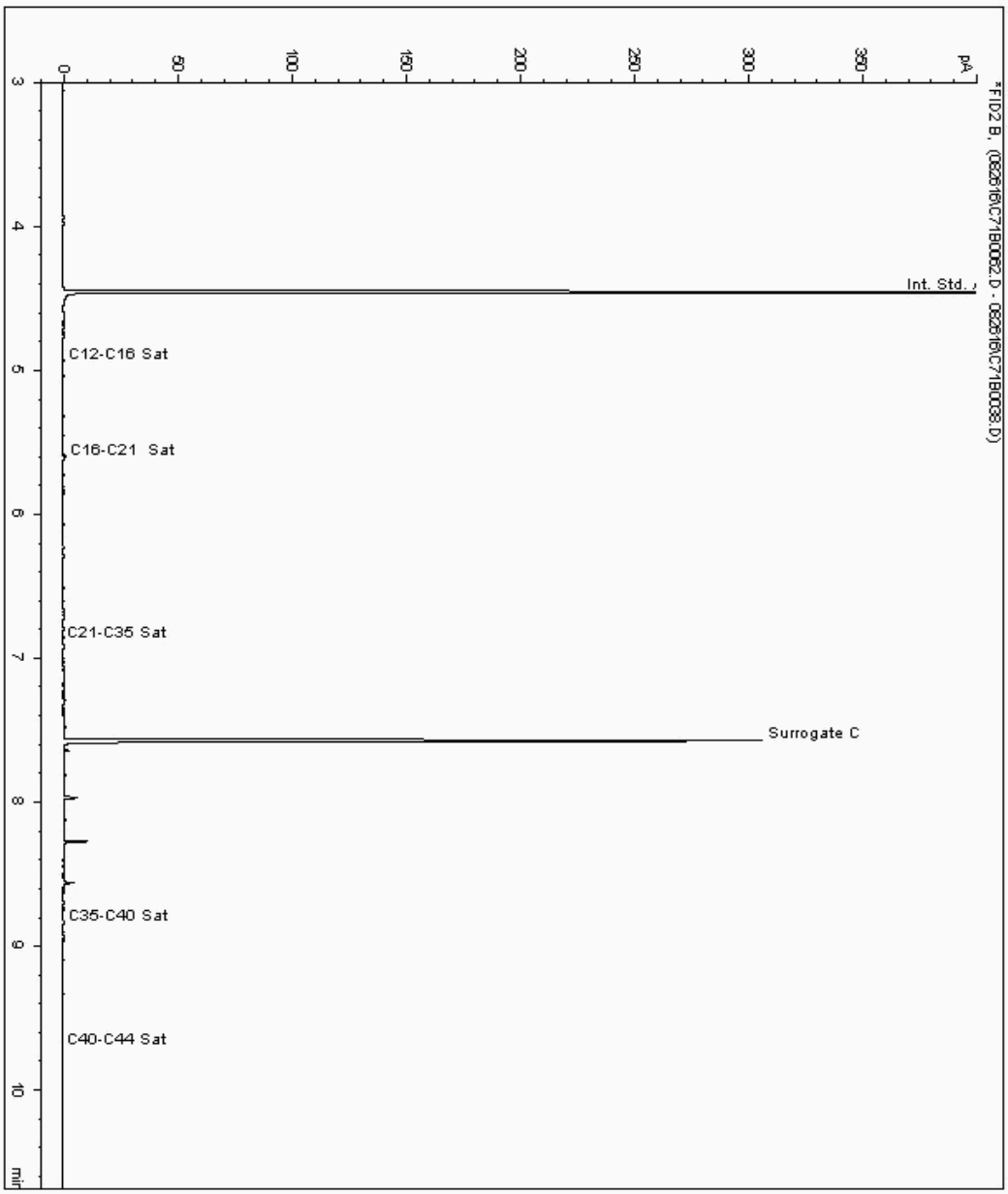
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038151
Sample ID : BH207

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181518-
Date Acquired : 27/08/2016 11:53:21 PM
Units : ppb
Dilution: BH207[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

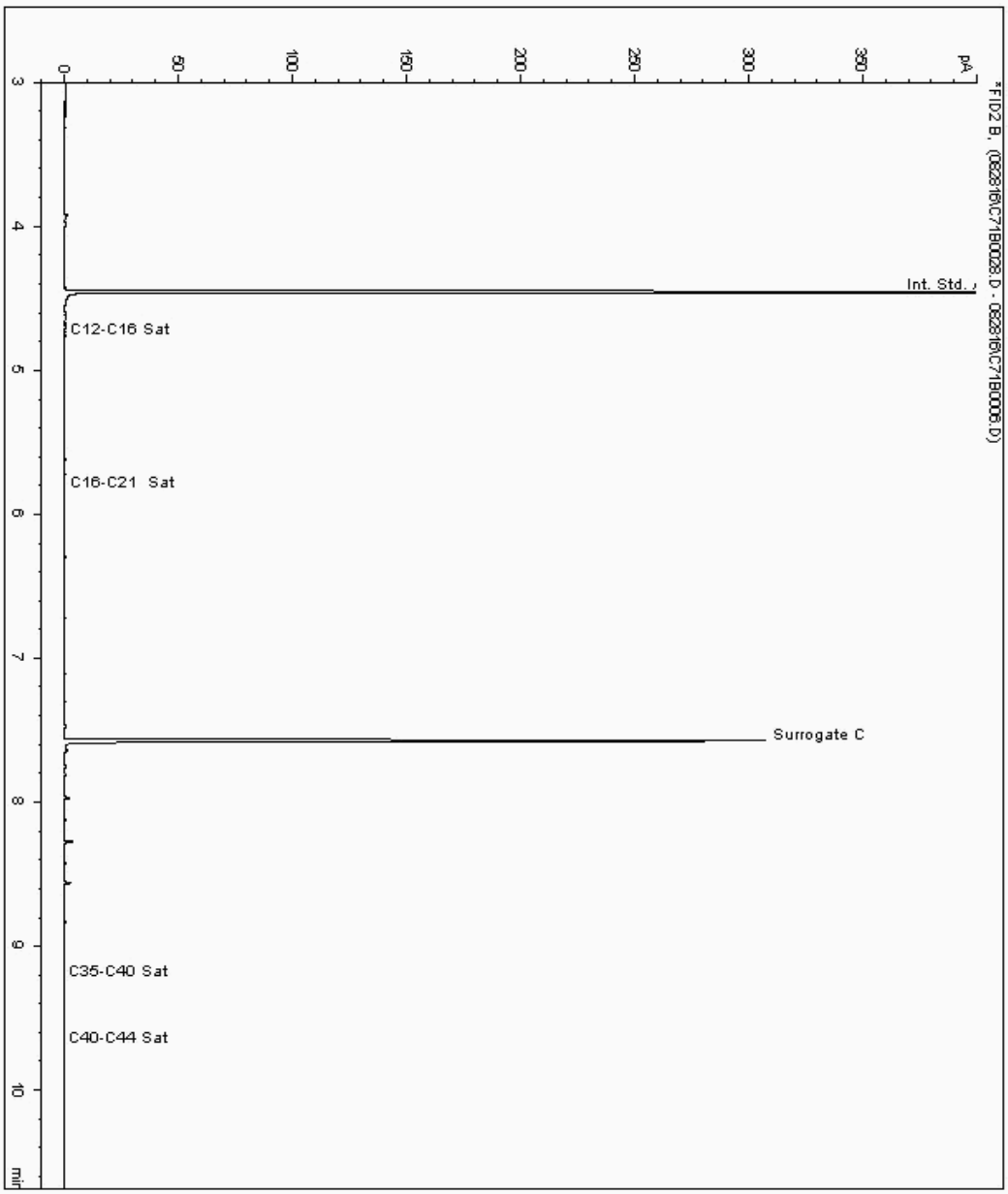
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038218
Sample ID : BH201

Depth : 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181836-
Date Acquired : 28/08/2016 23:24:39 PM
Units : ppb
Dilution: BH201[3.00] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

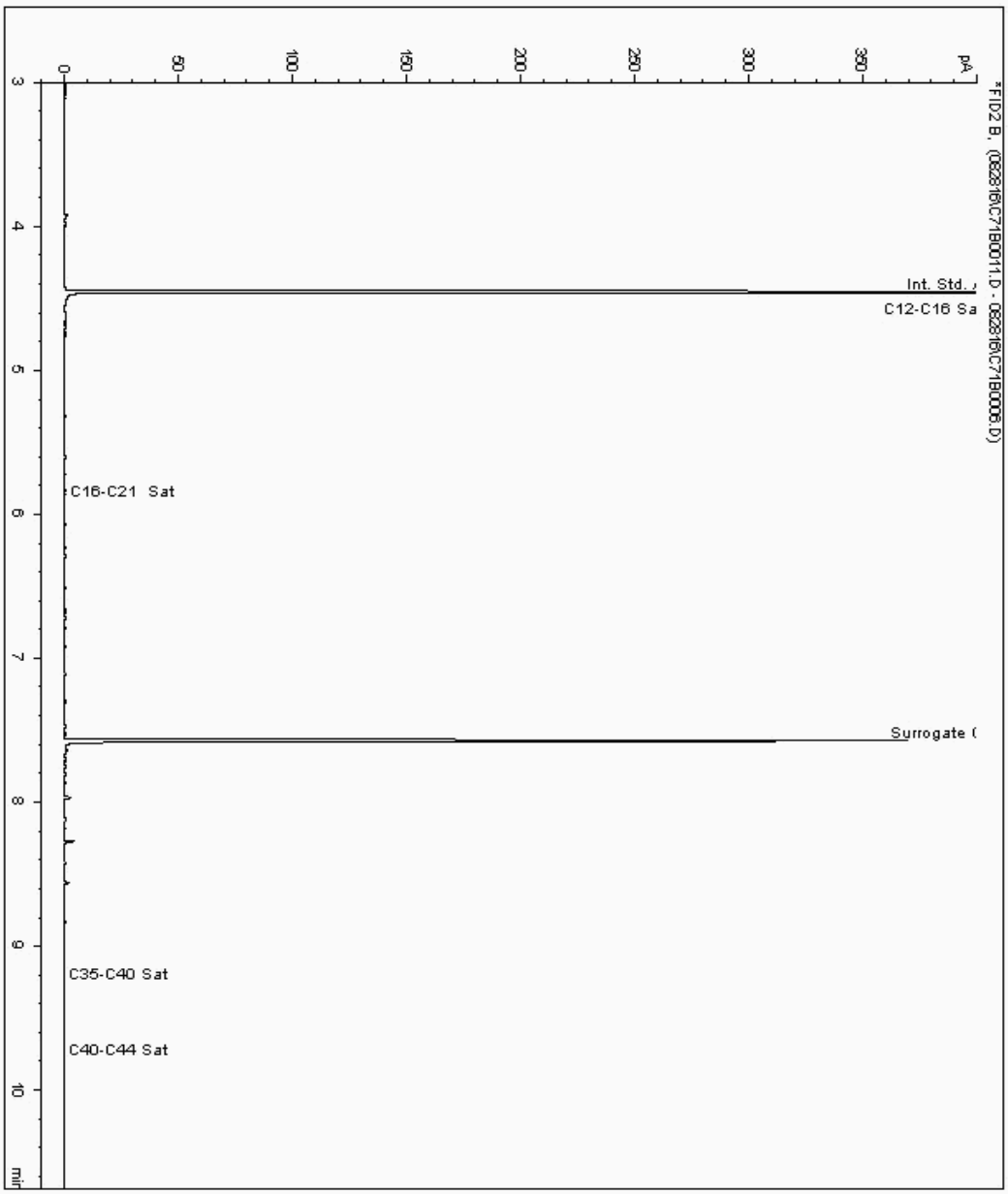
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038364
Sample ID : HP205

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181535-
Date Acquired : 28/08/2016 17:35:50 PM
Units : ppb
Dilution: HP205[0.70] ->



CERTIFICATE OF ANALYSIS

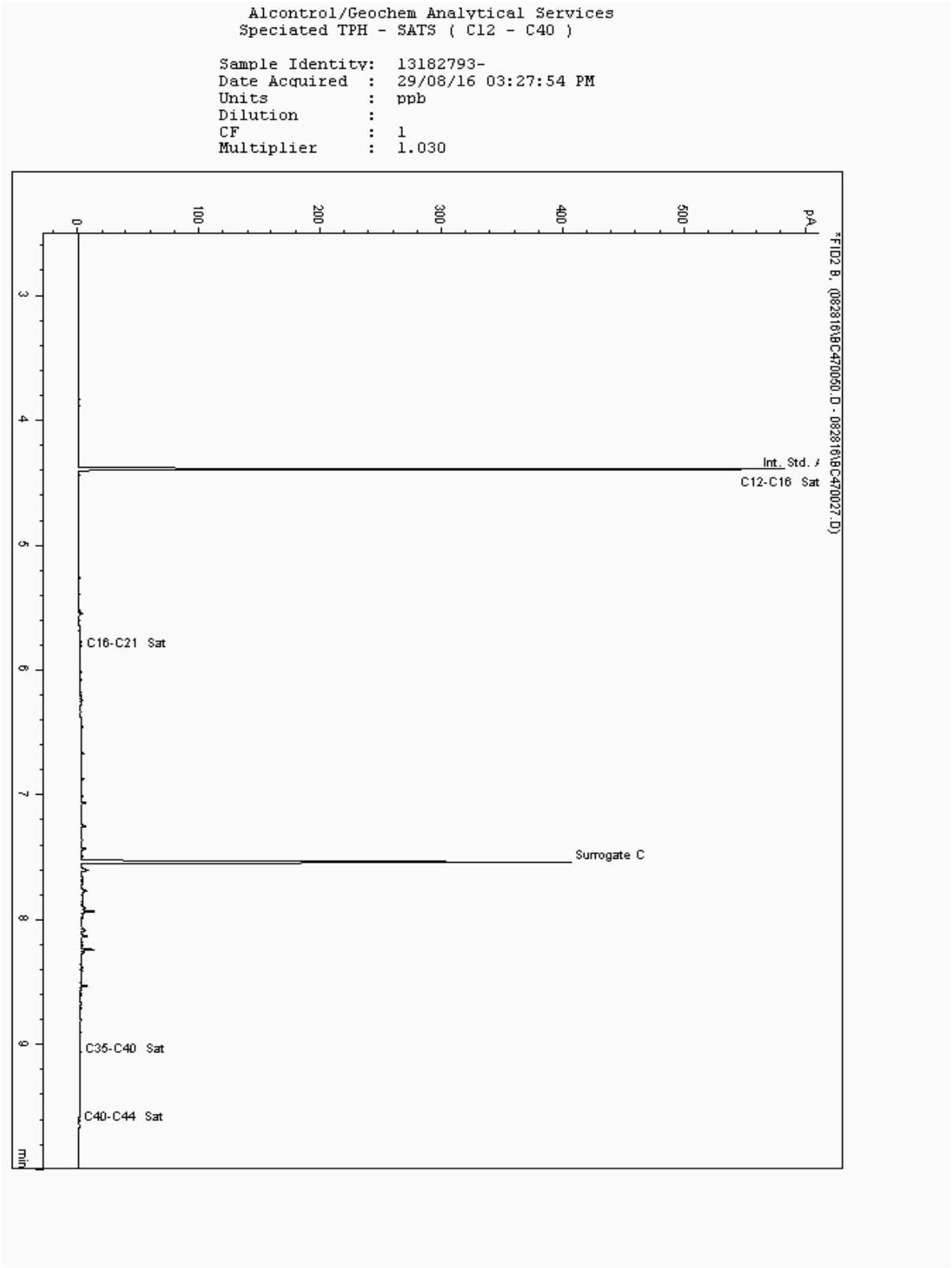
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038492
Sample ID : WS202

Depth : 1.00



CERTIFICATE OF ANALYSIS

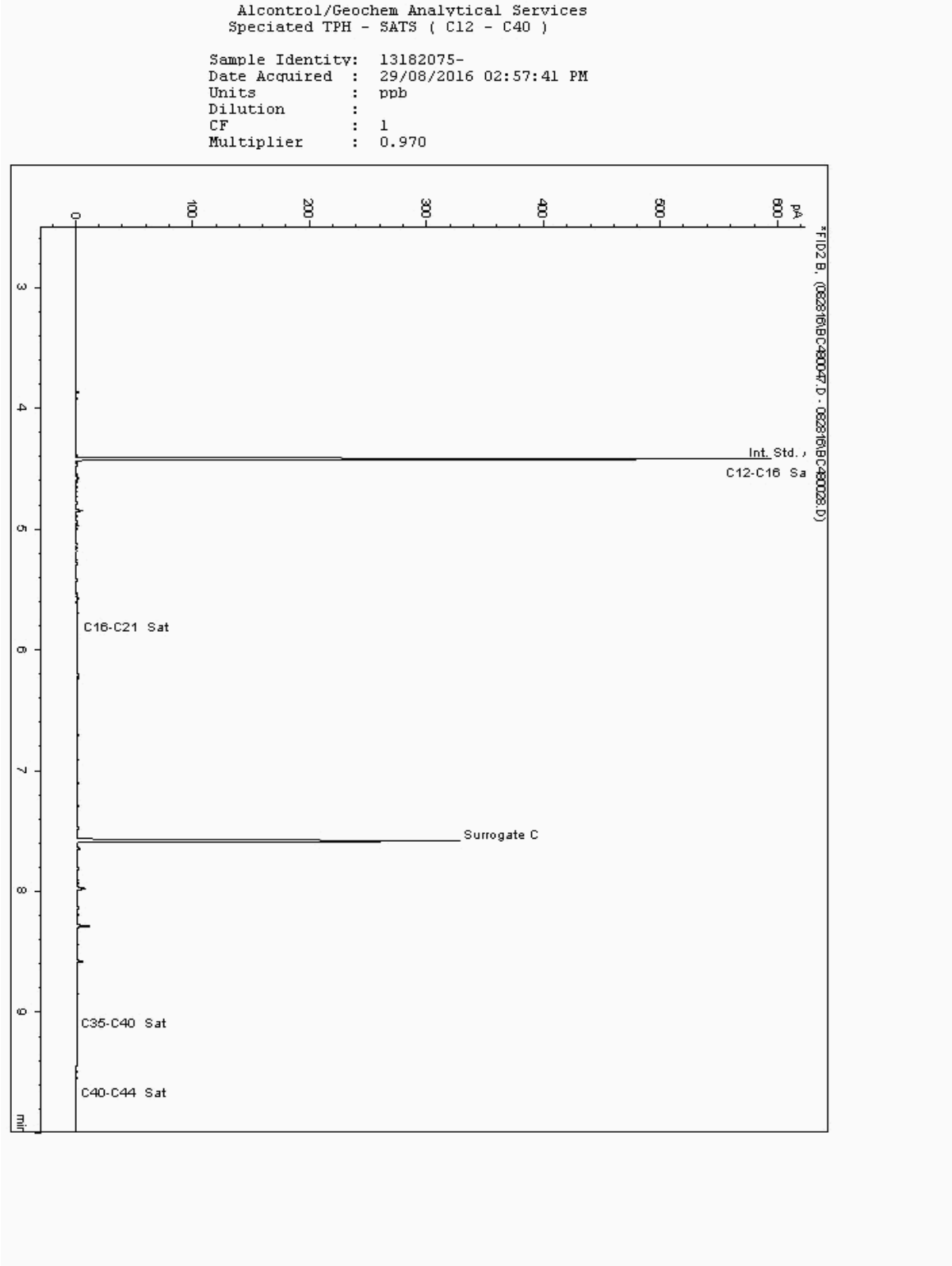
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038556
Sample ID : TP211

Depth : 0.70



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

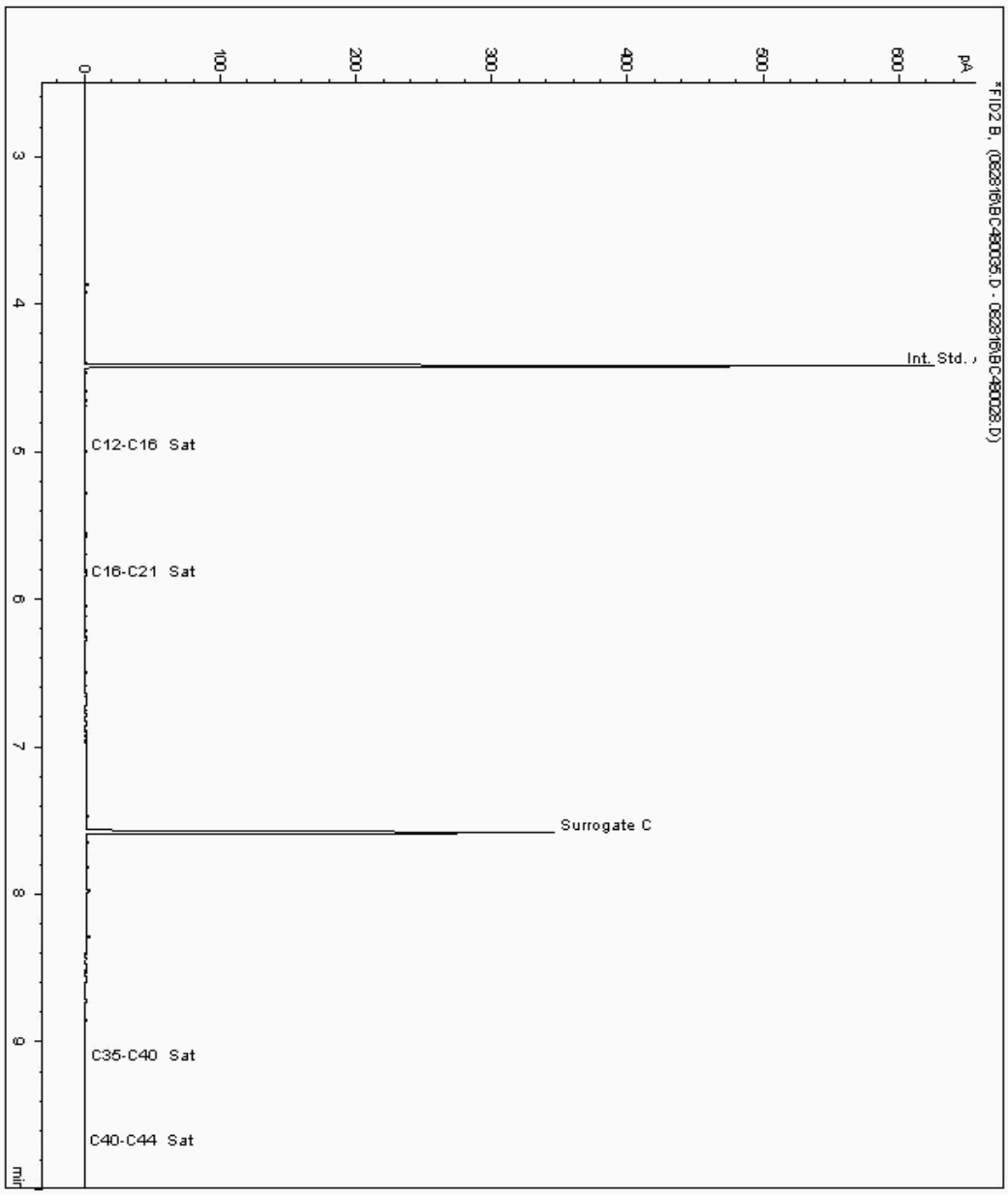
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14038945
Sample ID : TP203

Depth : 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13181793-
Date Acquired : 28/08/2016 23:45:01 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

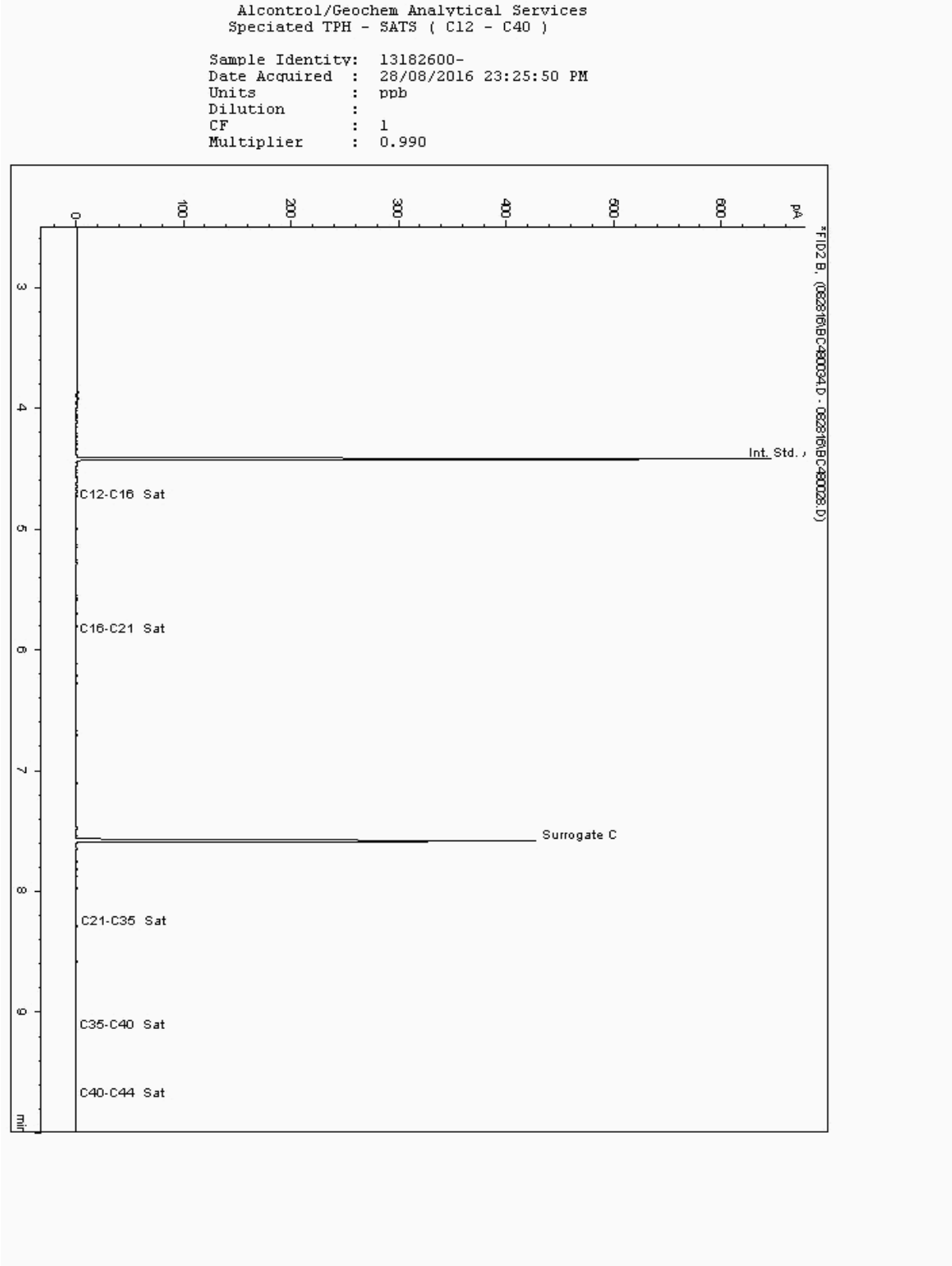
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14040186
Sample ID : WS209

Depth : 1.00



CERTIFICATE OF ANALYSIS

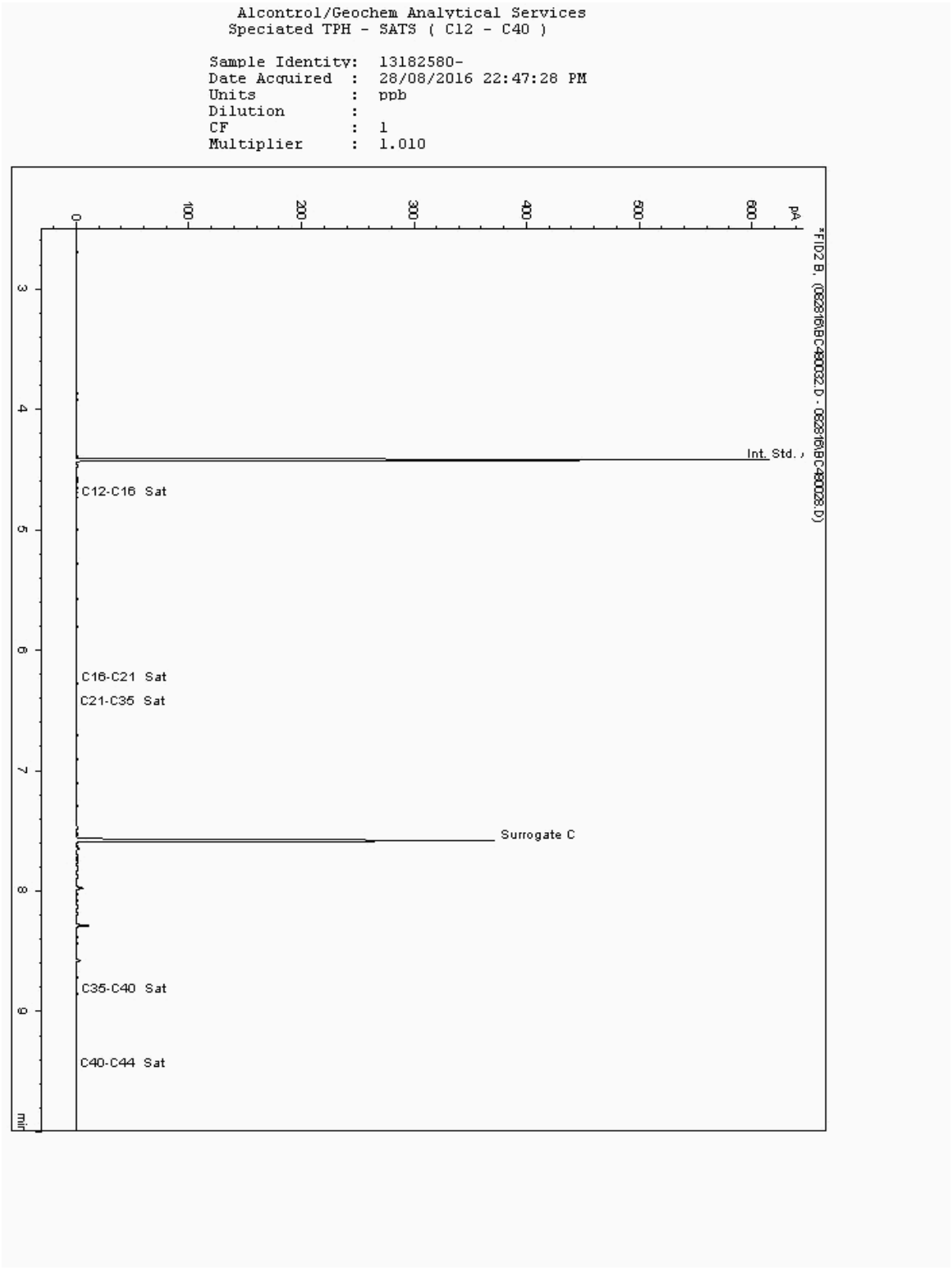
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14040343
Sample ID : WS209

Depth : 0.50



CERTIFICATE OF ANALYSIS

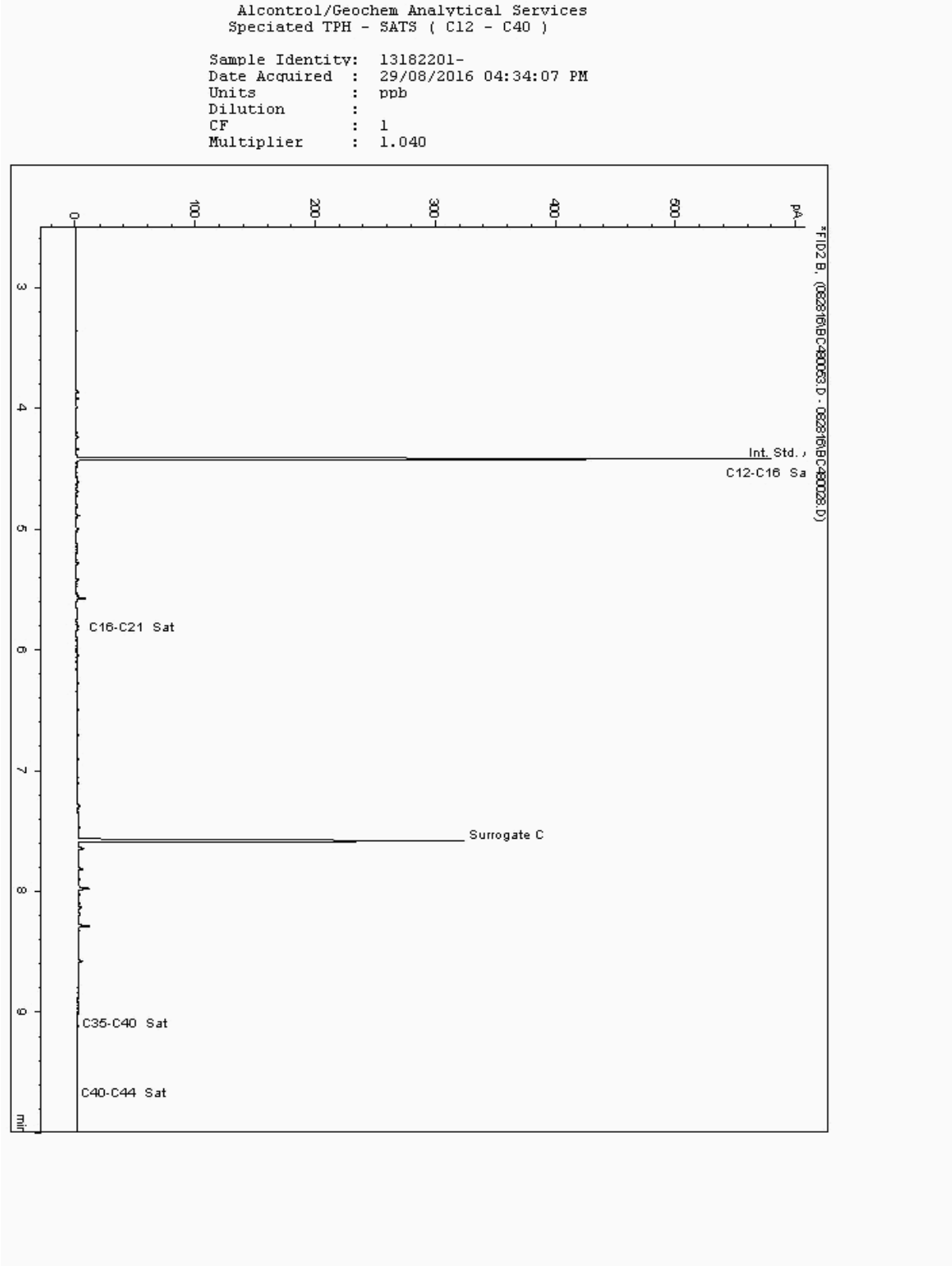
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14043890
Sample ID : WS203

Depth : 0.30



CERTIFICATE OF ANALYSIS

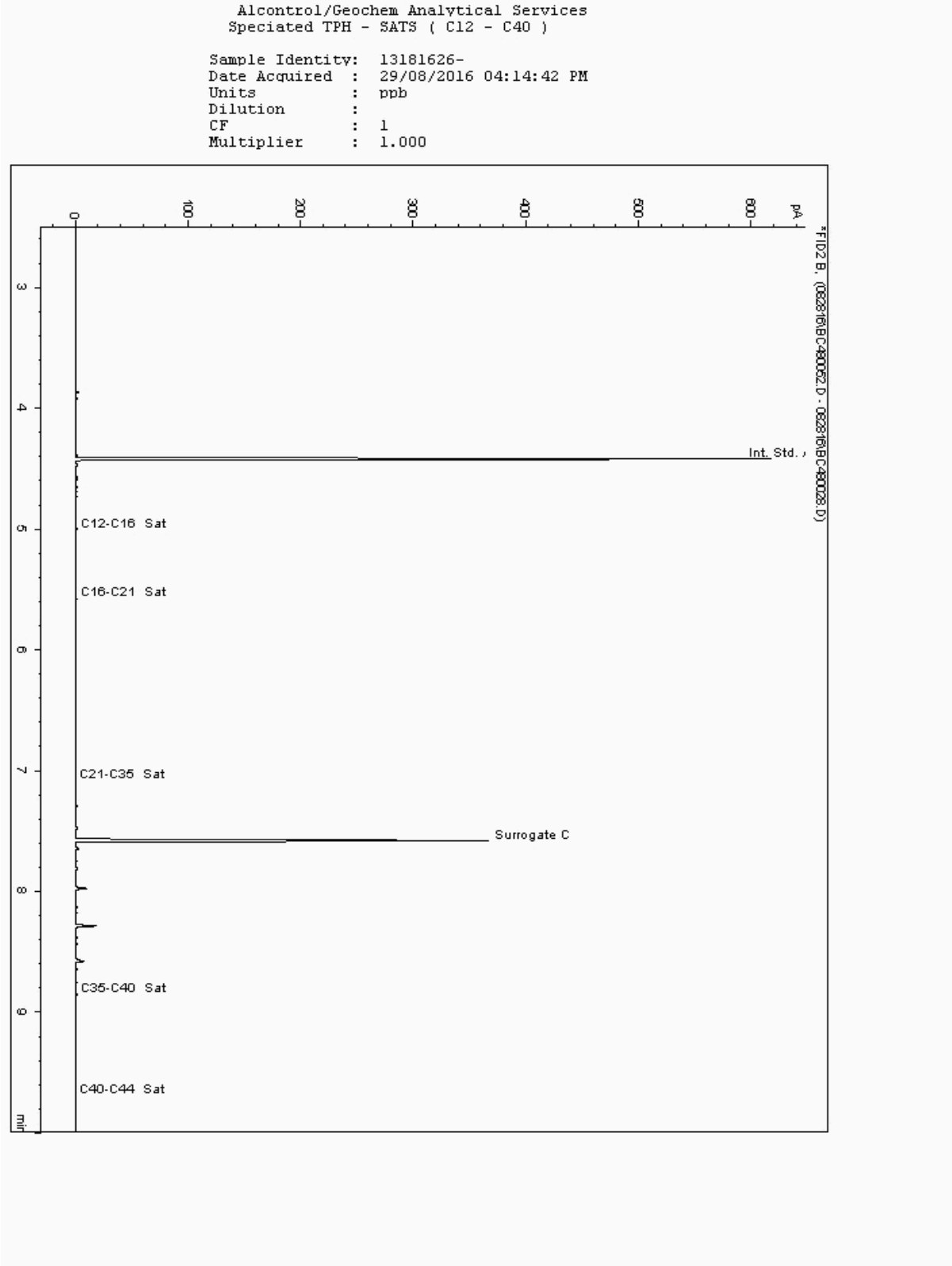
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14047035
Sample ID : HP208

Depth : 0.15



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

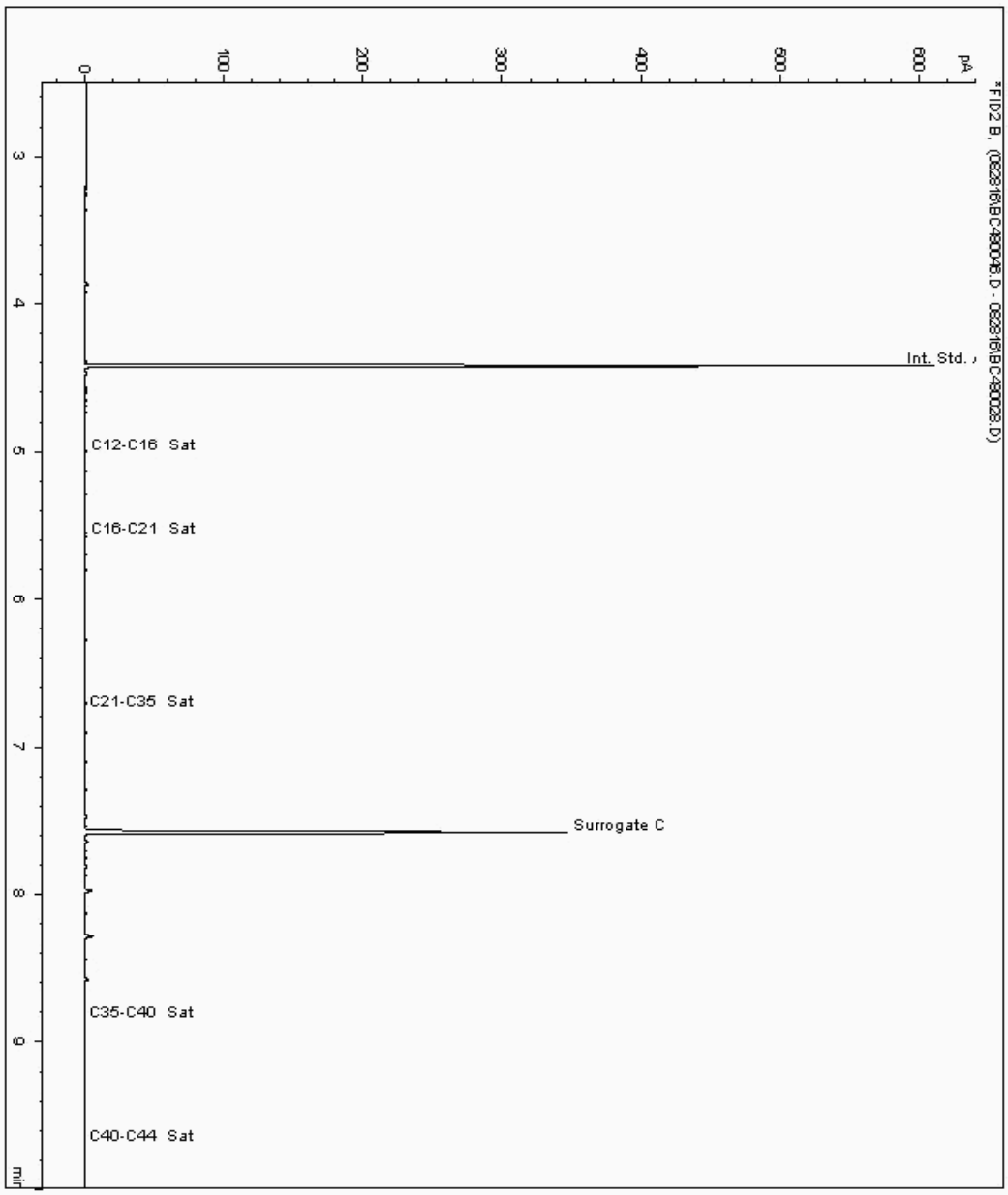
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14047190
Sample ID : WS205

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13182402-
Date Acquired : 29/08/2016 02:38:29 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

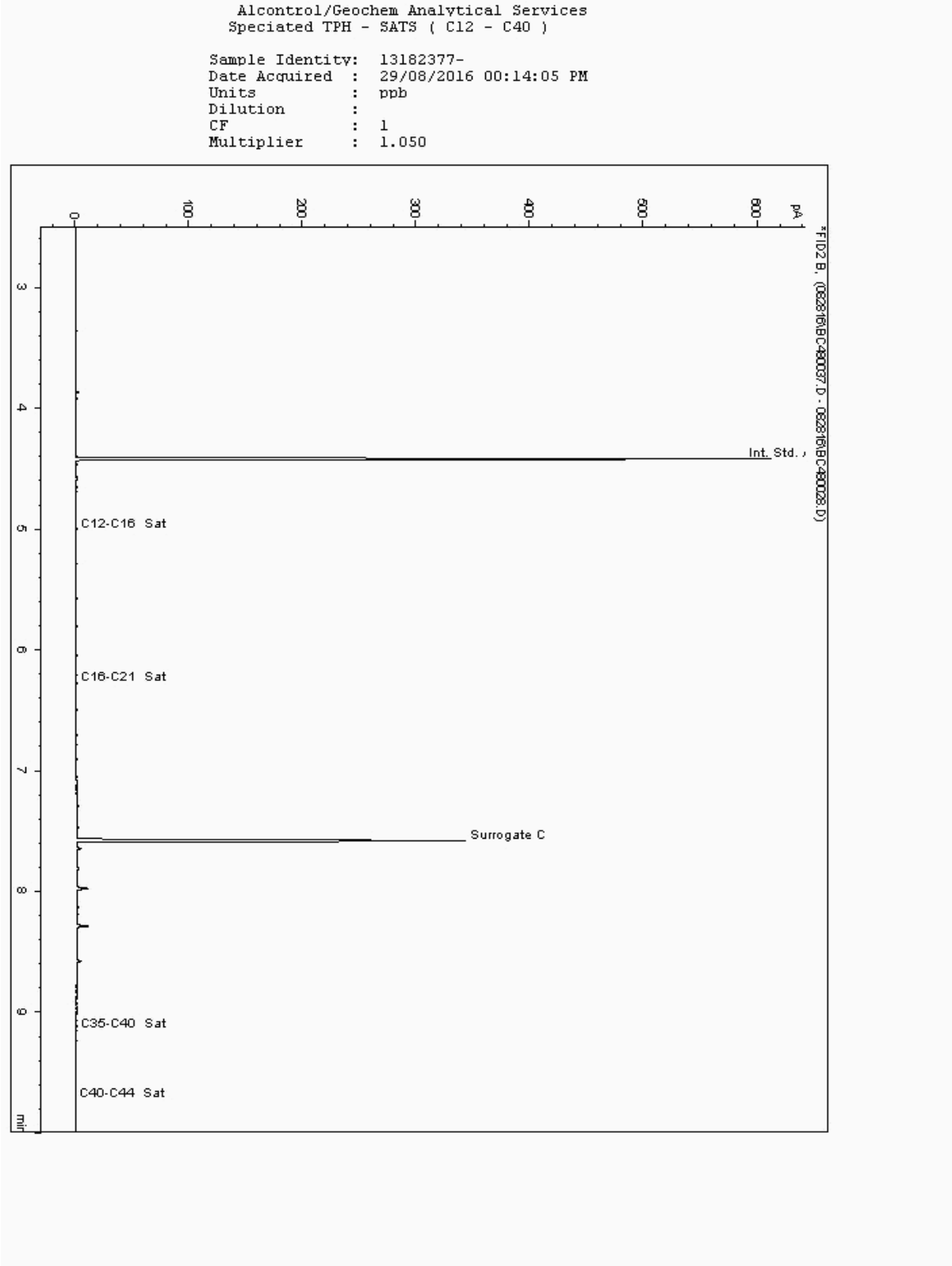
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14047372
Sample ID : WS205

Depth : 0.30



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

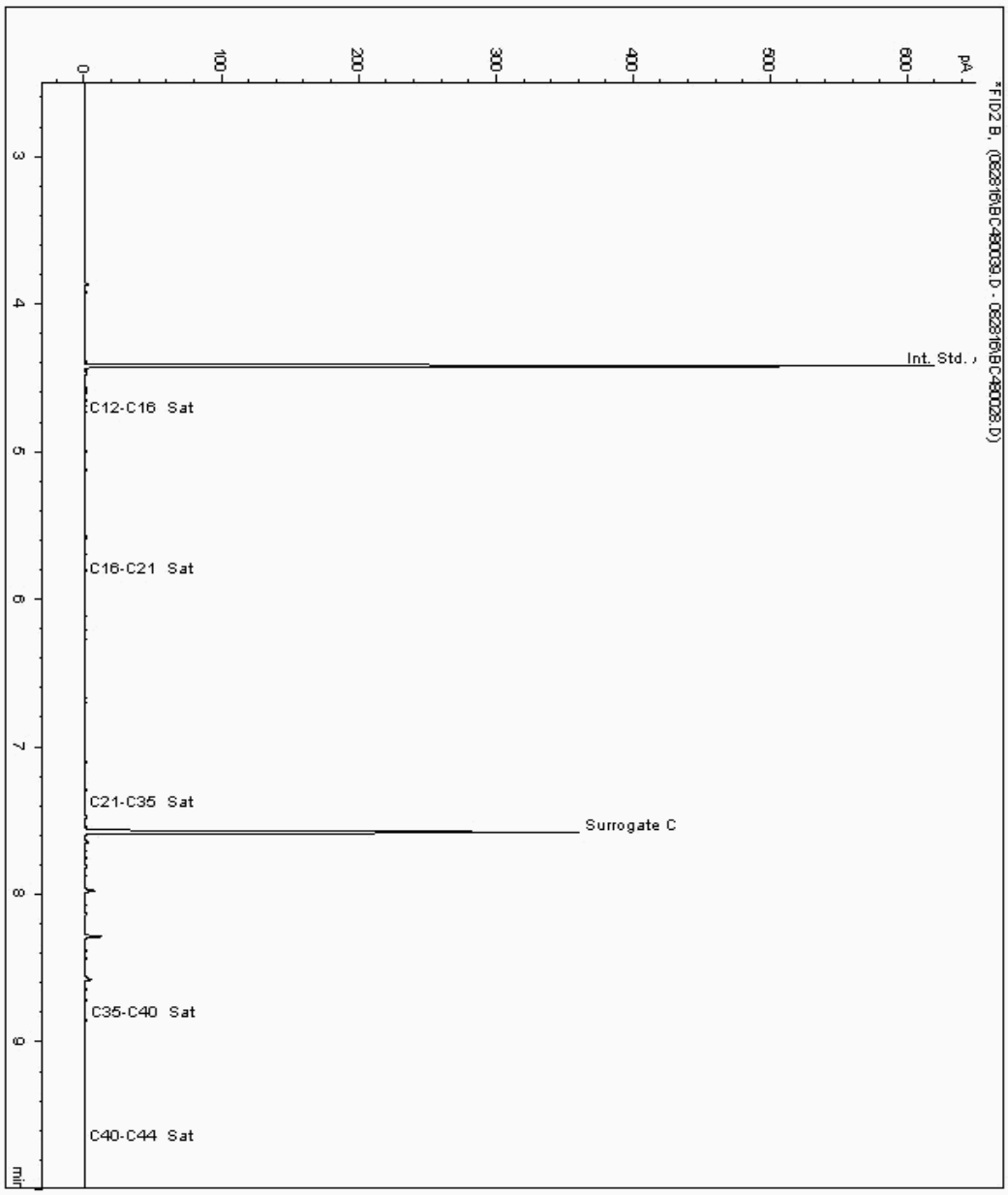
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14047514
Sample ID : HP208

Depth : 0.80

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13181660-
Date Acquired : 29/08/2016 00:42:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

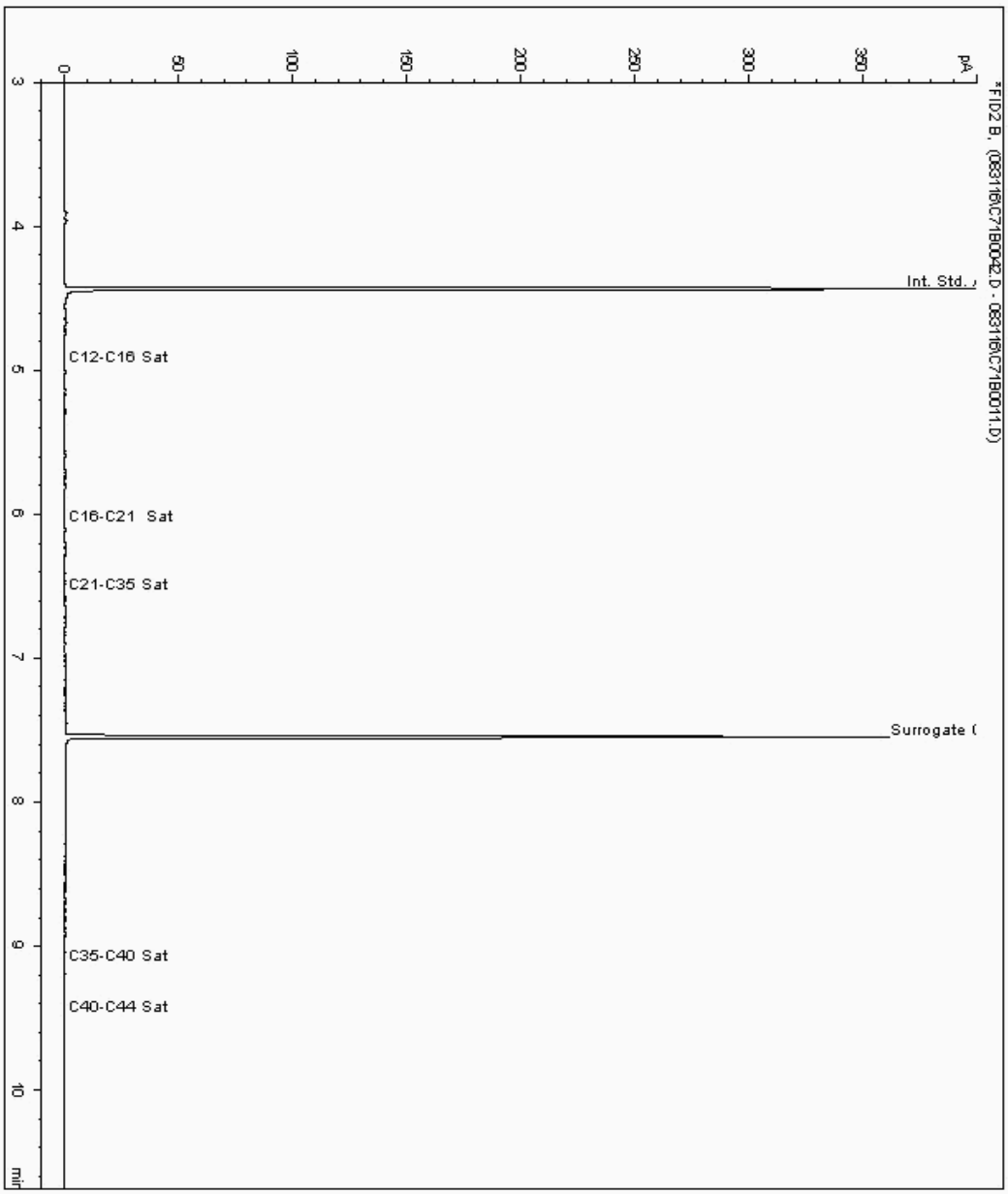
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14053976
Sample ID : TP214

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199751-
Date Acquired : 01/09/2016 03:05:50 PM
Units : ppb
Dilution: TP214[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

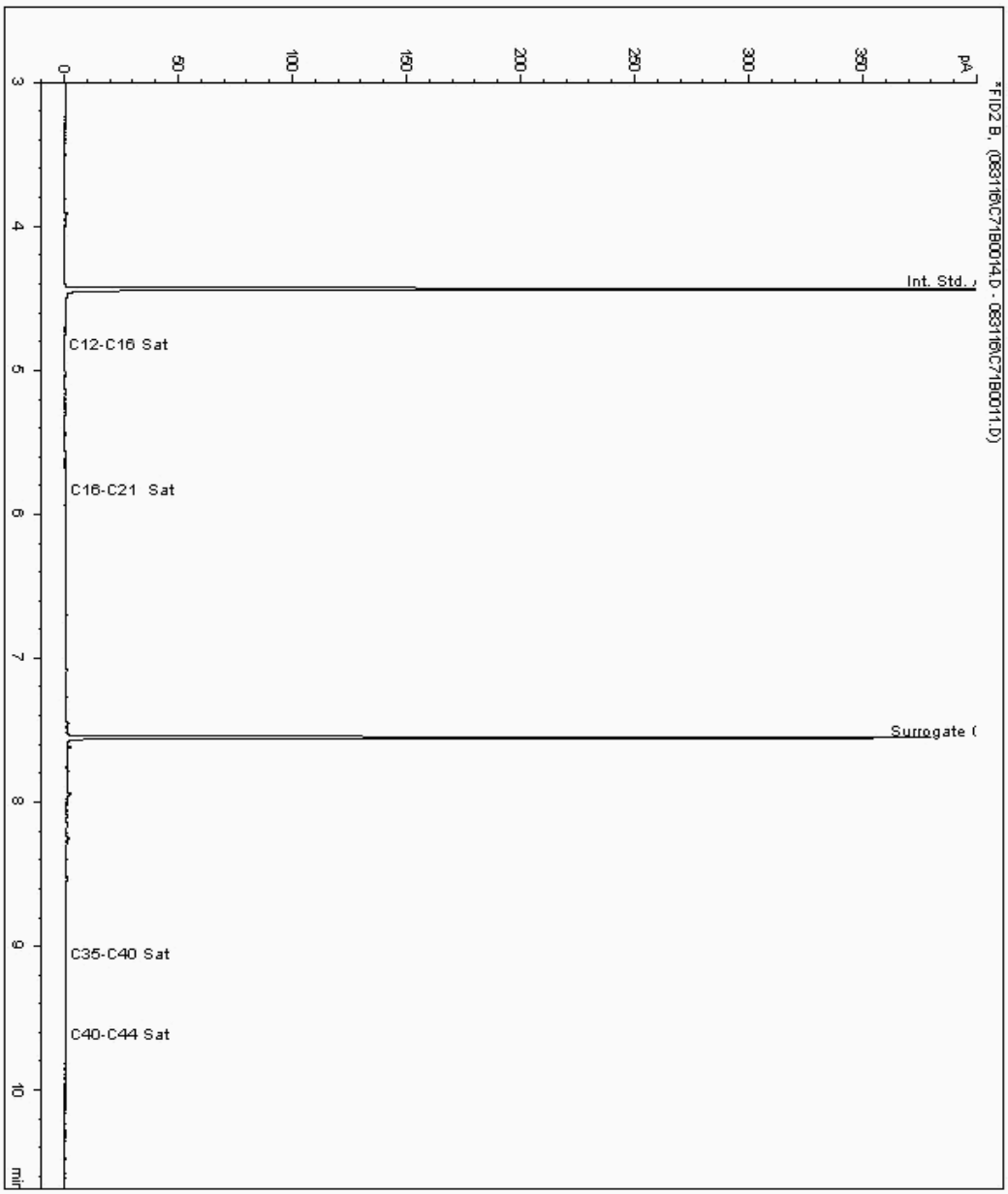
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14063659
Sample ID : BH202

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13211255-
Date Acquired : 31/08/2016 18:02:35 PM
Units : ppb
Dilution: BH202[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

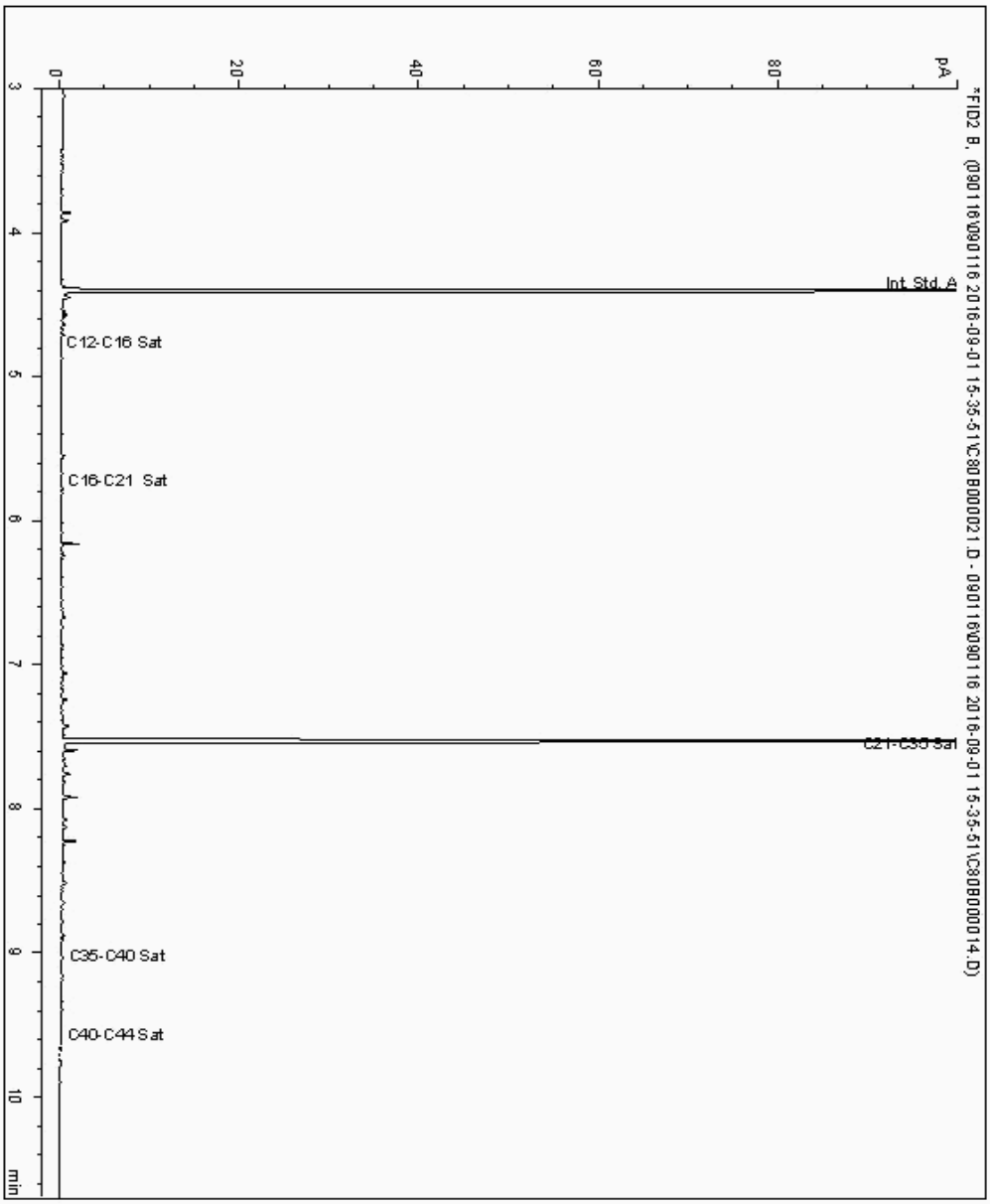
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14066134
Sample ID : WS202

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13203527-
Date Acquired : 01/09/16 15:38:16
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

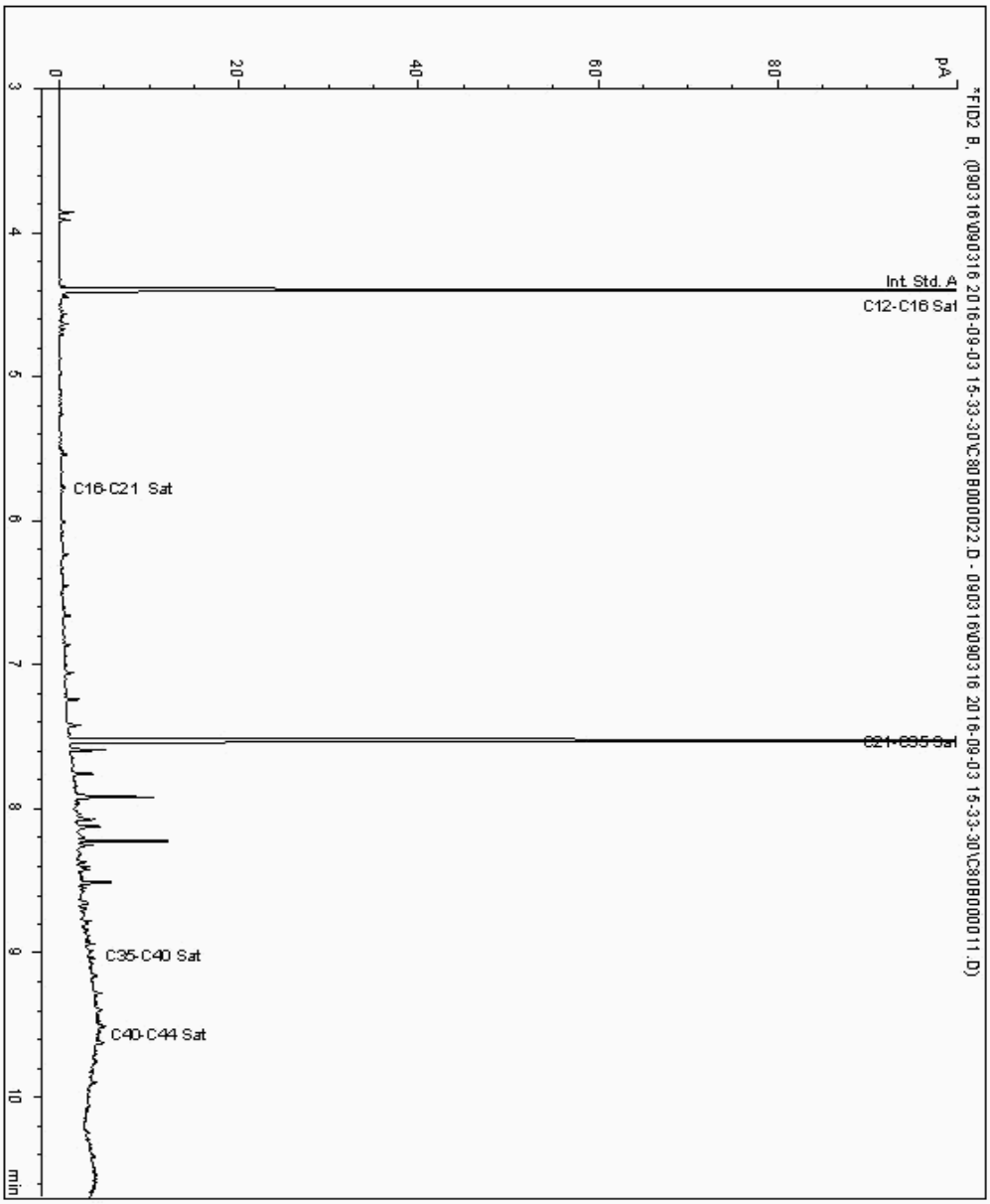
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14069441
Sample ID : WS207

Depth : 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13215182-
Date Acquired : 03/09/16 21:48:42
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

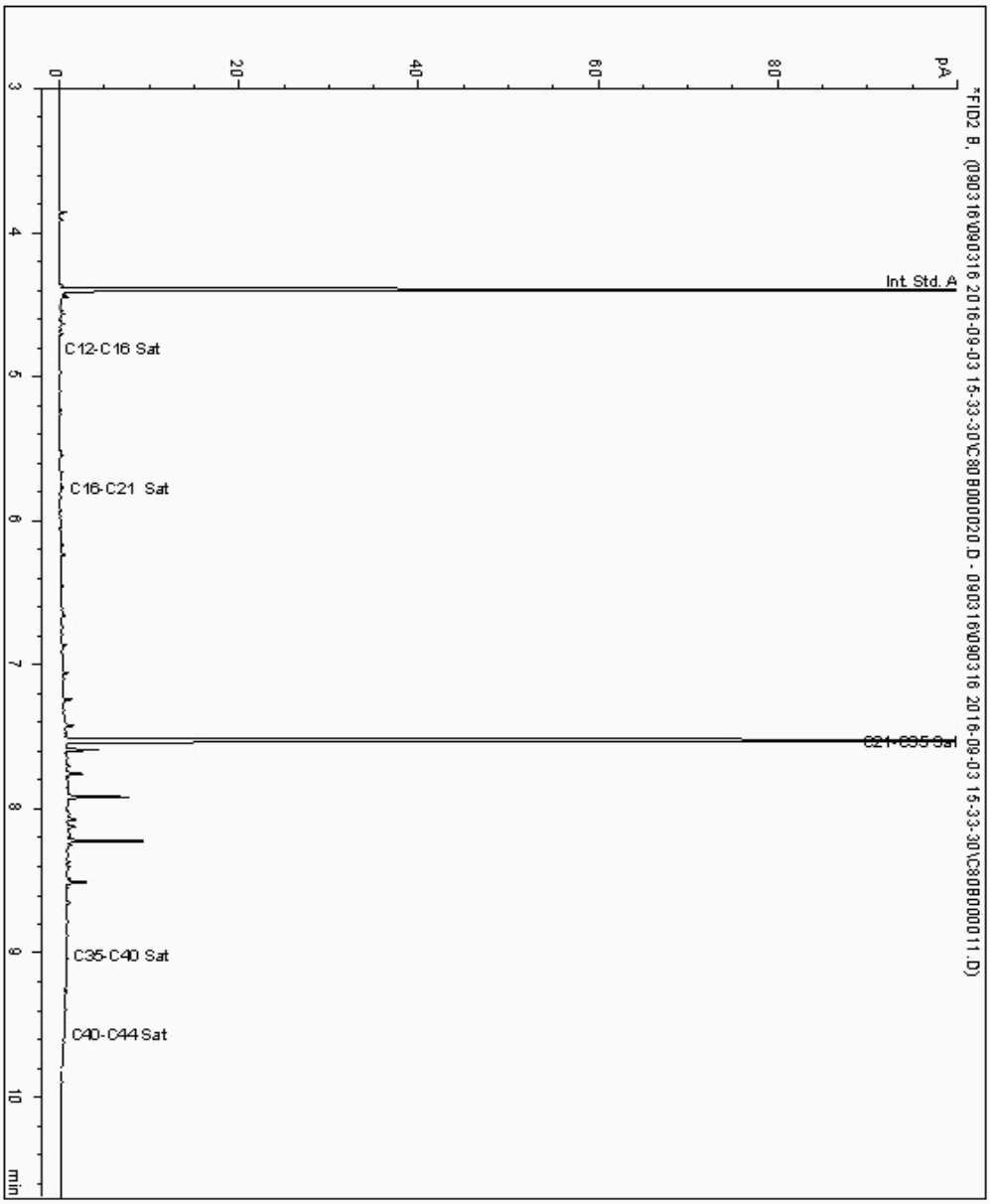
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14069573
Sample ID : HP210

Depth : 0.25

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13215201-
Date Acquired : 03/09/16 21:16:14
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

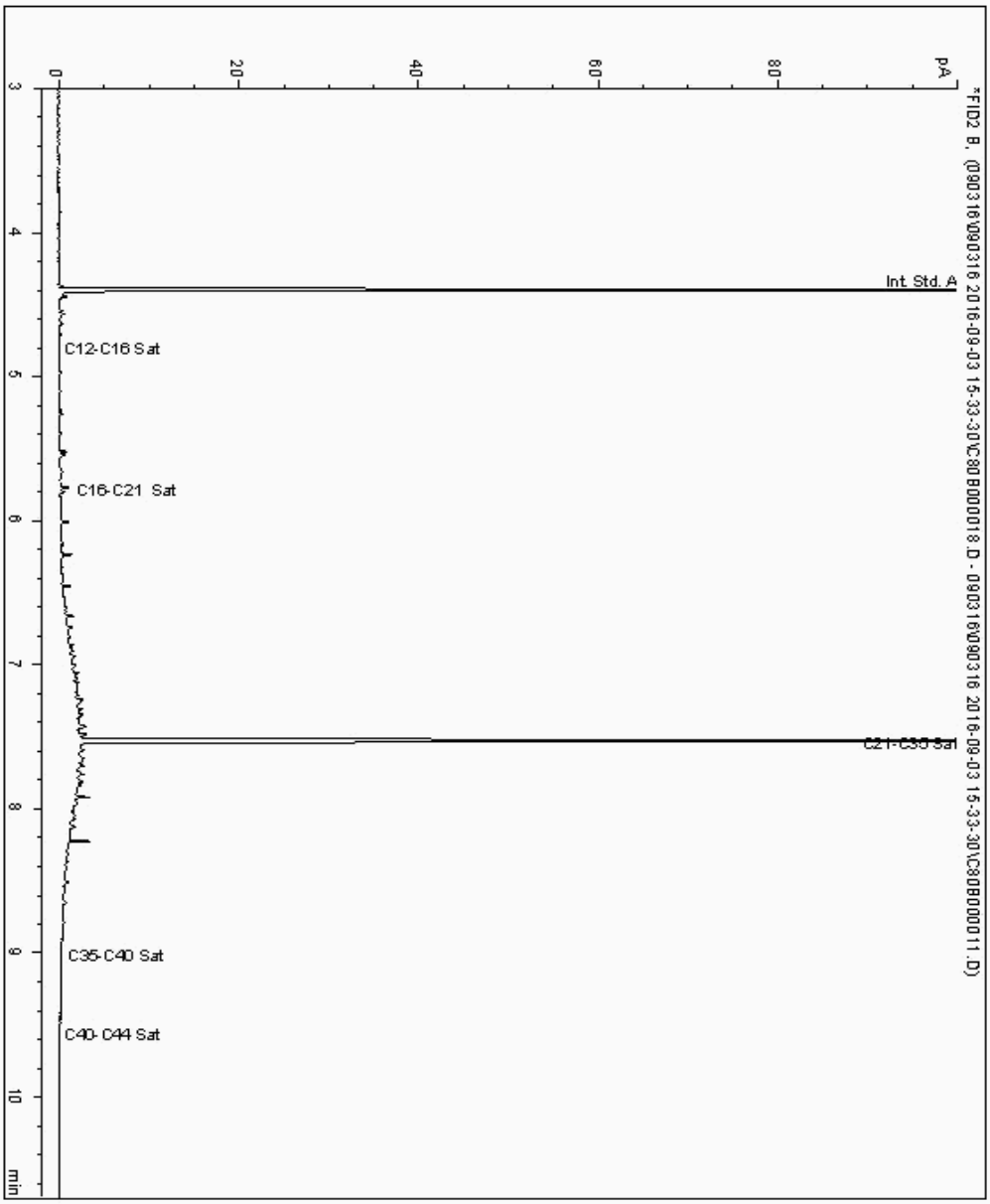
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14070152
Sample ID : HP209

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13215167-
Date Acquired : 03/09/16 20:35:43
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



CERTIFICATE OF ANALYSIS

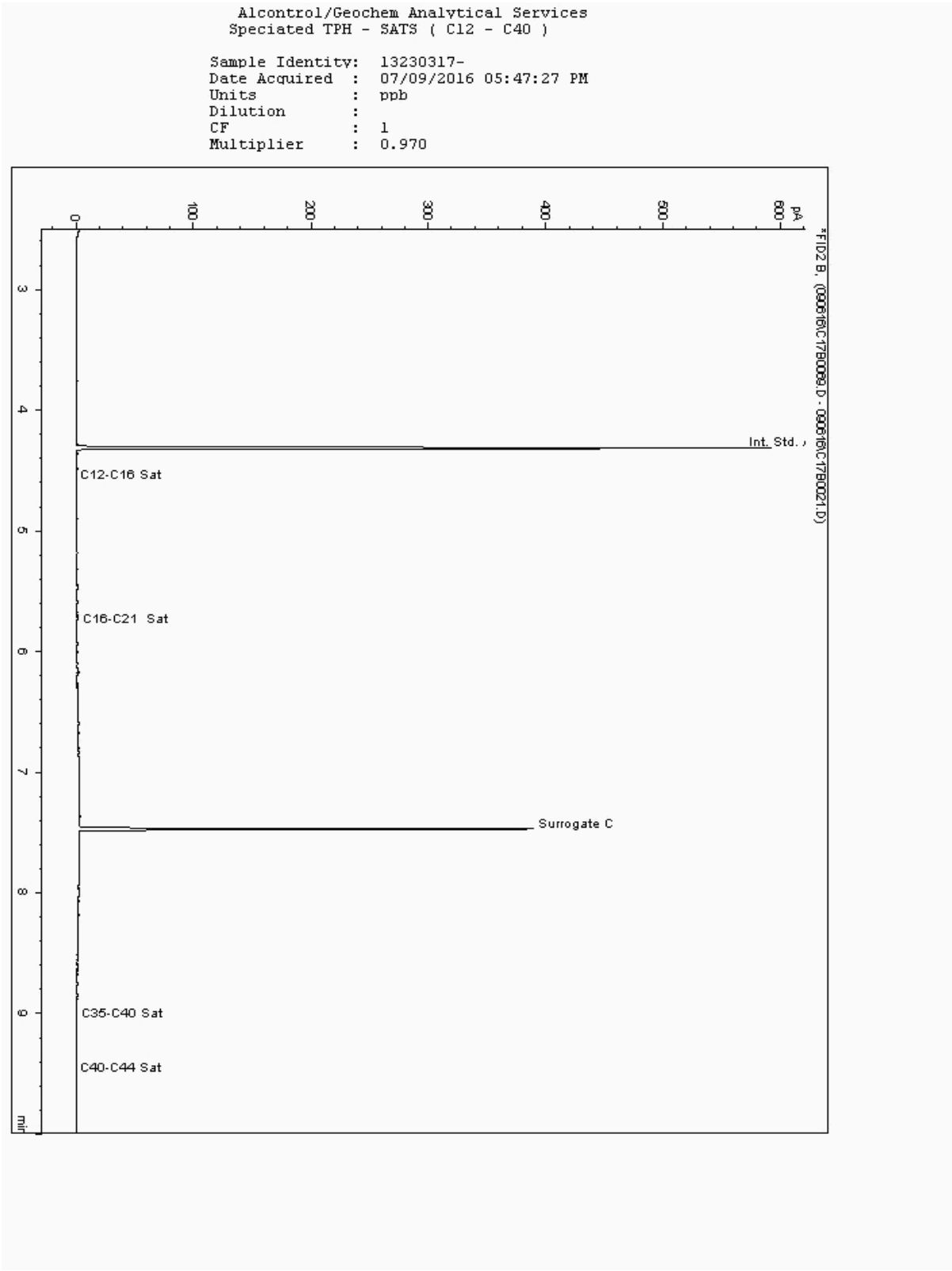
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14095265
Sample ID : HP209

Depth : 0.65



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

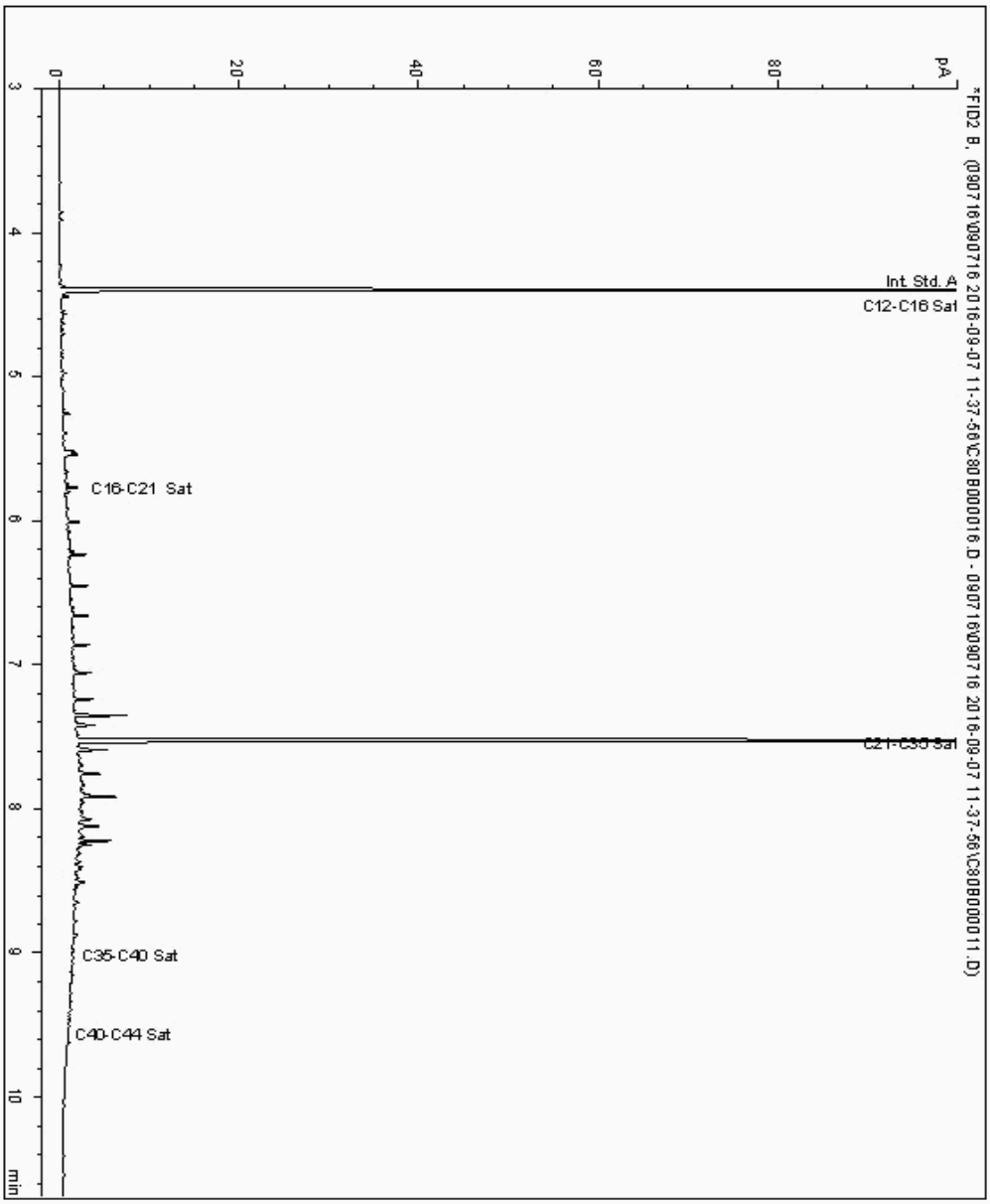
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14095338
Sample ID : HP210

Depth : 0.75

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13230338-
Date Acquired : 07/09/16 13:57:33
Units : ppb
Dilution :
CF : 1
Multiplier : 1.040



CERTIFICATE OF ANALYSIS

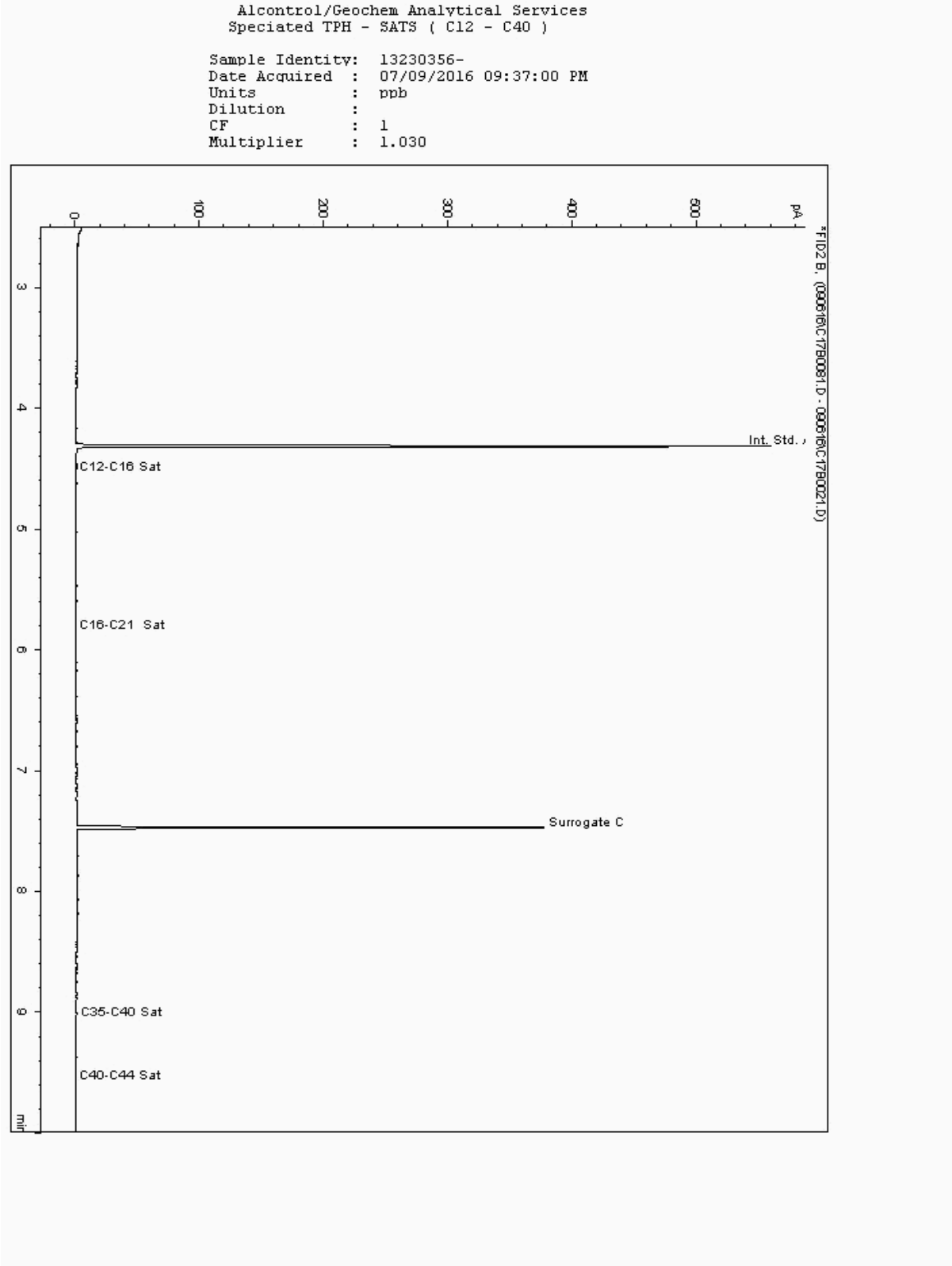
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14095394
Sample ID : WS207

Depth : 0.70



CERTIFICATE OF ANALYSIS

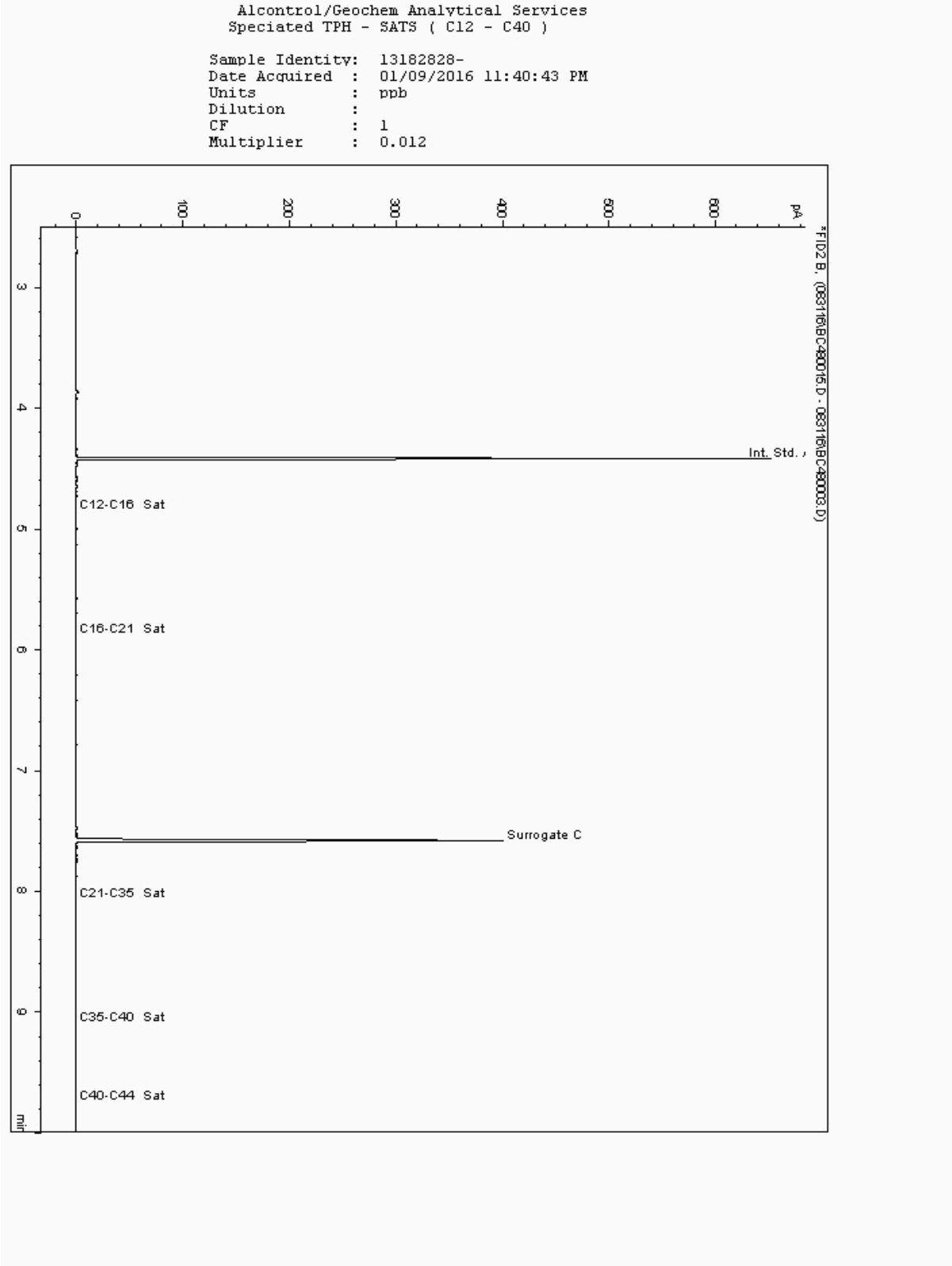
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 14064297
Sample ID : WS212

Depth : 0.65

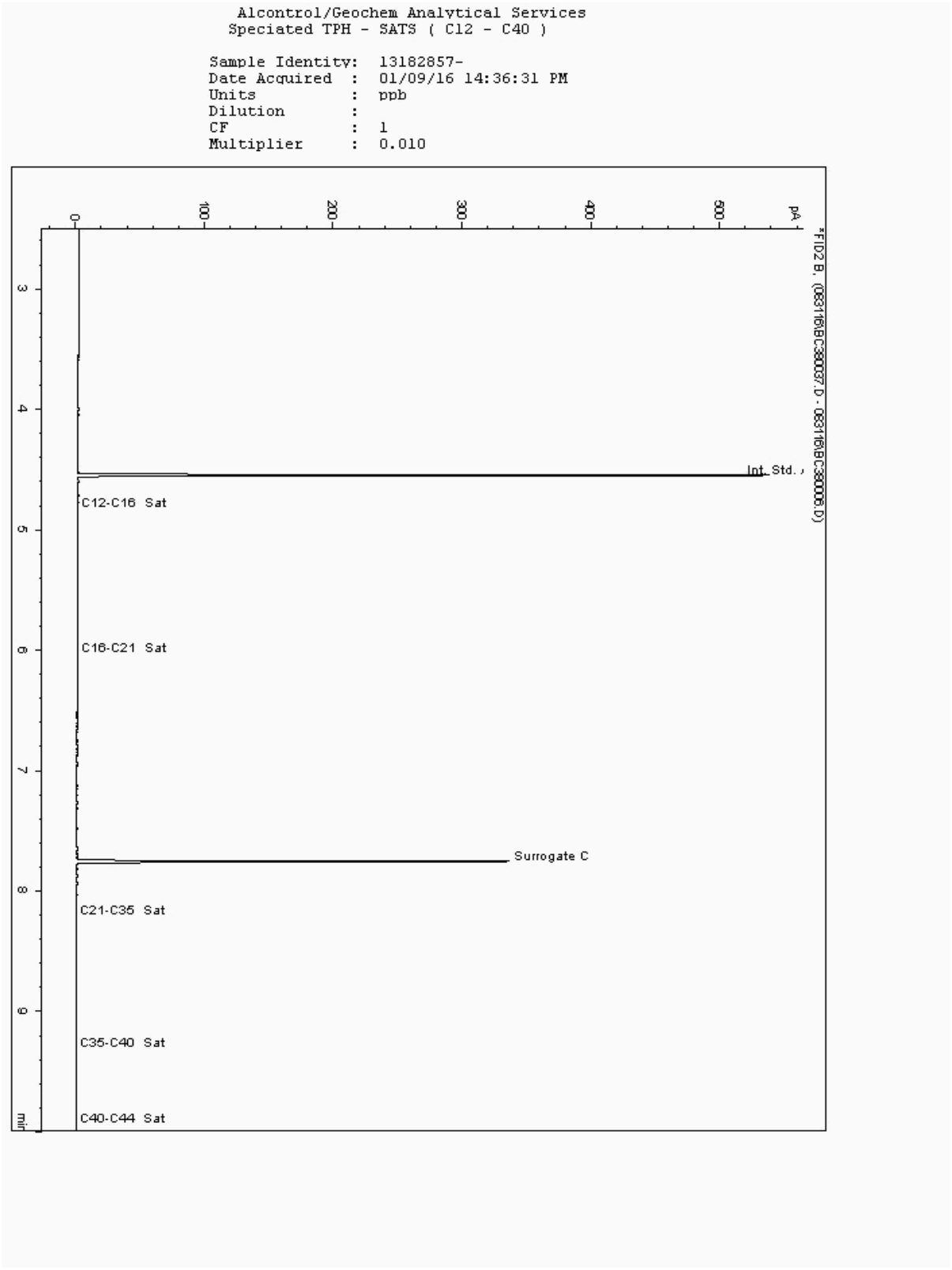


CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 14064307 **Sample ID :** BH202 **Depth :** 0.30



CERTIFICATE OF ANALYSIS

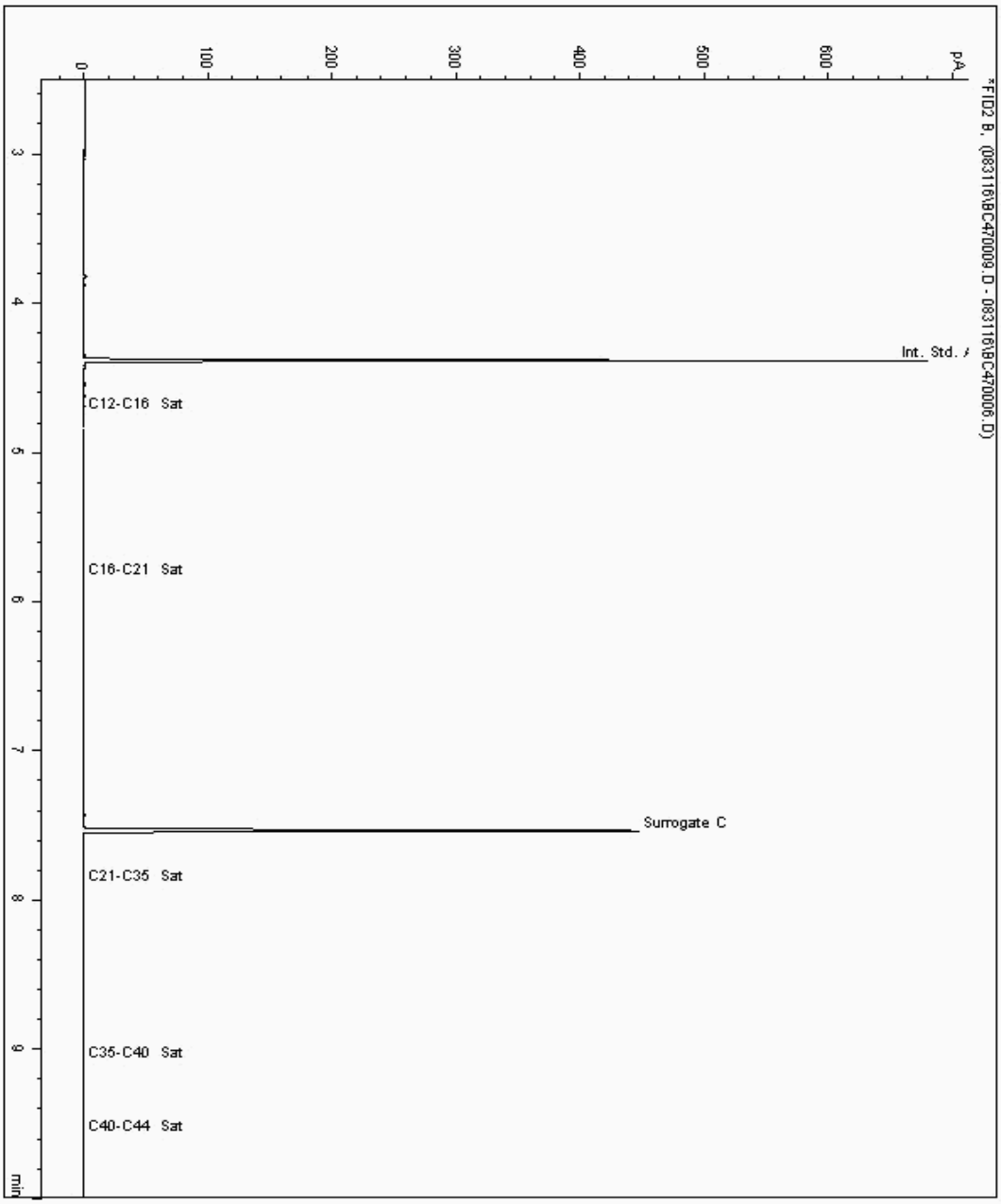
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 14064361 **Sample ID :** WS202 **Depth :** 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13182872-
Date Acquired : 01/09/16 11:26:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.010

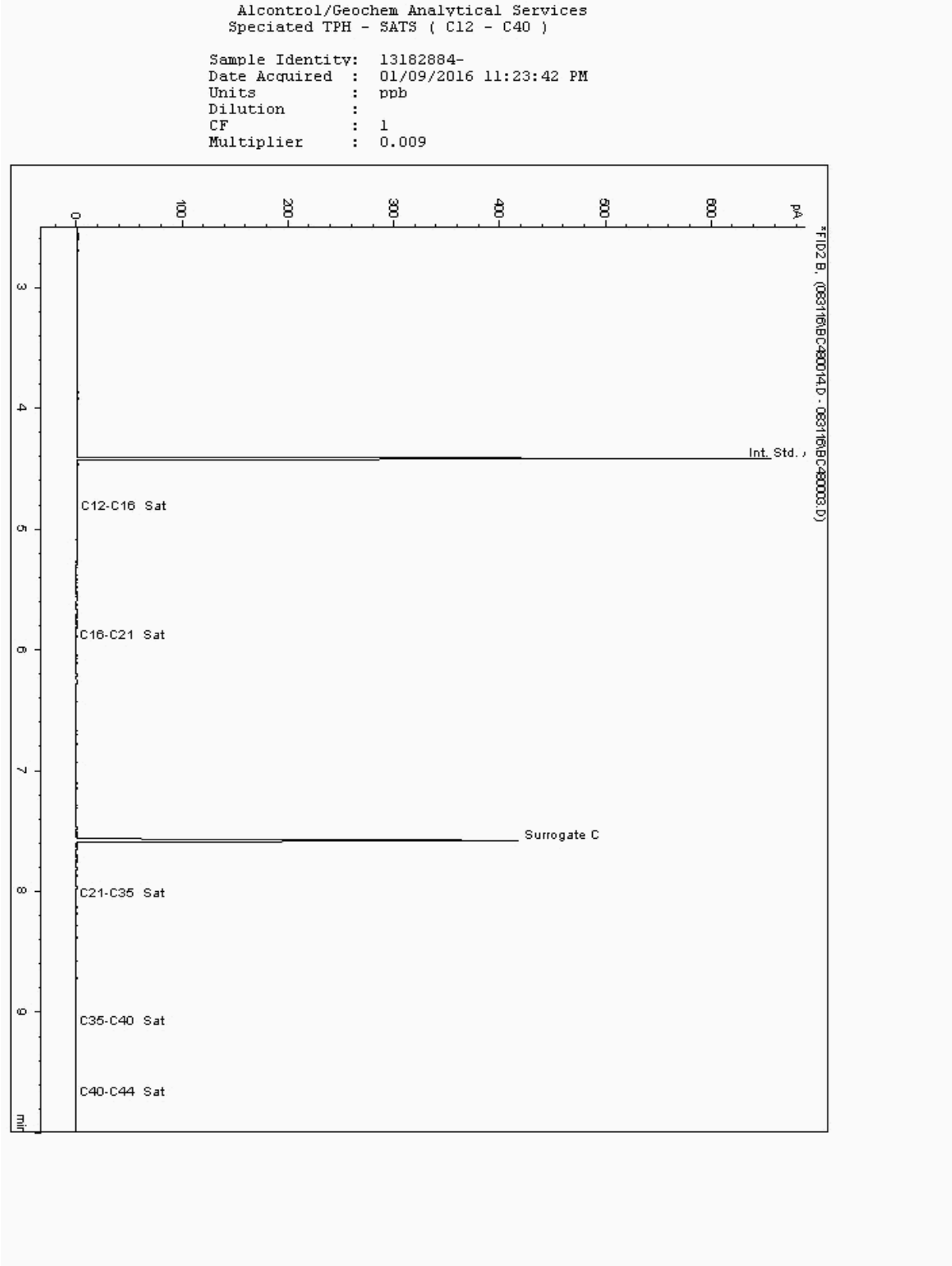


CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 14064372 **Sample ID :** WS204 **Depth :** 0.20



CERTIFICATE OF ANALYSIS

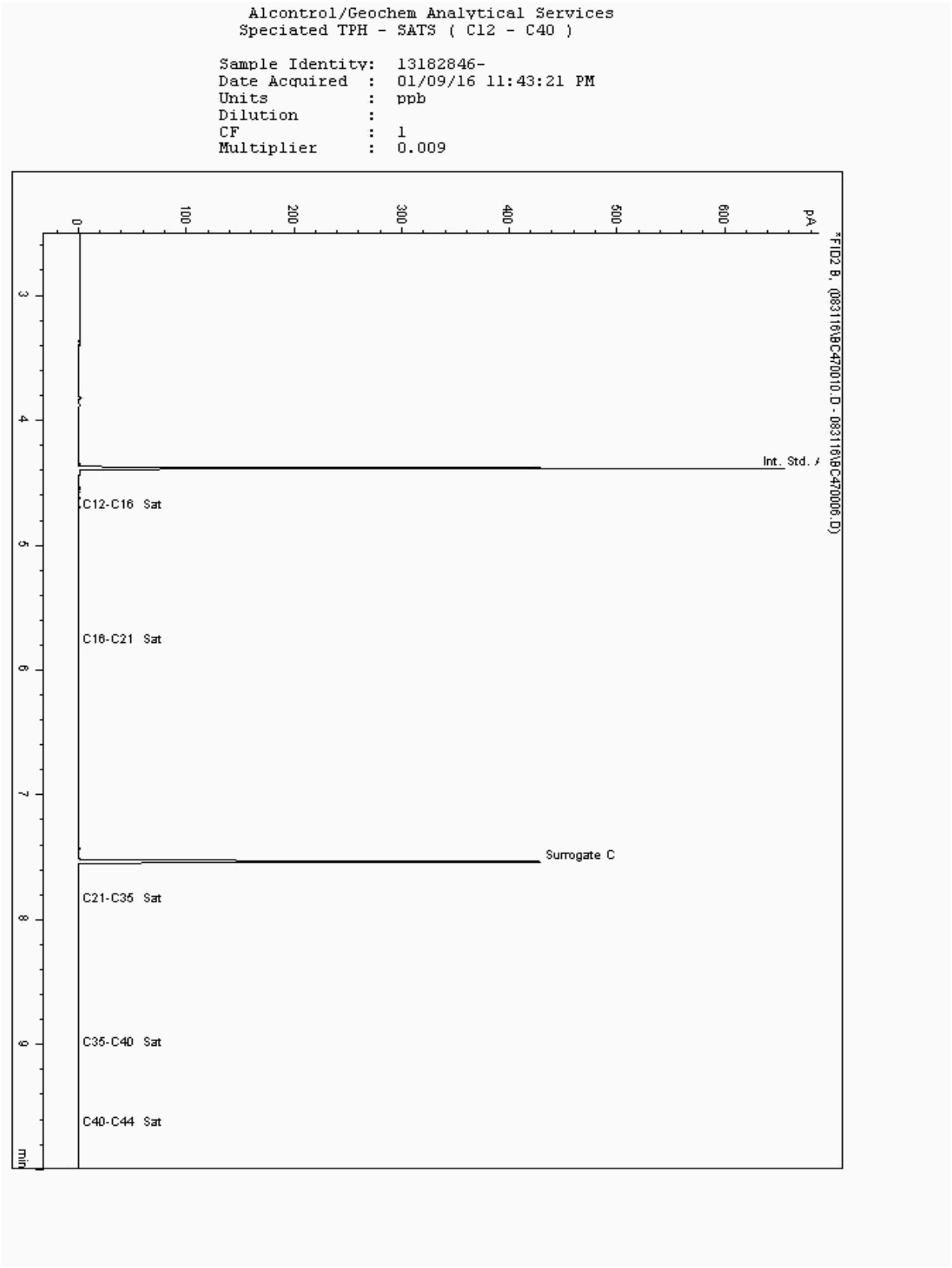
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 14064378
Sample ID : BH207

Depth : 0.70



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

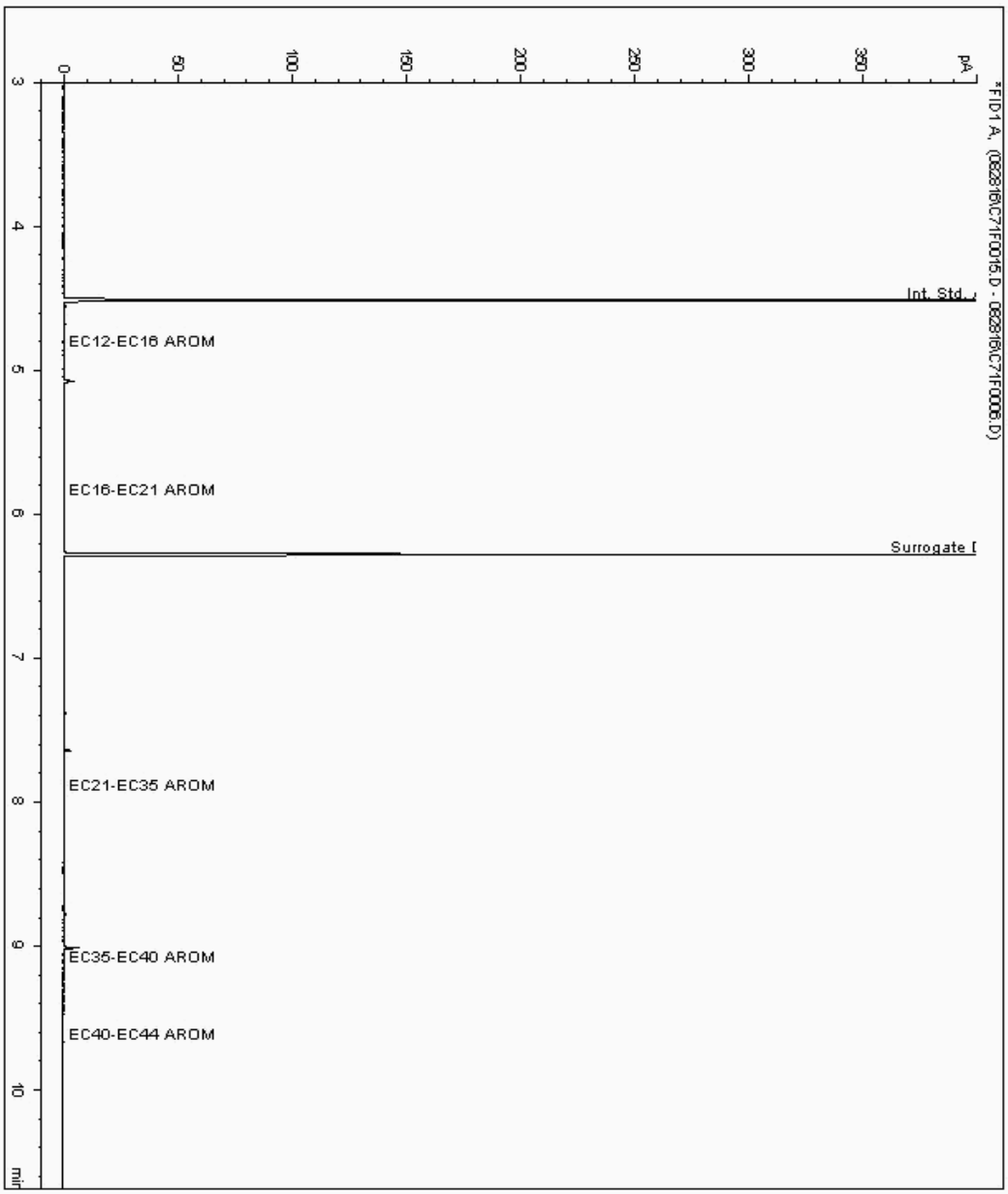
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14029052
Sample ID : BH207

Depth : 1.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182184-
Date Acquired : 28/08/2016 18:57:47 PM
Units : ppb
Dilution: BH207[1.50] ->



CERTIFICATE OF ANALYSIS

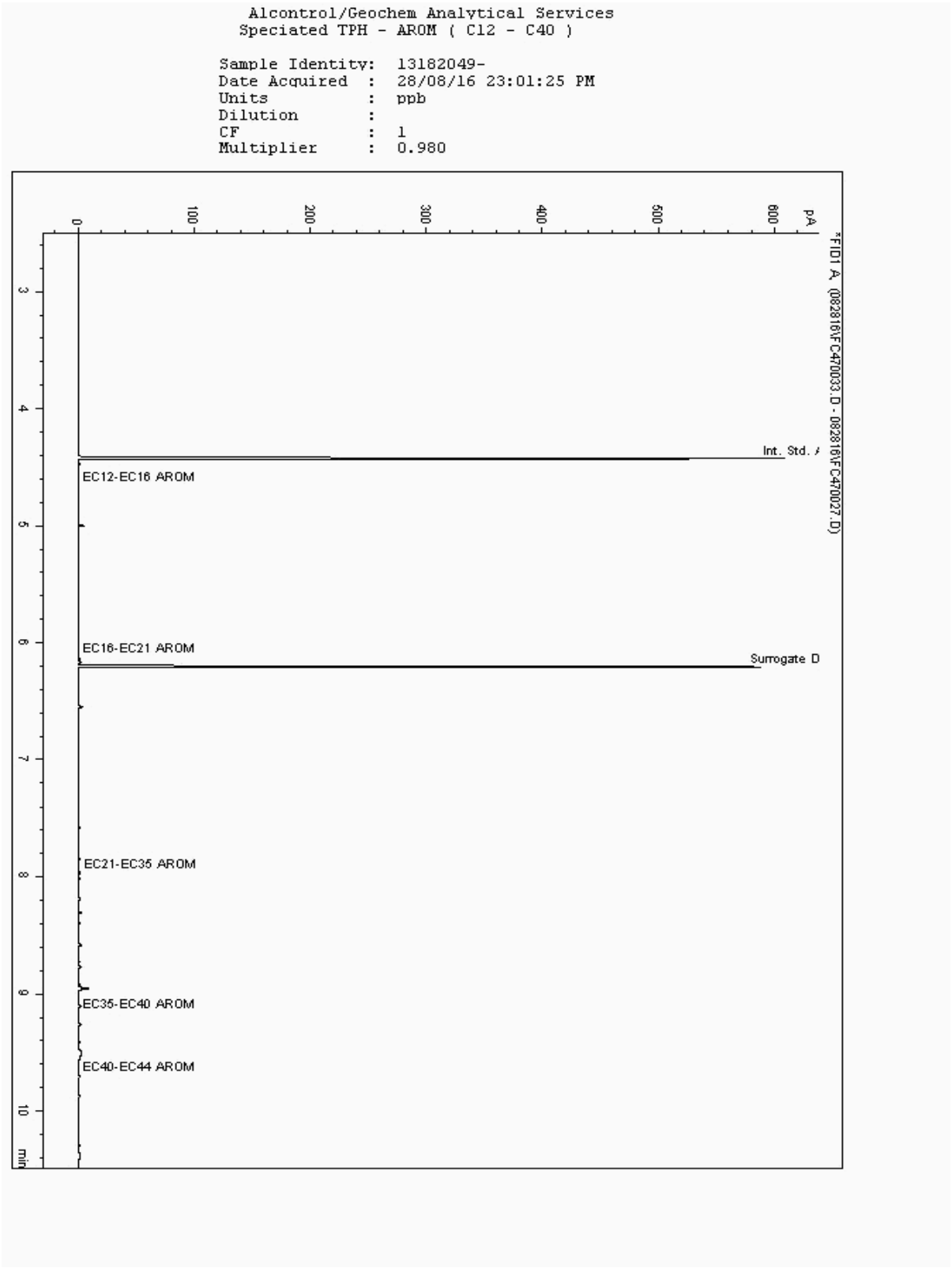
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14032027
Sample ID : TP210

Depth : 0.80



CERTIFICATE OF ANALYSIS

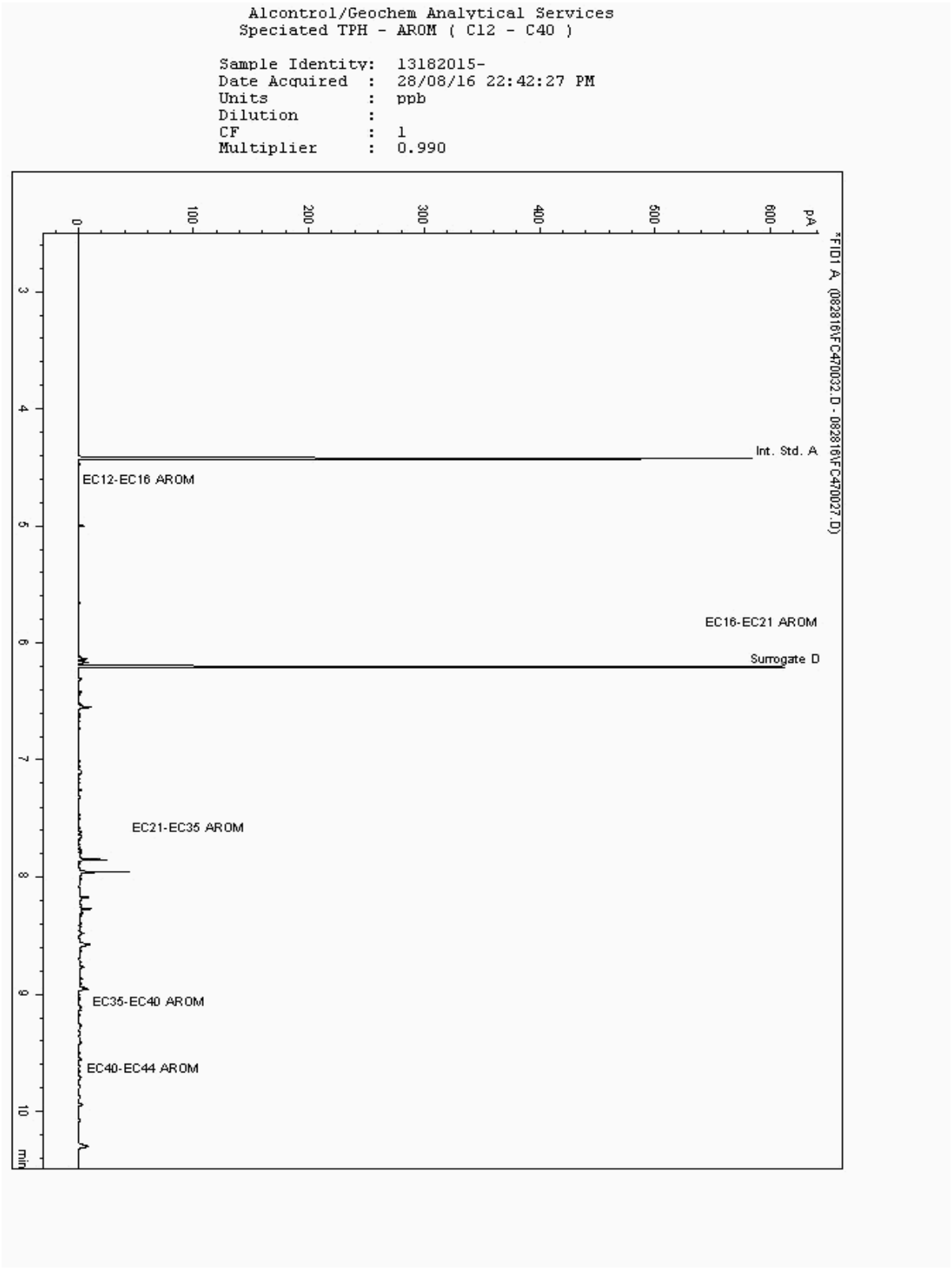
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14032111
Sample ID : TP210

Depth : 0.20



CERTIFICATE OF ANALYSIS

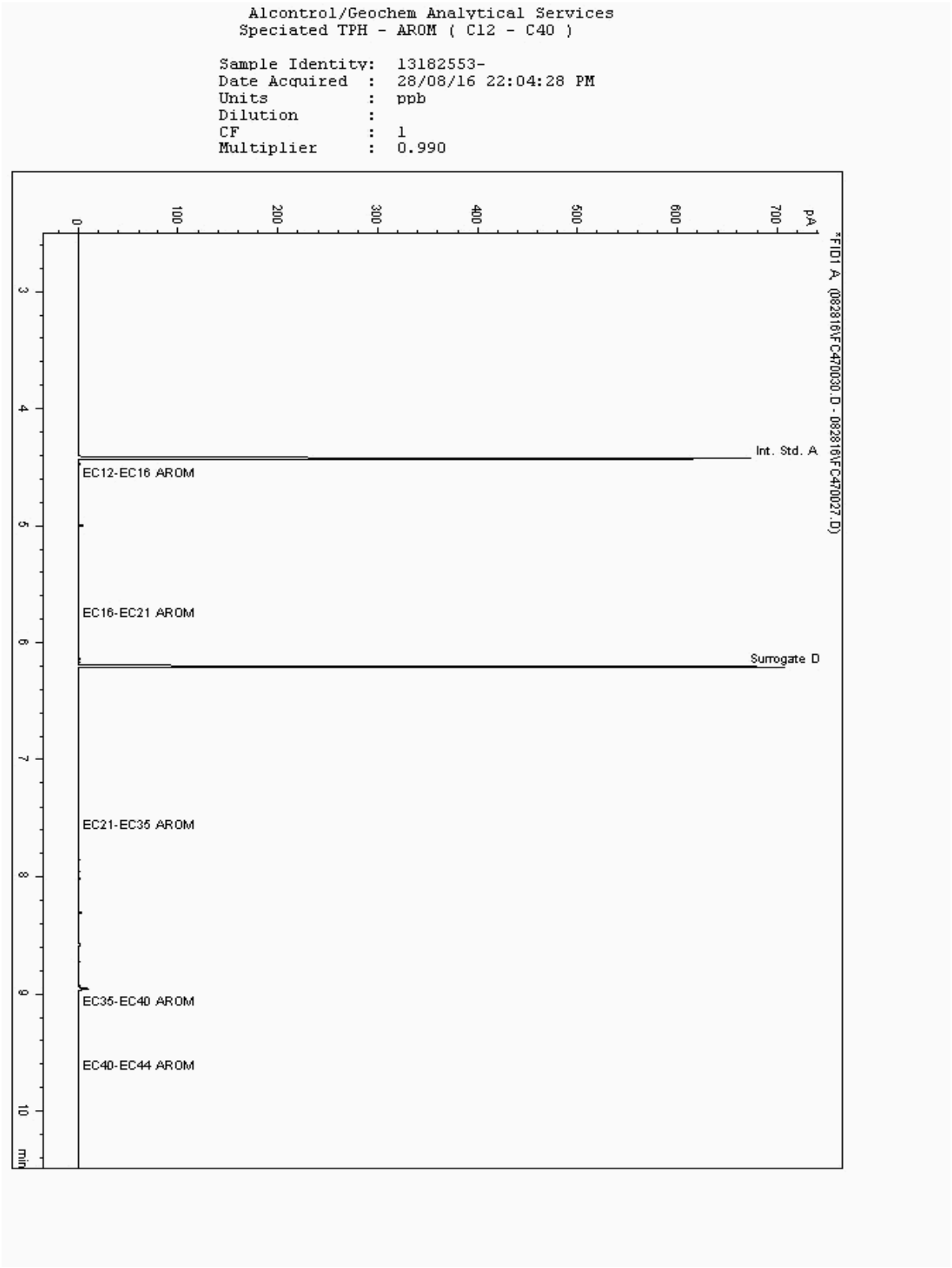
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14032319
Sample ID : WS208

Depth : 1.00



CERTIFICATE OF ANALYSIS

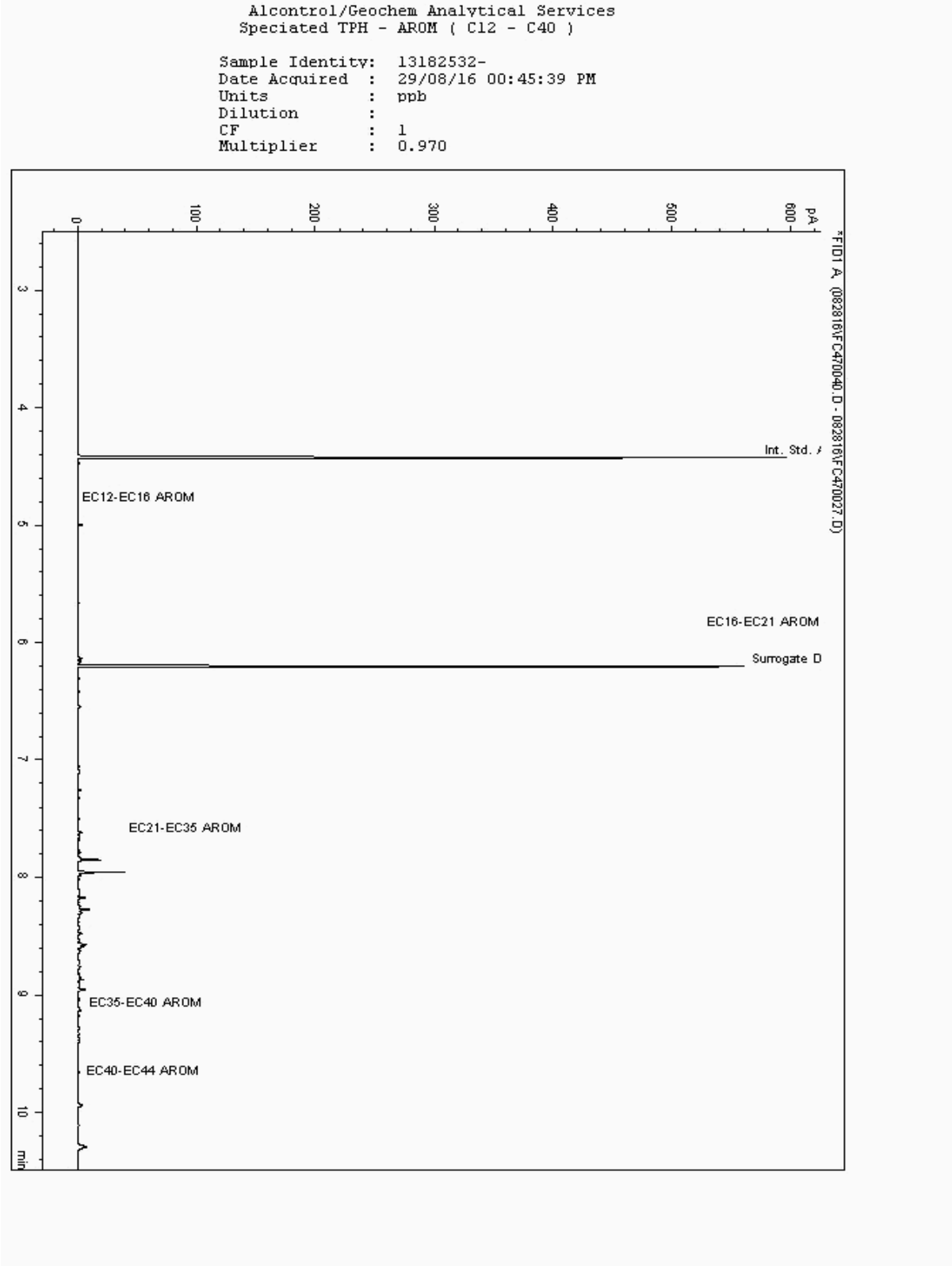
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14032364
Sample ID : WS208

Depth : 0.30



CERTIFICATE OF ANALYSIS

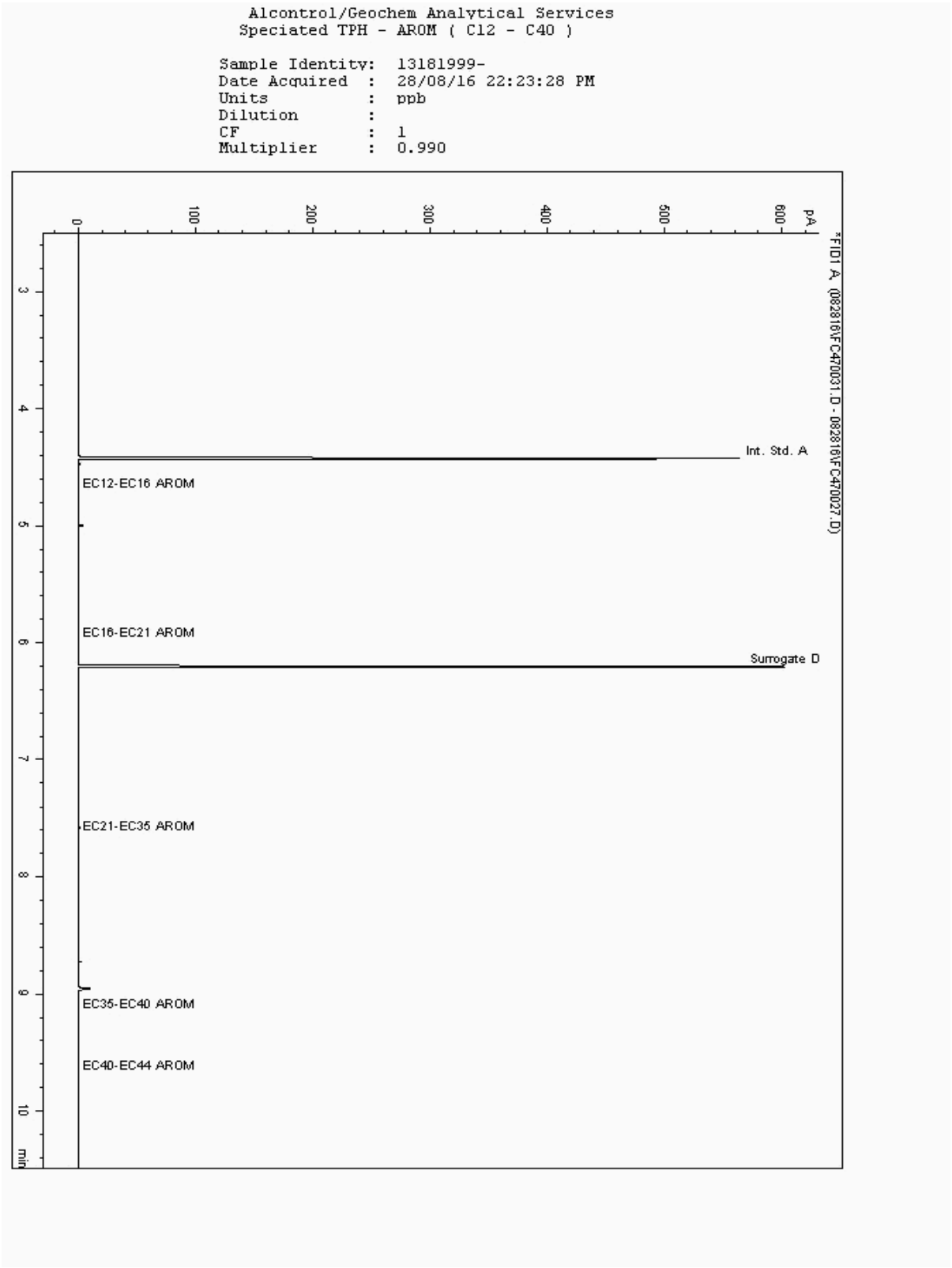
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14033032
Sample ID : TP209

Depth : 1.00



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

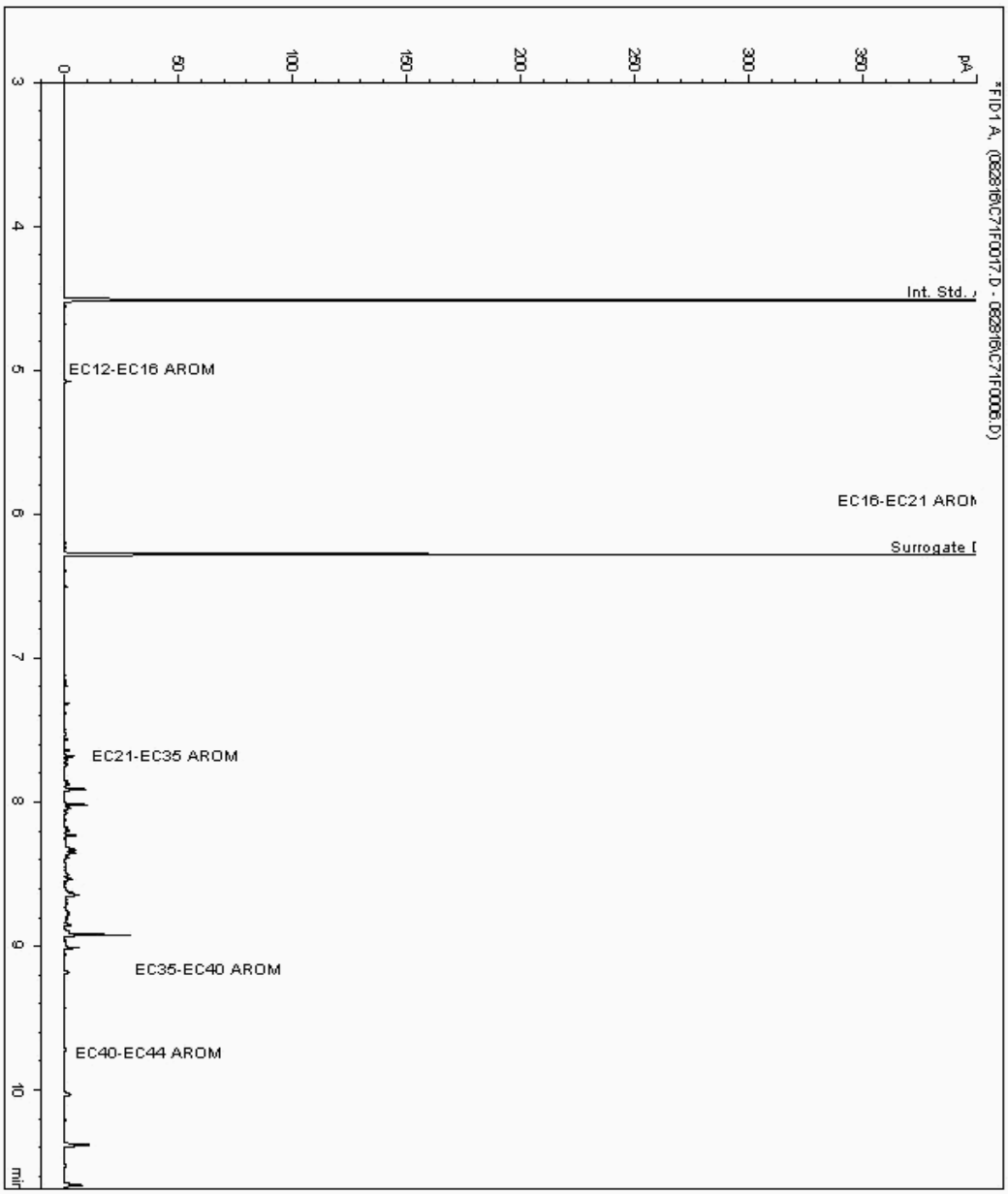
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035393
Sample ID : HP201

Depth : 0.90

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181407-
Date Acquired : 28/08/2016 19:38:52 PM
Units : ppb
Dilution: HP201[0.90] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

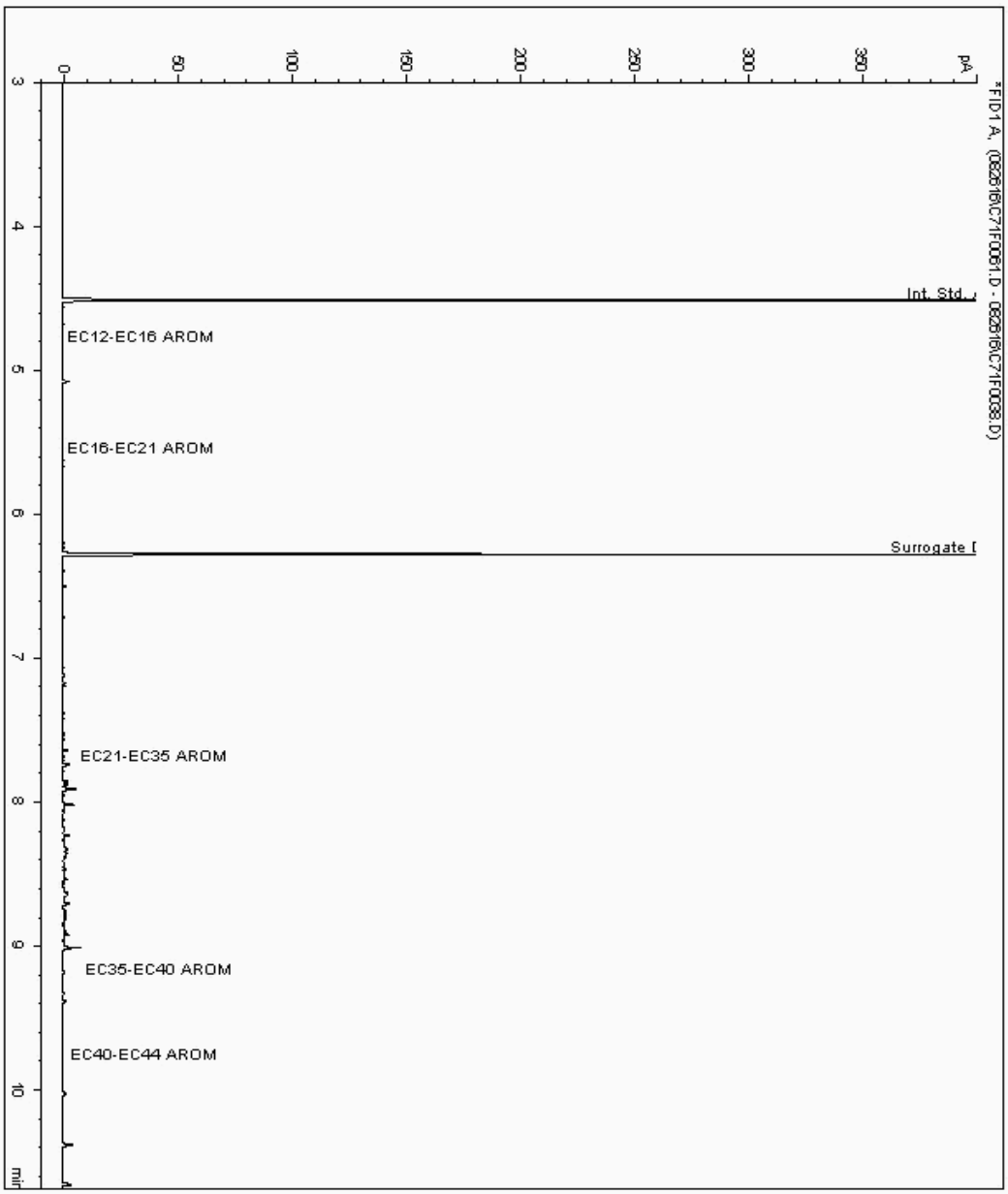
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035539
Sample ID : HP201

Depth : 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181391-
Date Acquired : 27/08/2016 11:32:46 PM
Units : ppb
Dilution: HP201[0.20] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

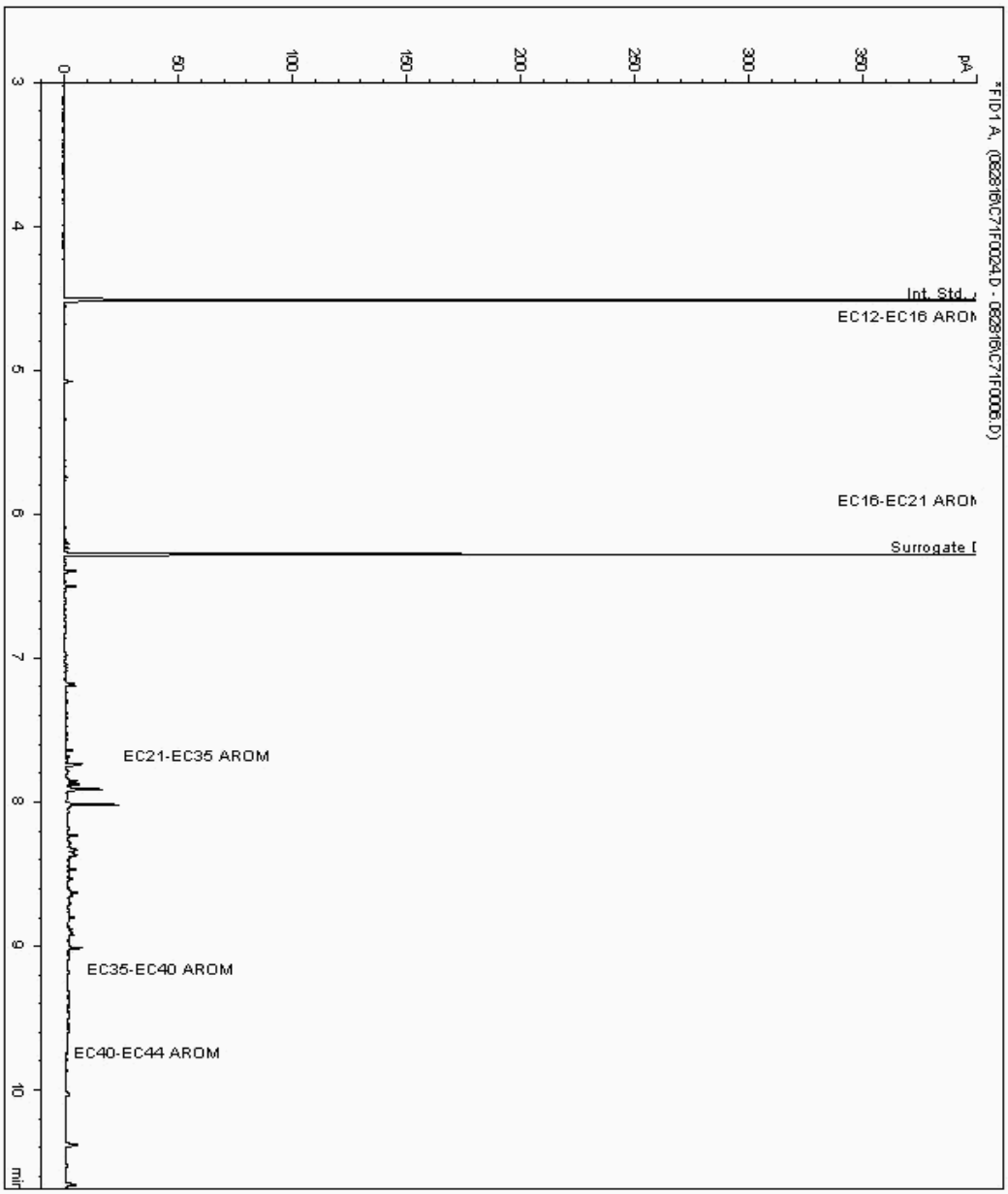
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035588
Sample ID : HP205

Depth : 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181502-
Date Acquired : 28/08/2016 22:02:35 PM
Units : ppb
Dilution: HP205[0.40] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

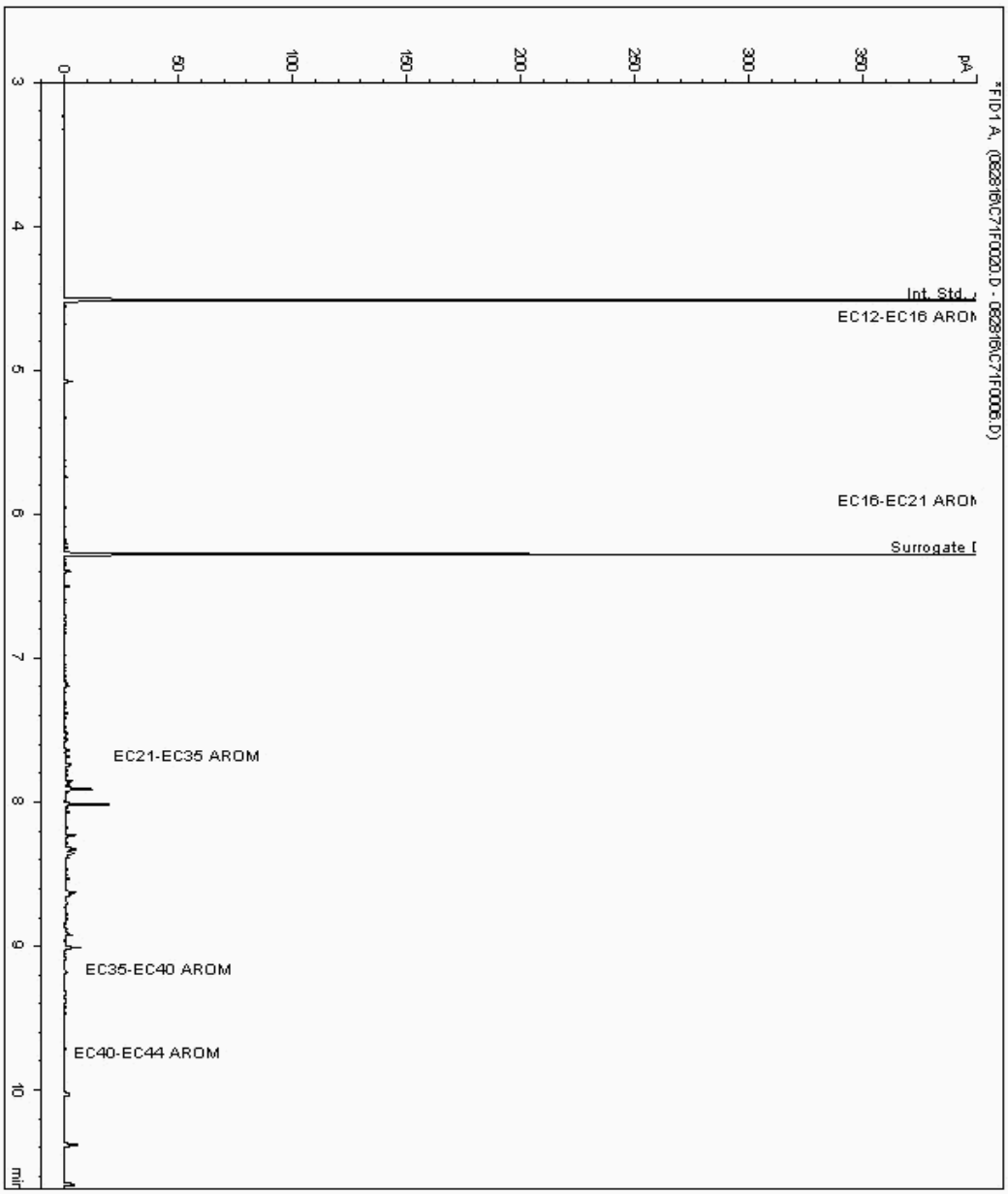
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035615
Sample ID : HP206

Depth : 0.80

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181568-
Date Acquired : 28/08/2016 20:40:28 PM
Units : ppb
Dilution: HP206[0.80] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

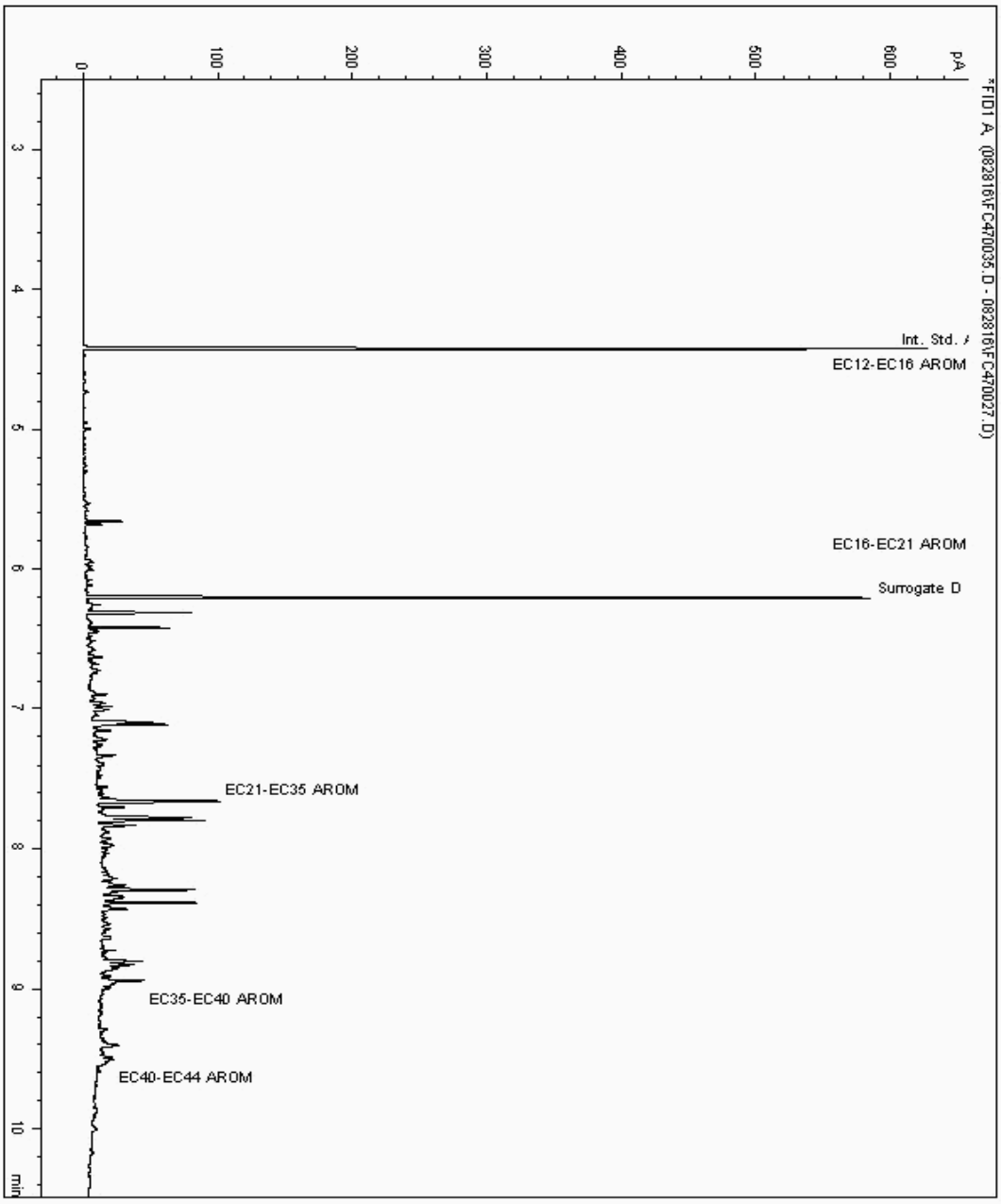
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035678
Sample ID : TP207

Depth : 0.85

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181922-
Date Acquired : 28/08/16 23:39:26 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.040



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

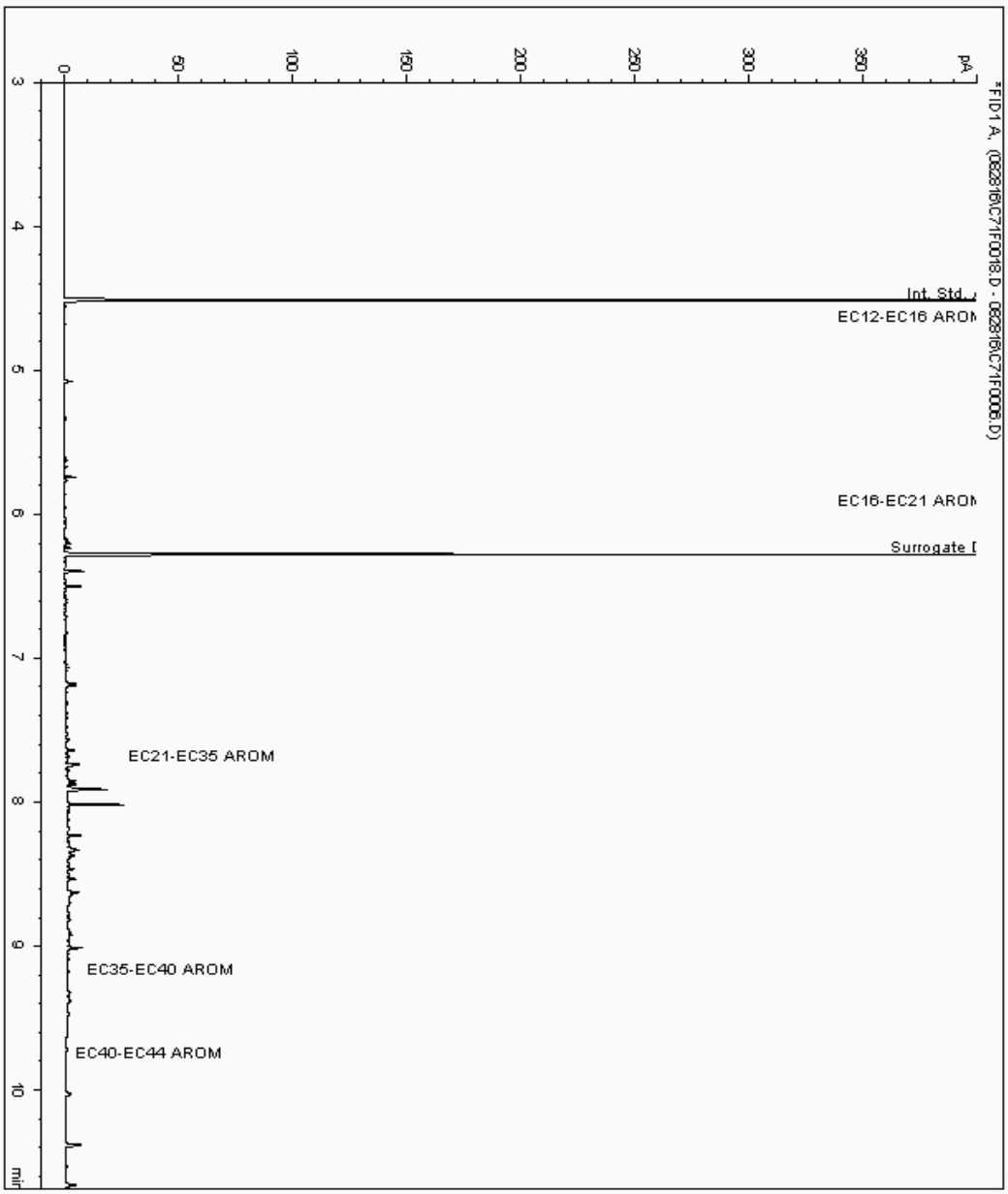
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035709
Sample ID : HP206

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181552-
Date Acquired : 28/08/2016 19:59:18 PM
Units : ppb
Dilution: HP206[0.30] ->



CERTIFICATE OF ANALYSIS

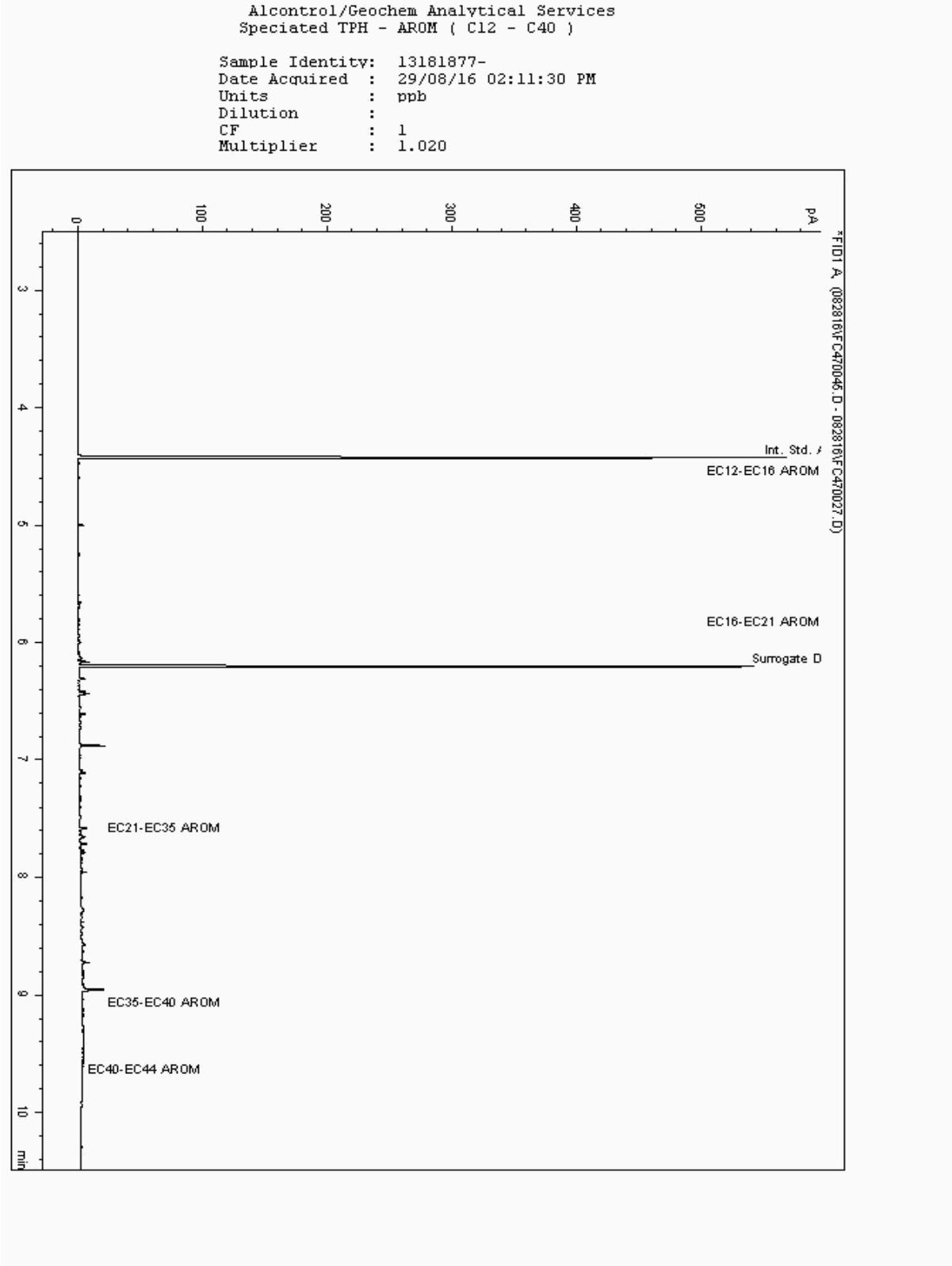
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035822
Sample ID : TP207

Depth : 0.50



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

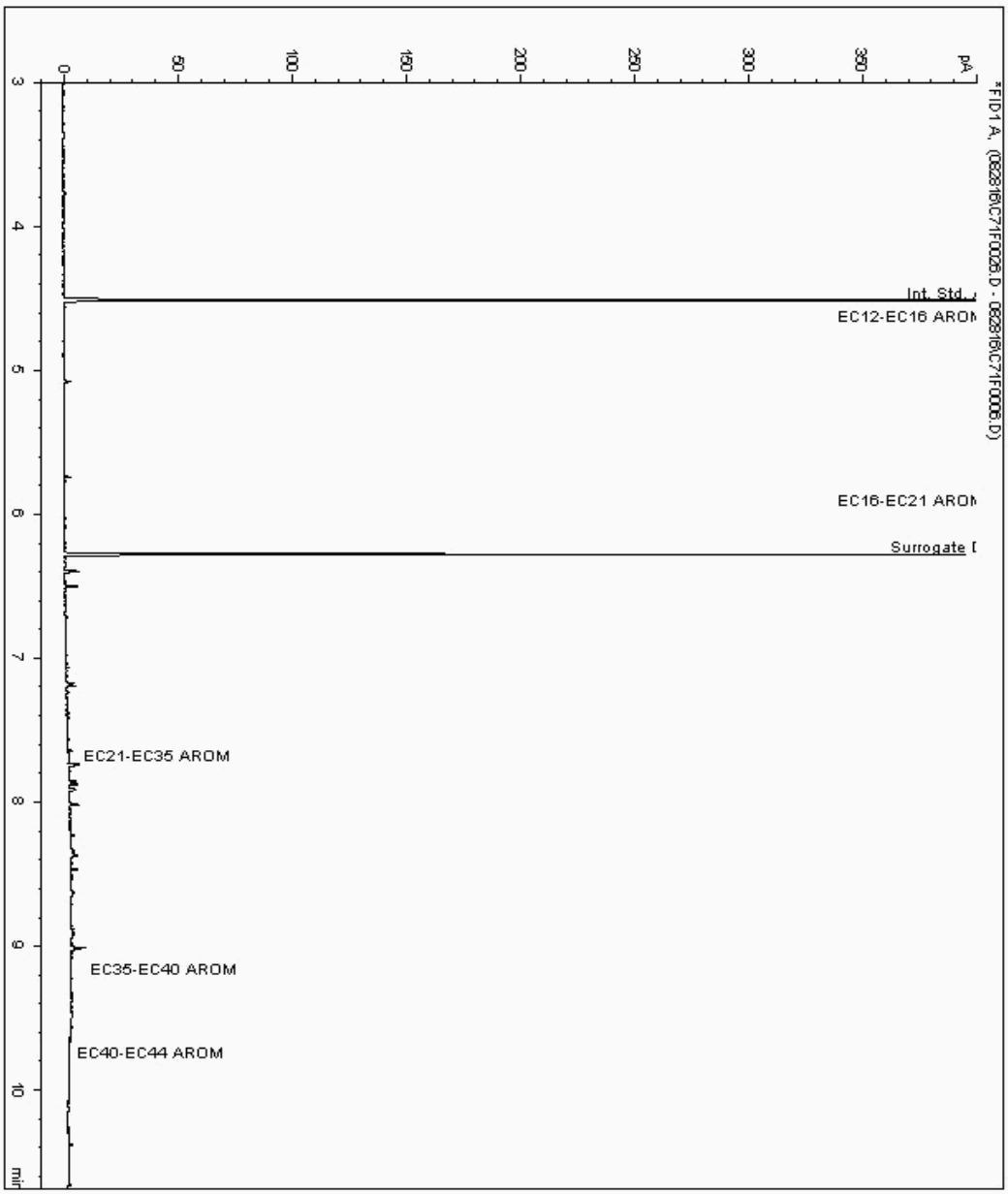
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035881
Sample ID : BH201

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182730-
Date Acquired : 28/08/2016 22:43:44 PM
Units : ppb
Dilution: BH201[1.00] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

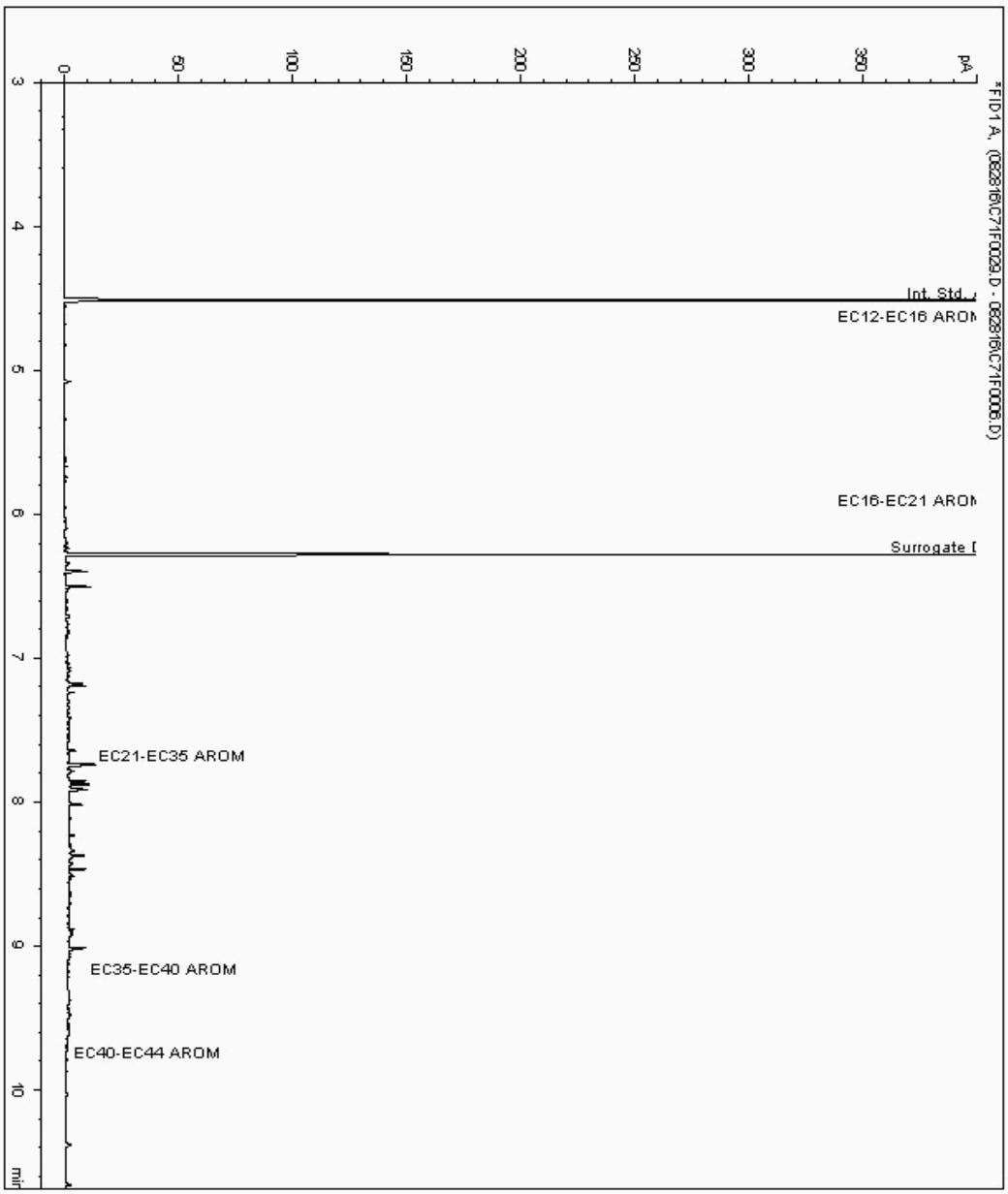
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14035930
Sample ID : BH201

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181368-
Date Acquired : 28/08/2016 23:45:18 PM
Units : ppb
Dilution: BH201[0.30] ->



CERTIFICATE OF ANALYSIS

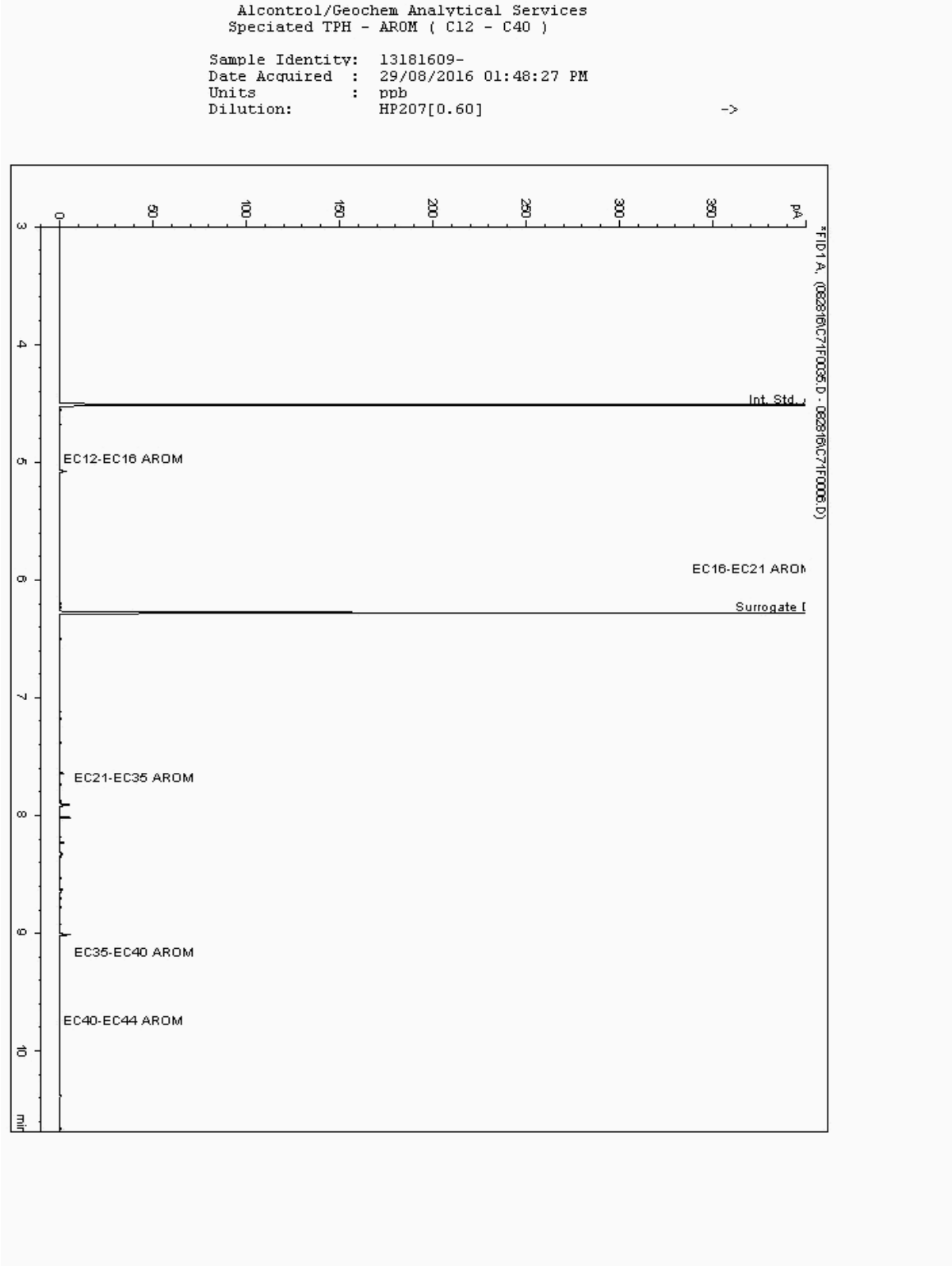
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14036024
Sample ID : HP207

Depth : 0.60



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

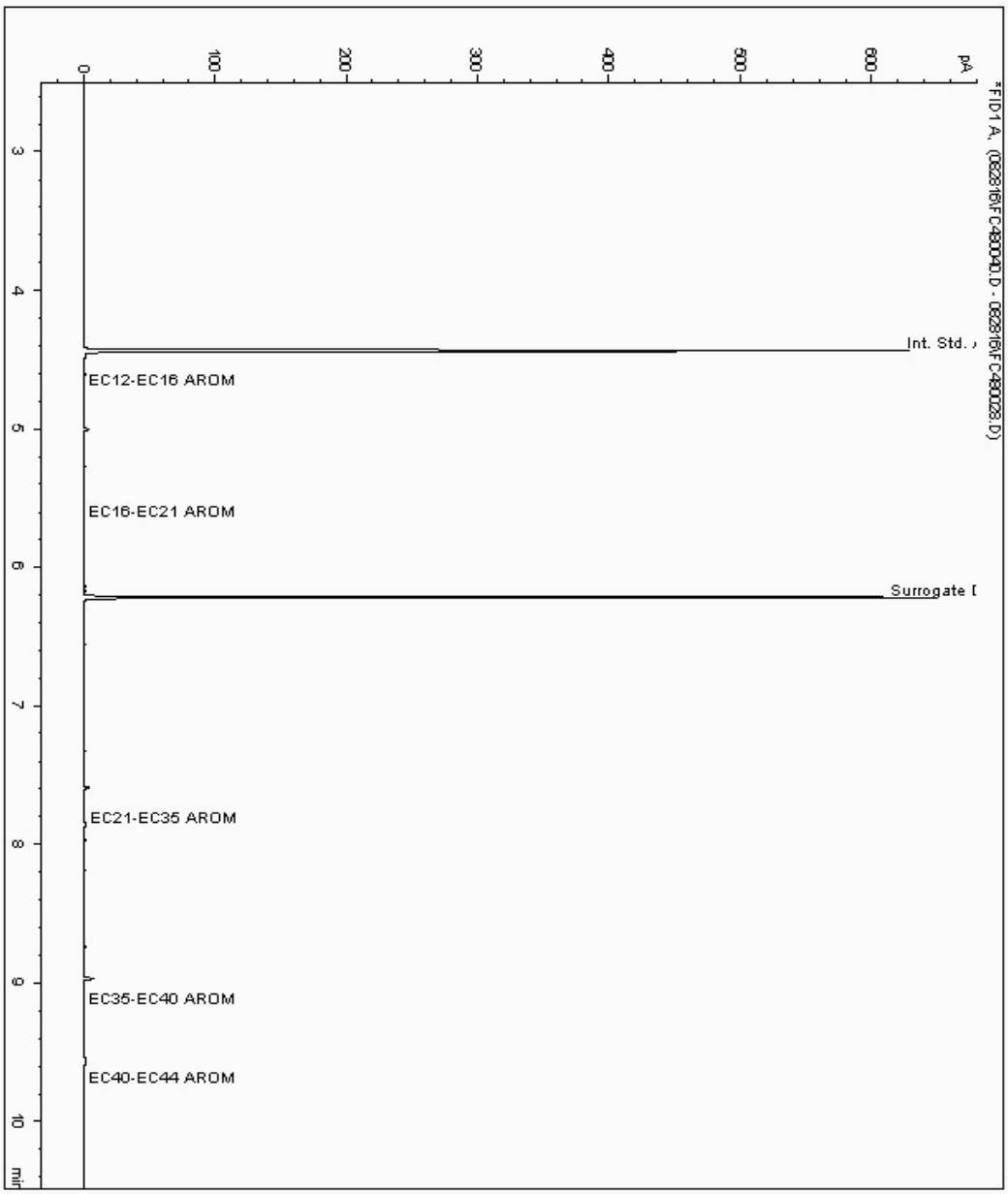
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14036888
Sample ID : TP213

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182lll-
Date Acquired : 29/08/2016 01:02:07 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.020



CERTIFICATE OF ANALYSIS

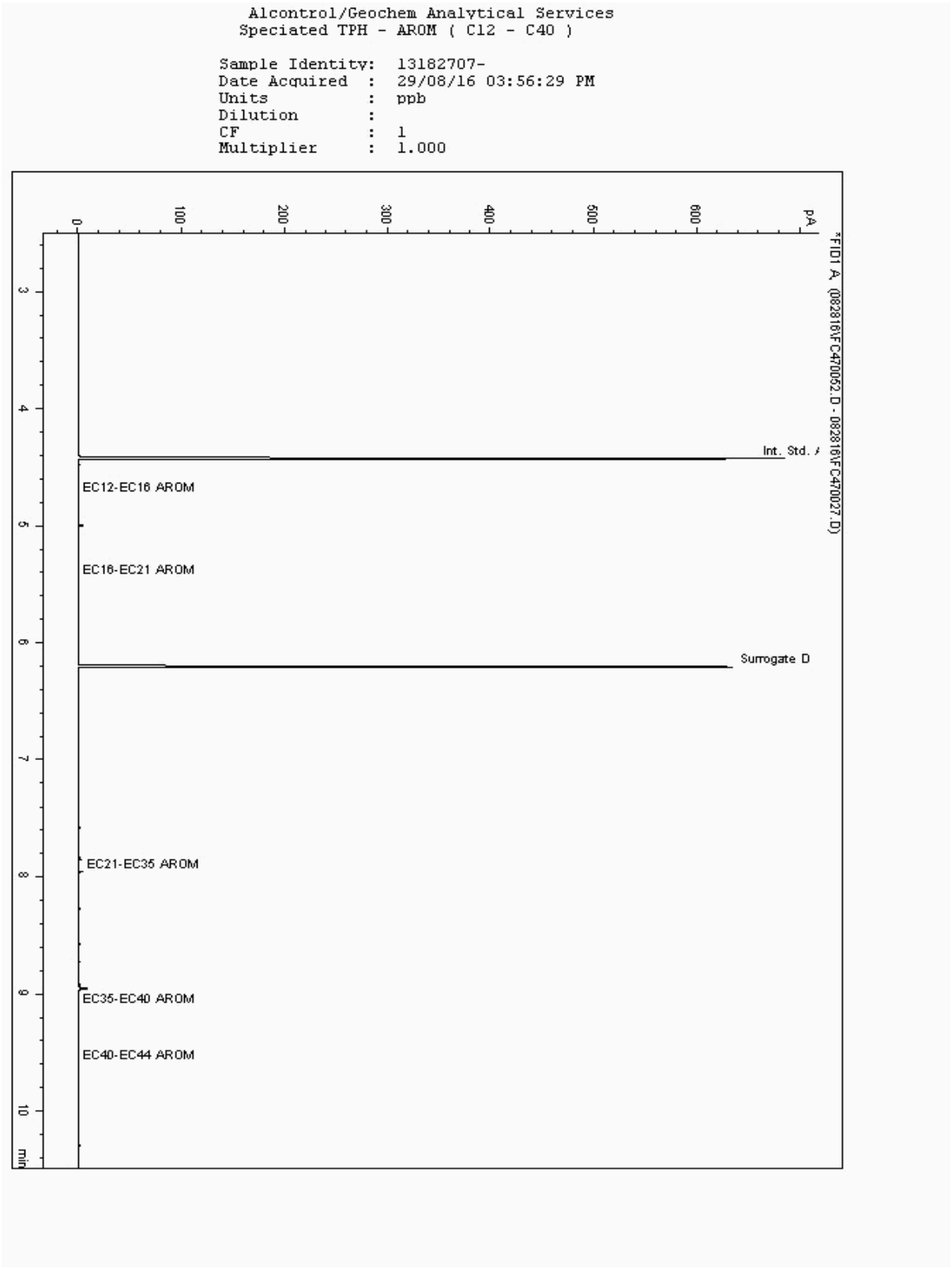
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14036957
Sample ID : WS212

Depth : 0.65



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

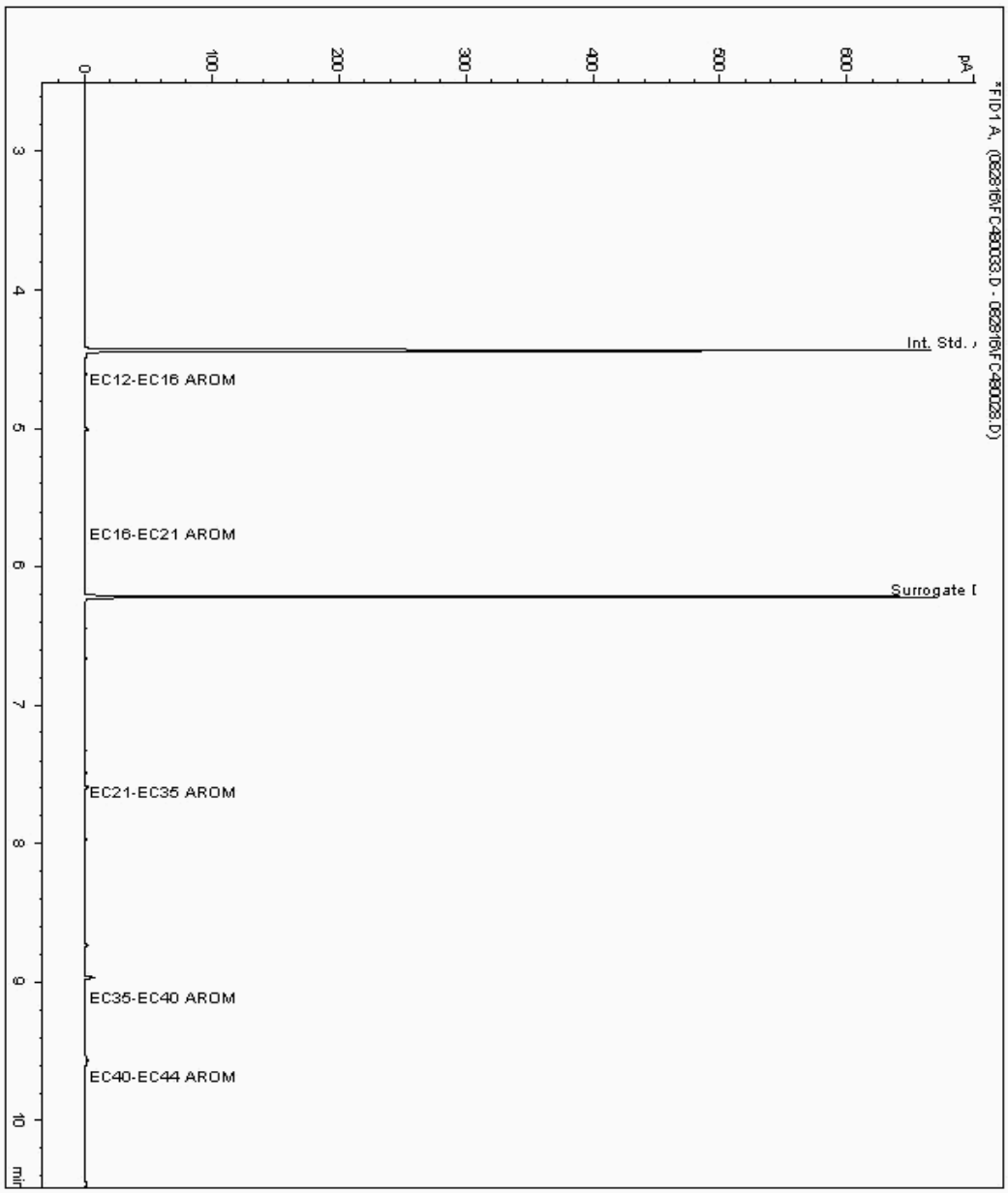
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14036960
Sample ID : WS203

Depth : 1.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182236-
Date Acquired : 28/08/2016 23:06:36 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.020



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

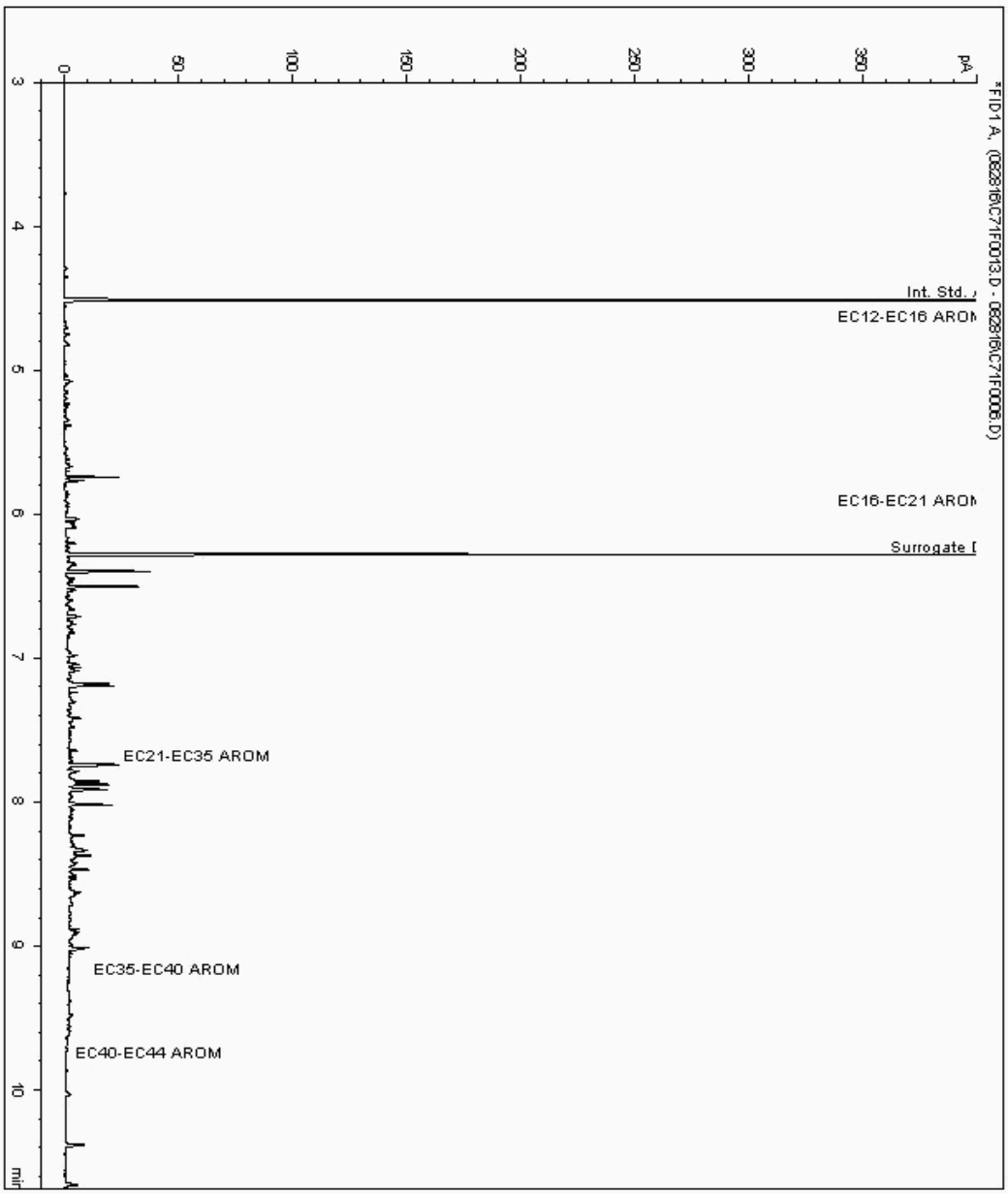
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037028
Sample ID : BH207

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182755-
Date Acquired : 28/08/2016 18:16:38 PM
Units : ppb
Dilution: BH207[0.70] ->



CERTIFICATE OF ANALYSIS

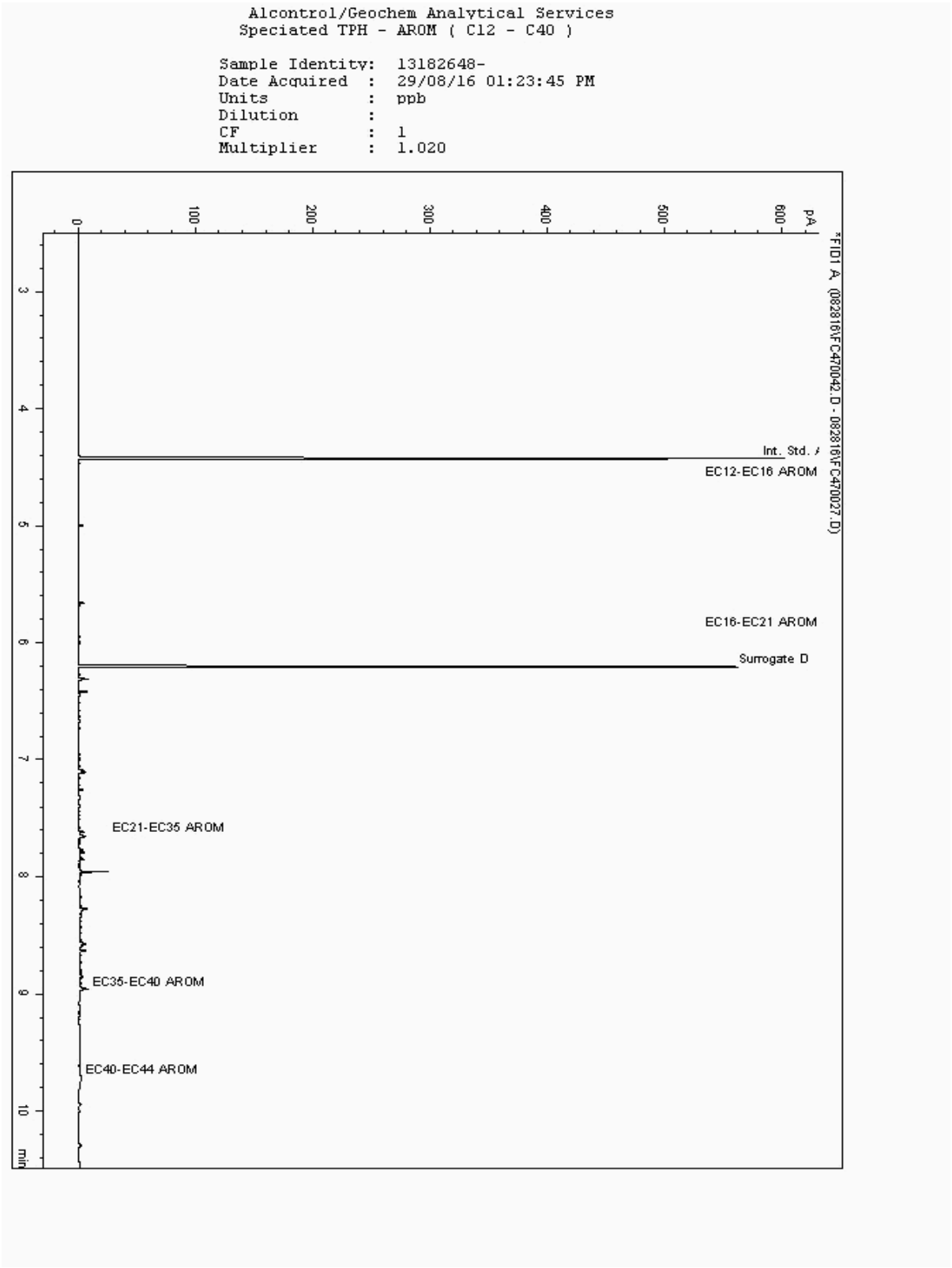
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037035
Sample ID : WS211

Depth : 0.65



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

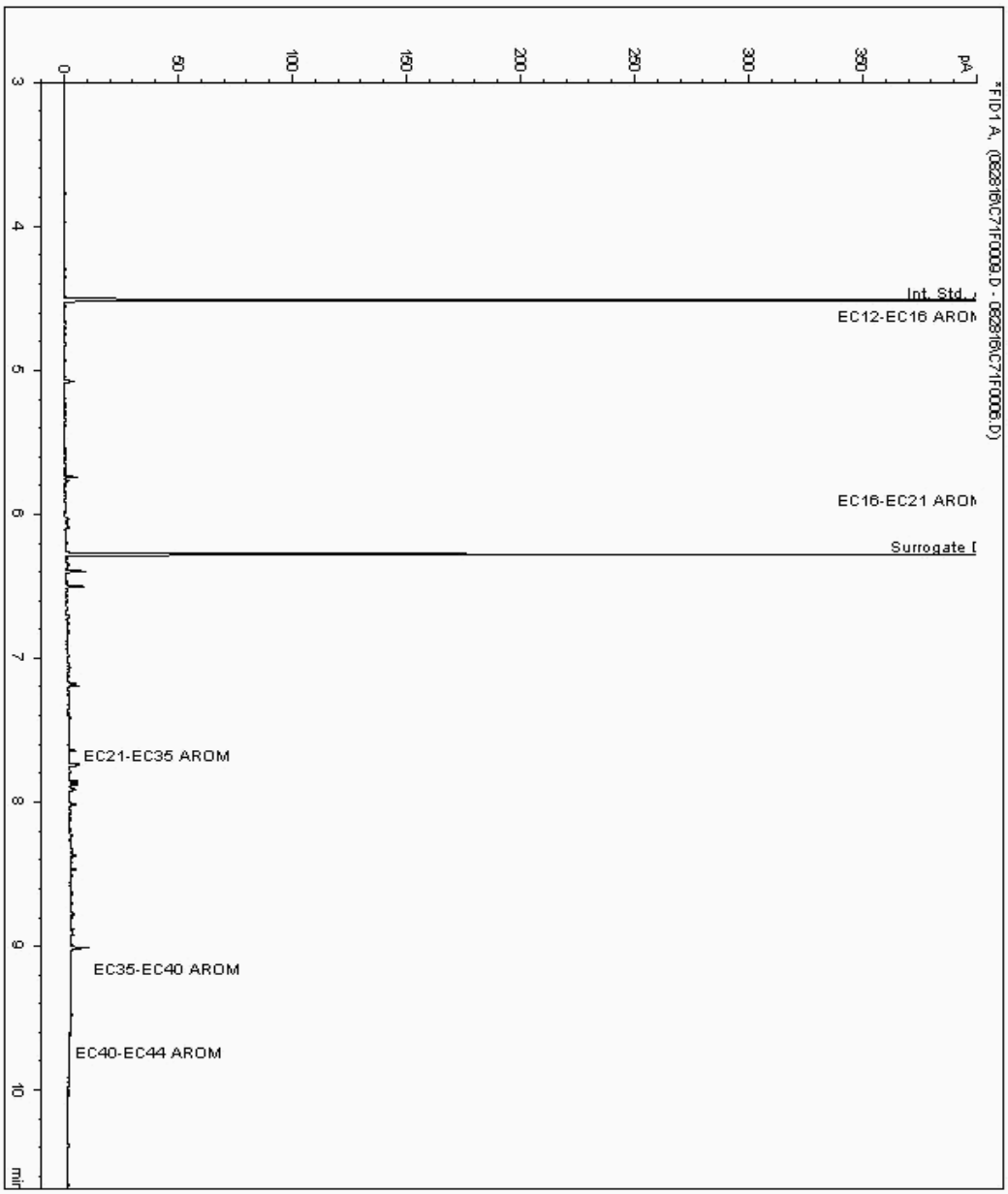
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037057
Sample ID : BH202

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182276-
Date Acquired : 28/08/2016 16:54:45 PM
Units : ppb
Dilution: BH202[1.00] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

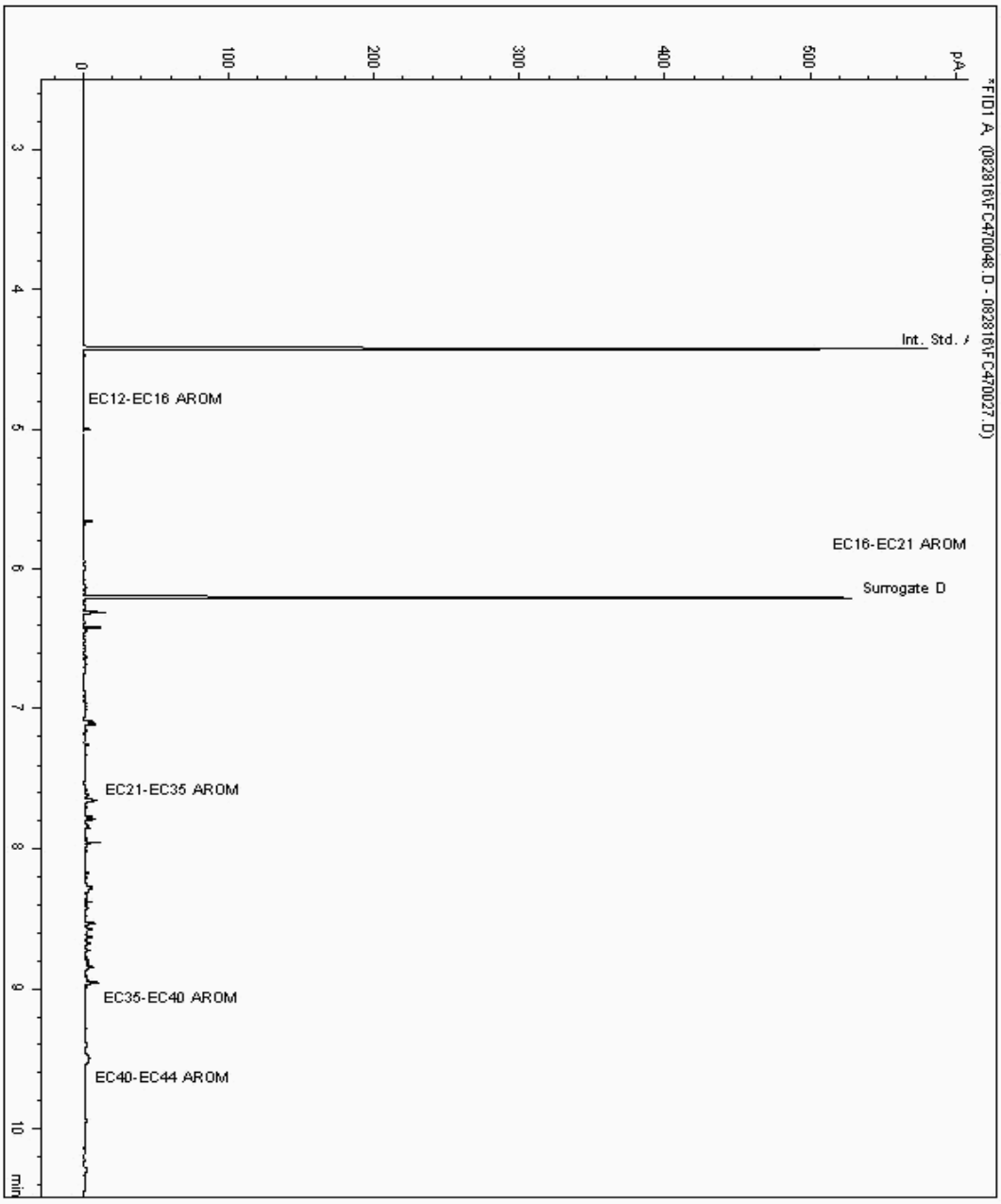
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037077
Sample ID : WS204

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182323-
Date Acquired : 29/08/16 02:59:06 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

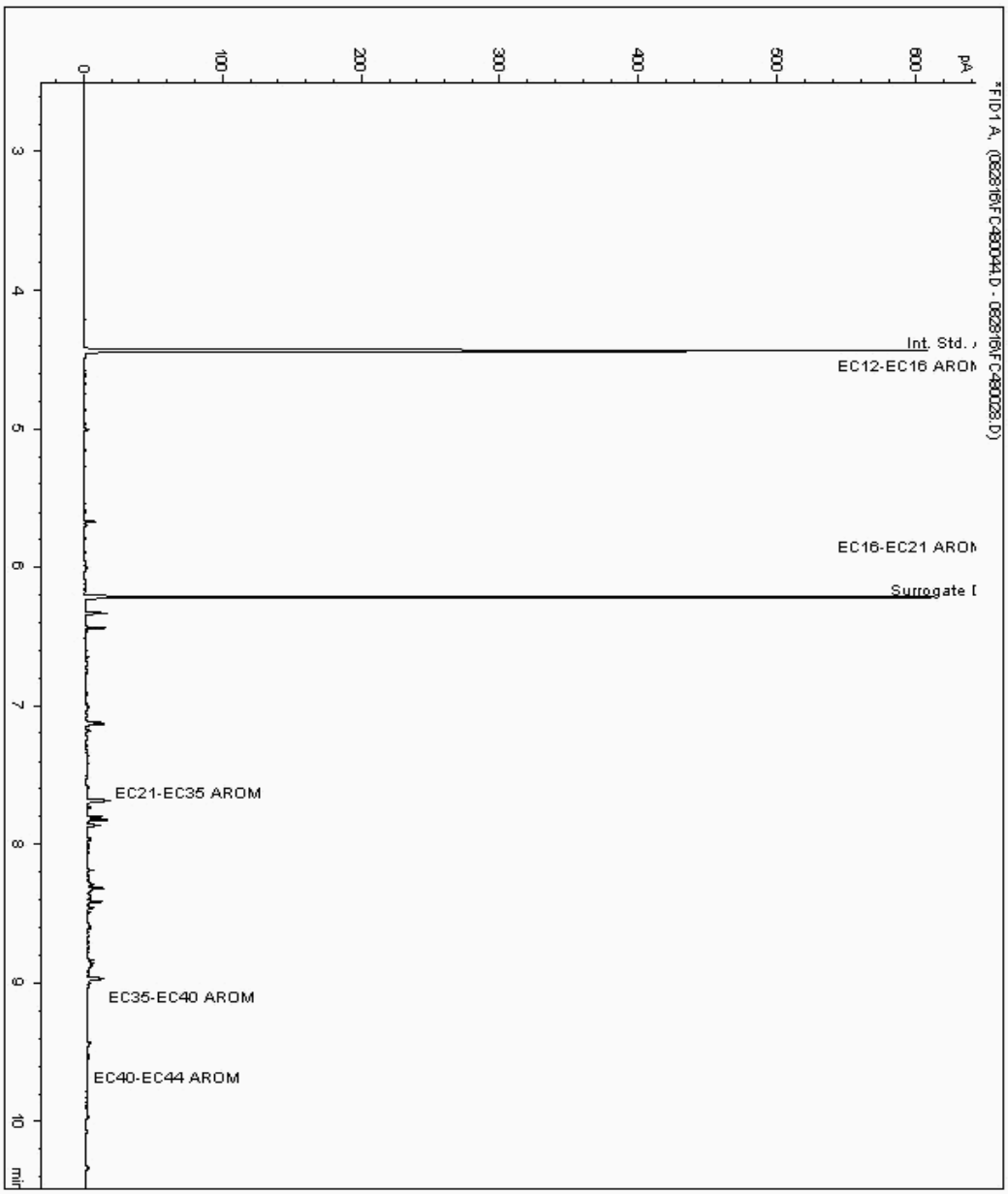
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037100
Sample ID : TP201

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181755-
Date Acquired : 29/08/2016 02:09:30 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

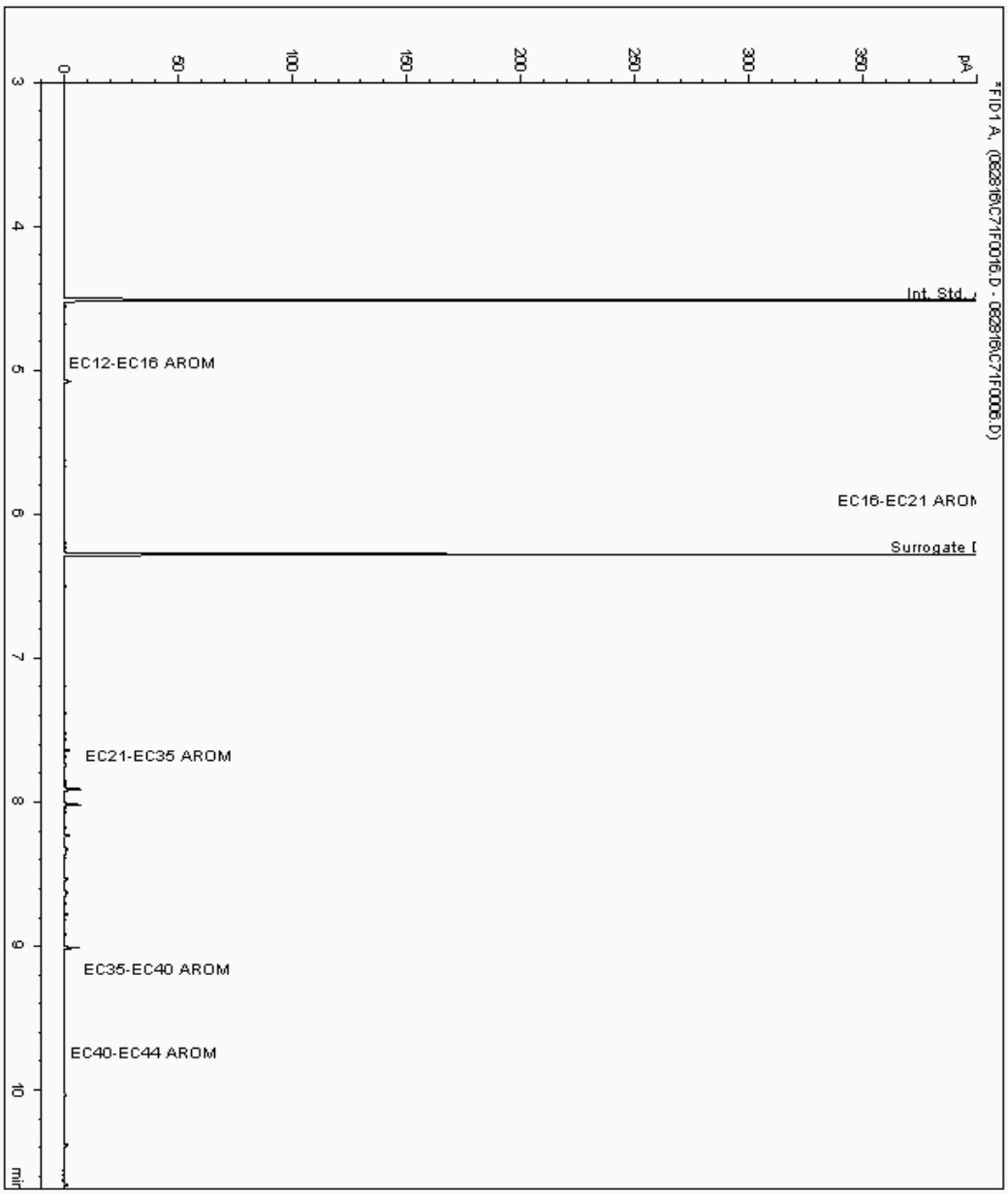
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037150
Sample ID : HP207

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181592-
Date Acquired : 28/08/2016 19:18:13 PM
Units : ppb
Dilution: HP207[0.30] ->



CERTIFICATE OF ANALYSIS

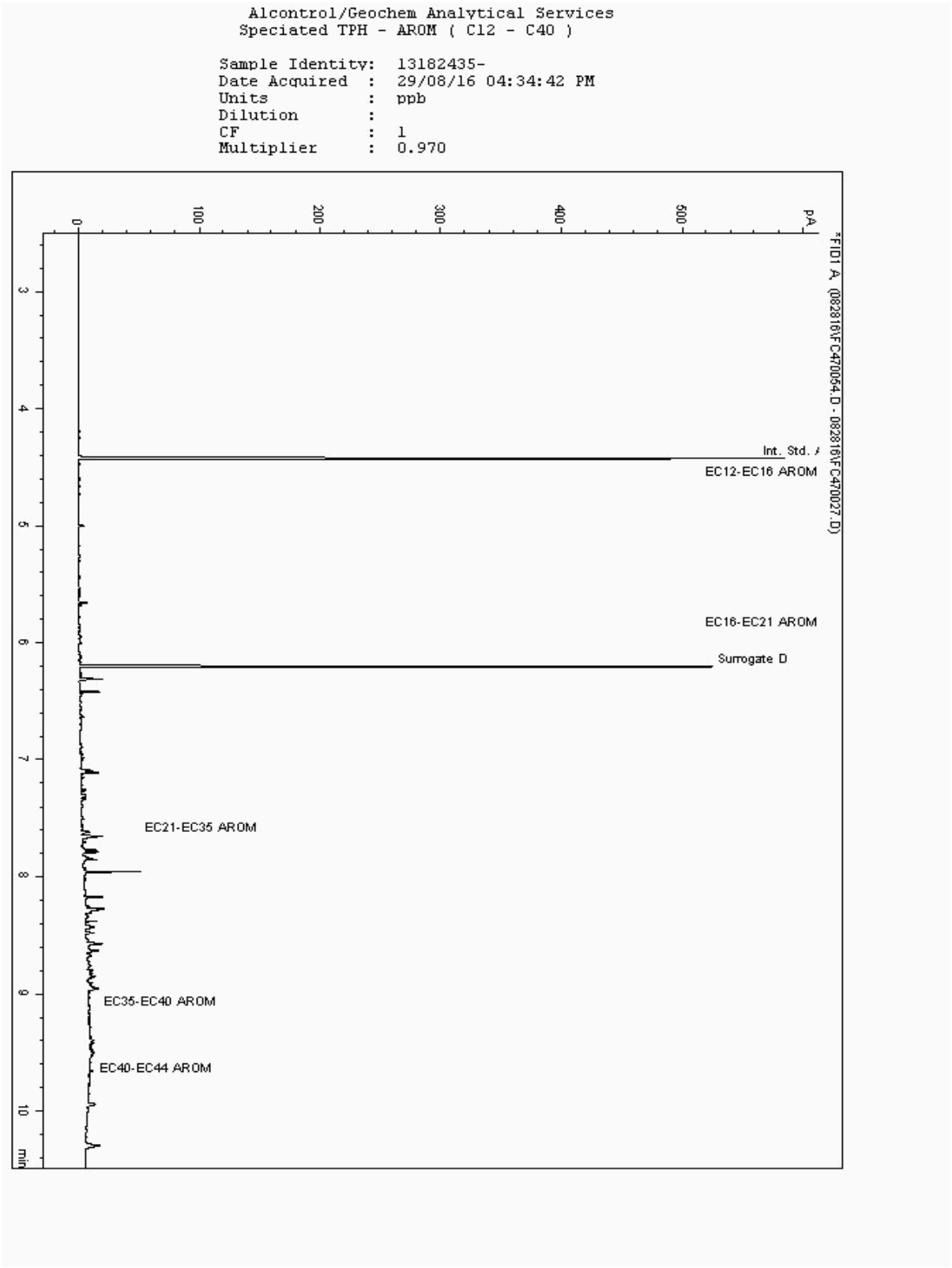
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037182
Sample ID : WS206

Depth : 0.30



CERTIFICATE OF ANALYSIS

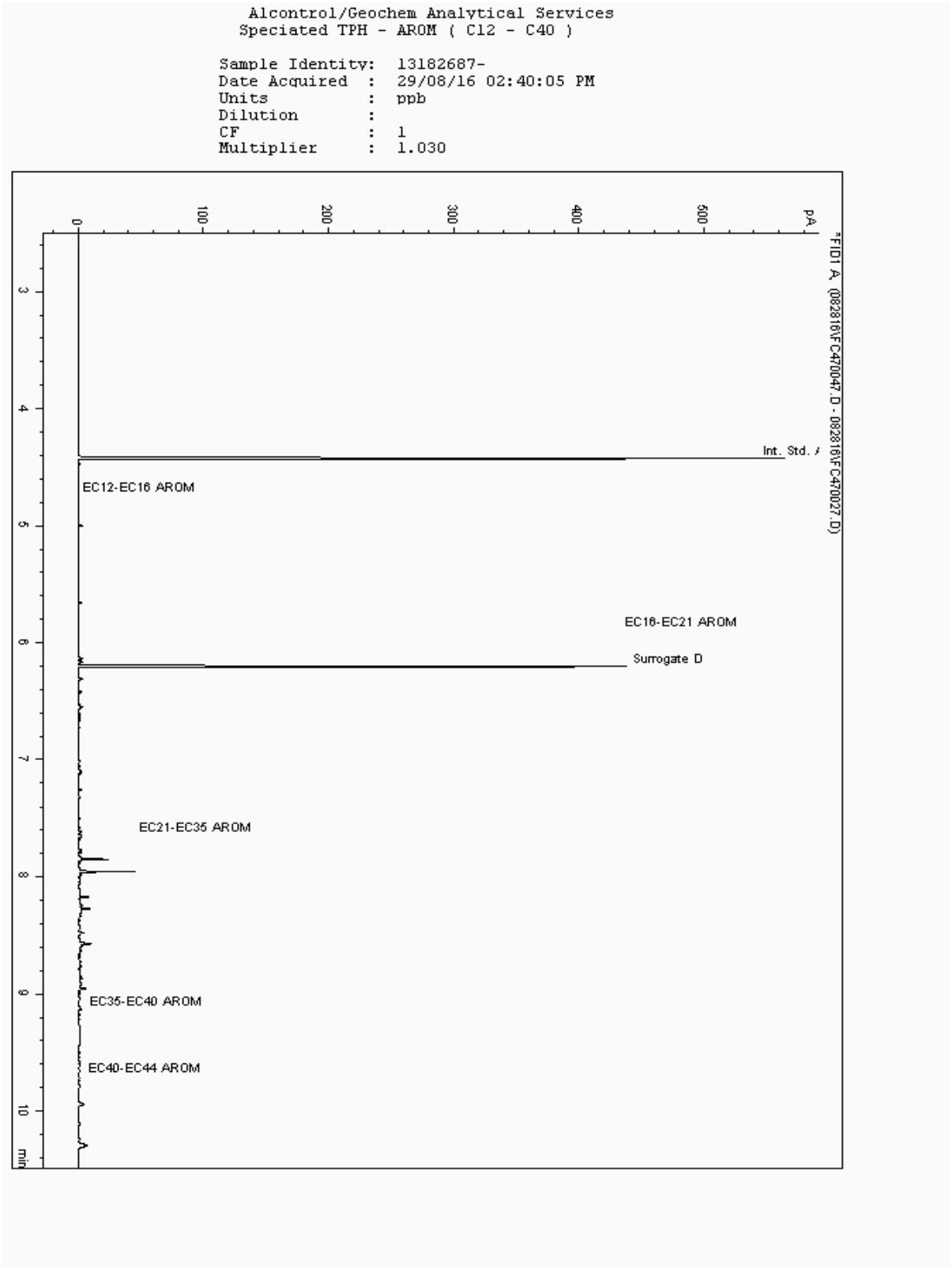
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037264
Sample ID : WS212

Depth : 0.20



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

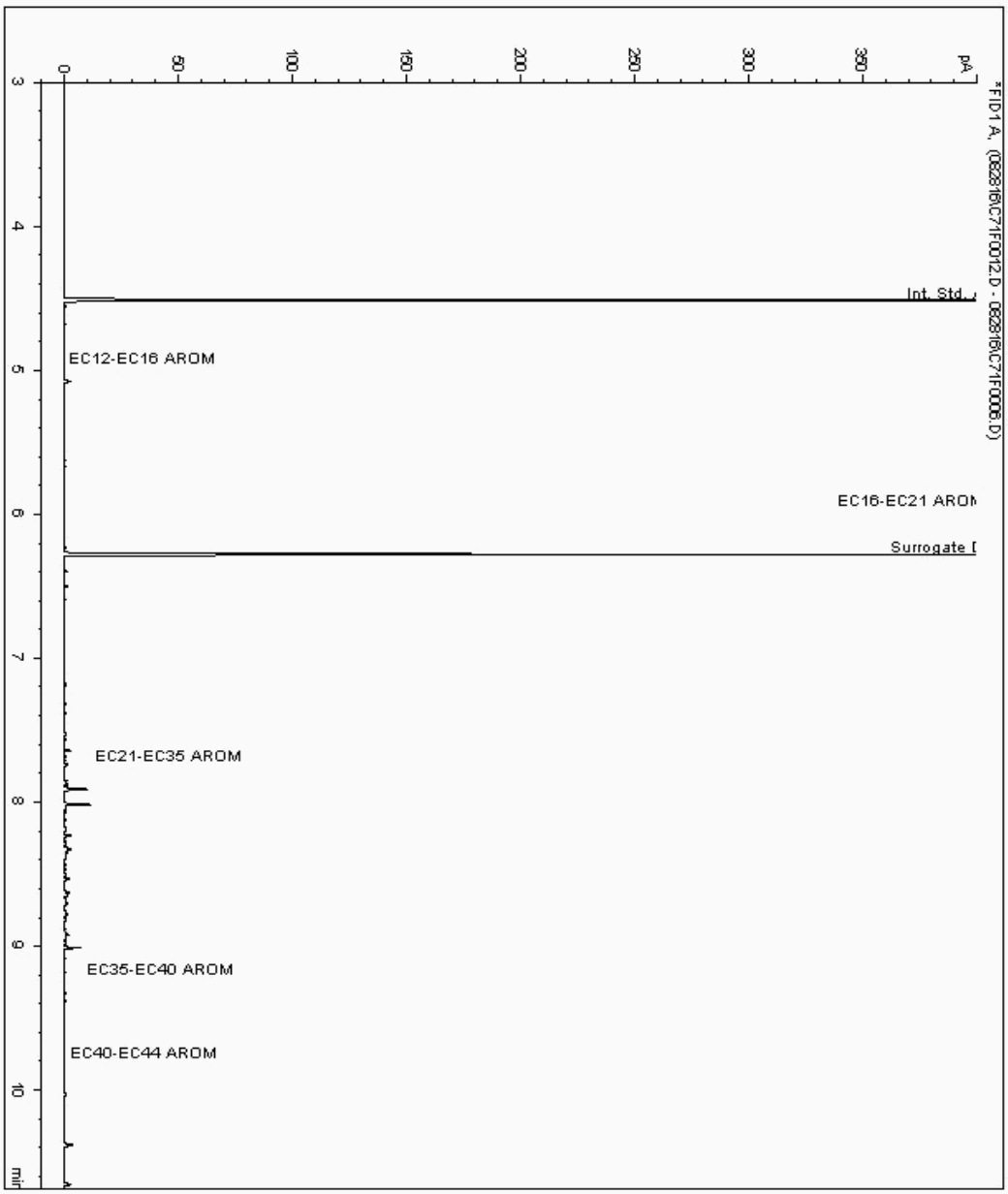
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037289
Sample ID : HP203

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181485-
Date Acquired : 28/08/2016 17:56:13 PM
Units : ppb
Dilution: HP203[0.70] ->



CERTIFICATE OF ANALYSIS

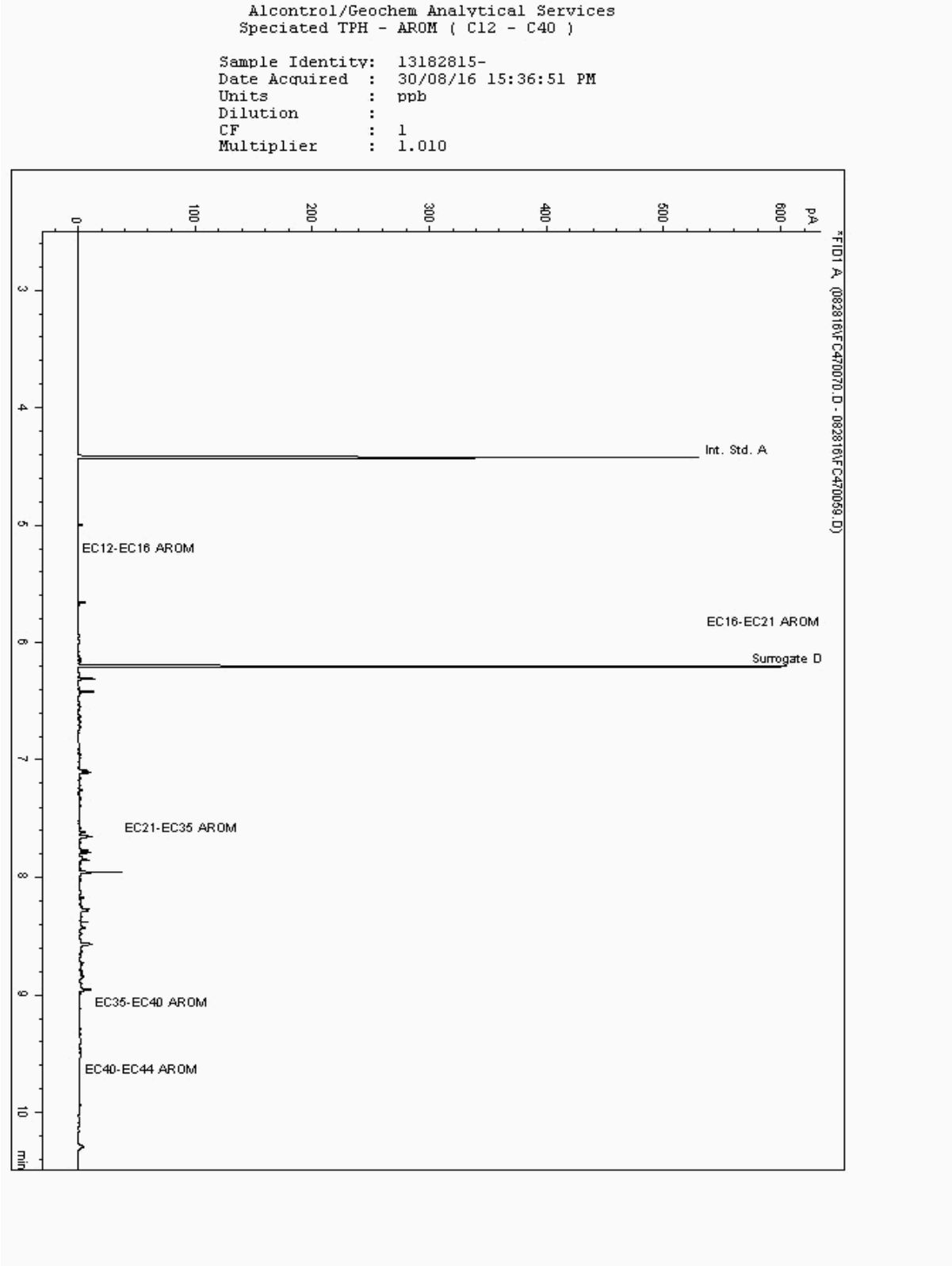
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037353
Sample ID : WS204

Depth : 0.20



CERTIFICATE OF ANALYSIS

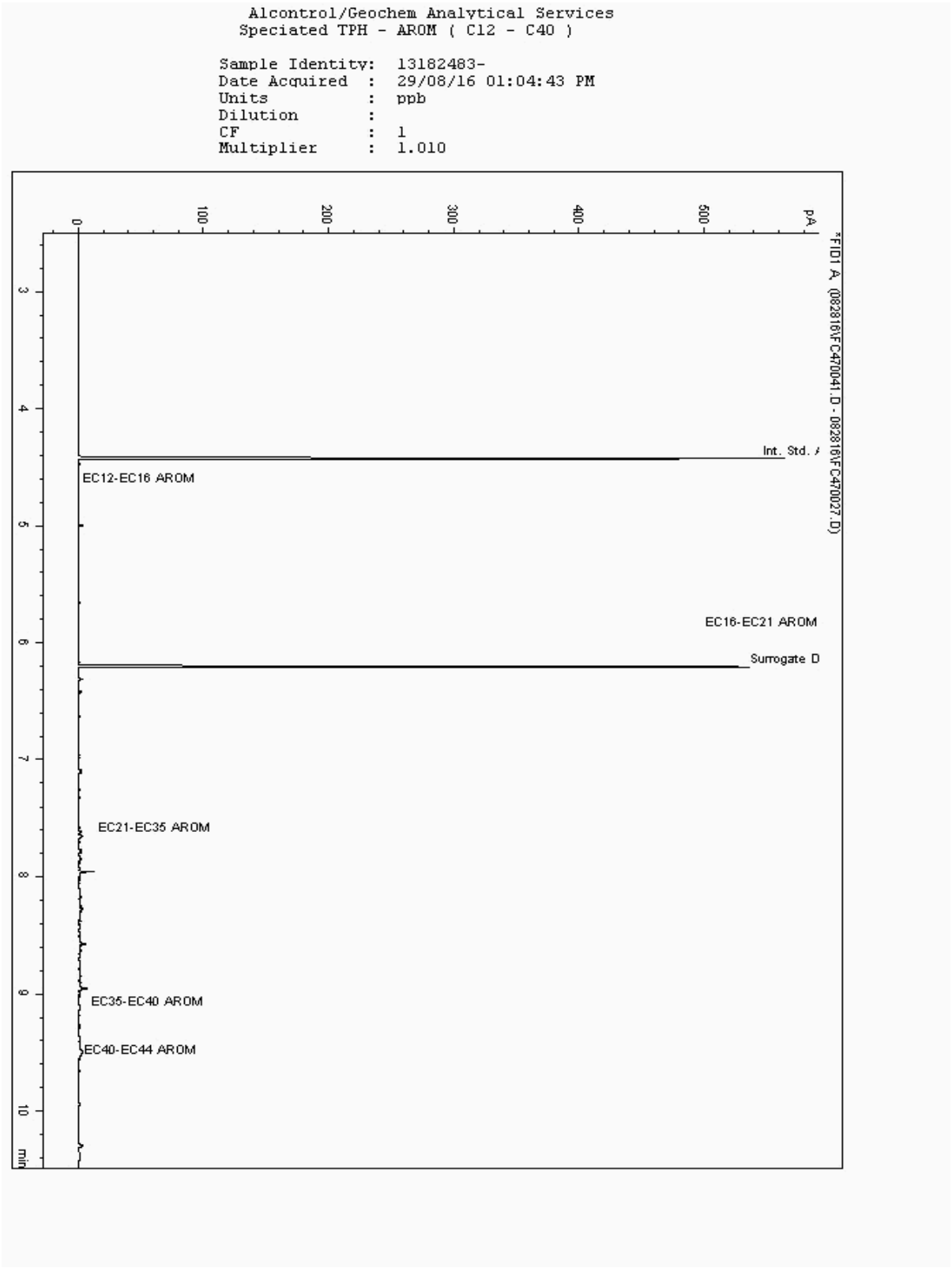
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037381
Sample ID : WS206

Depth : 1.00



CERTIFICATE OF ANALYSIS

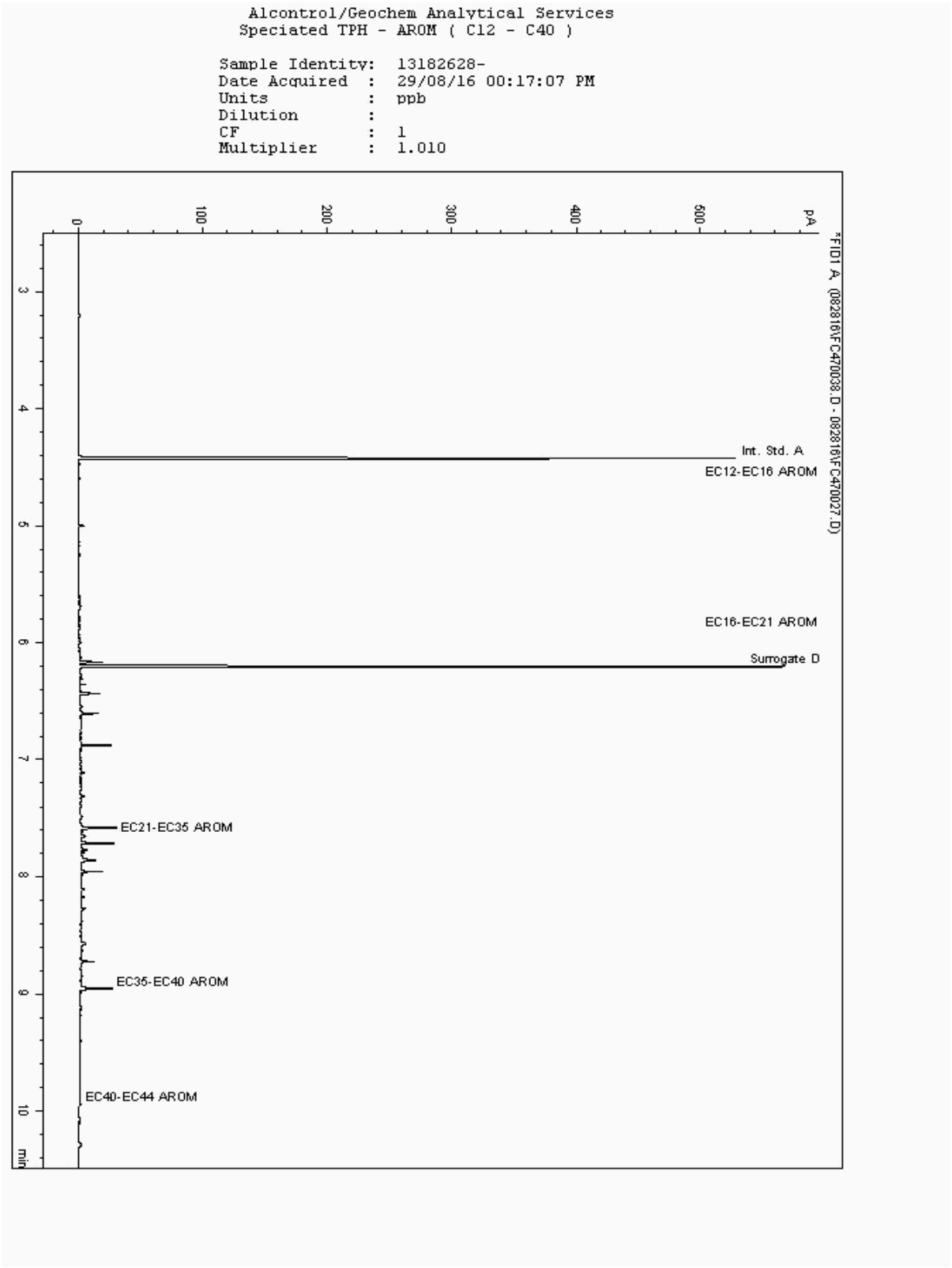
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037418
Sample ID : WS211

Depth : 0.20



CERTIFICATE OF ANALYSIS

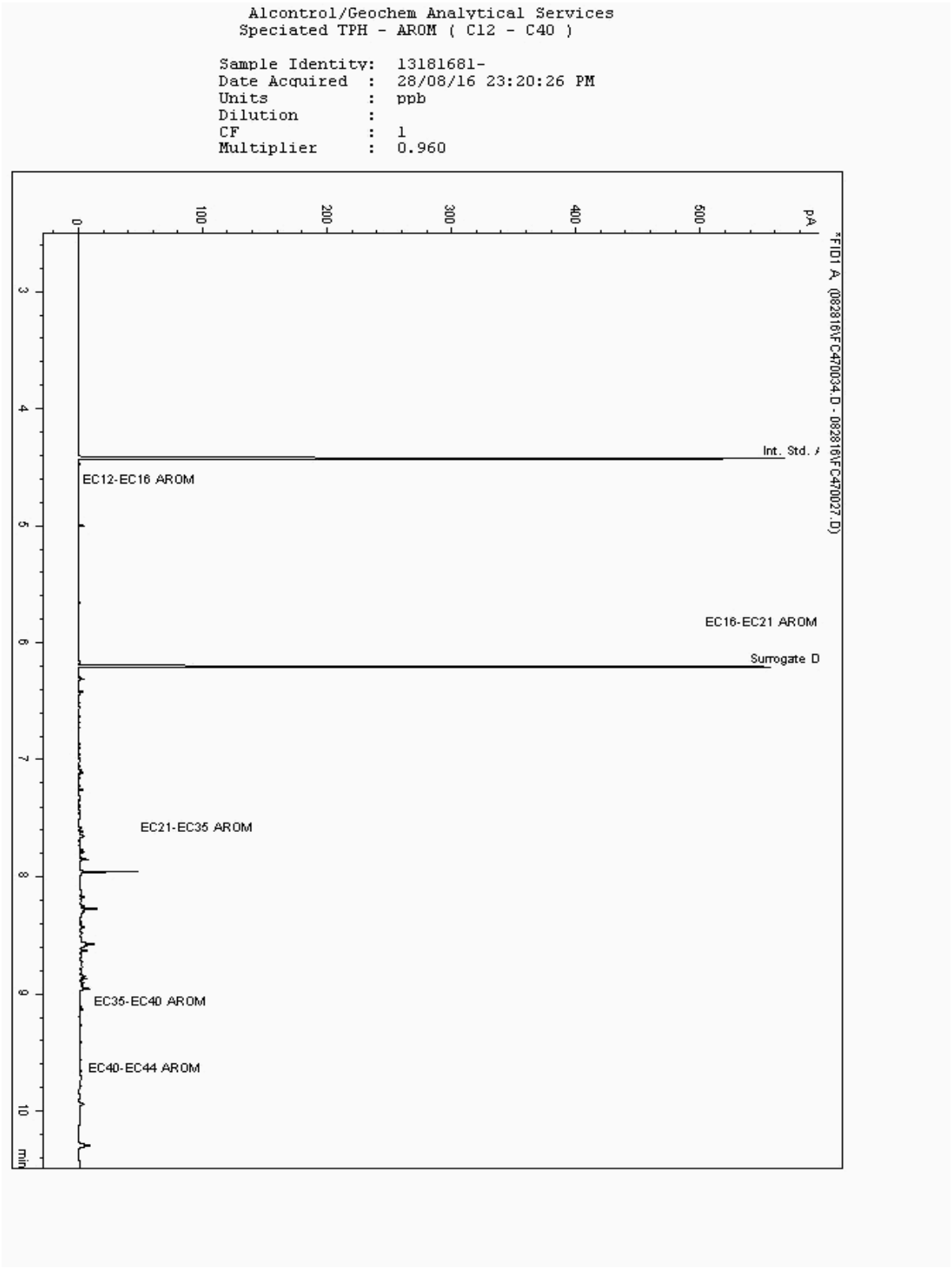
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037497
Sample ID : HP215

Depth : 0.20



CERTIFICATE OF ANALYSIS

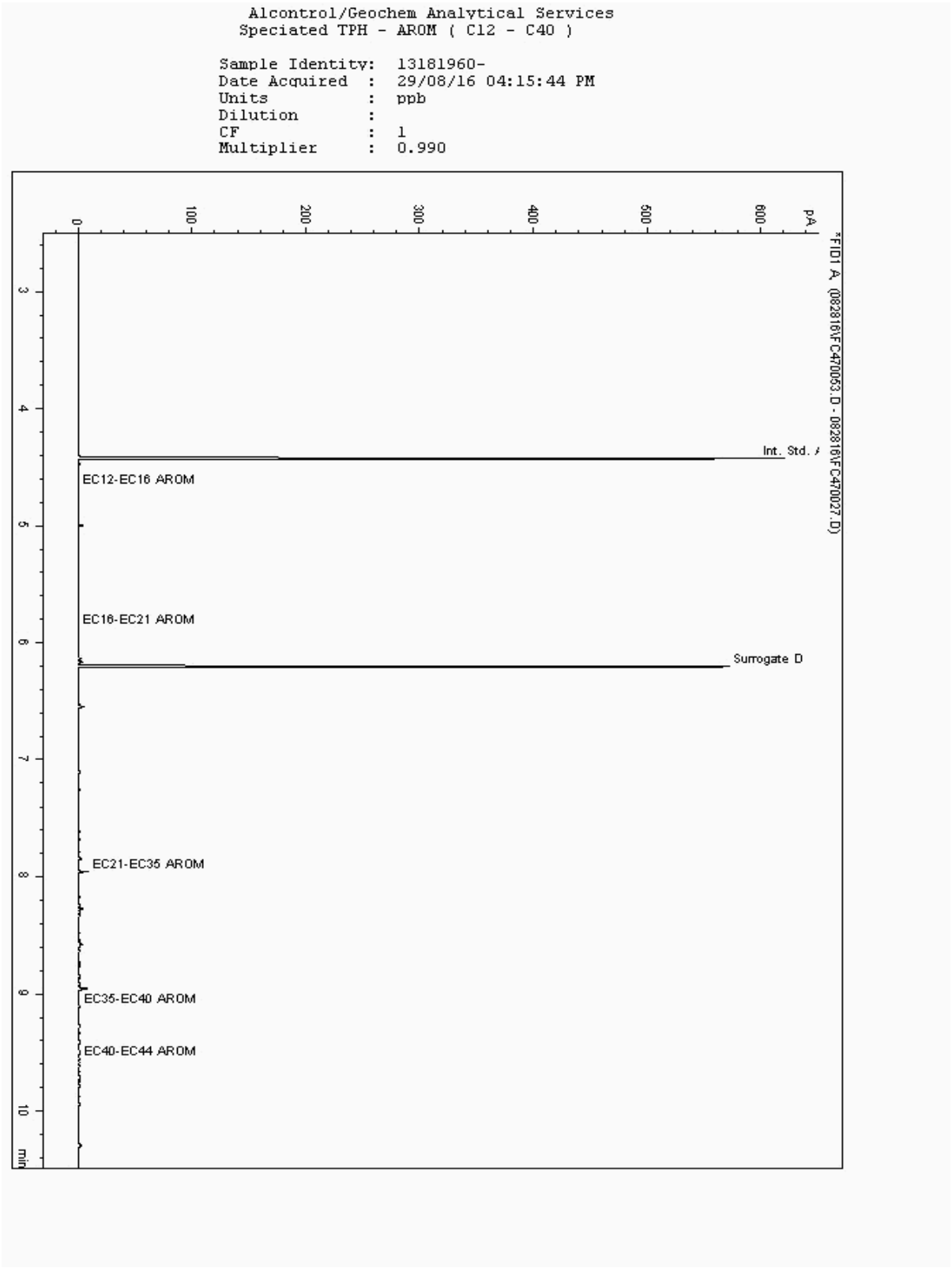
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037656
Sample ID : TP209

Depth : 0.40



CERTIFICATE OF ANALYSIS

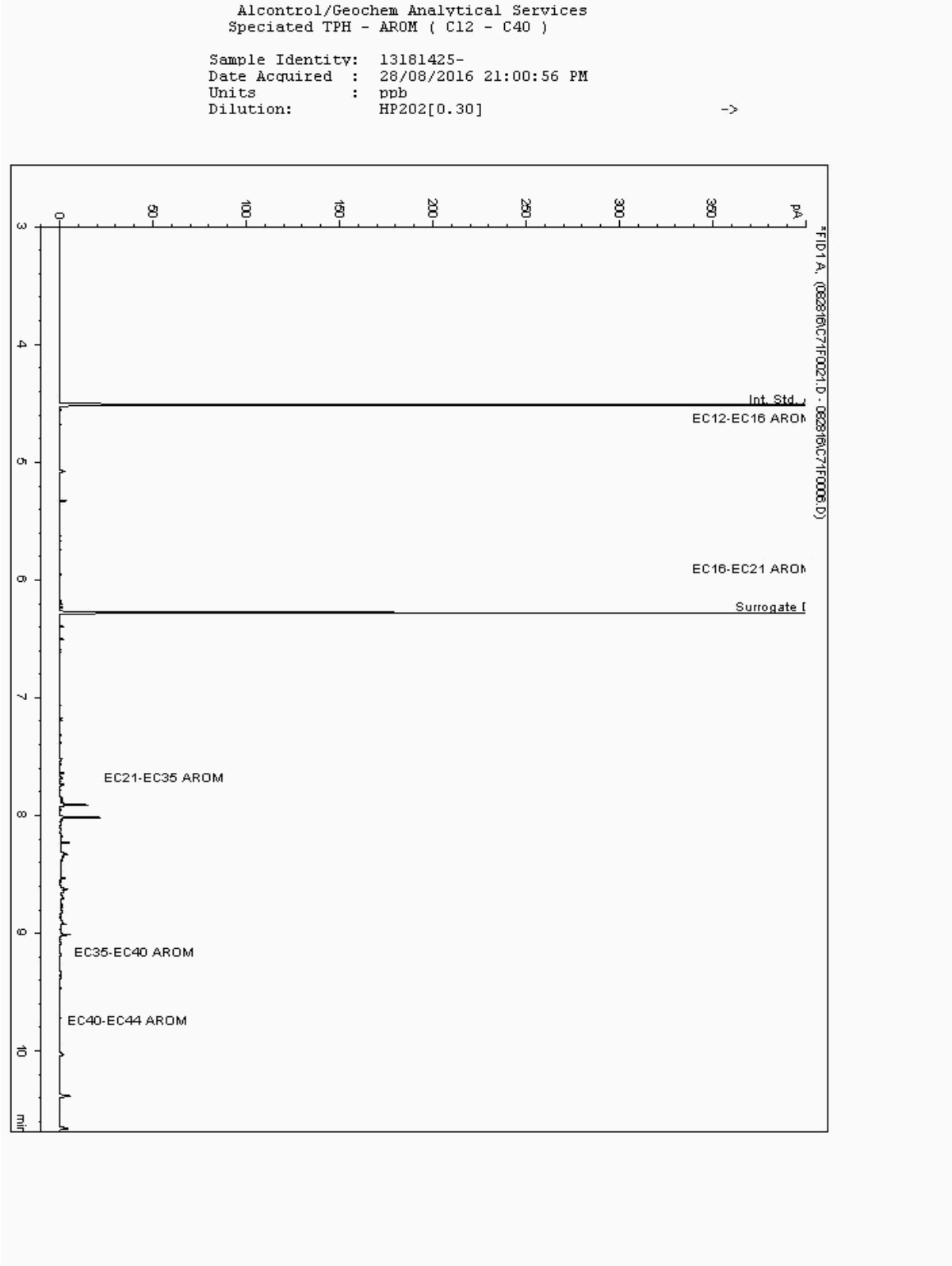
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14037725
Sample ID : HP202

Depth : 0.30



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

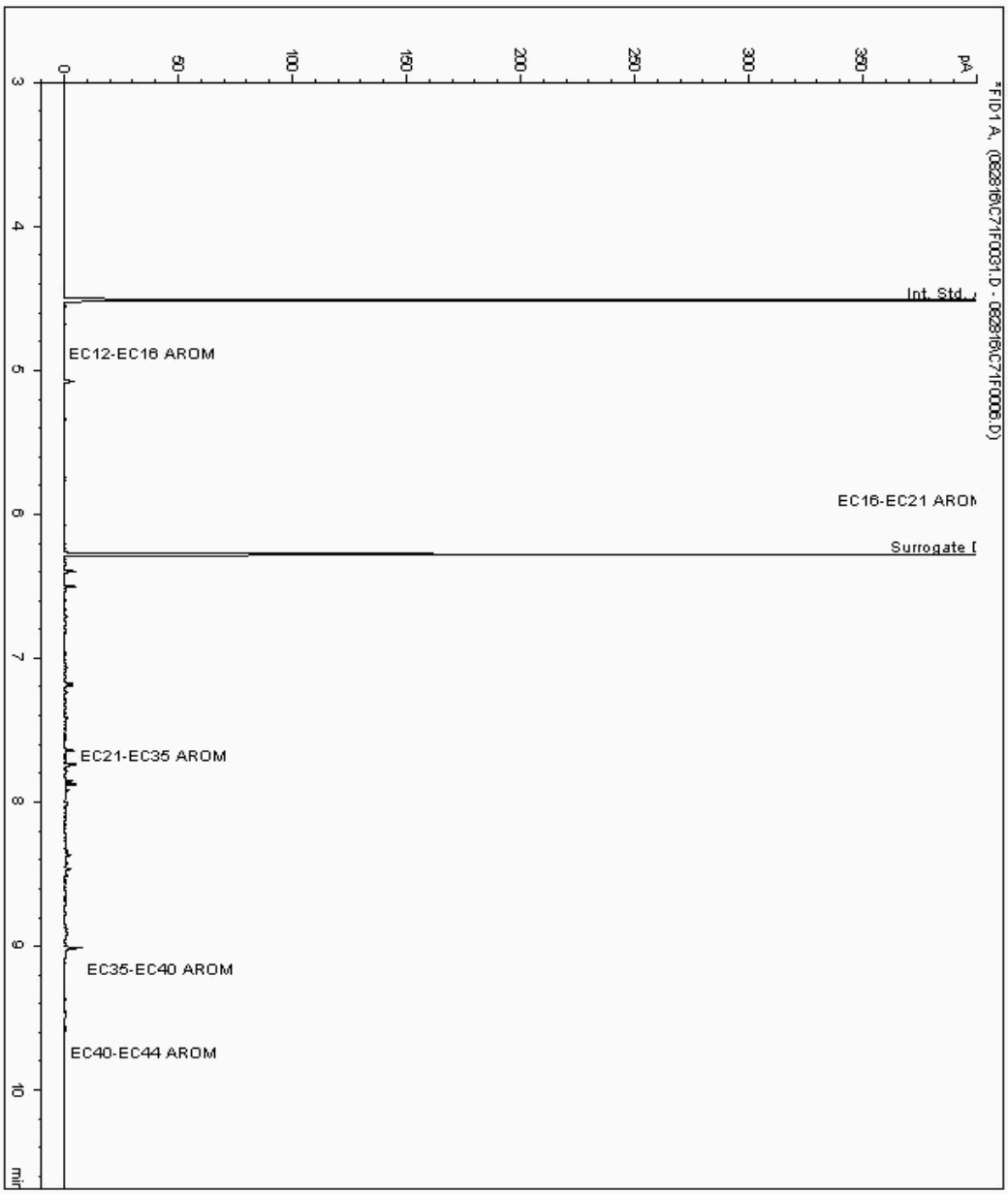
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038027
Sample ID : HP202

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181450-
Date Acquired : 29/08/2016 00:26:12 PM
Units : ppb
Dilution: HP202[0.70] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

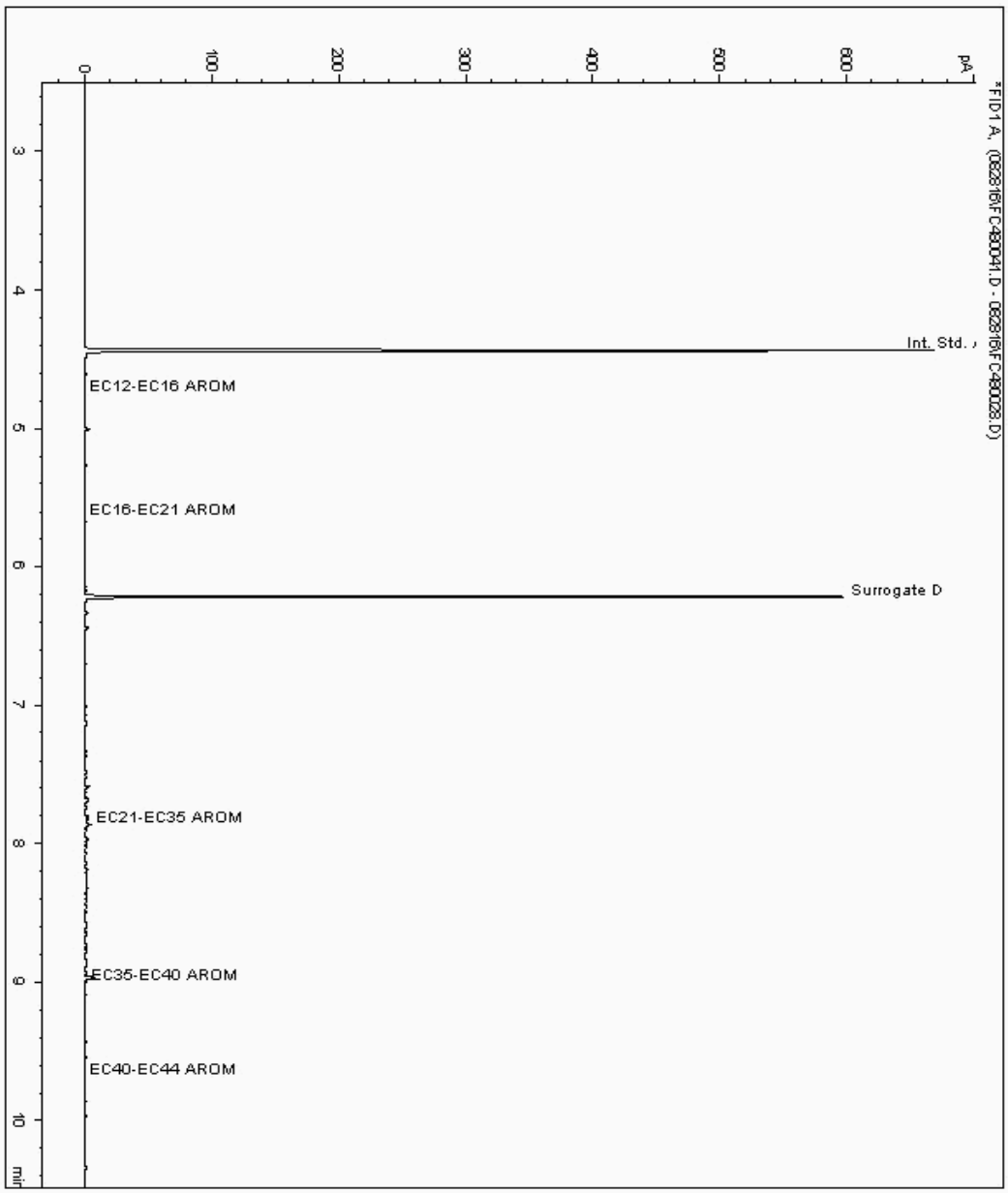
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038062
Sample ID : TP201

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181715-
Date Acquired : 29/08/2016 01:21:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

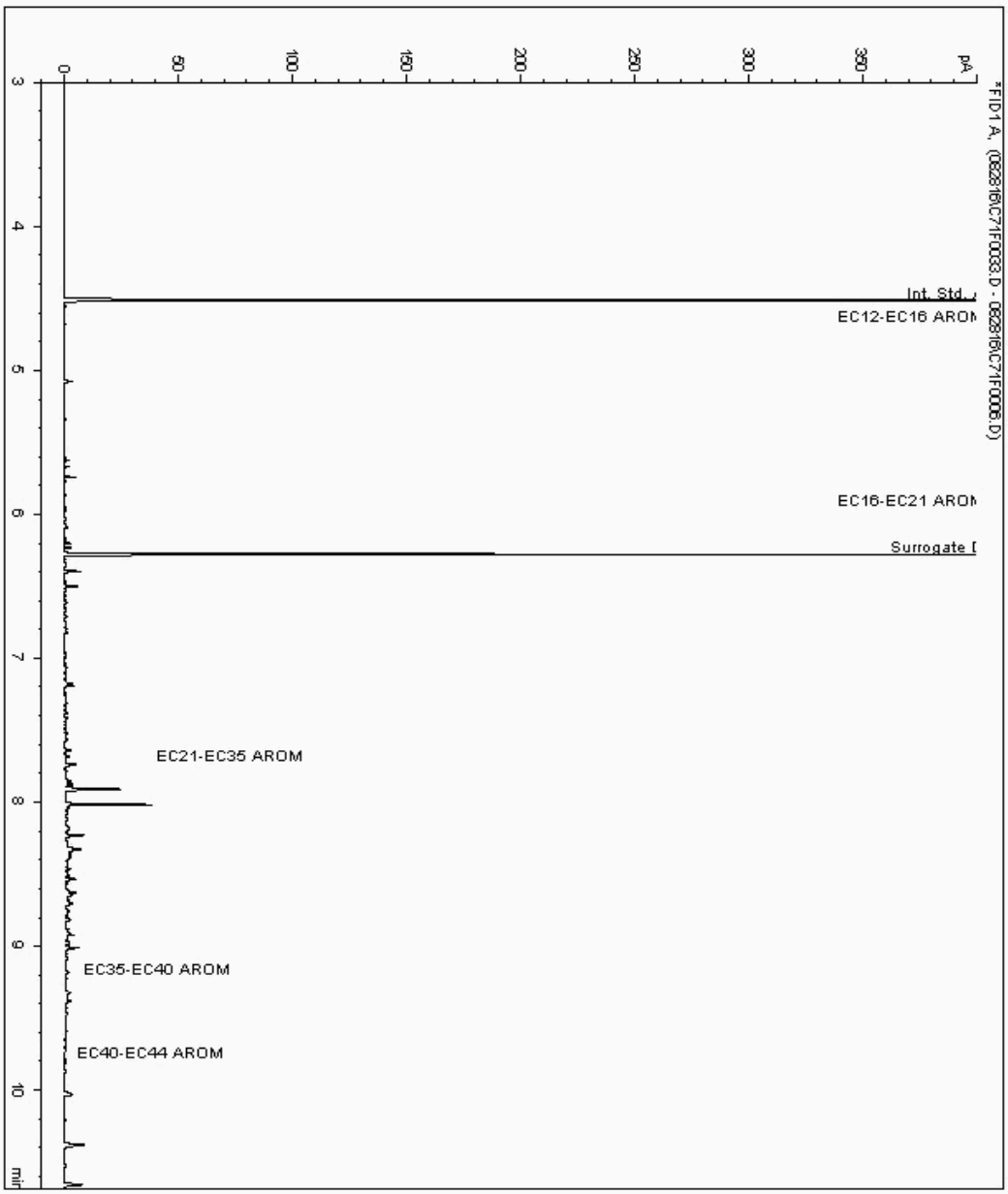
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038091
Sample ID : HP203

Depth : 0.15

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181469-
Date Acquired : 29/08/2016 01:07:20 PM
Units : ppb
Dilution: HP203[0.15] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

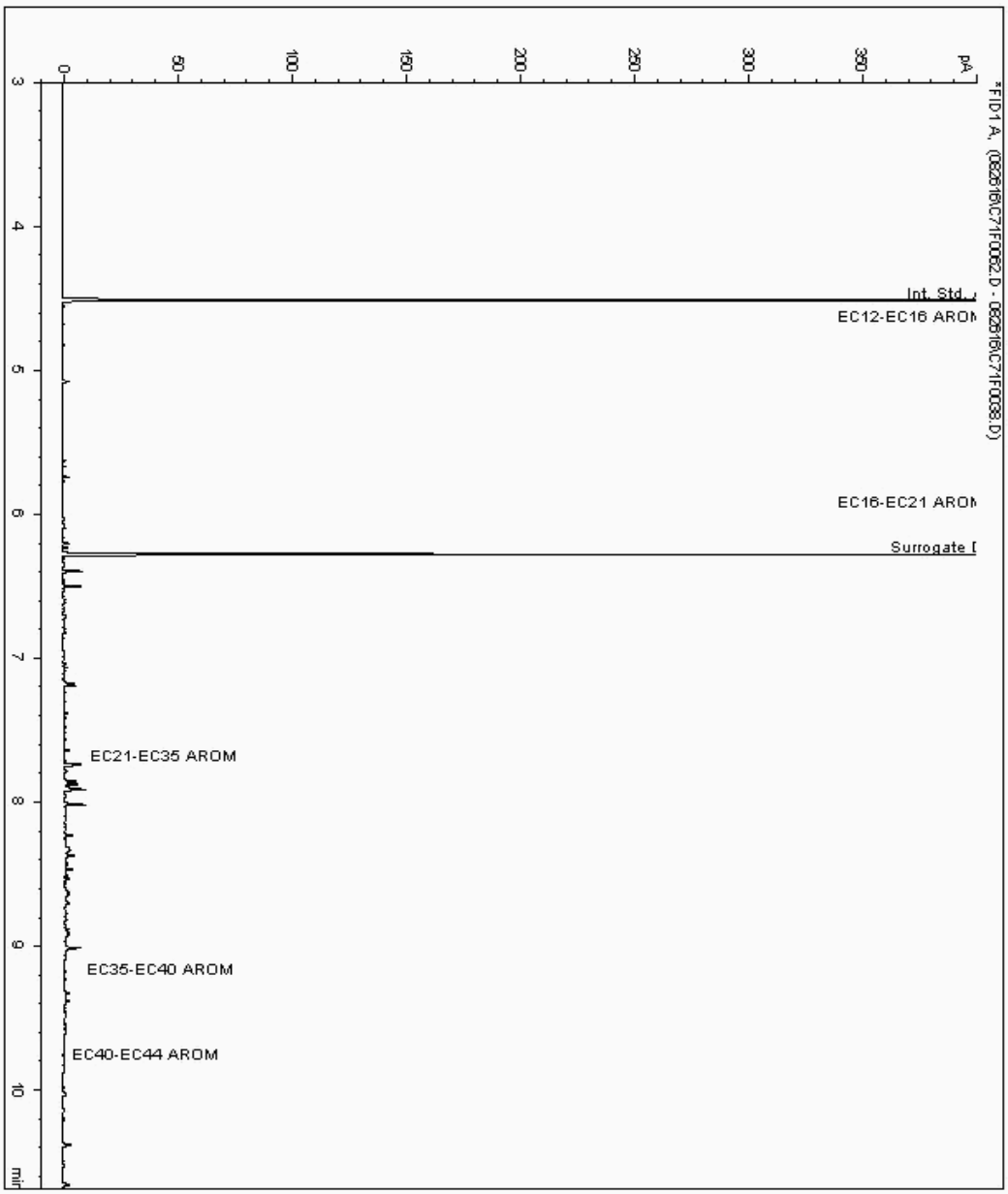
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038151
Sample ID : BH207

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181519-
Date Acquired : 27/08/2016 11:53:21 PM
Units : ppb
Dilution: BH207[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

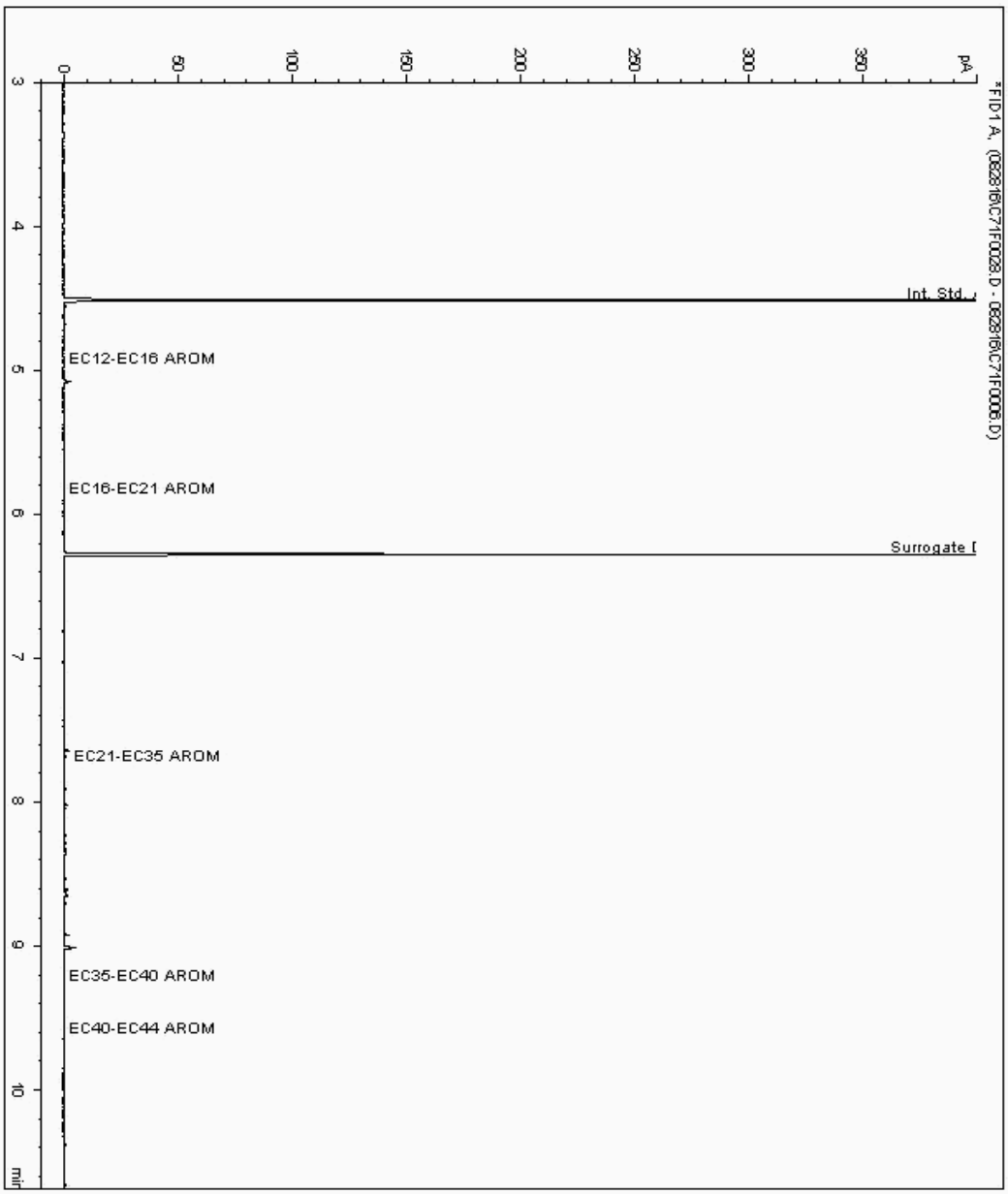
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038218
Sample ID : BH201

Depth : 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181837-
Date Acquired : 28/08/2016 23:24:39 PM
Units : ppb
Dilution: BH201[3.00] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

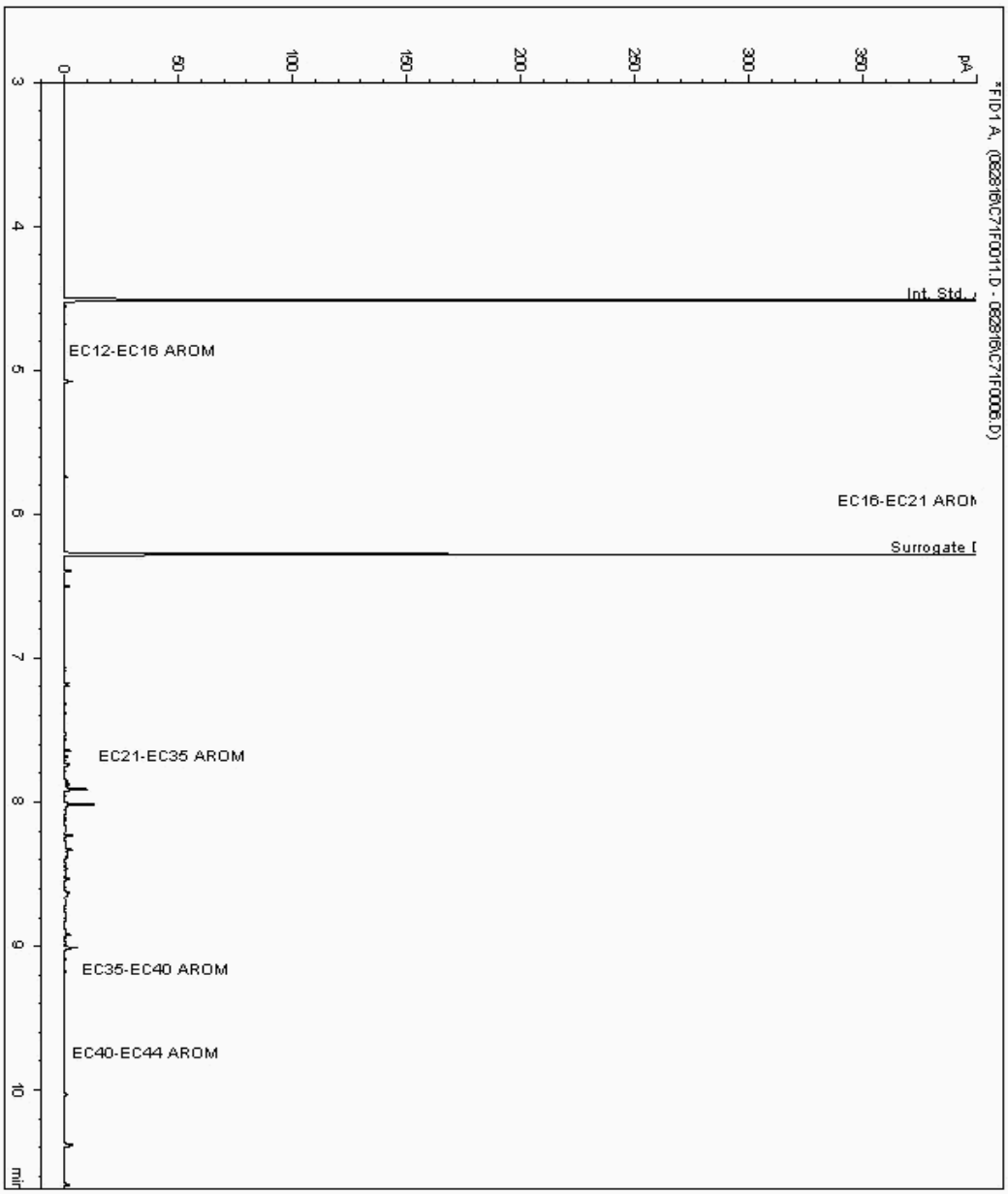
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038364
Sample ID : HP205

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181536-
Date Acquired : 28/08/2016 17:35:50 PM
Units : ppb
Dilution: HP205[0.70] ->



CERTIFICATE OF ANALYSIS

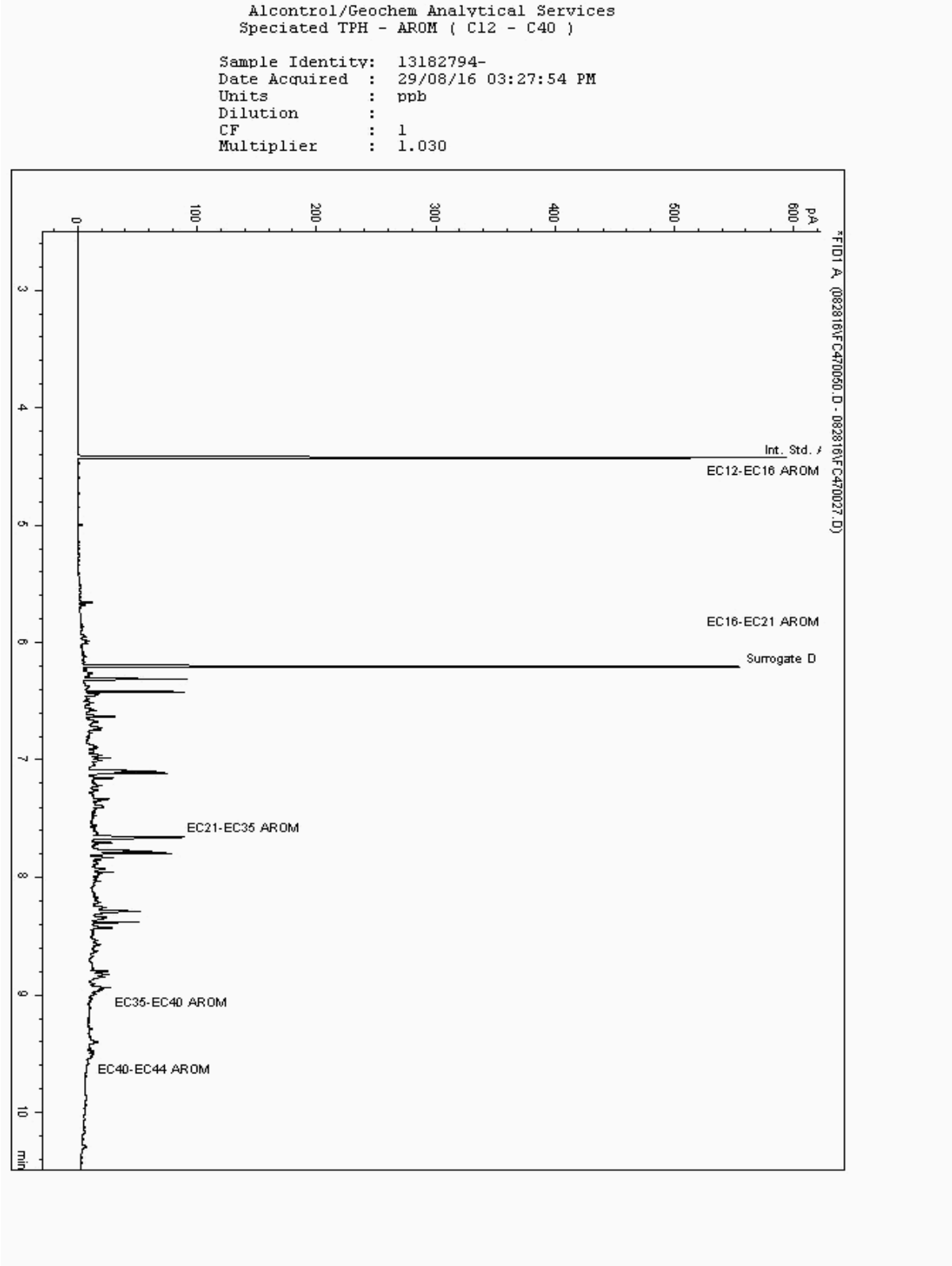
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038492
Sample ID : WS202

Depth : 1.00



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

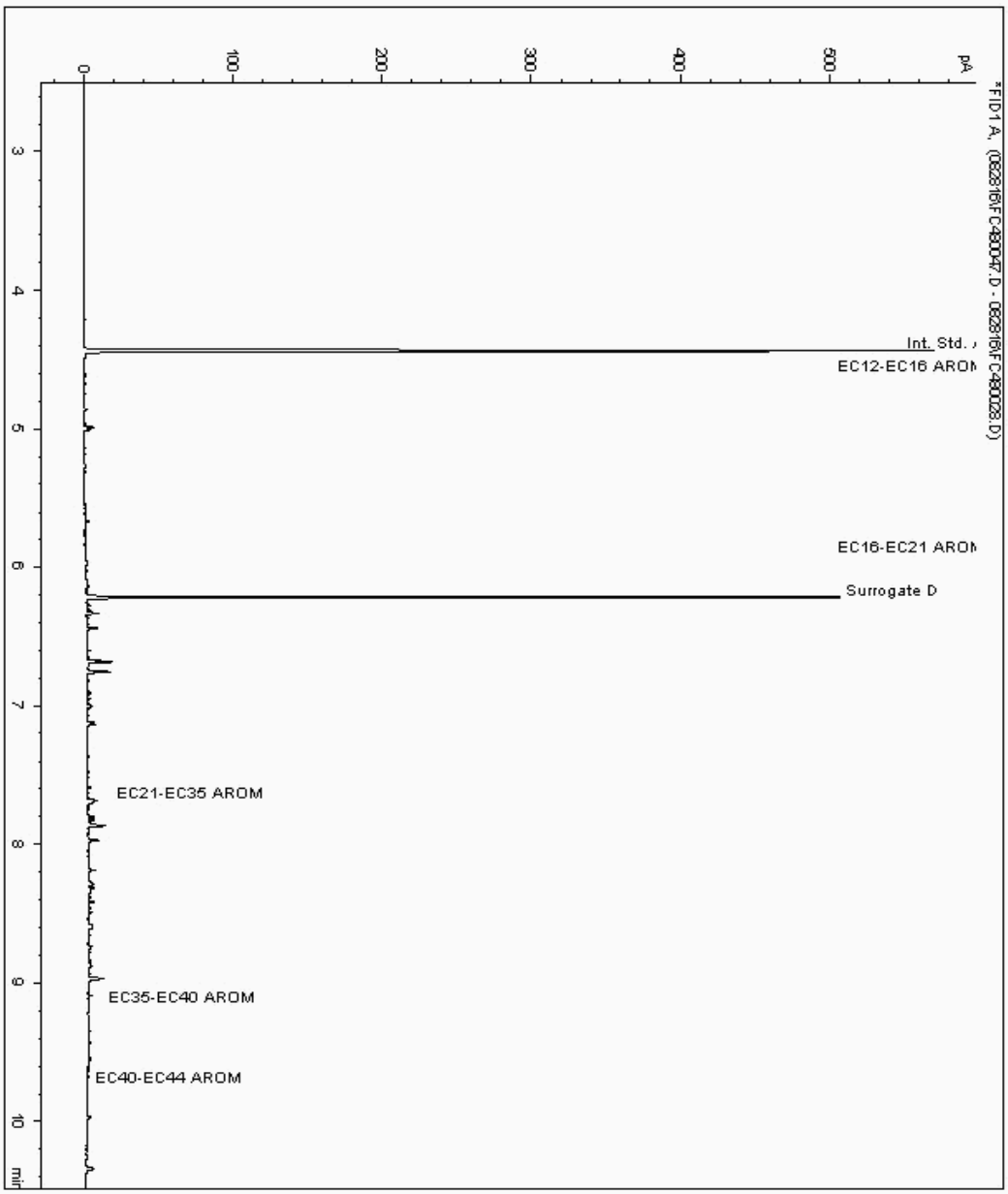
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038556
Sample ID : TP211

Depth : 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182076-
Date Acquired : 29/08/2016 02:57:41 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.970



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

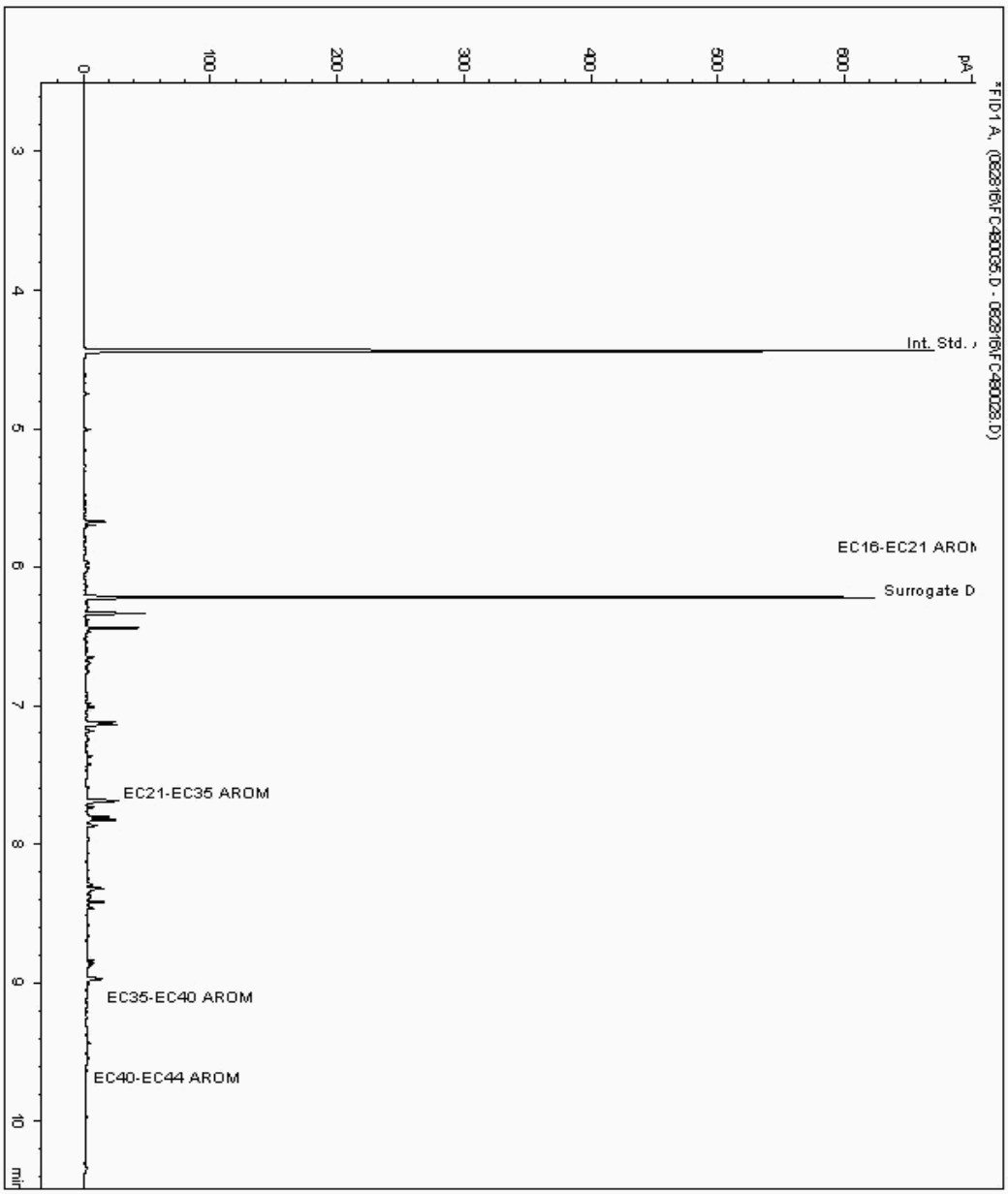
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14038945
Sample ID : TP203

Depth : 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181794-
Date Acquired : 28/08/2016 23:45:00 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

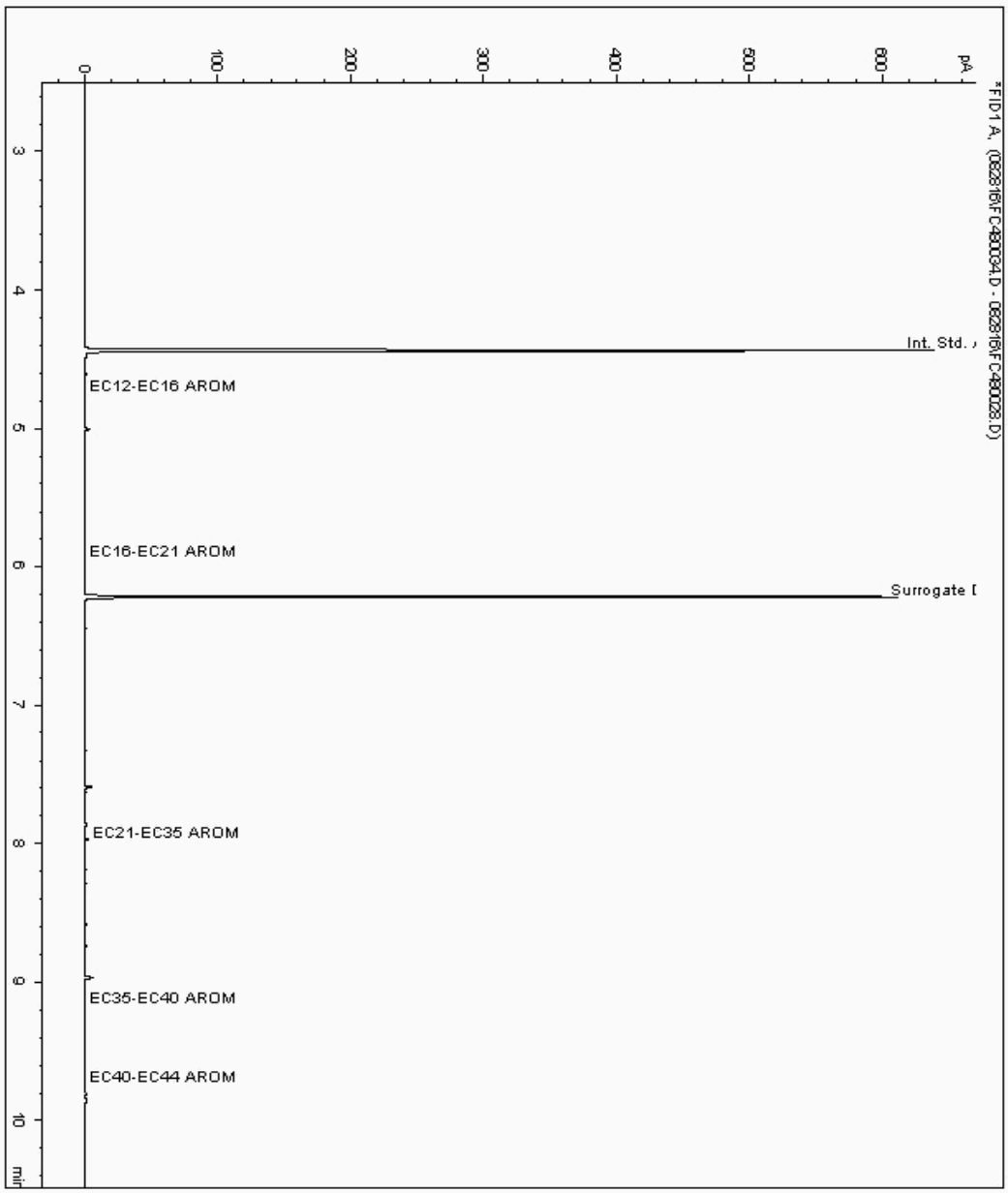
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14040186
Sample ID : WS209

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182601-
Date Acquired : 28/08/2016 23:25:49 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



CERTIFICATE OF ANALYSIS

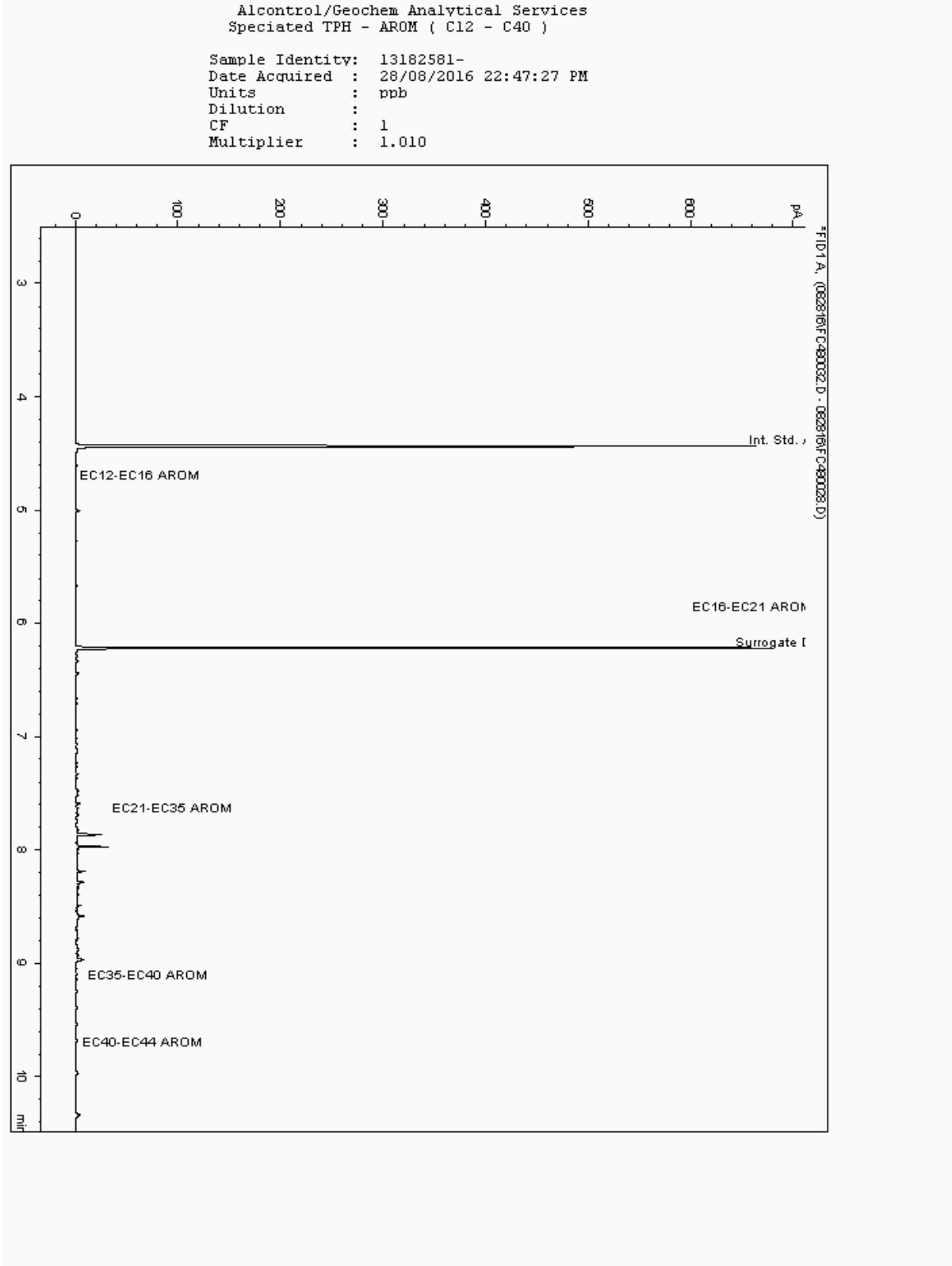
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14040343
Sample ID : WS209

Depth : 0.50



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

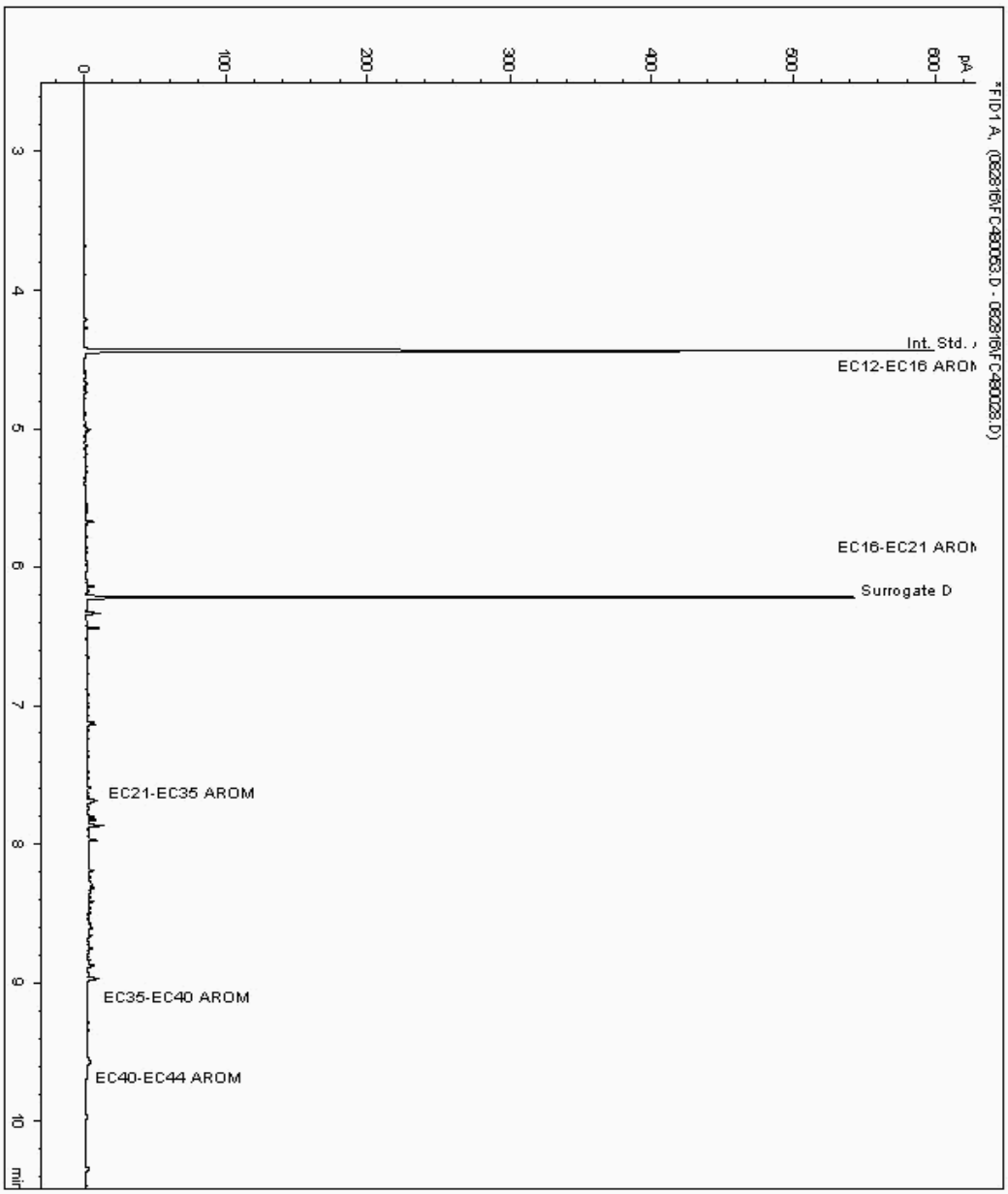
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14043890
Sample ID : WS203

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182202-
Date Acquired : 29/08/2016 04:34:06 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.040



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

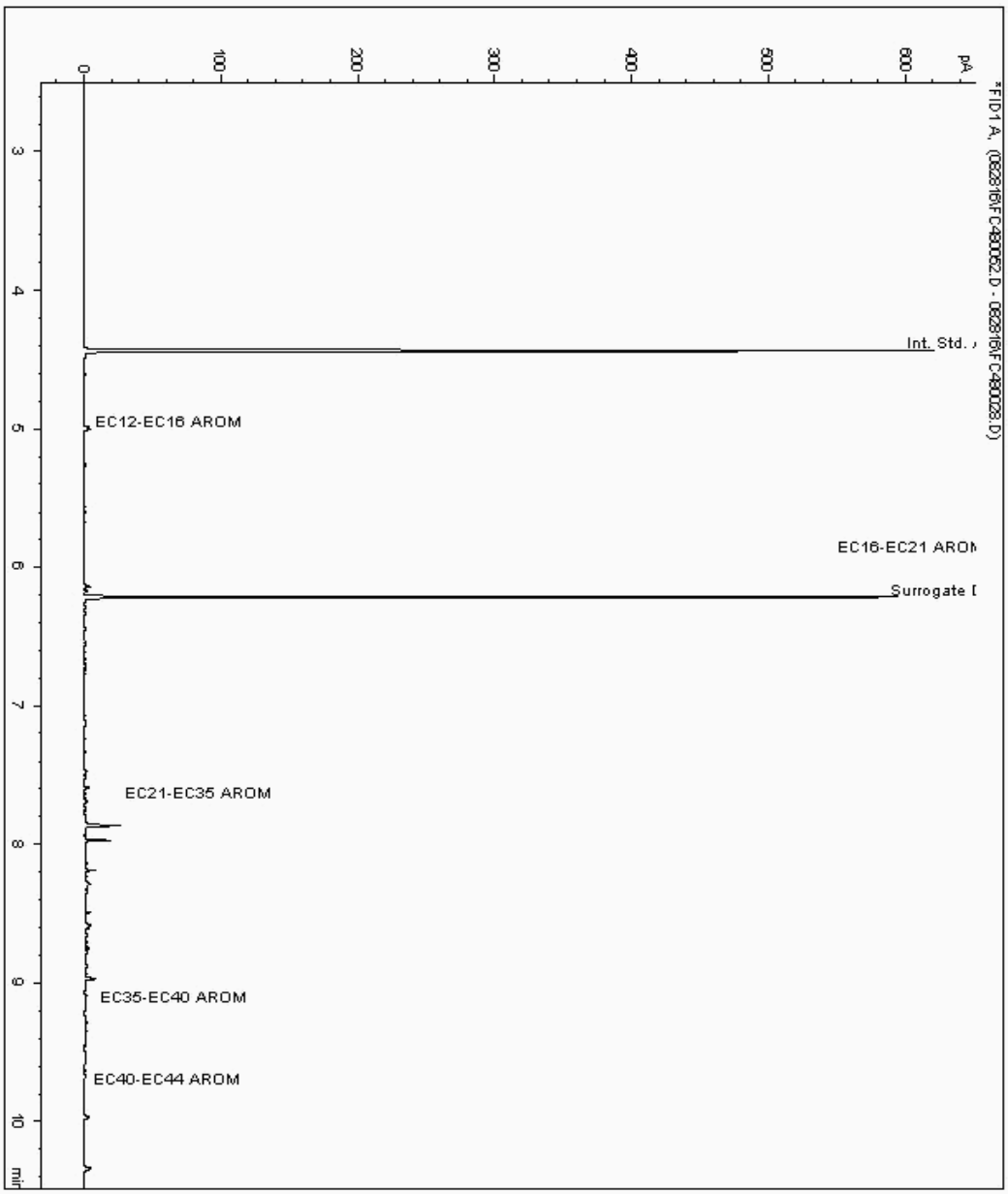
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14047035
Sample ID : HP208

Depth : 0.15

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13181627-
Date Acquired : 29/08/2016 04:14:42 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.000



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

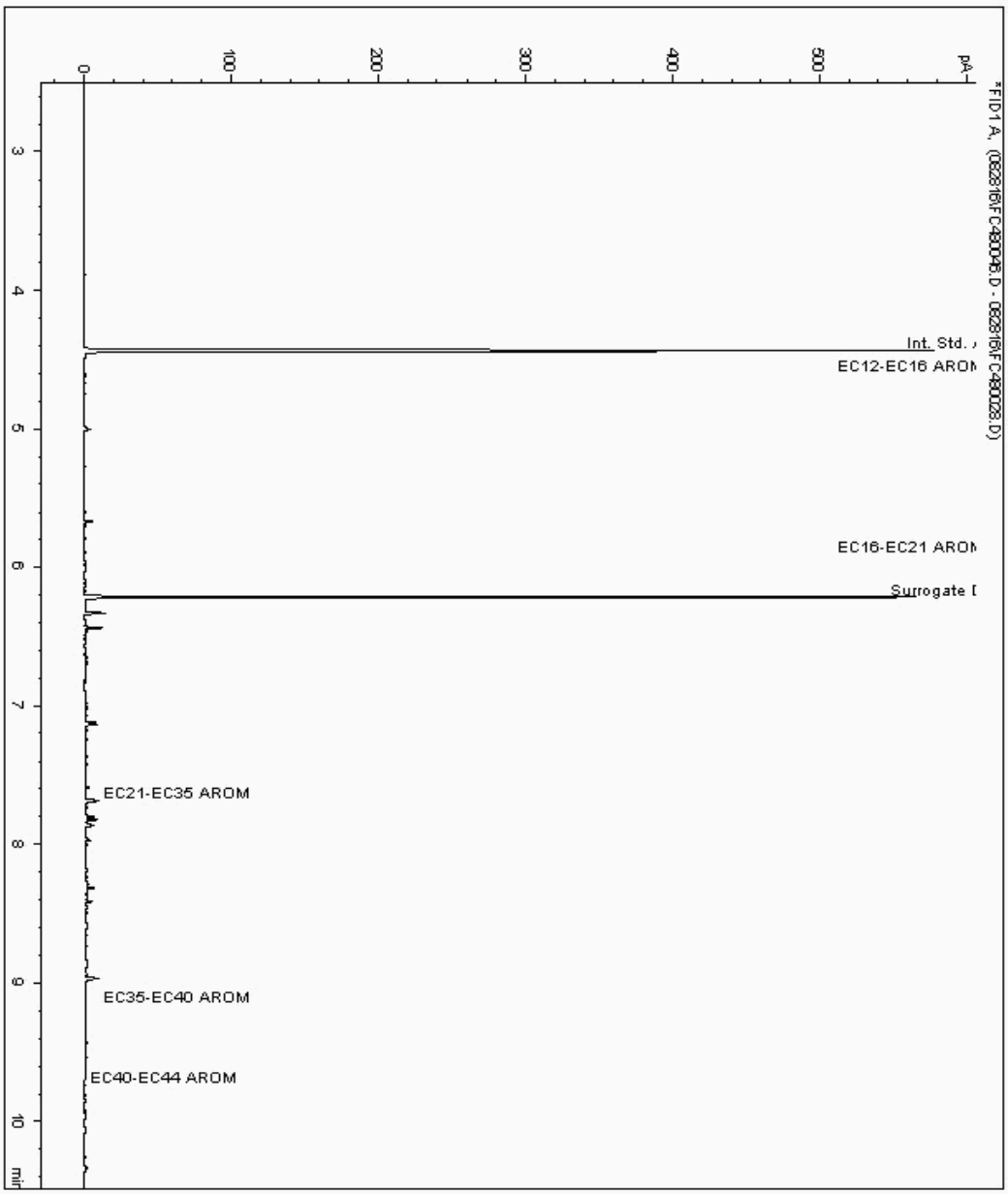
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14047190
Sample ID : WS205

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182403-
Date Acquired : 29/08/2016 02:38:29 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

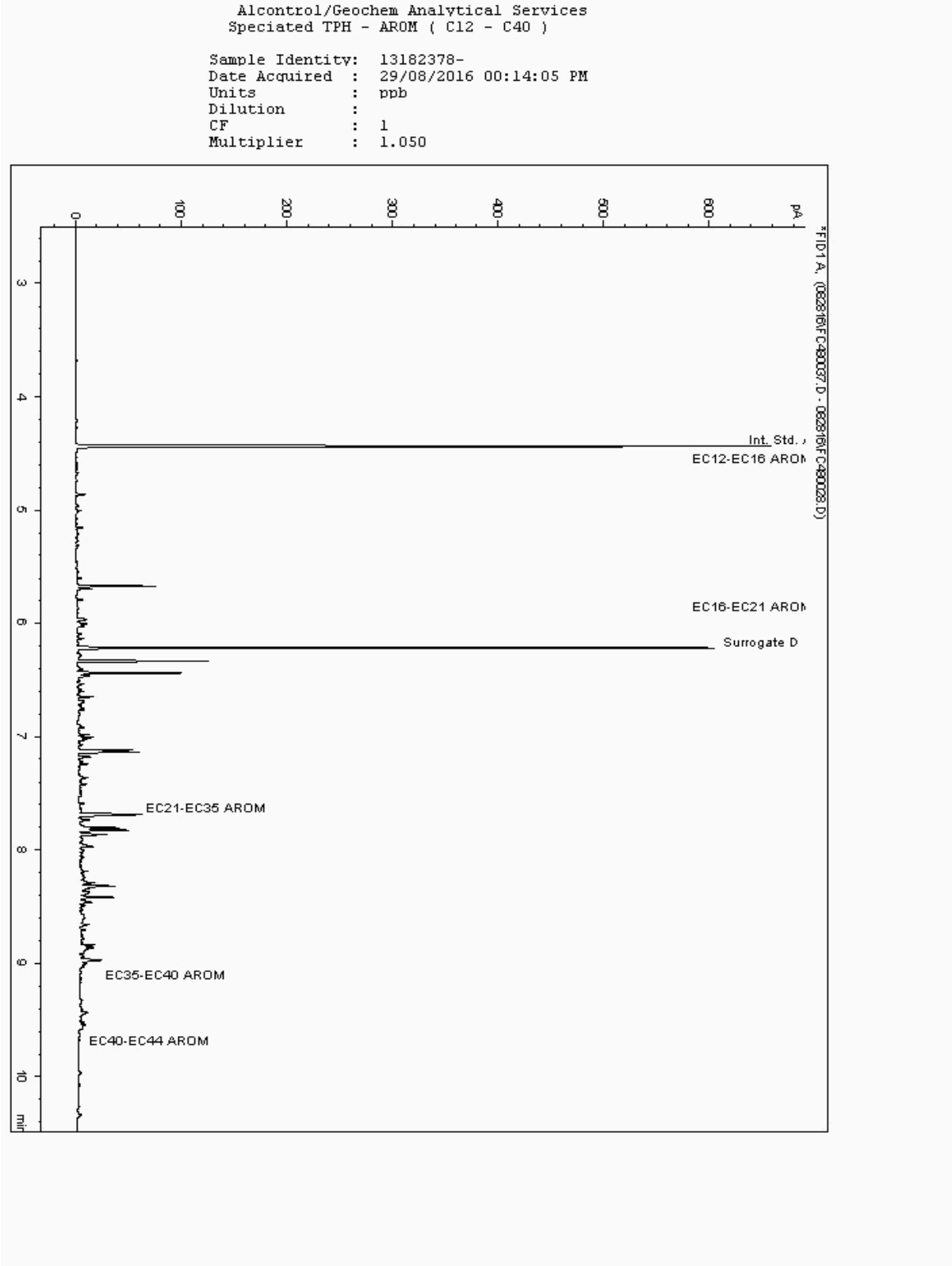
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14047372
Sample ID : WS205

Depth : 0.30



CERTIFICATE OF ANALYSIS

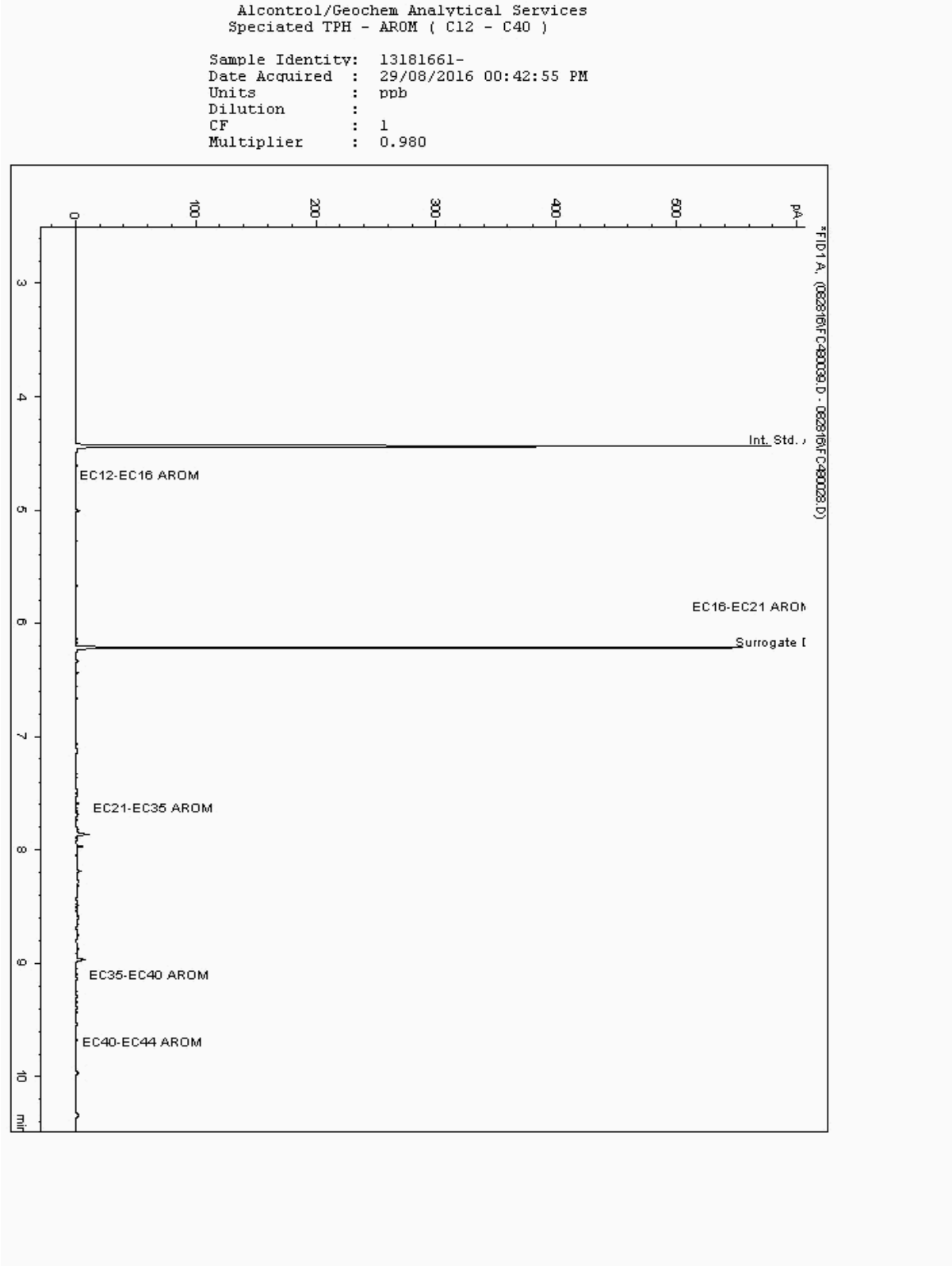
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14047514
Sample ID : HP208

Depth : 0.80



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

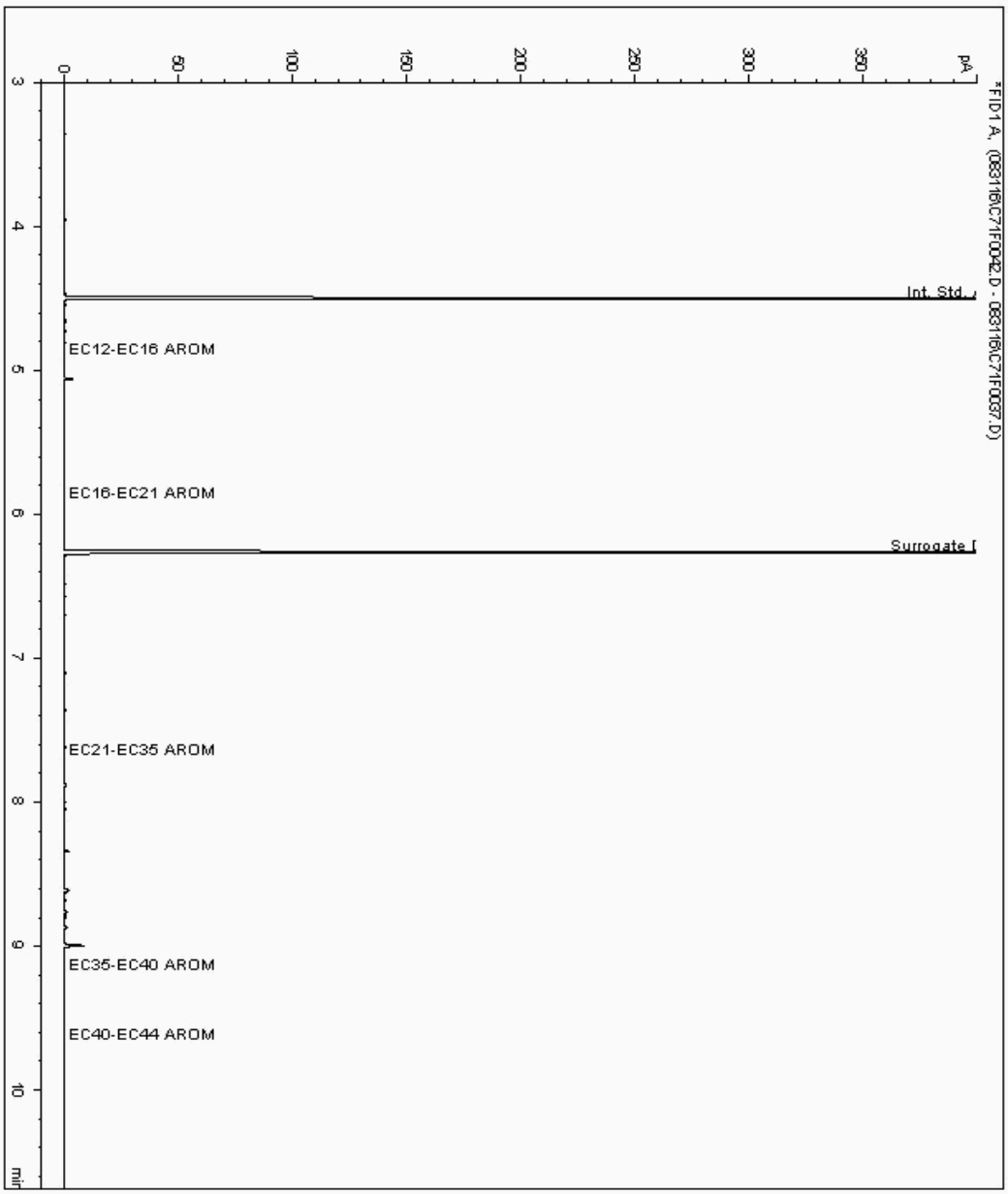
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14053976
Sample ID : TP214

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199752-
Date Acquired : 01/09/2016 03:05:50 PM
Units : ppb
Dilution: TP214[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

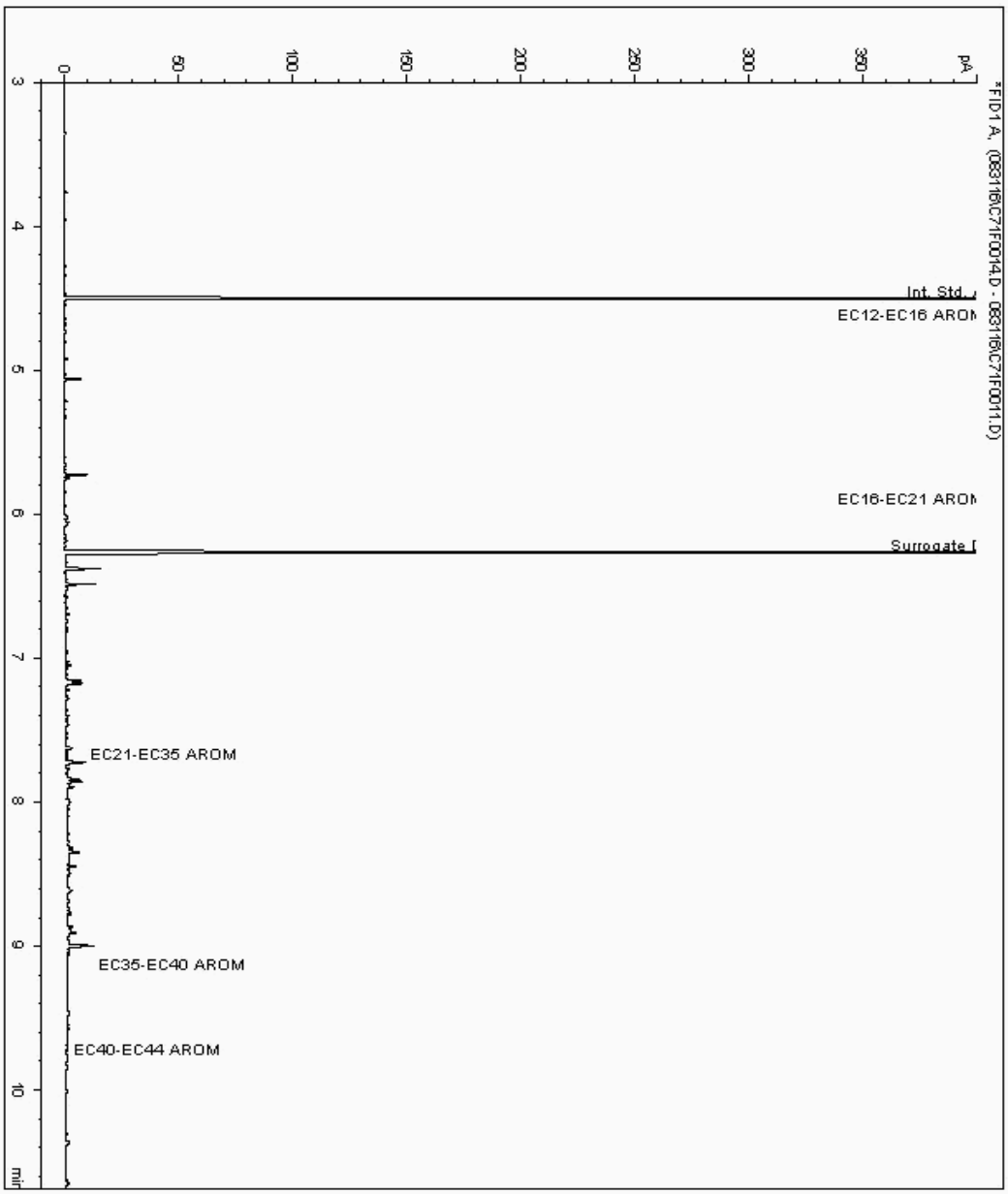
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14063659
Sample ID : BH202

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13211257-
Date Acquired : 31/08/2016 18:02:35 PM
Units : ppb
Dilution: BH202[0.30] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

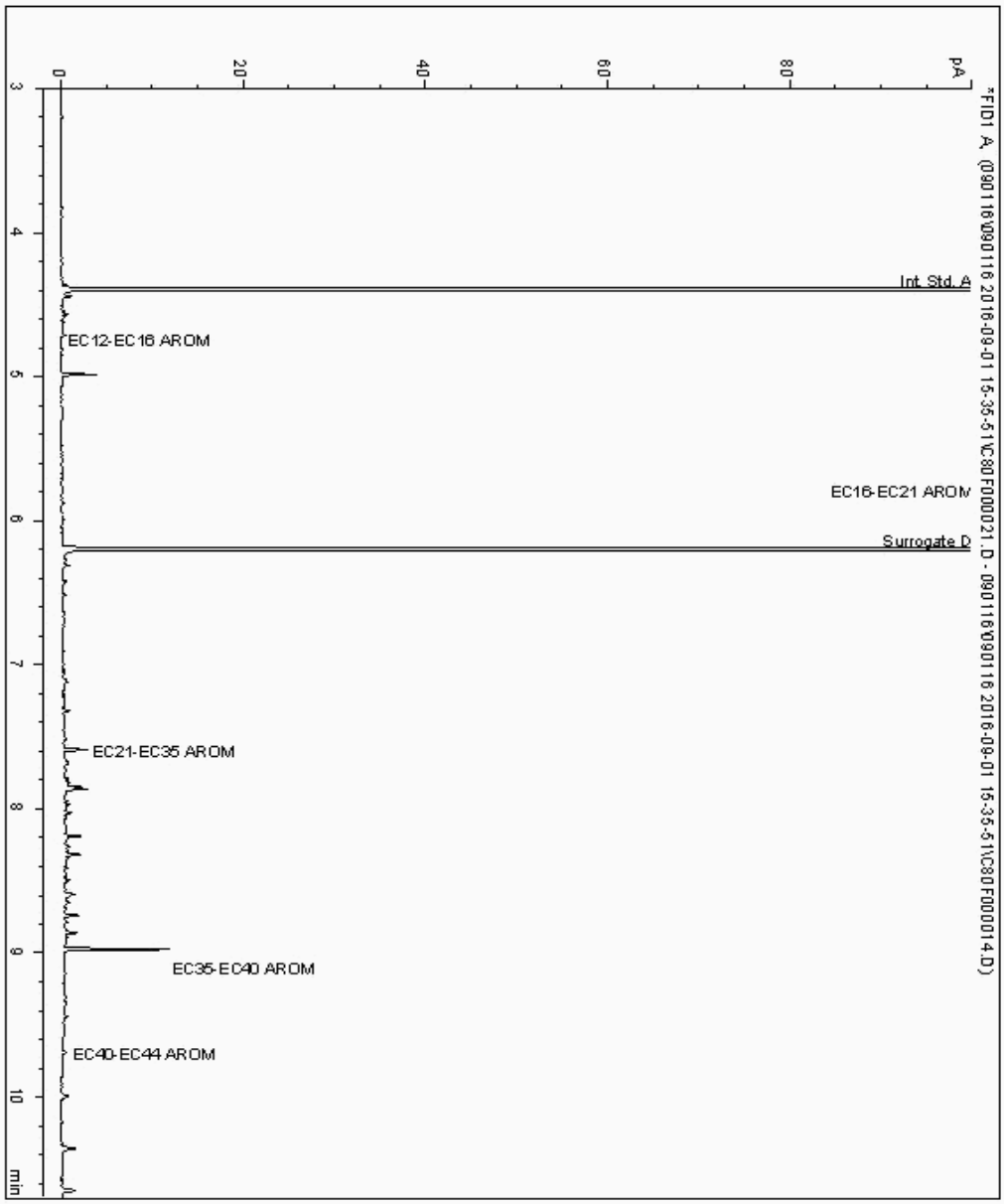
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14066134
Sample ID : WS202

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 13203528-
Date Acquired : 01/09/16 15:38:15
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

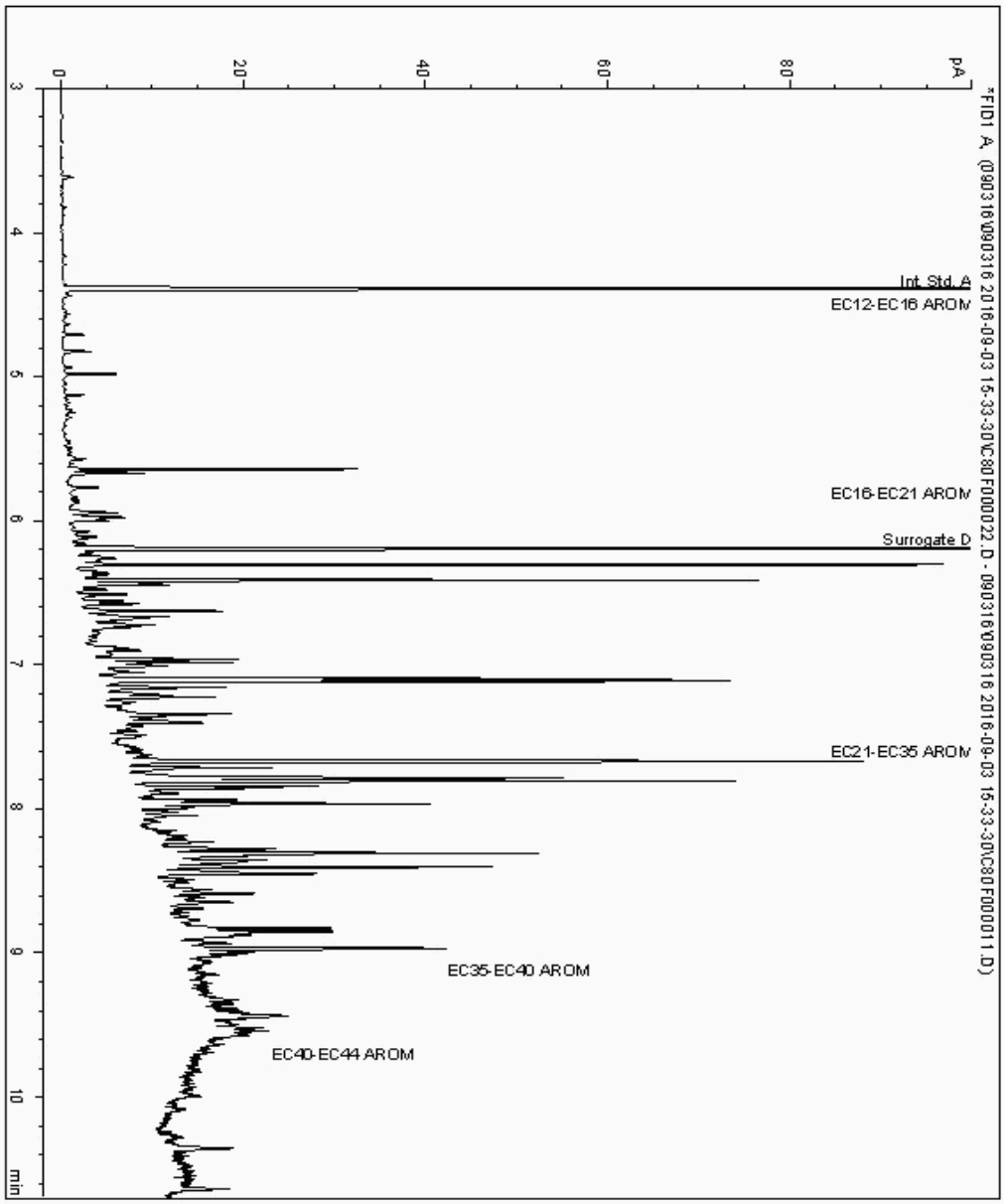
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14069441
Sample ID : WS207

Depth : 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 13215183-
Date Acquired : 03/09/16 21:48:41
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

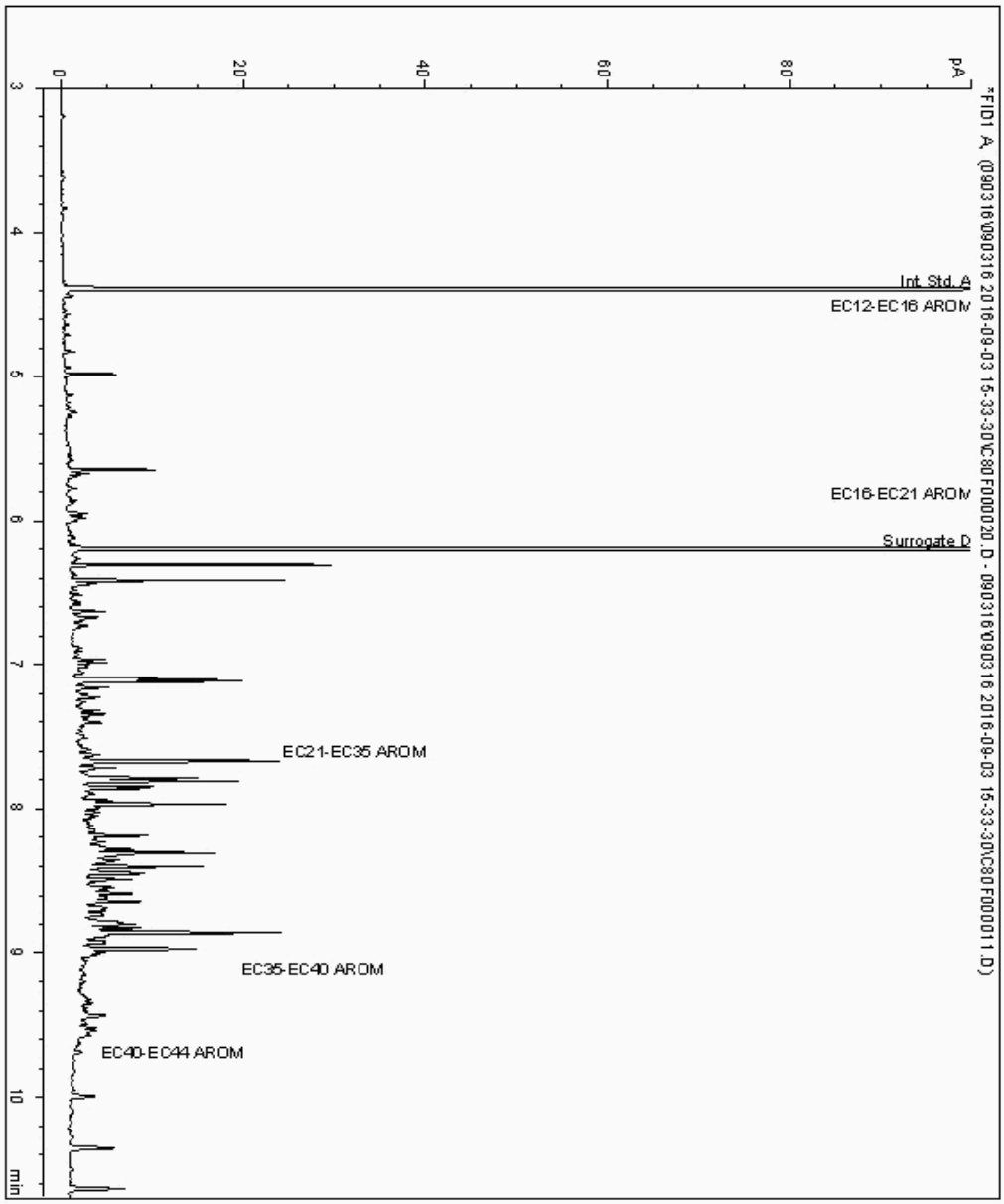
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14069573
Sample ID : HP210

Depth : 0.25

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 13215202-
Date Acquired : 03/09/16 21:16:14
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010



CERTIFICATE OF ANALYSIS

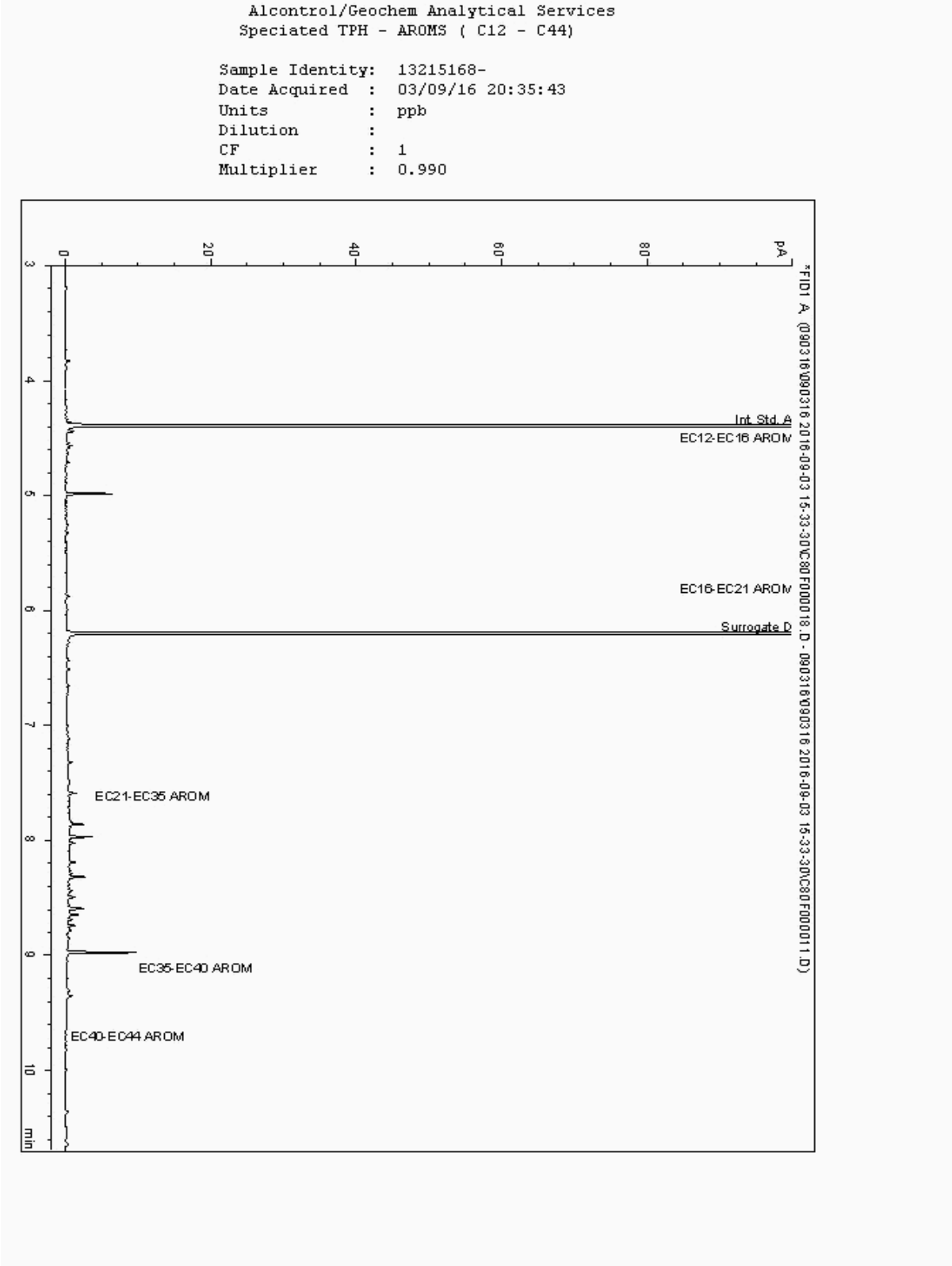
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14070152
Sample ID : HP209

Depth : 0.30



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

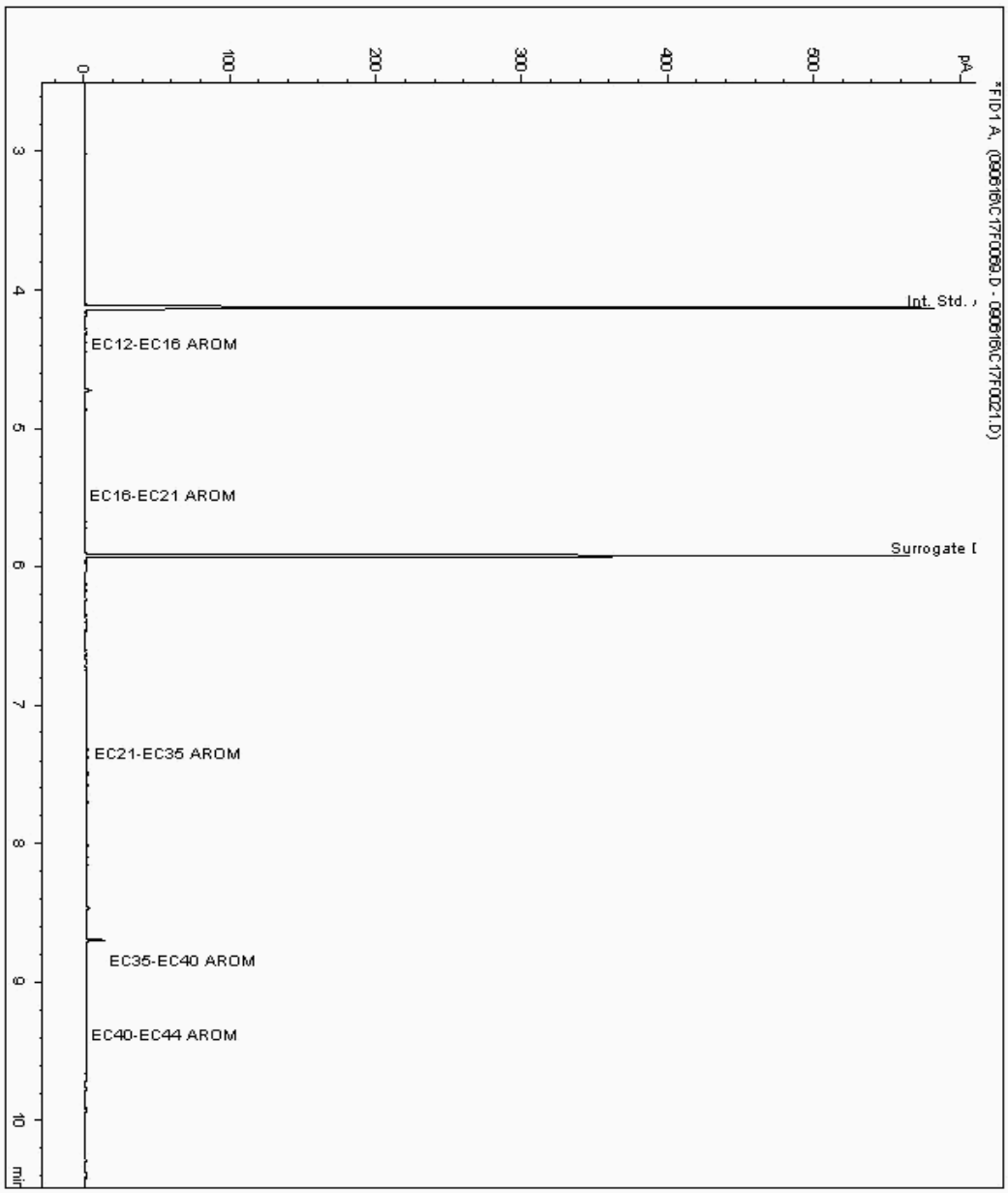
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14095265
Sample ID : HP209

Depth : 0.65

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13230318-
Date Acquired : 07/09/2016 05:47:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.970



CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

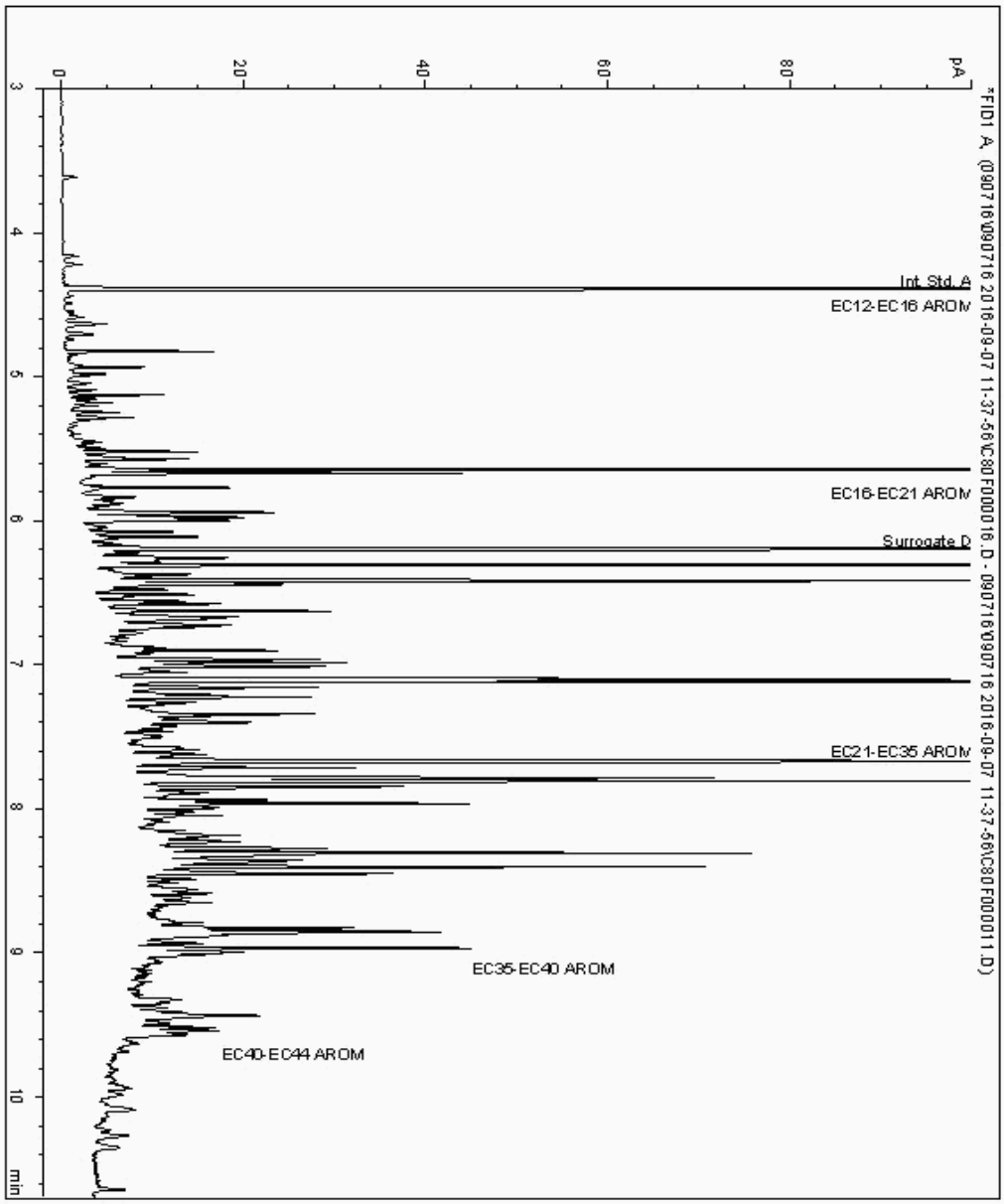
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14095338
Sample ID : HP210

Depth : 0.75

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 13230339-
Date Acquired : 07/09/16 13:57:33
Units : ppb
Dilution :
CF : 1
Multiplier : 1.040



CERTIFICATE OF ANALYSIS

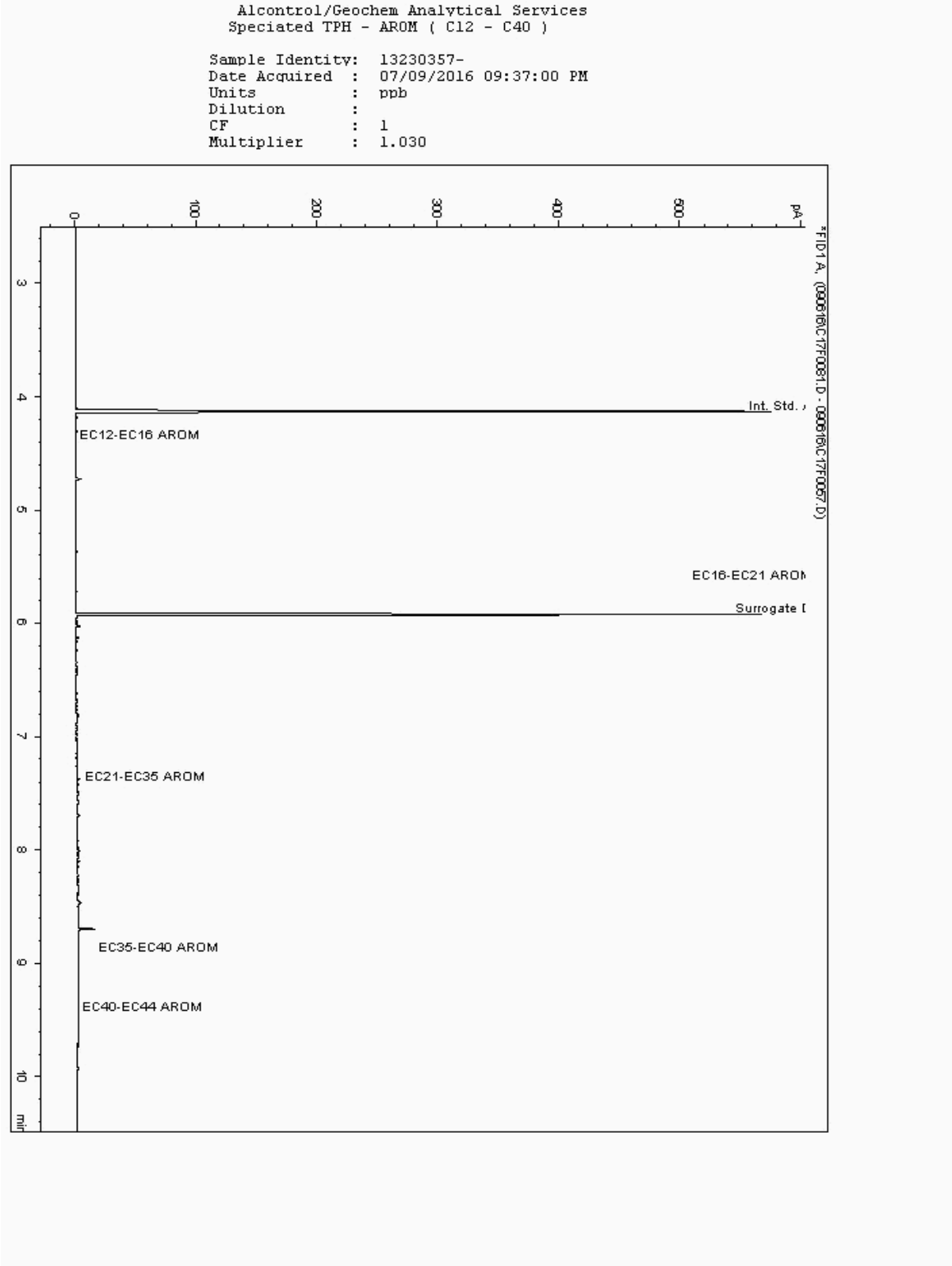
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14095394
Sample ID : WS207

Depth : 0.70

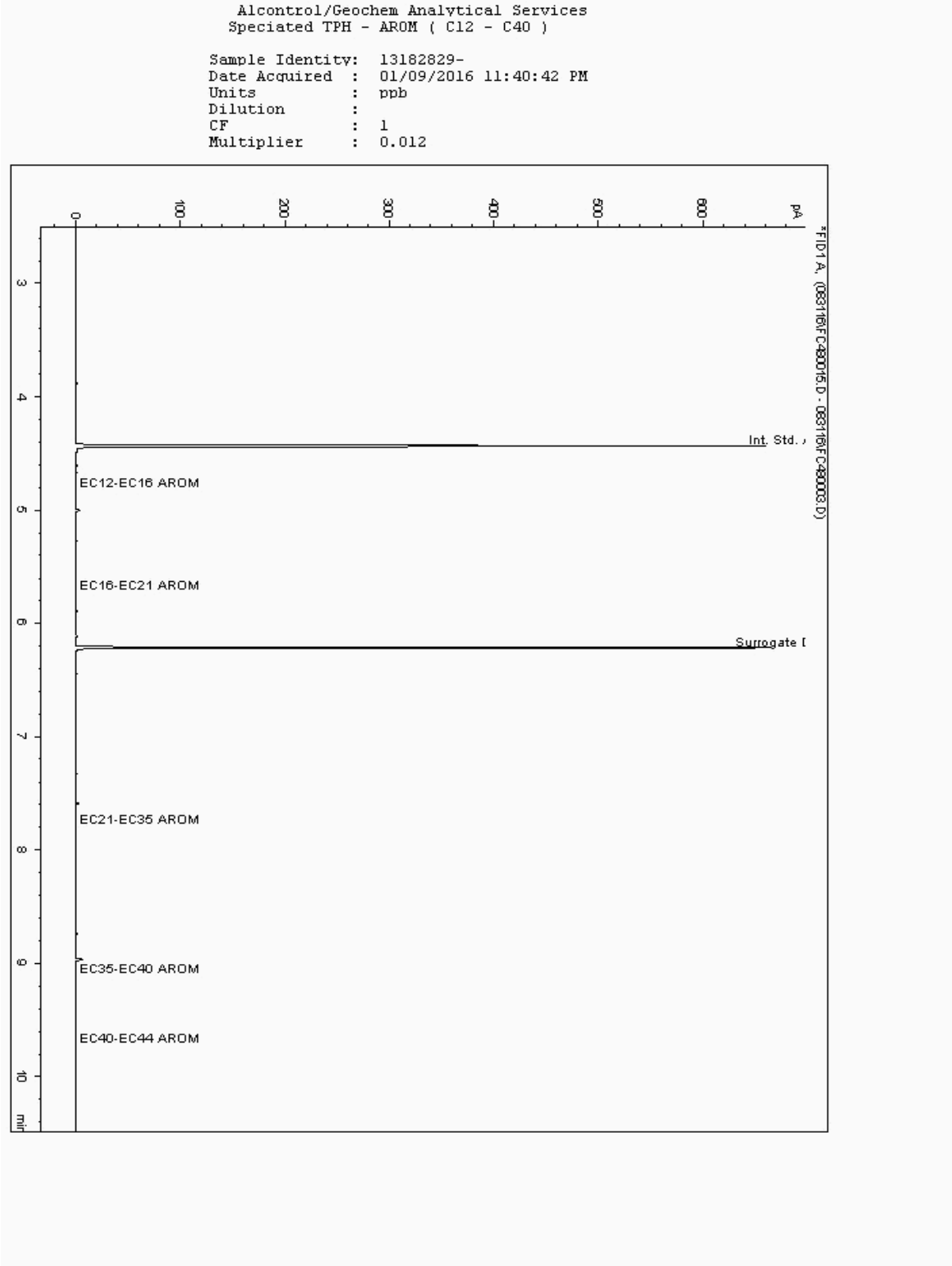


CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 14064297 **Sample ID :** WS212 **Depth :** 0.65

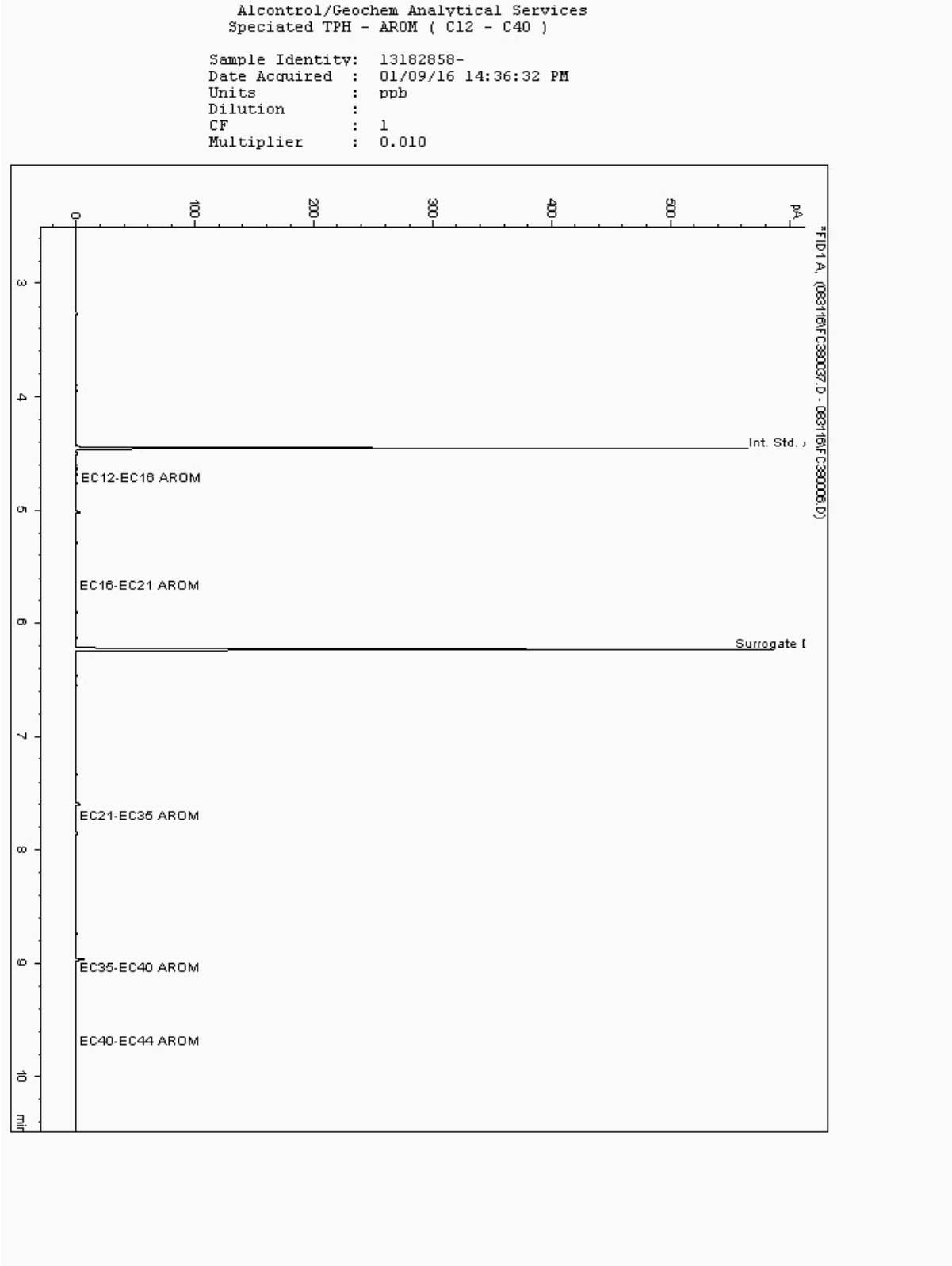


CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 14064307 **Sample ID :** BH202 **Depth :** 0.30

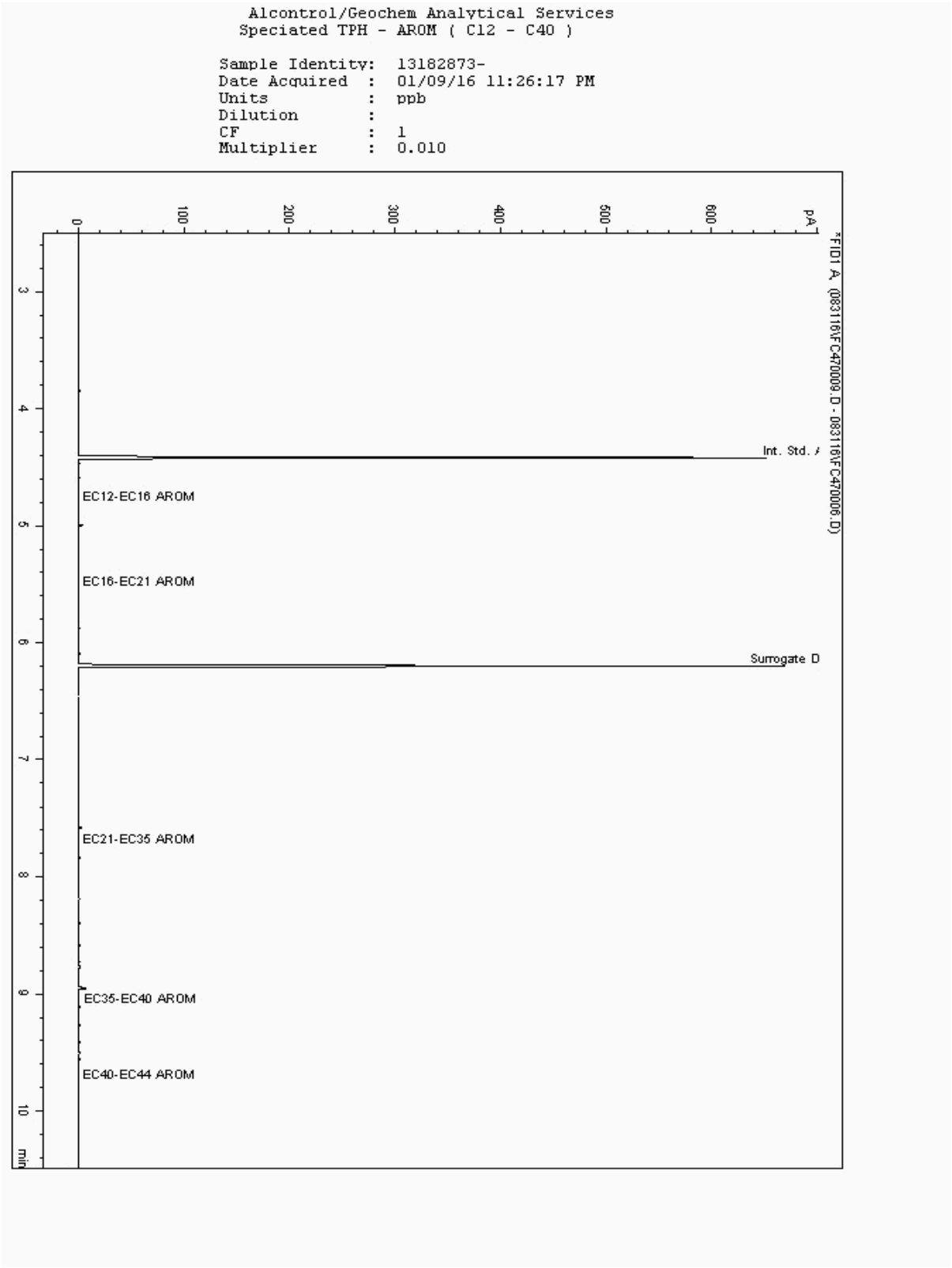


CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 14064361 **Sample ID :** WS202 **Depth :** 1.00



CERTIFICATE OF ANALYSIS

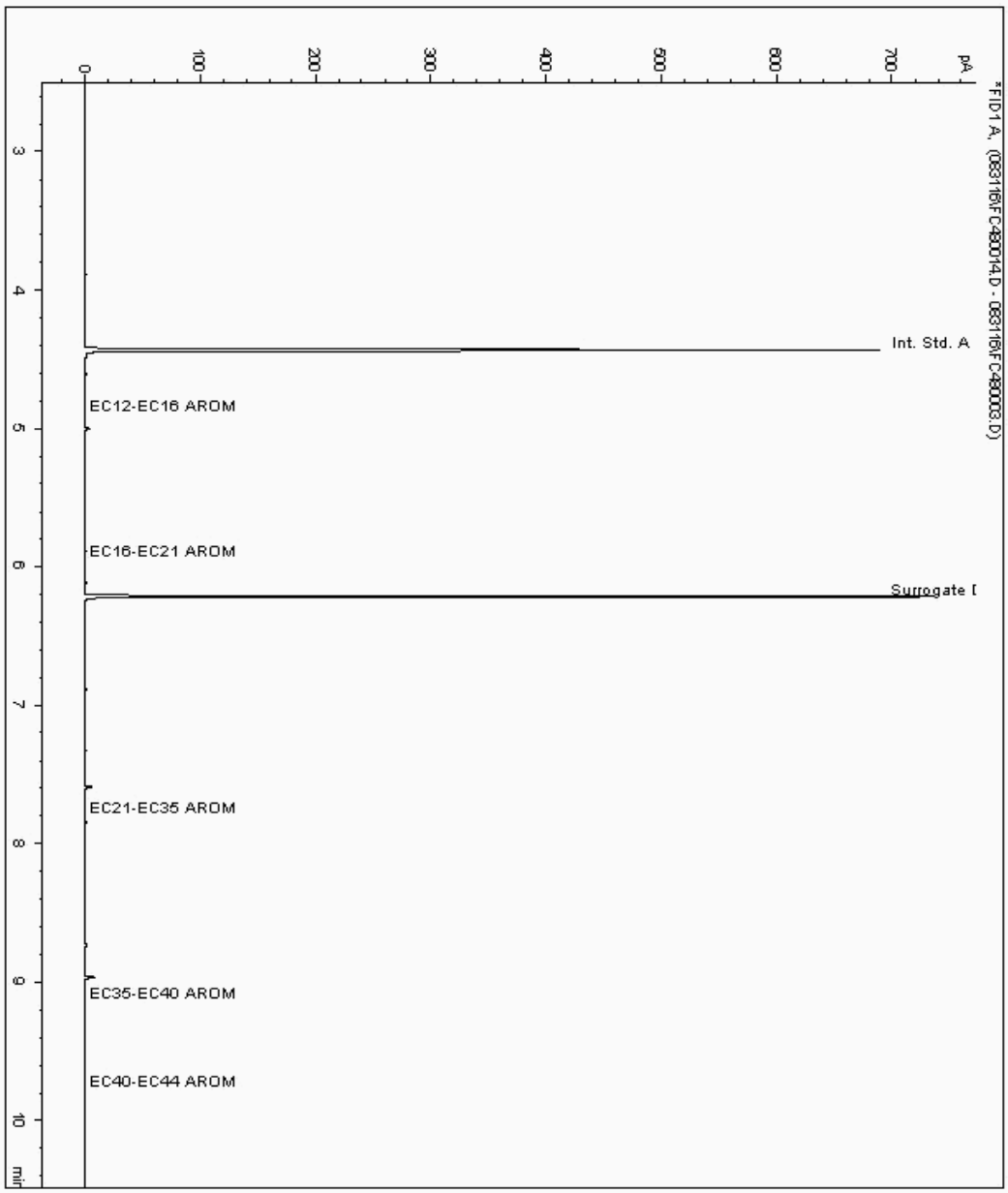
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 14064372 **Sample ID :** WS204 **Depth :** 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13182885-
Date Acquired : 01/09/2016 11:23:42 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.009

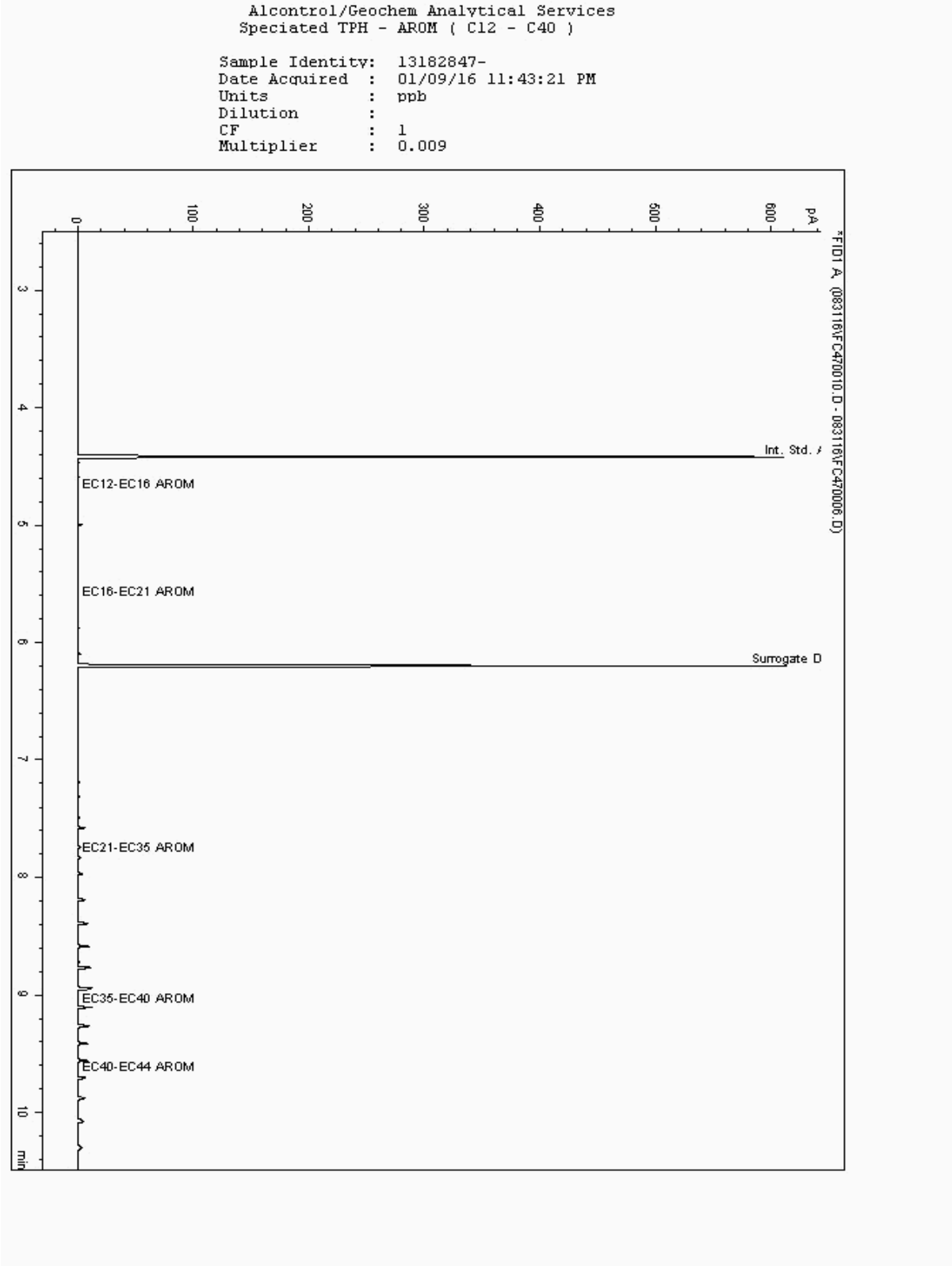


CERTIFICATE OF ANALYSIS

SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 14064378 **Sample ID :** BH207 **Depth :** 0.70



CERTIFICATE OF ANALYSIS

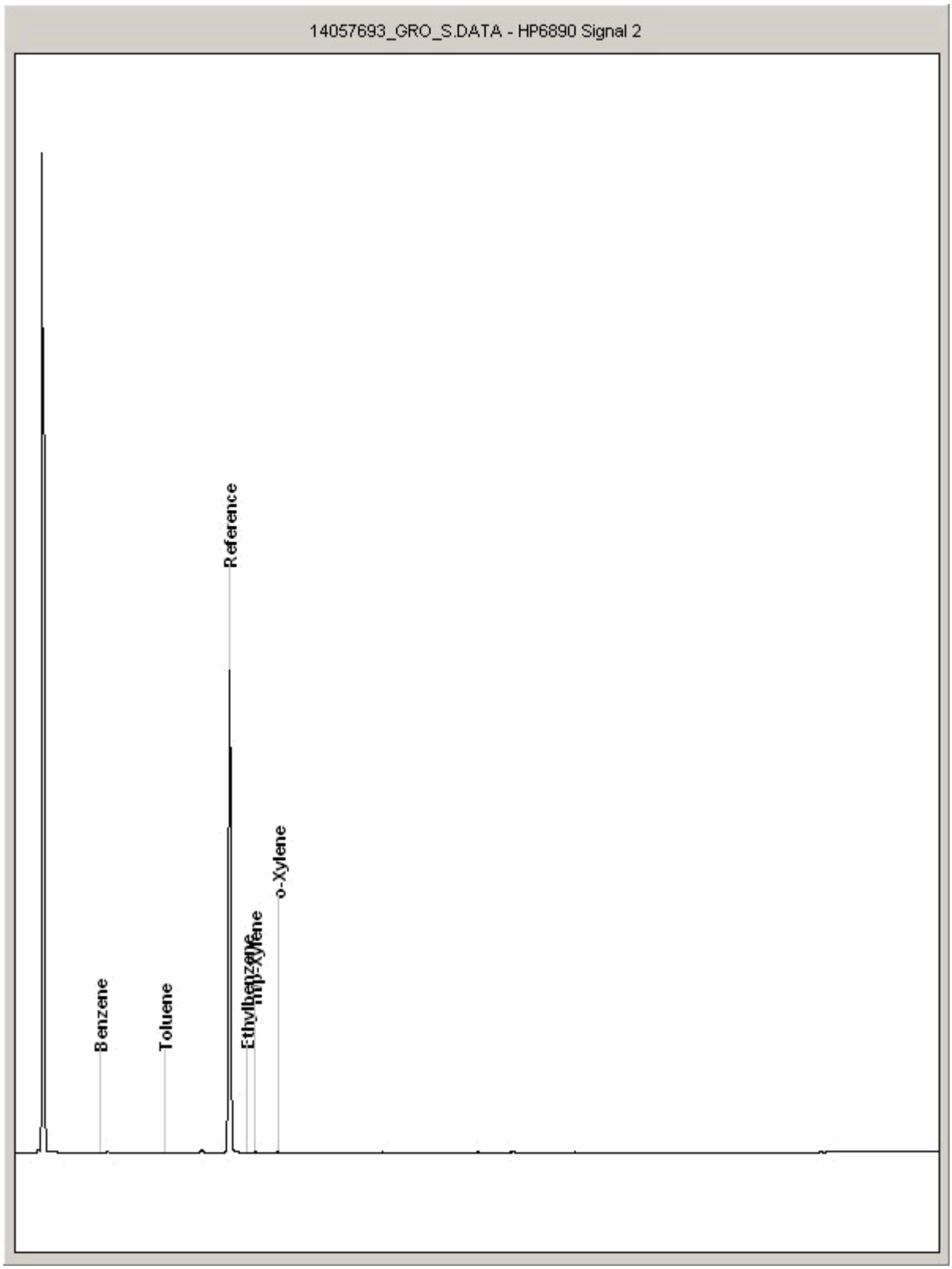
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14057693
Sample ID : BH202

Depth : 1.00



CERTIFICATE OF ANALYSIS

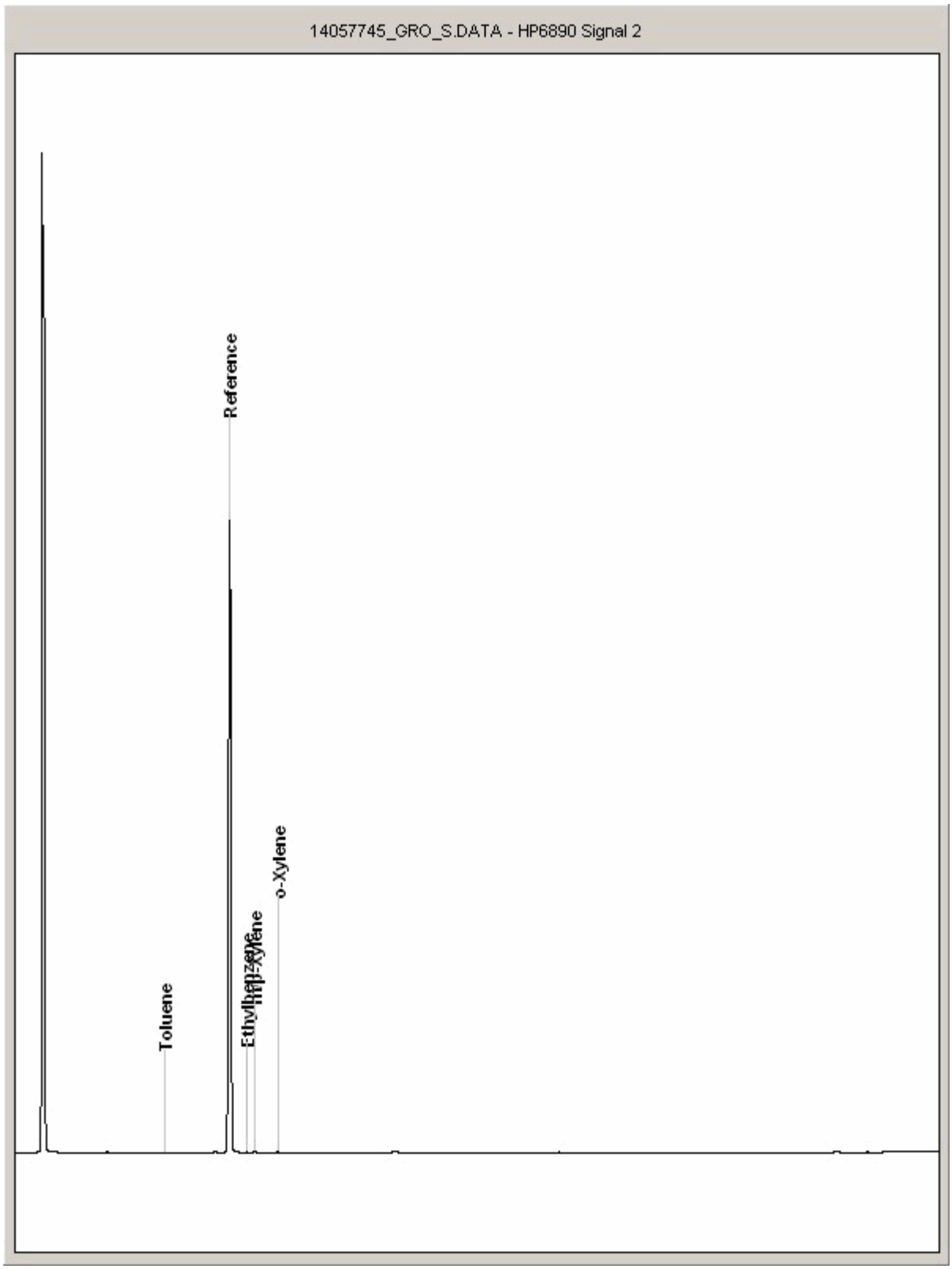
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14057745
Sample ID : BH201

Depth : 0.30



CERTIFICATE OF ANALYSIS

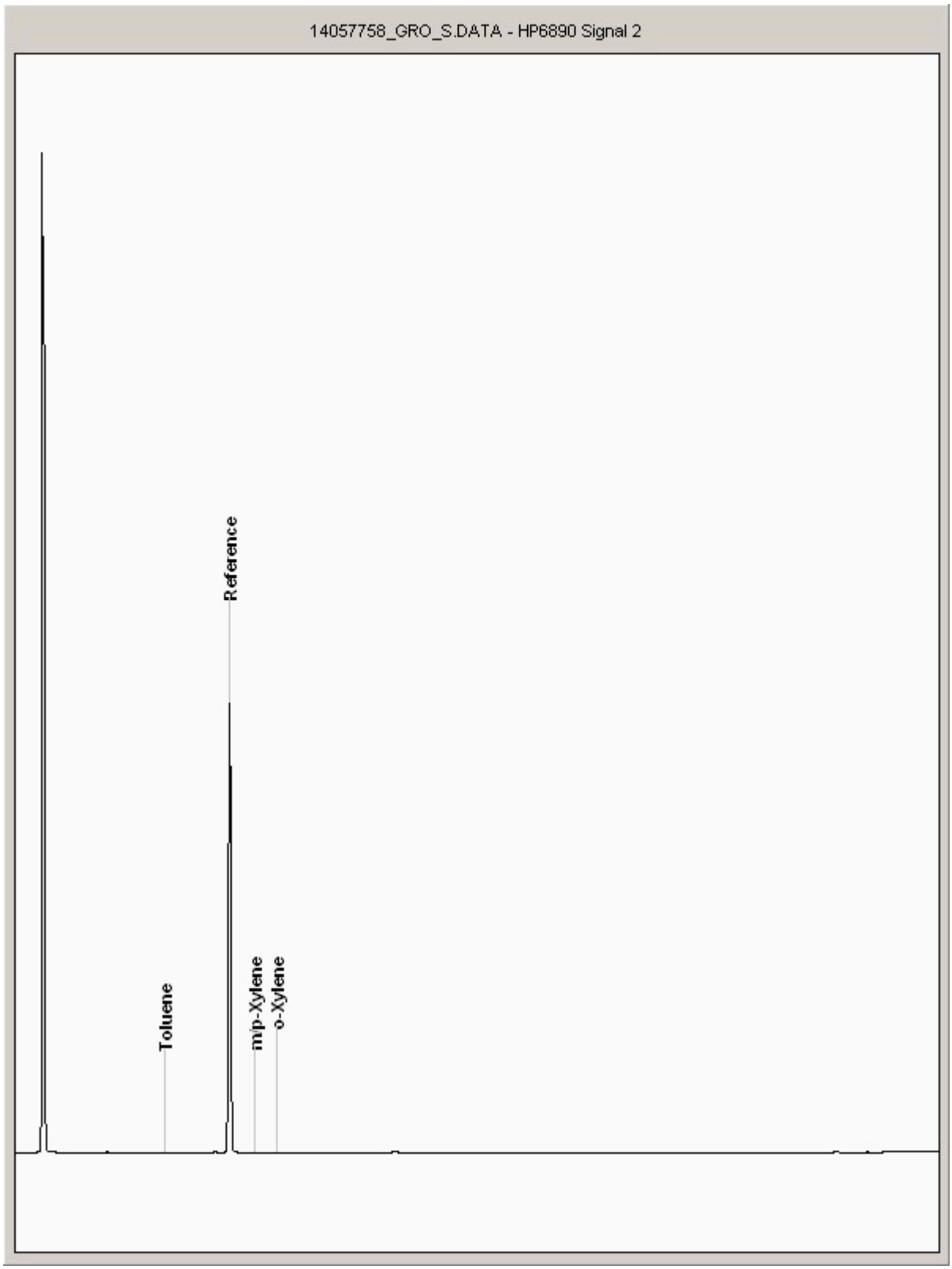
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14057758
Sample ID : BH201

Depth : 1.00



CERTIFICATE OF ANALYSIS

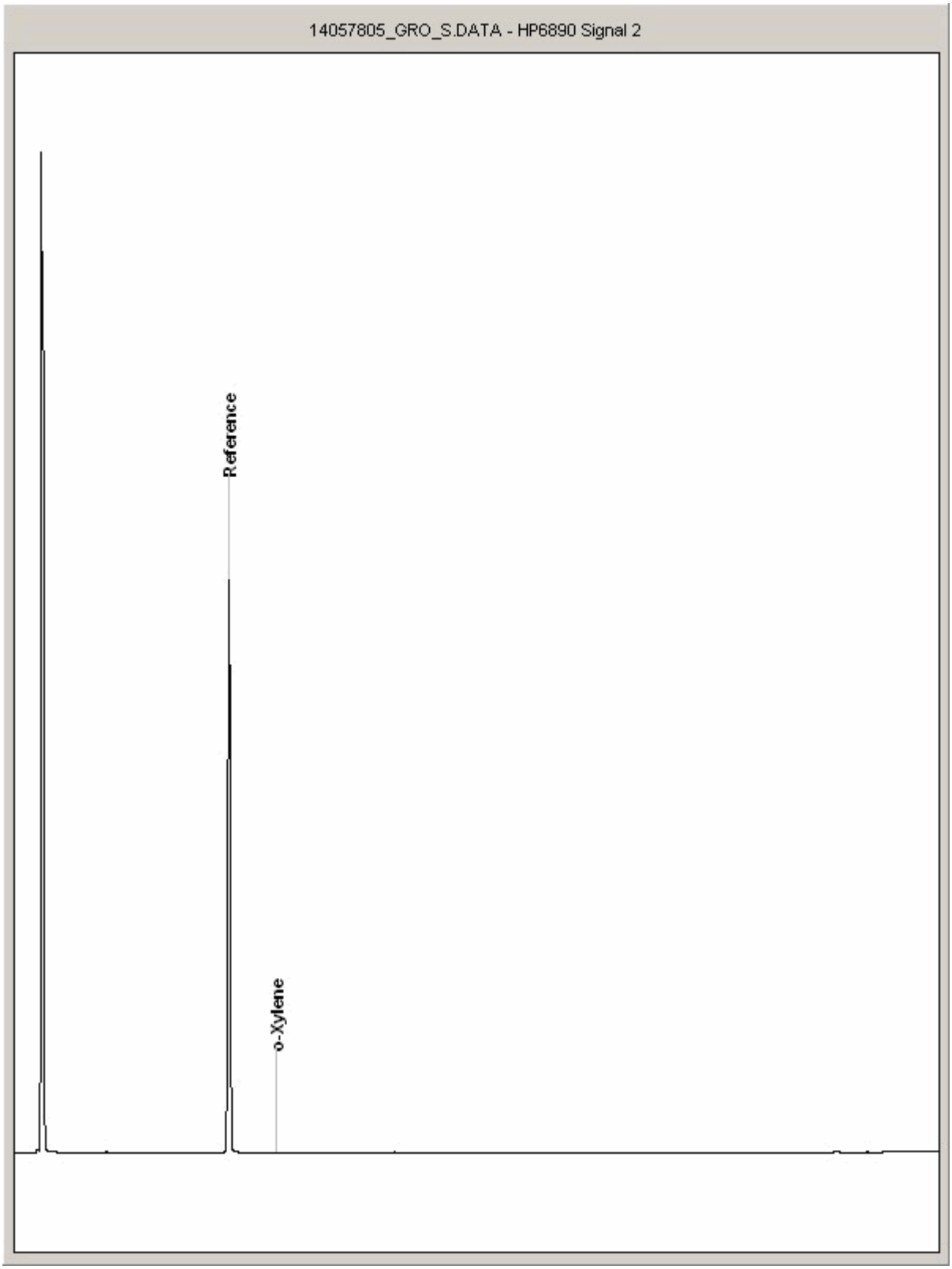
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14057805
Sample ID : HP207

Depth : 0.30



CERTIFICATE OF ANALYSIS

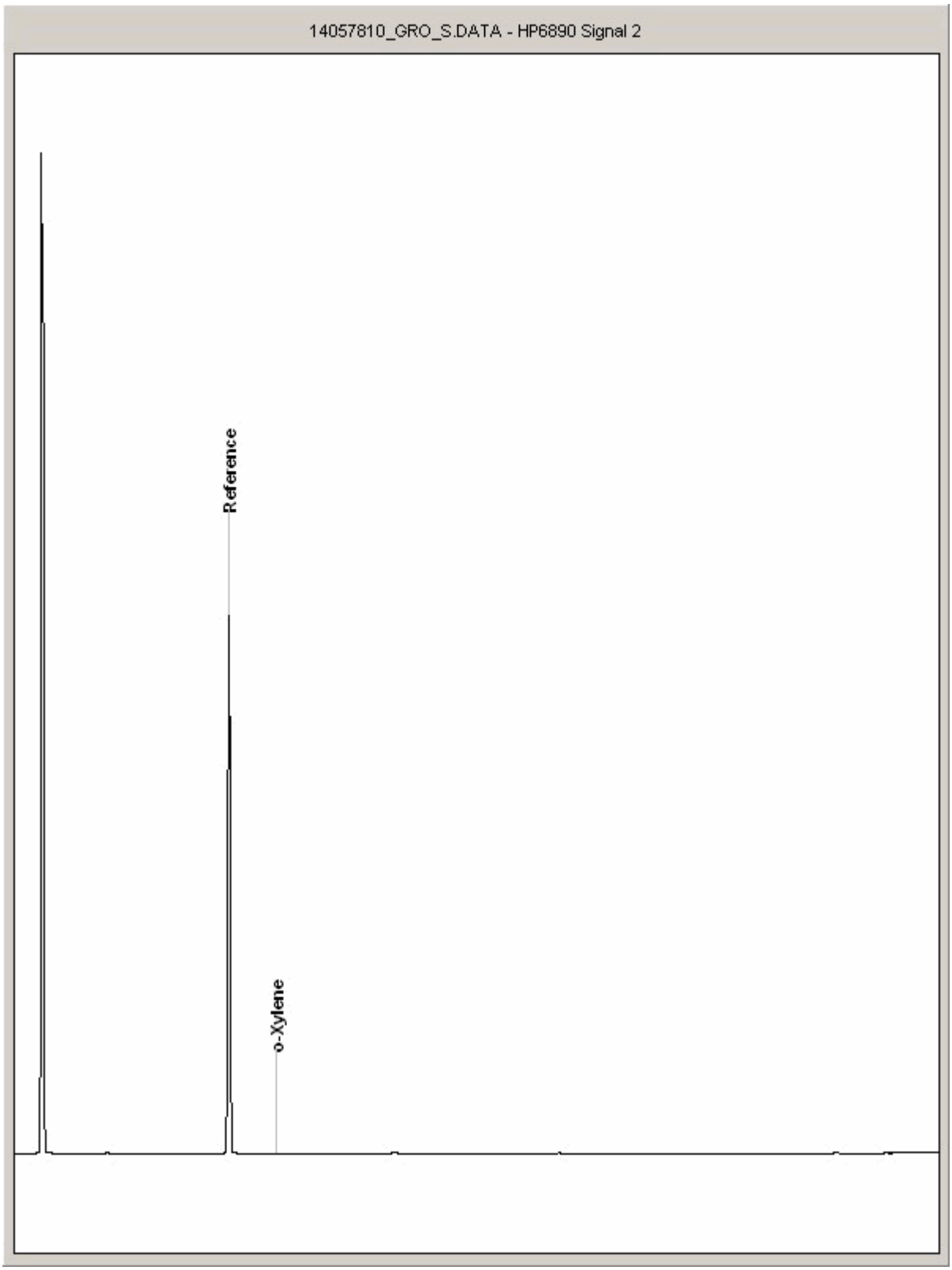
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14057810
Sample ID : HP207

Depth : 0.60



CERTIFICATE OF ANALYSIS

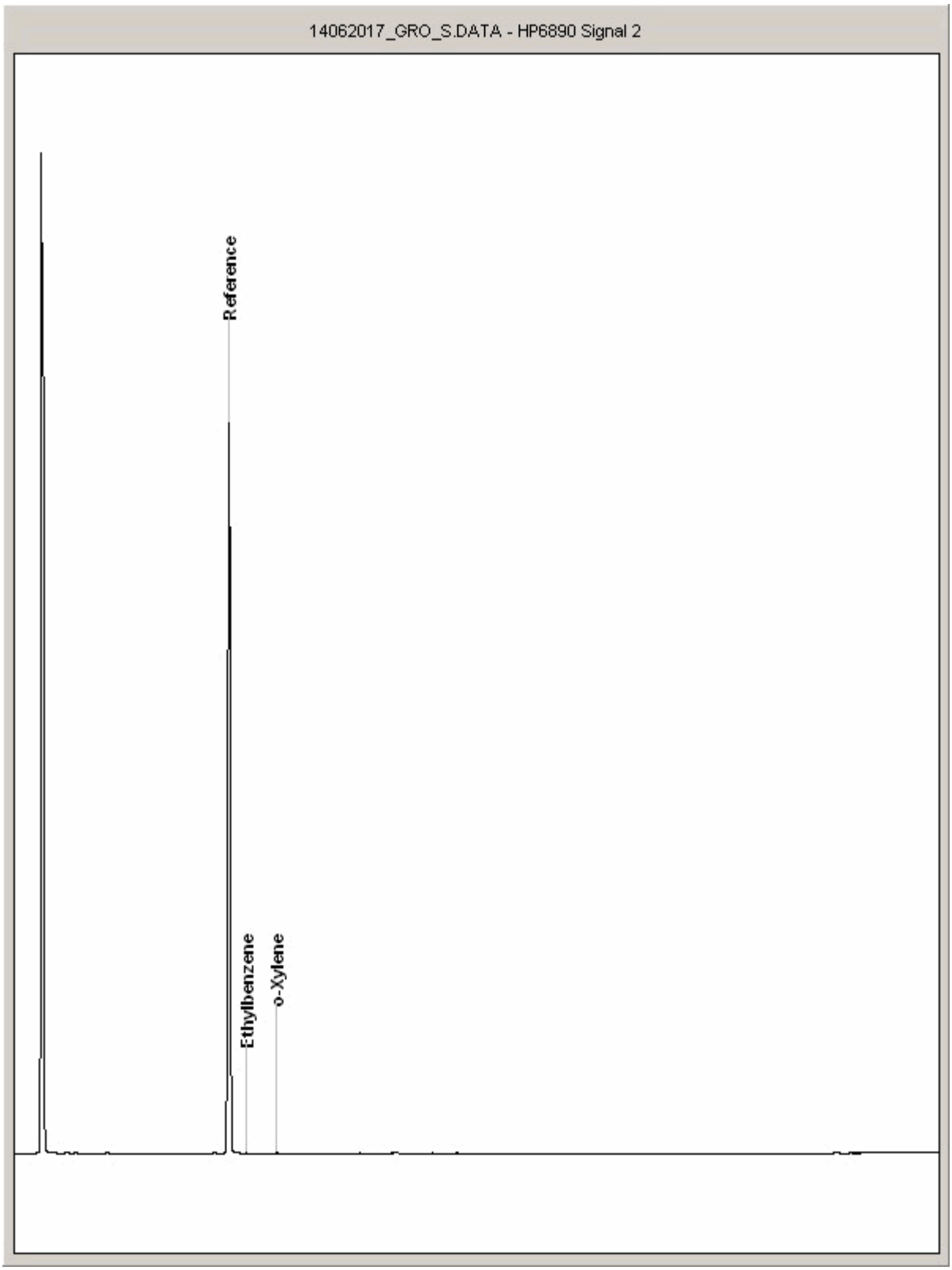
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062017
Sample ID : BH201

Depth : 3.00



CERTIFICATE OF ANALYSIS

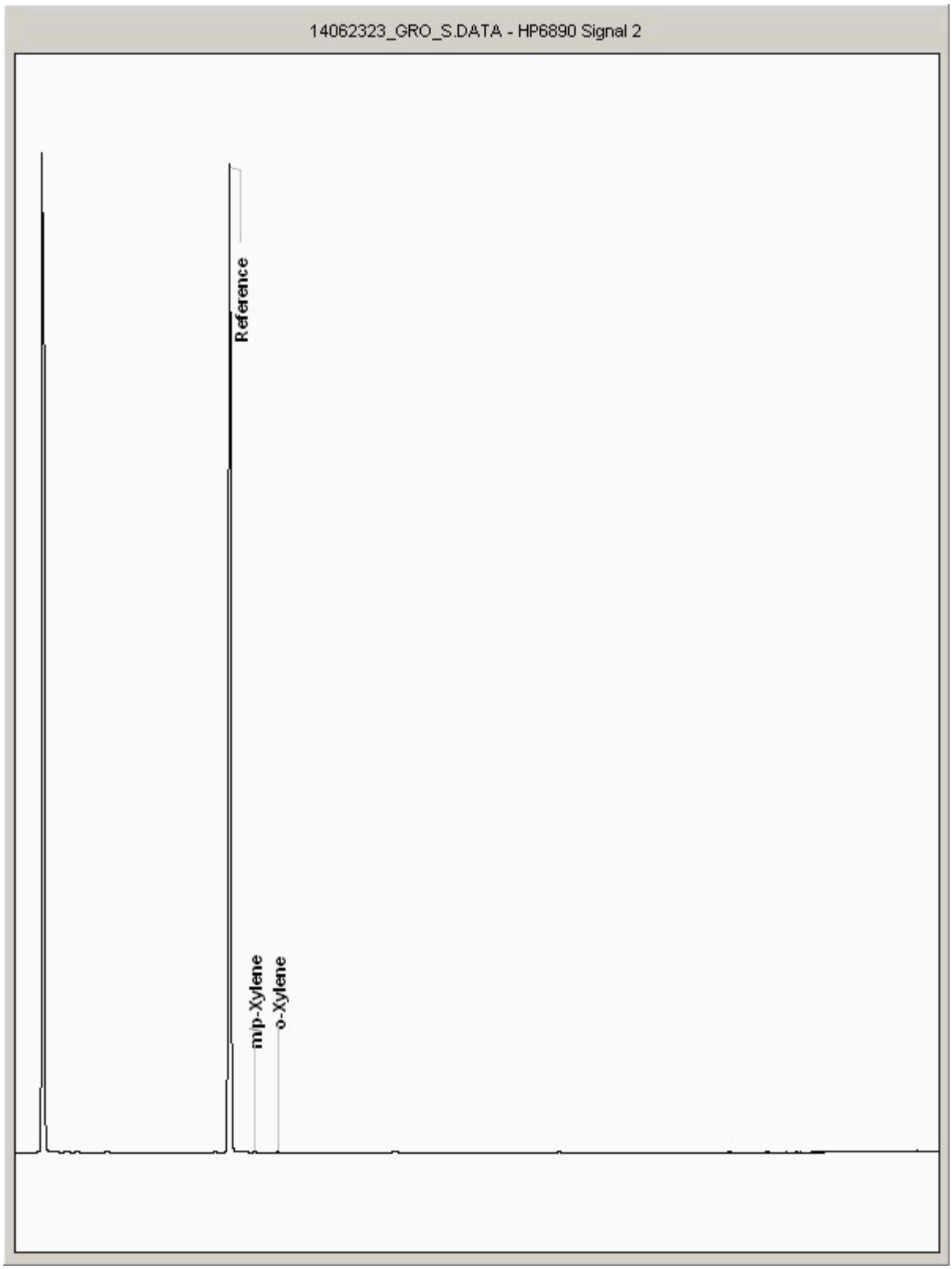
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062323
Sample ID : HP202

Depth : 0.70



CERTIFICATE OF ANALYSIS

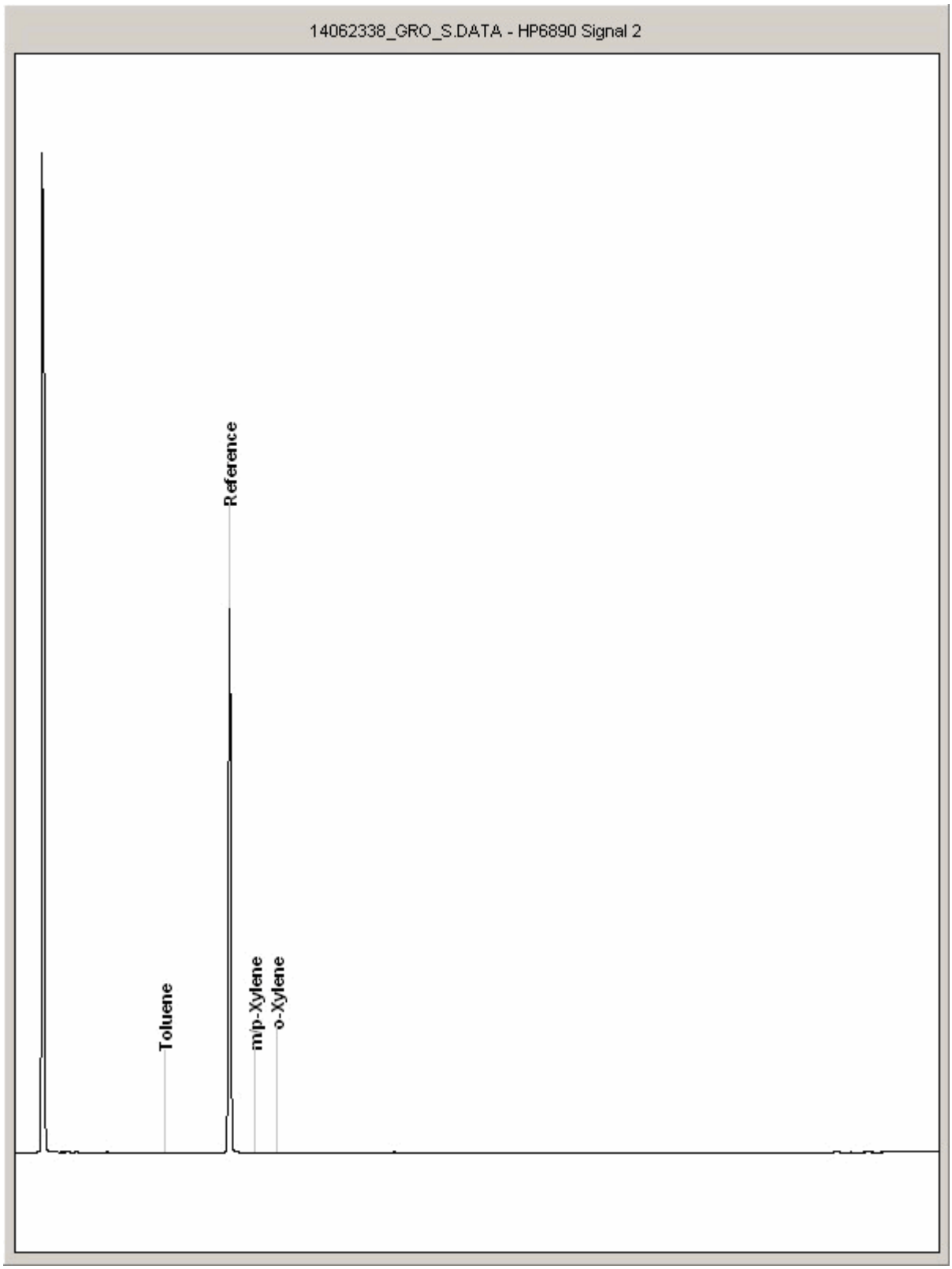
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062338
Sample ID : HP202

Depth : 0.30



CERTIFICATE OF ANALYSIS

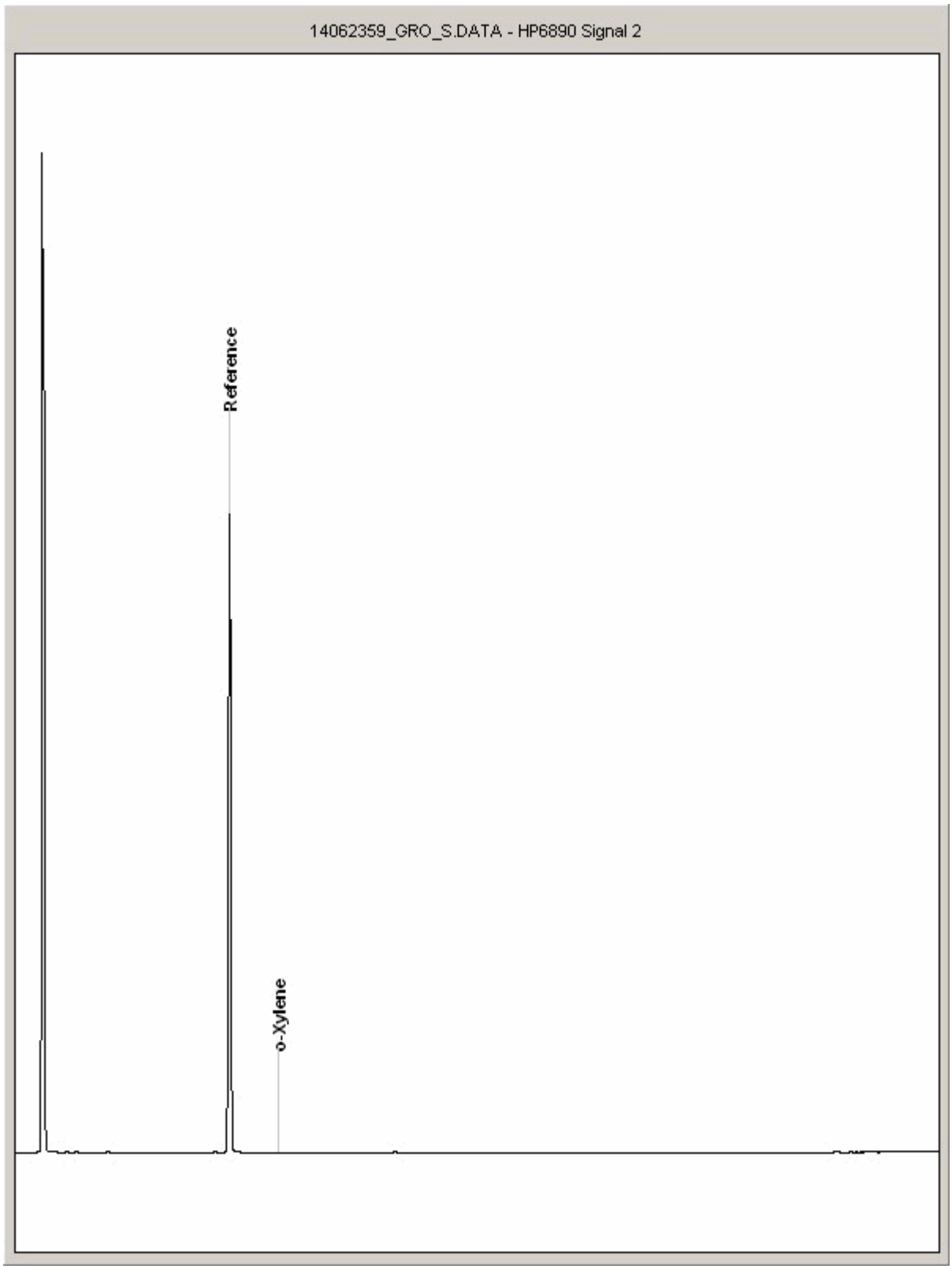
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062359
Sample ID : TP209

Depth : 0.40



CERTIFICATE OF ANALYSIS

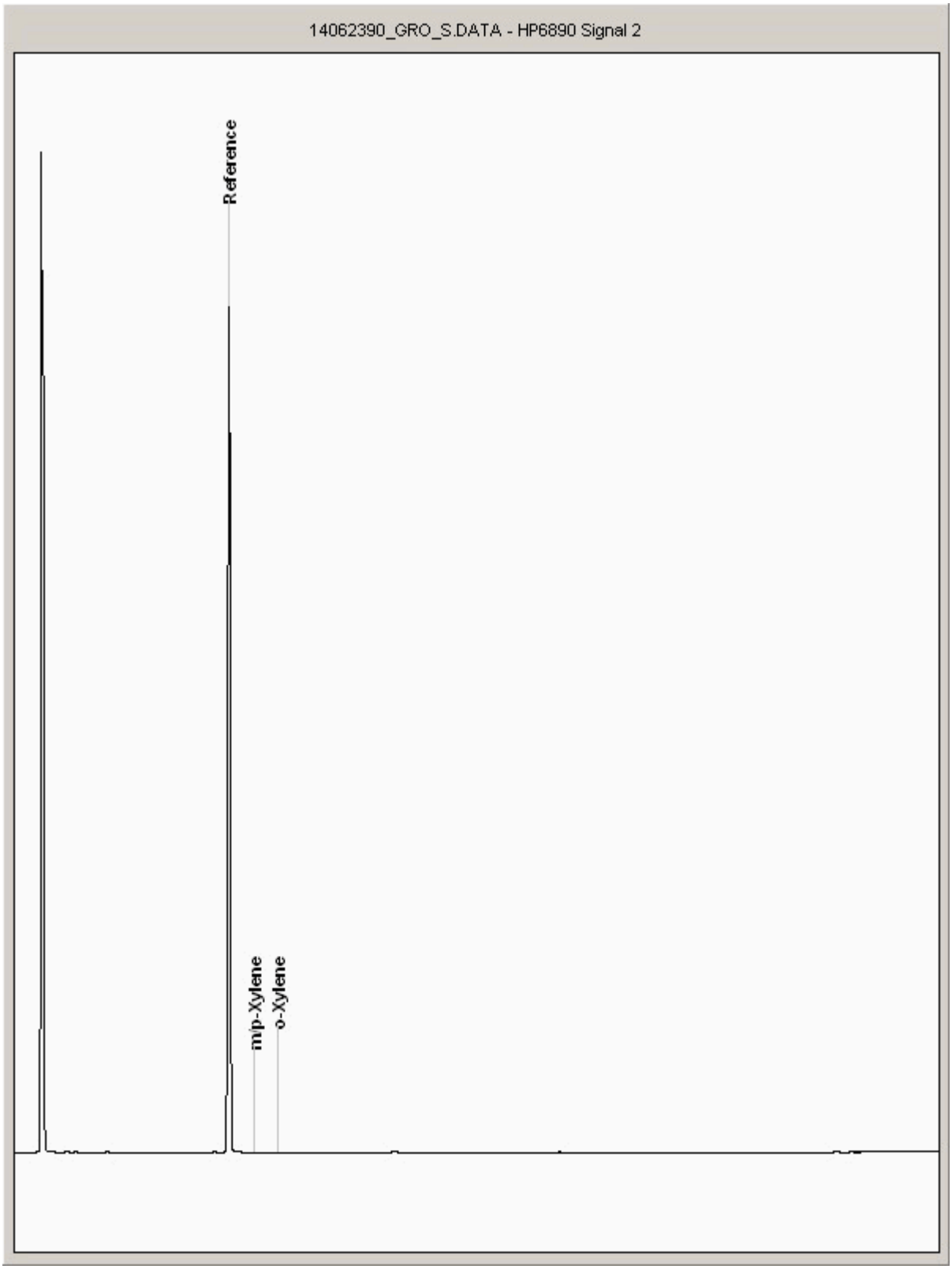
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062390
Sample ID : TP213

Depth : 1.00



CERTIFICATE OF ANALYSIS

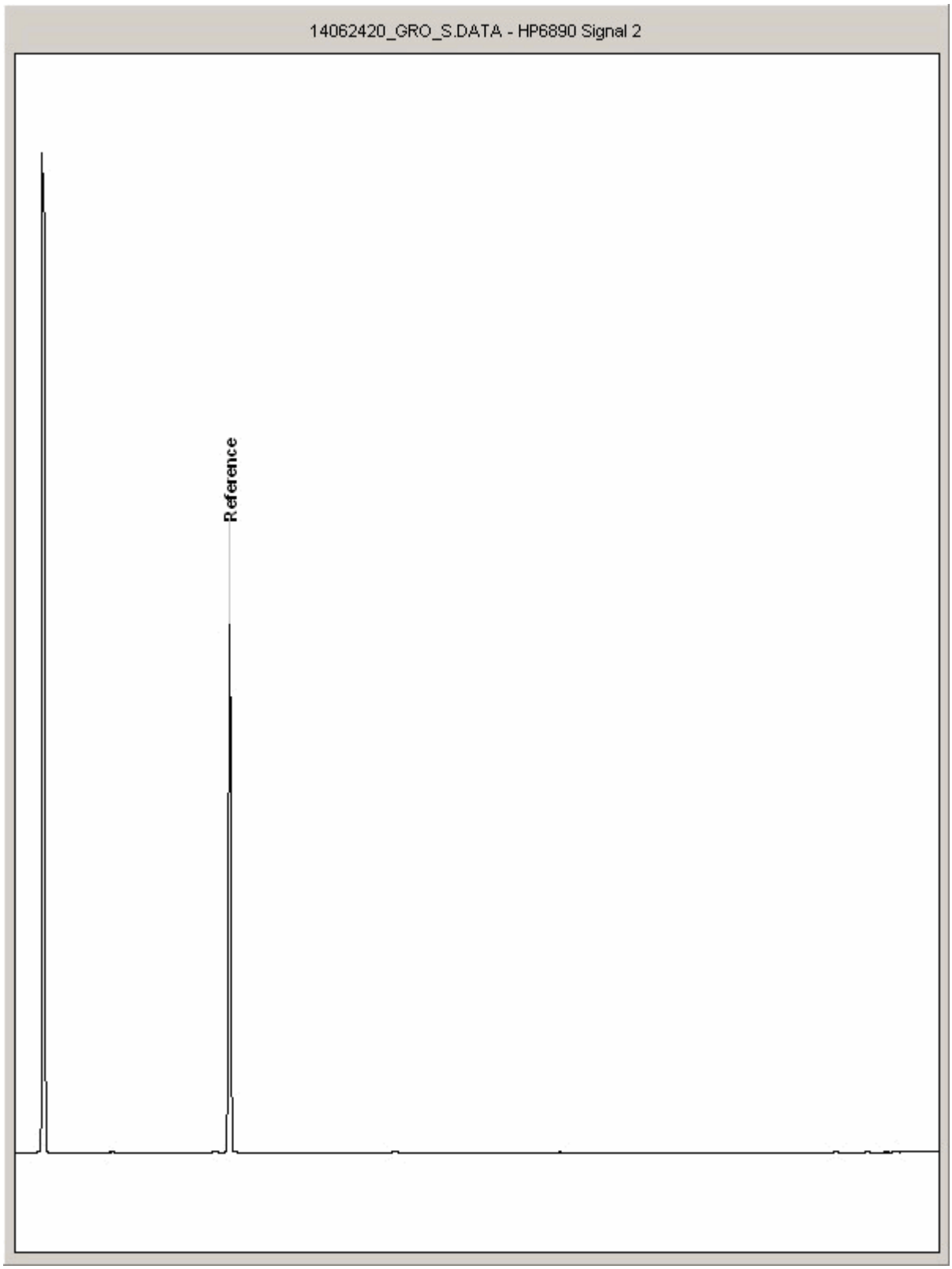
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062420
Sample ID : TP209

Depth : 1.00



CERTIFICATE OF ANALYSIS

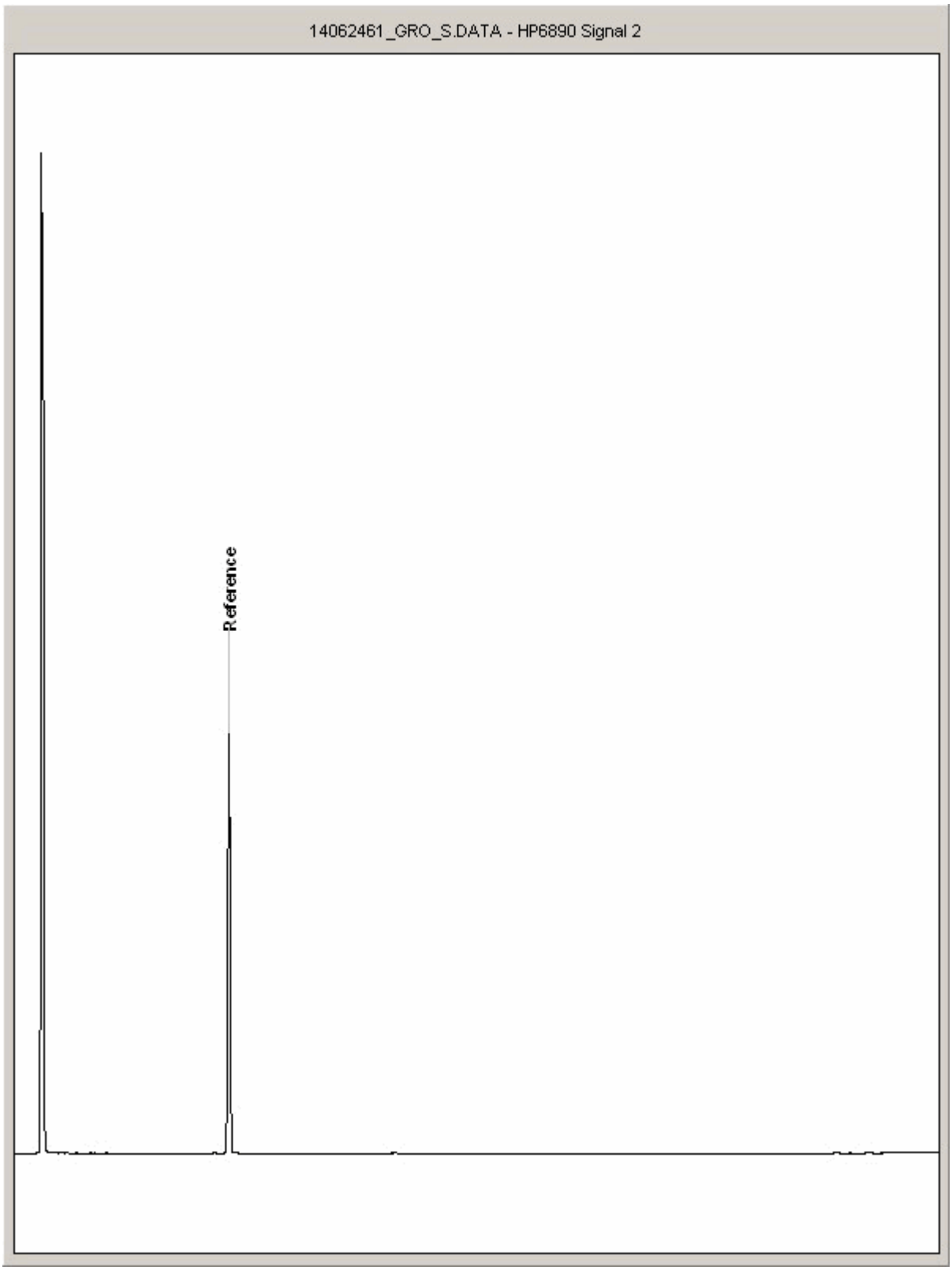
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062461
Sample ID : BH207

Depth : 0.30



CERTIFICATE OF ANALYSIS

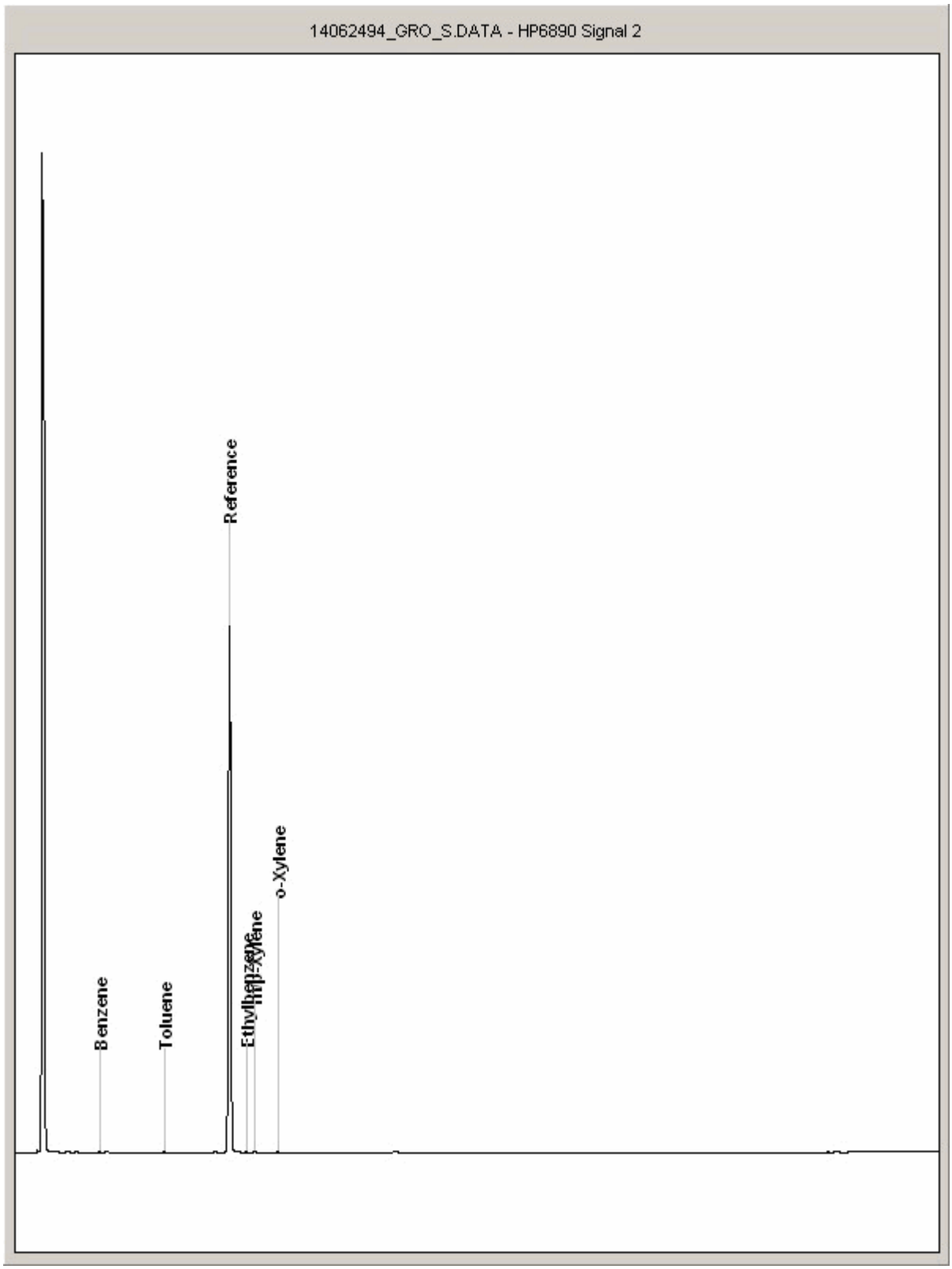
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062494
Sample ID : TP201

Depth : 1.00



CERTIFICATE OF ANALYSIS

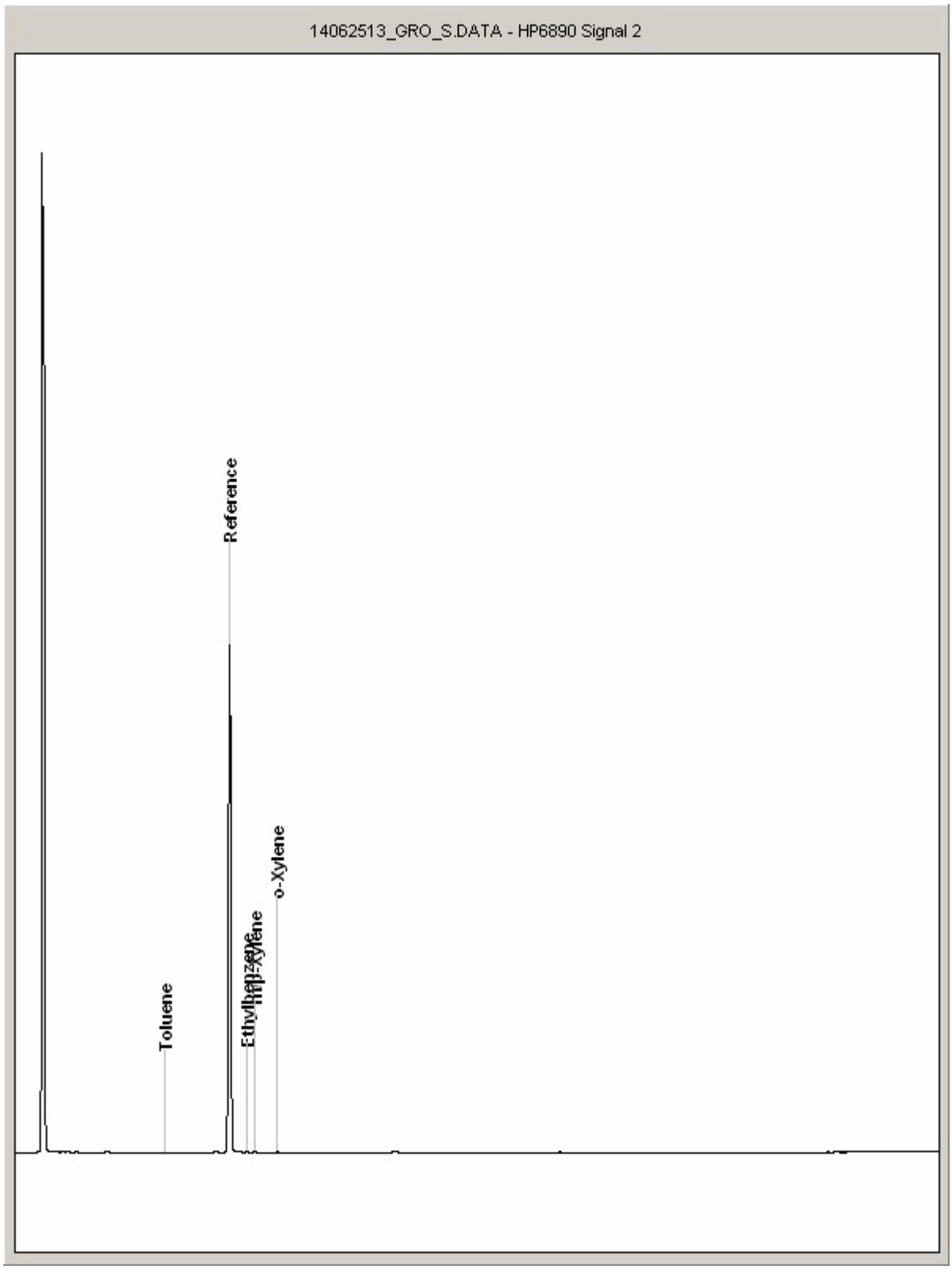
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062513
Sample ID : HP203

Depth : 0.70



CERTIFICATE OF ANALYSIS

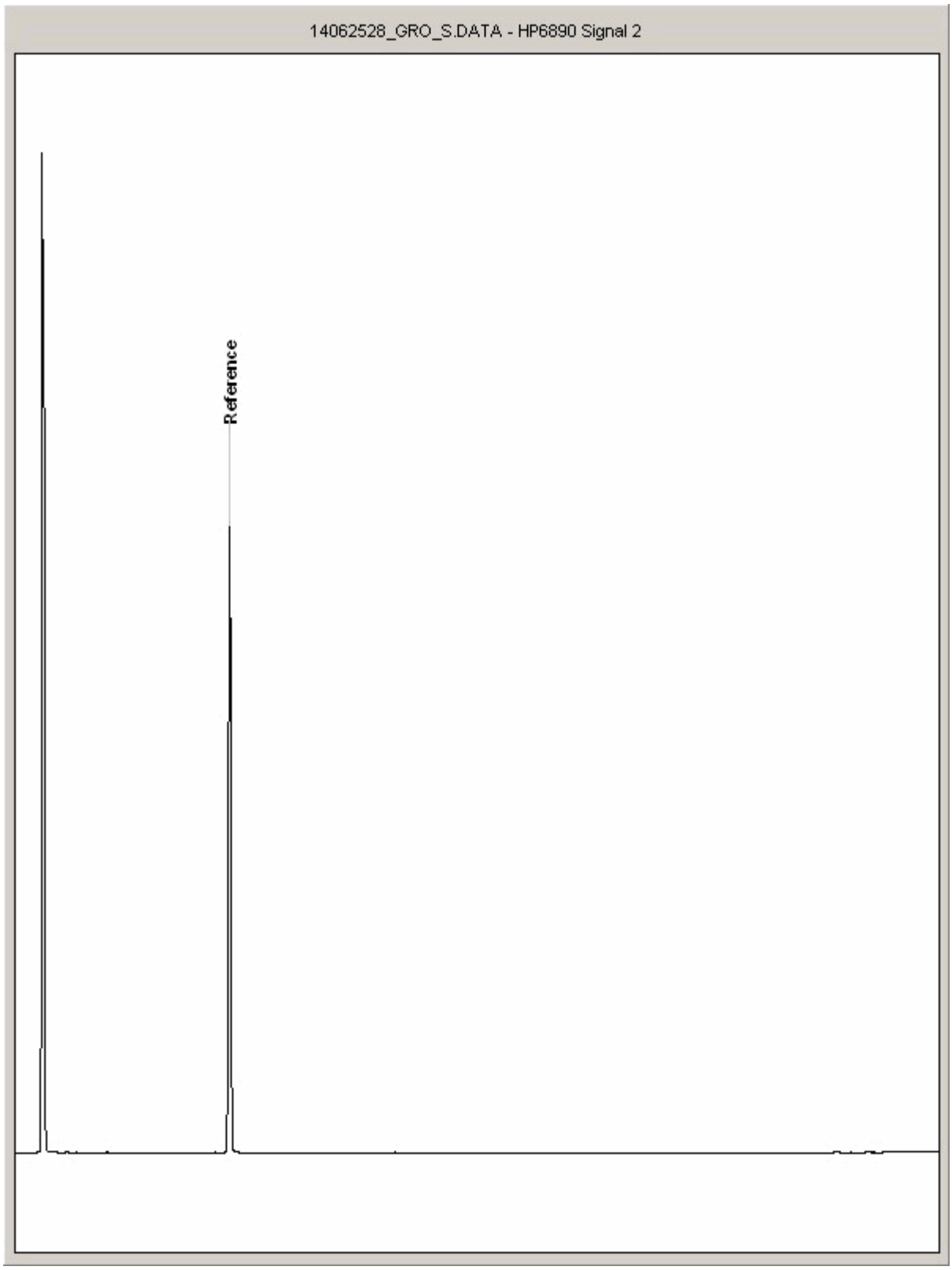
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062528
Sample ID : TP201

Depth : 0.30



CERTIFICATE OF ANALYSIS

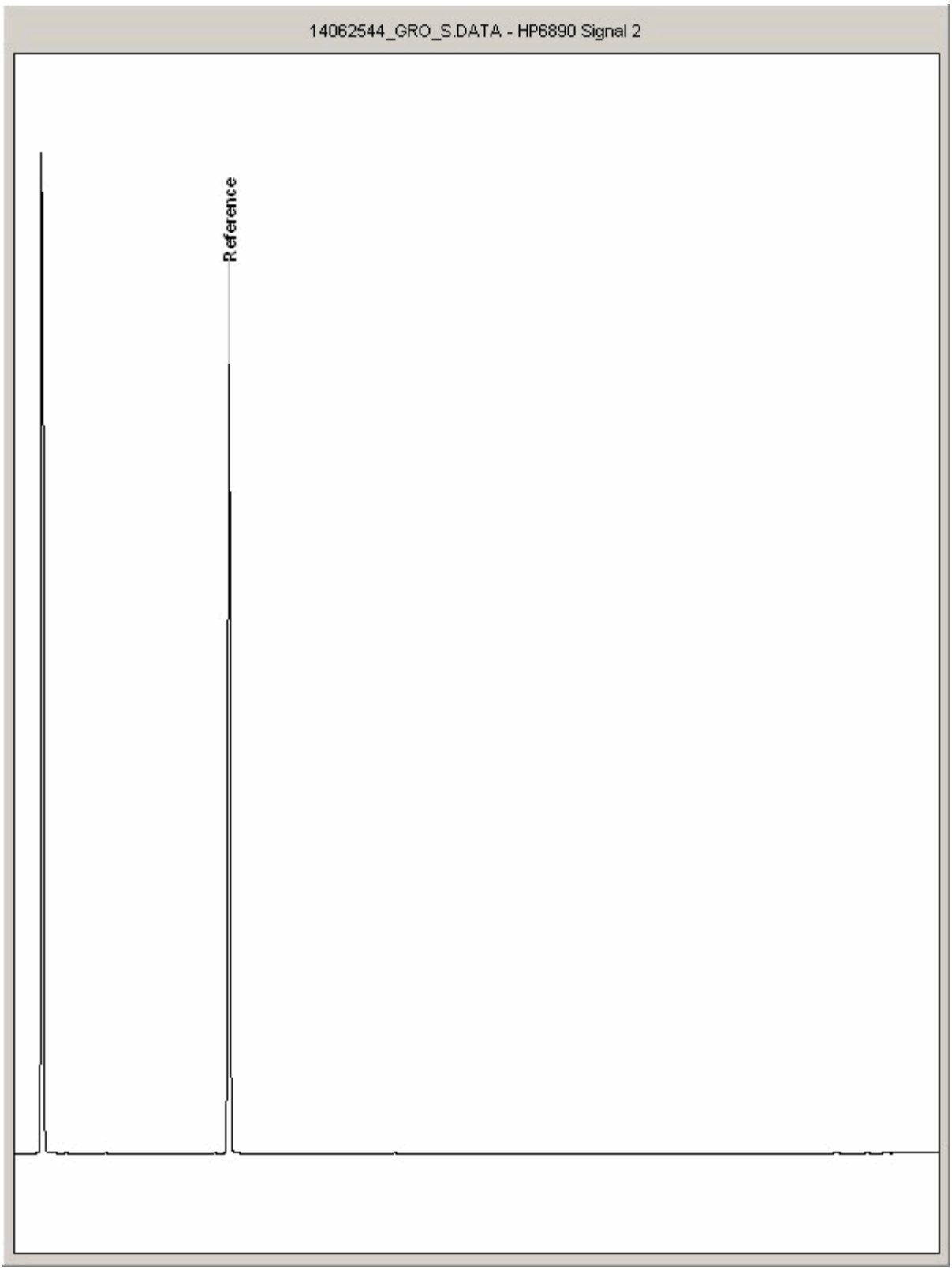
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062544
Sample ID : BH207

Depth : 1.50



CERTIFICATE OF ANALYSIS

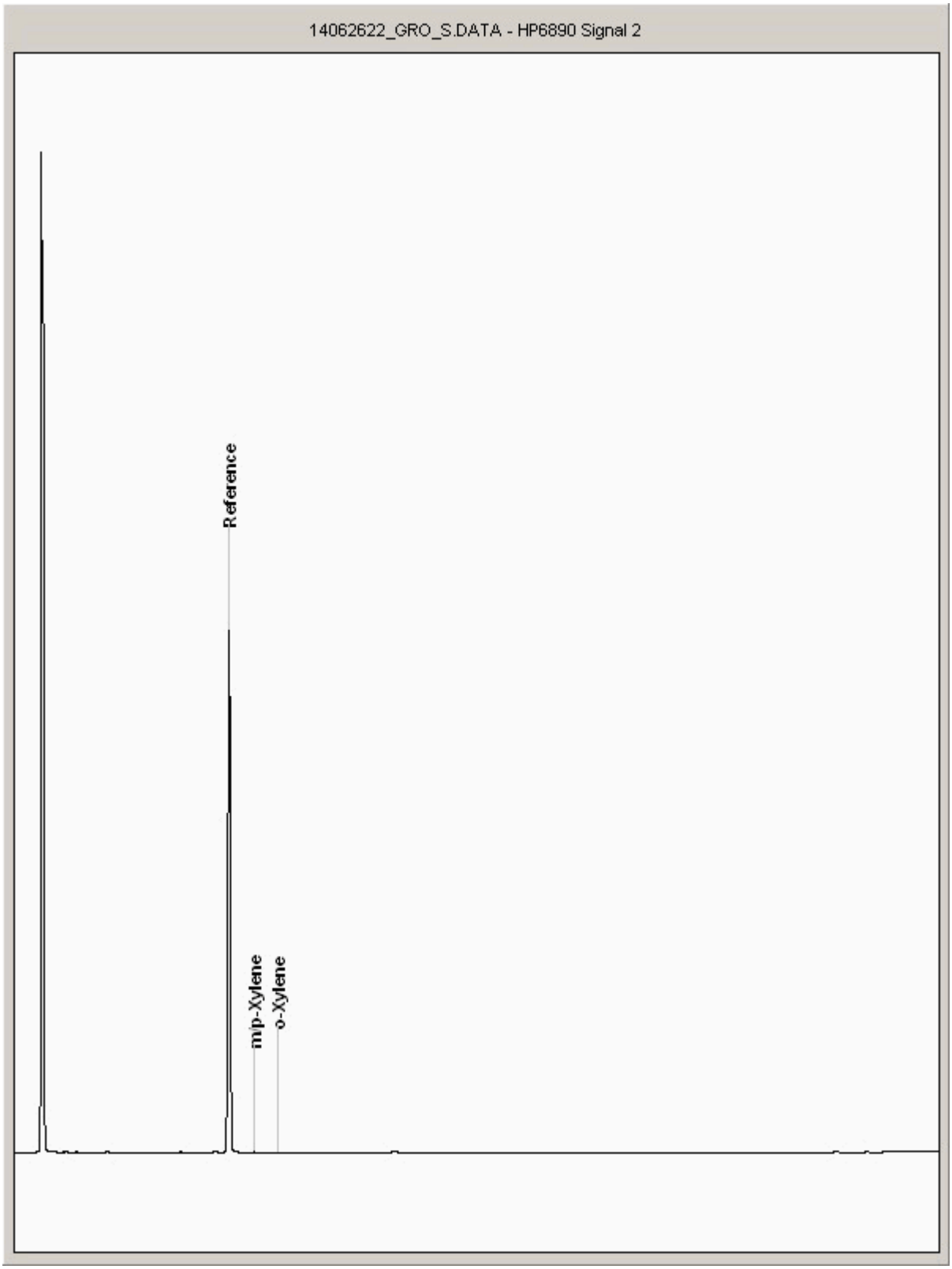
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062622
Sample ID : HP201

Depth : 0.20



CERTIFICATE OF ANALYSIS

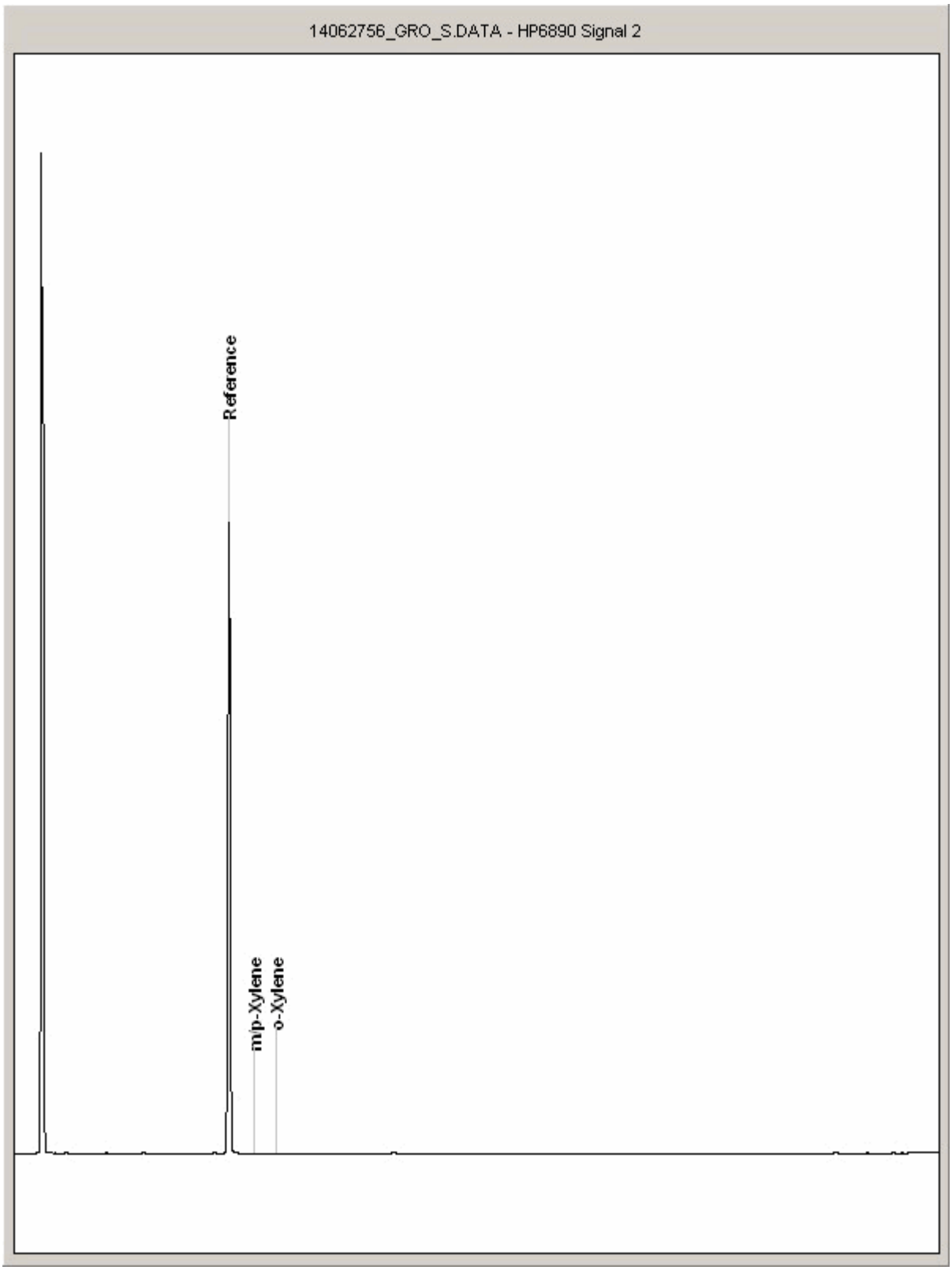
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062756
Sample ID : TP211

Depth : 0.70



CERTIFICATE OF ANALYSIS

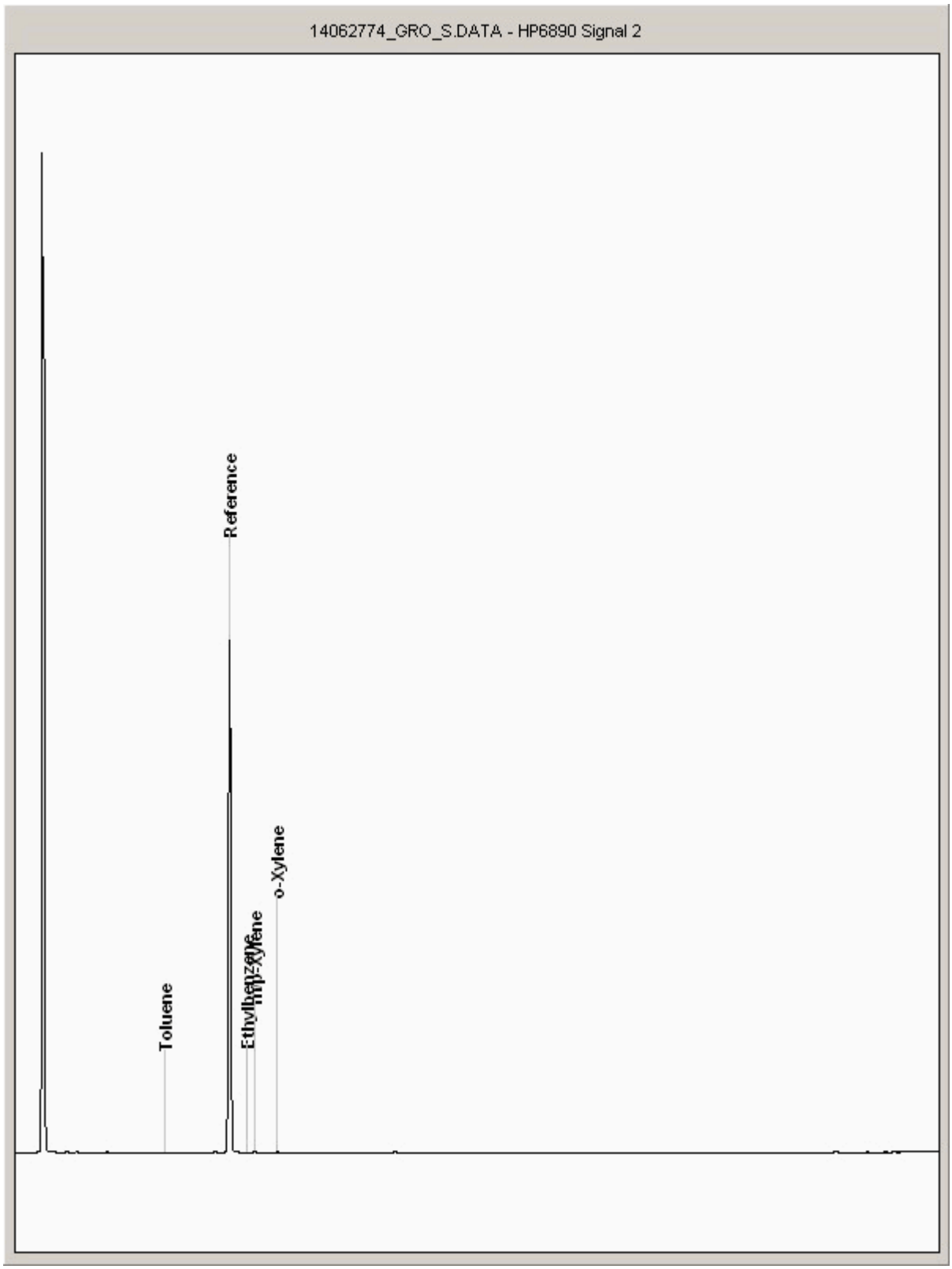
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062774
Sample ID : WS209

Depth : 0.50



CERTIFICATE OF ANALYSIS

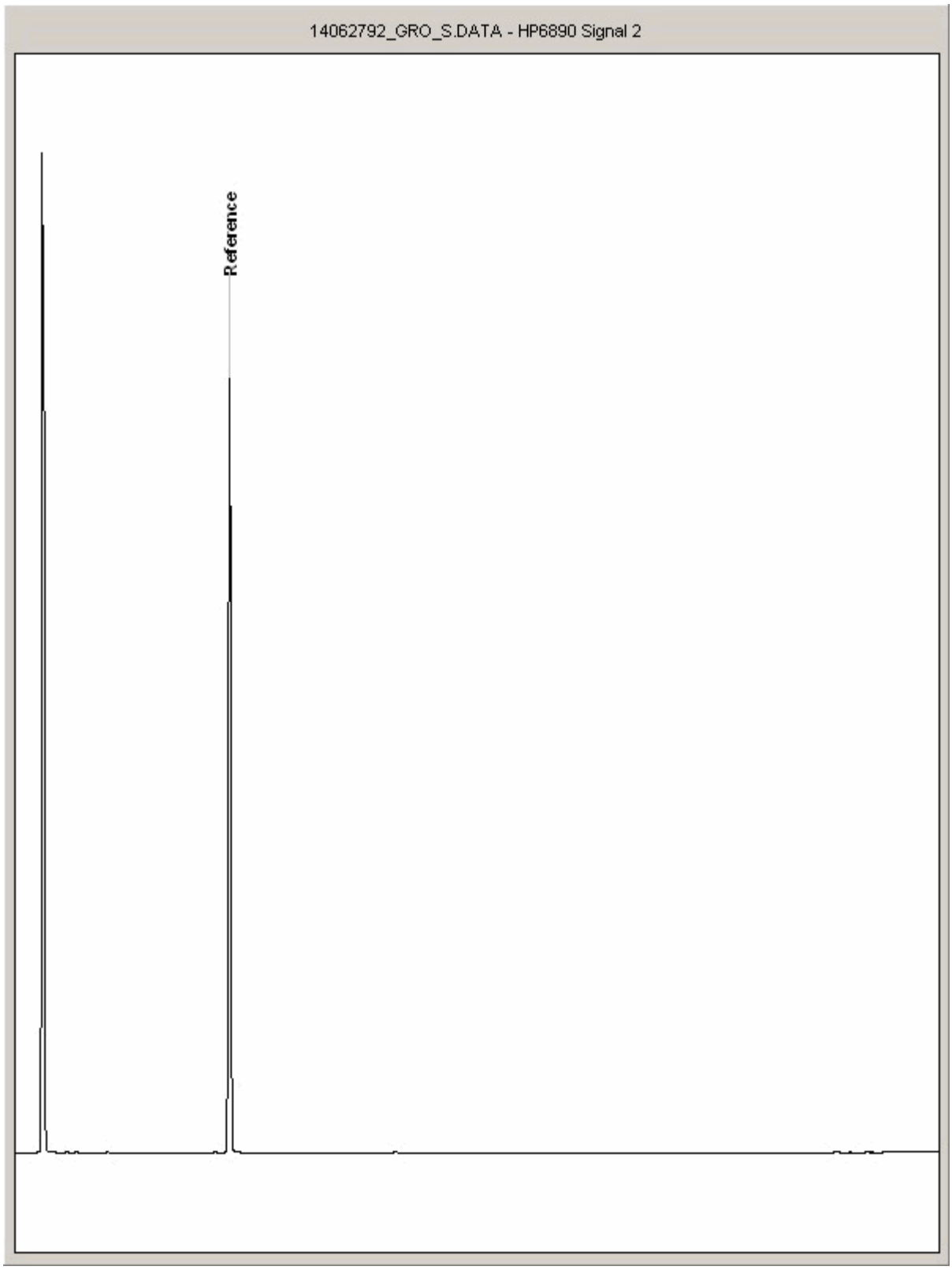
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062792
Sample ID : HP205

Depth : 0.70



CERTIFICATE OF ANALYSIS

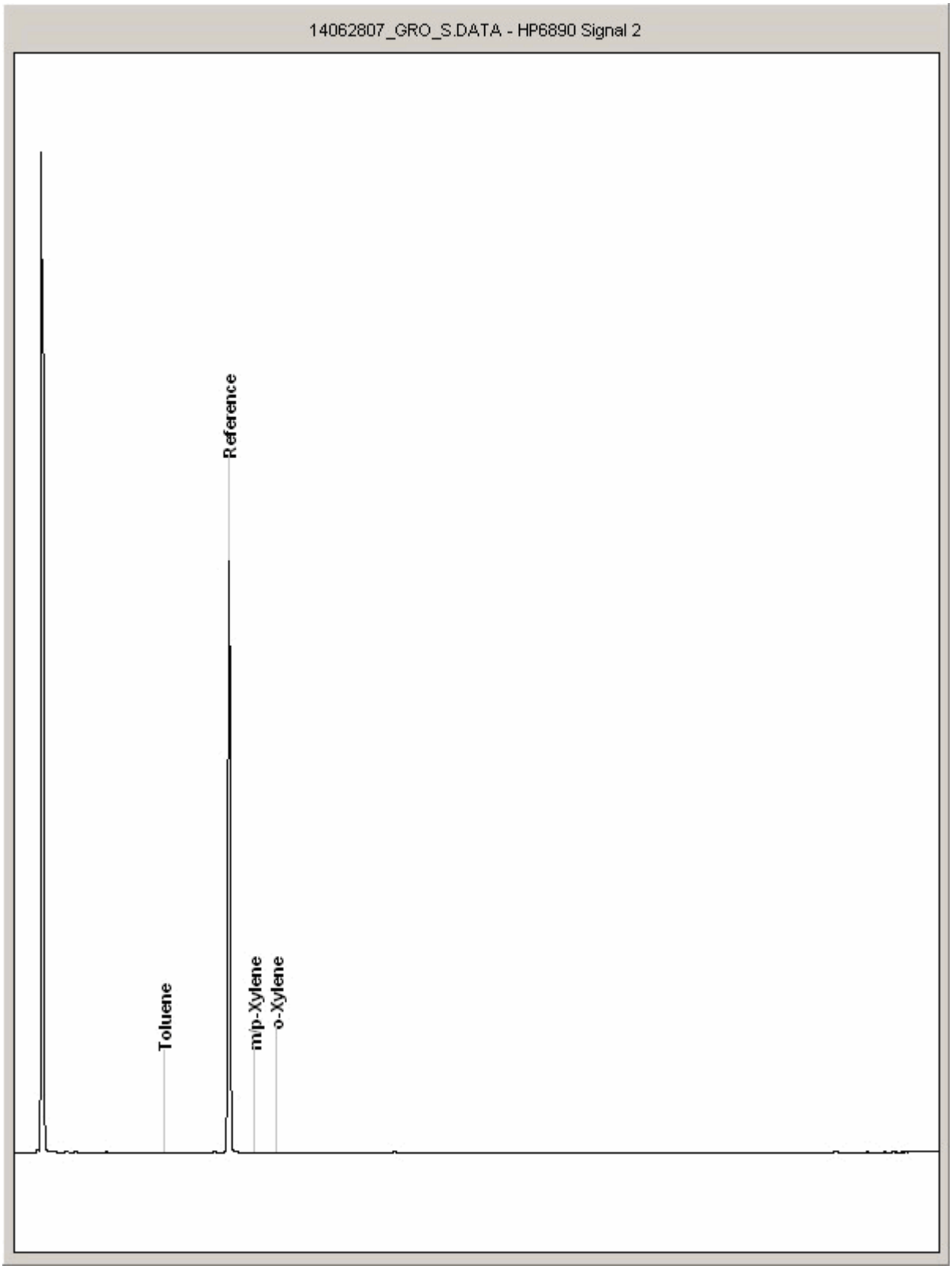
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062807
Sample ID : HP206

Depth : 0.30



CERTIFICATE OF ANALYSIS

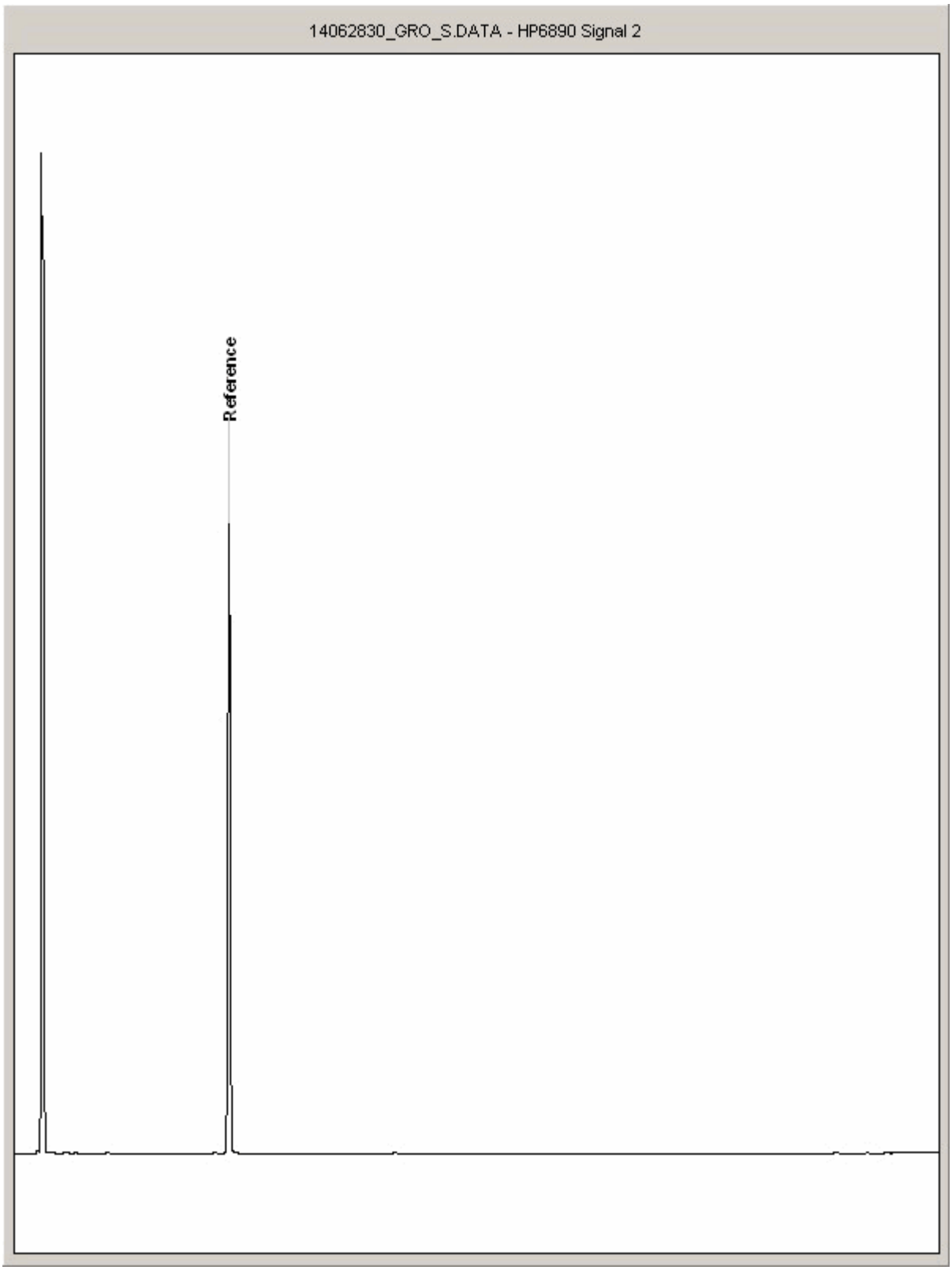
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062830
Sample ID : HP201

Depth : 0.90



CERTIFICATE OF ANALYSIS

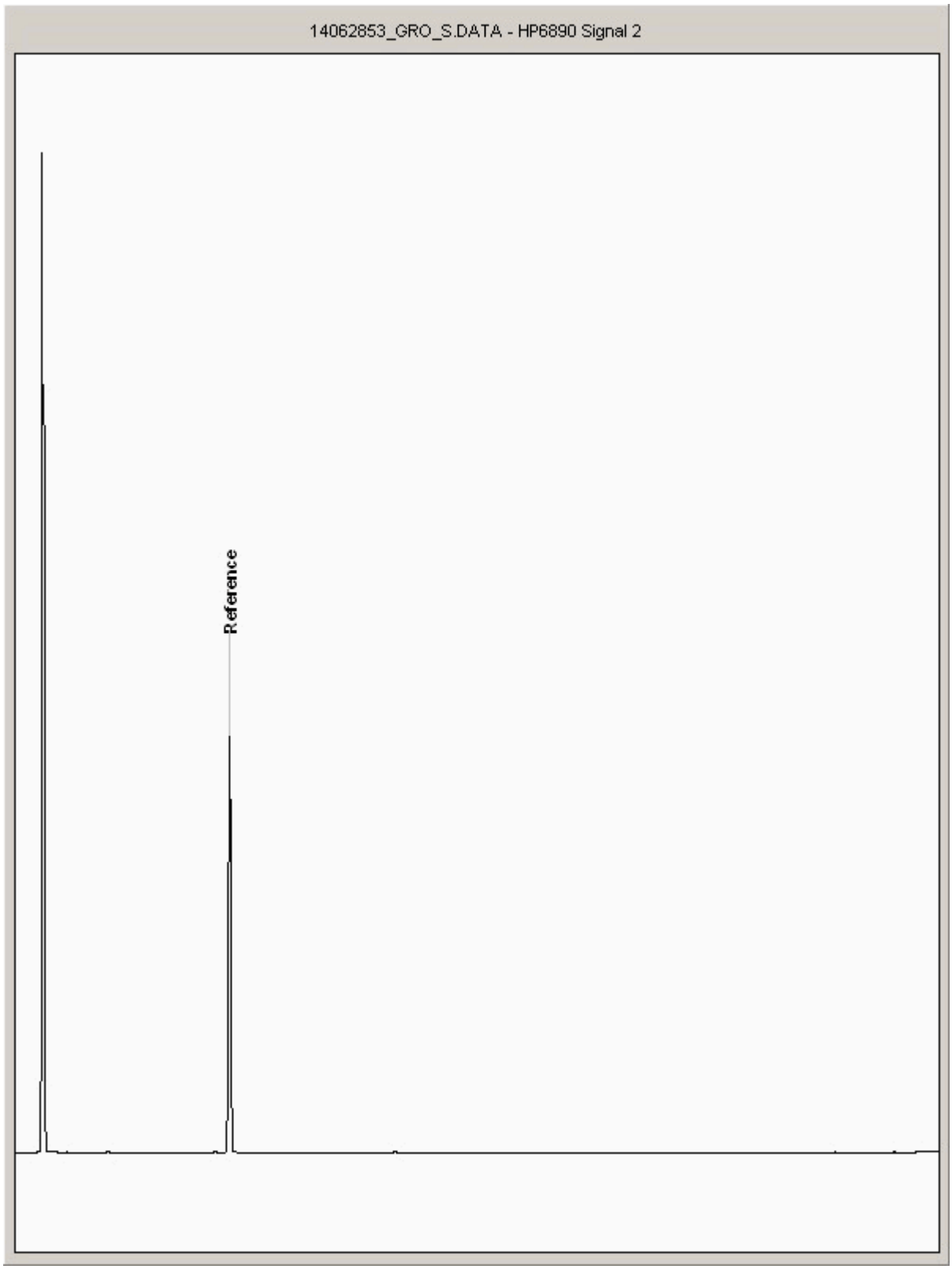
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062853
Sample ID : HP205

Depth : 0.40



CERTIFICATE OF ANALYSIS

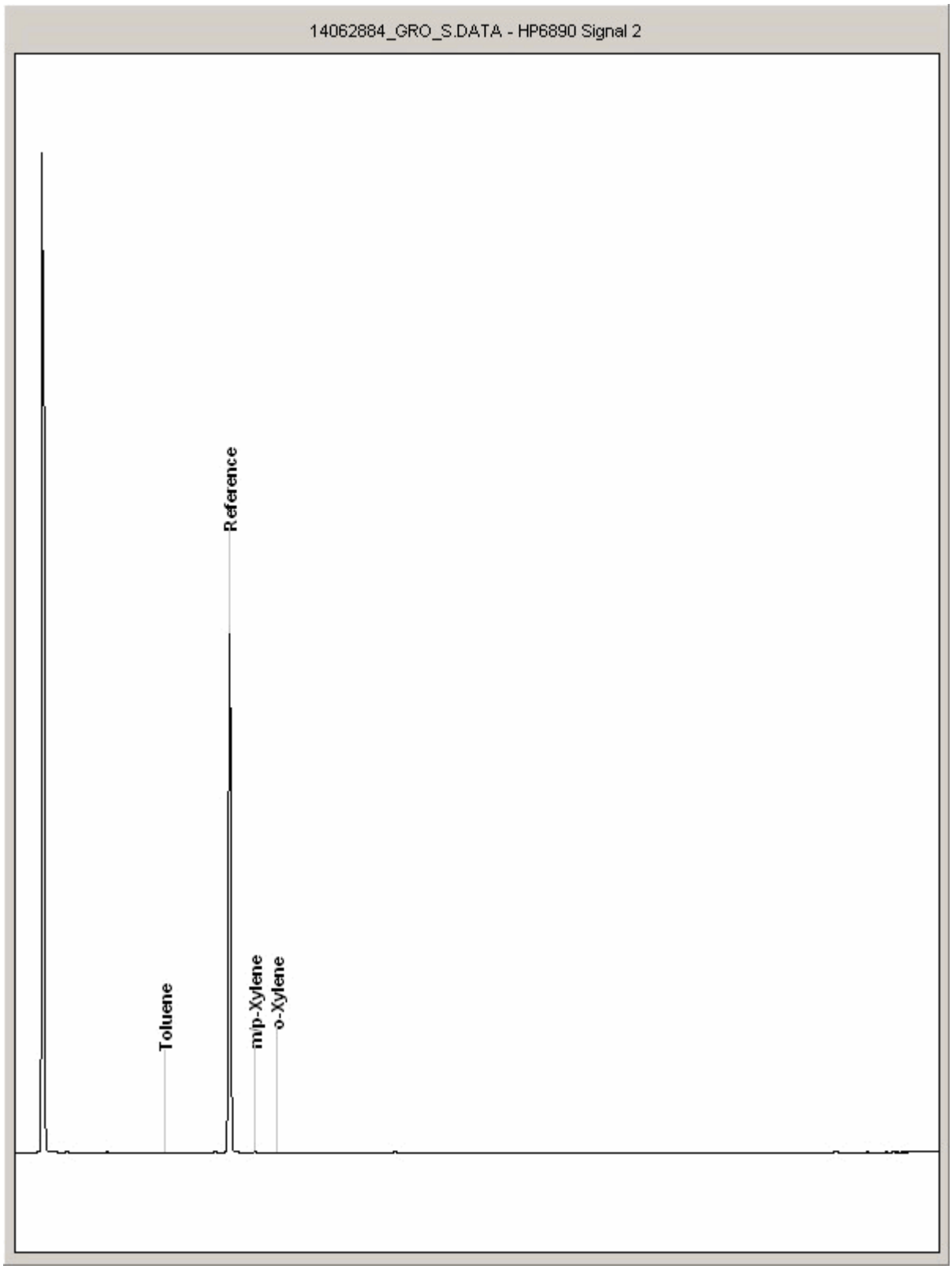
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14062884
Sample ID : HP206

Depth : 0.80



CERTIFICATE OF ANALYSIS

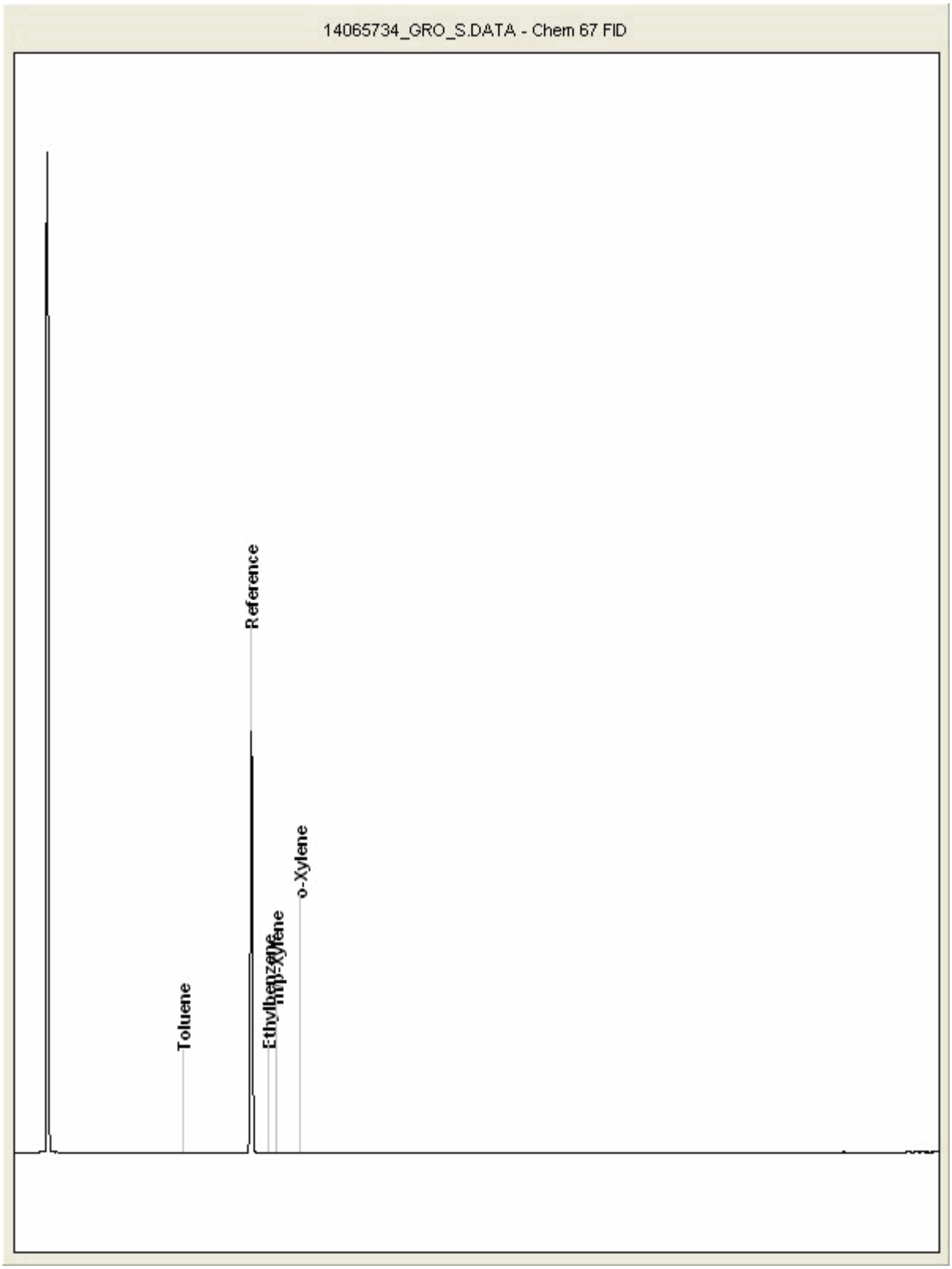
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14065734
Sample ID : BH207

Depth : 0.70



CERTIFICATE OF ANALYSIS

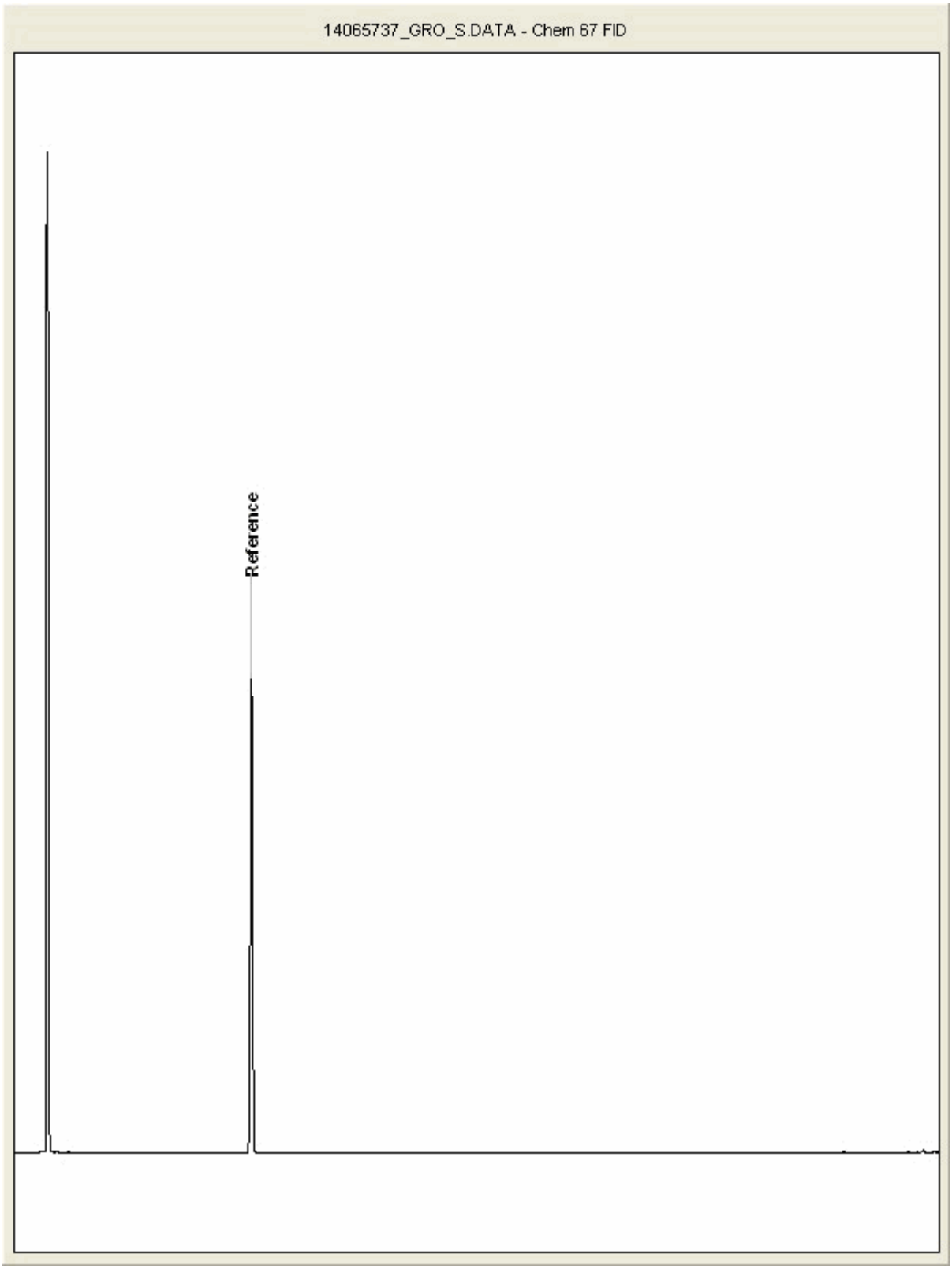
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14065737
Sample ID : HP203

Depth : 0.15



CERTIFICATE OF ANALYSIS

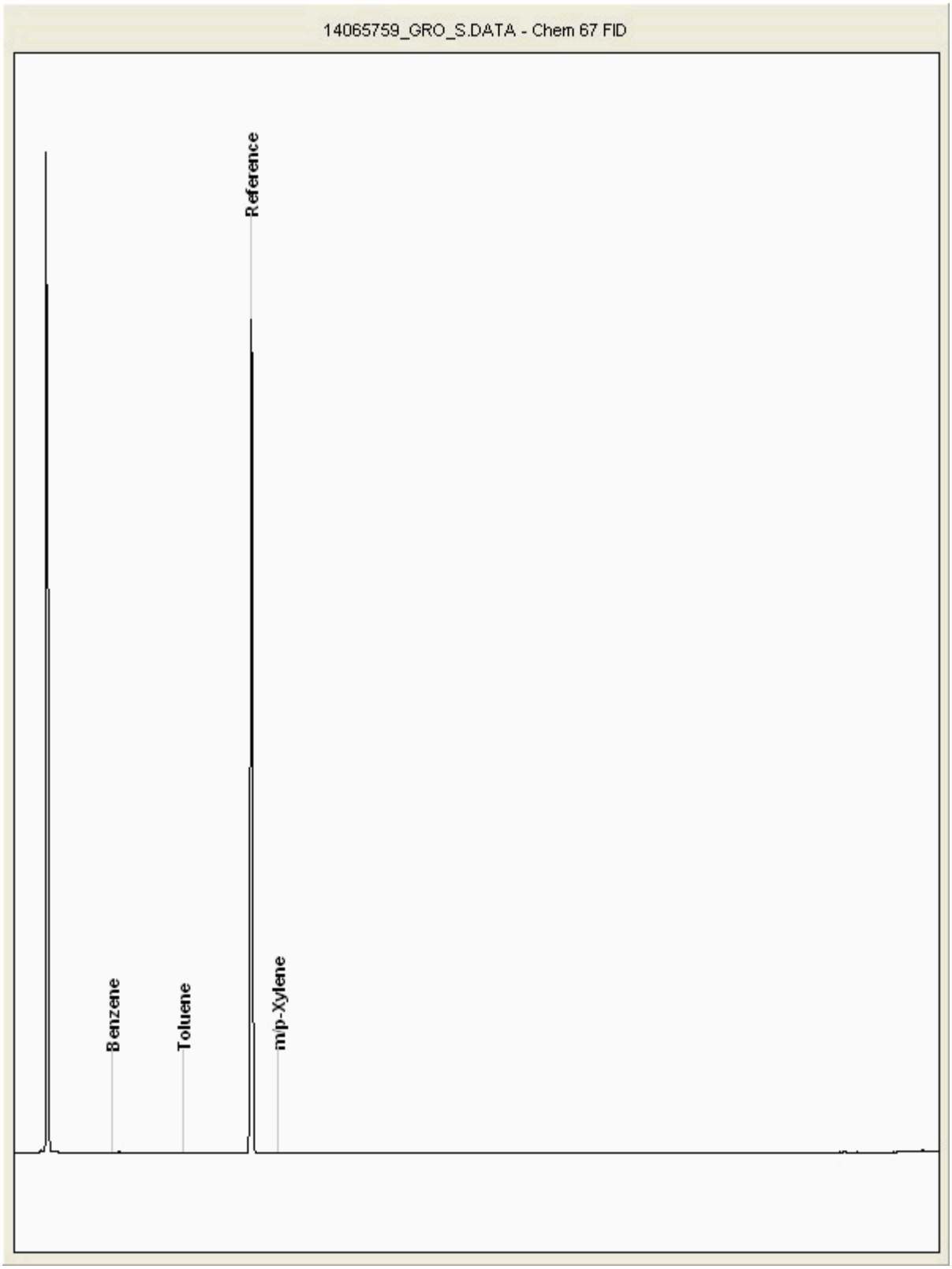
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14065759
Sample ID : BH202

Depth : 0.30



CERTIFICATE OF ANALYSIS

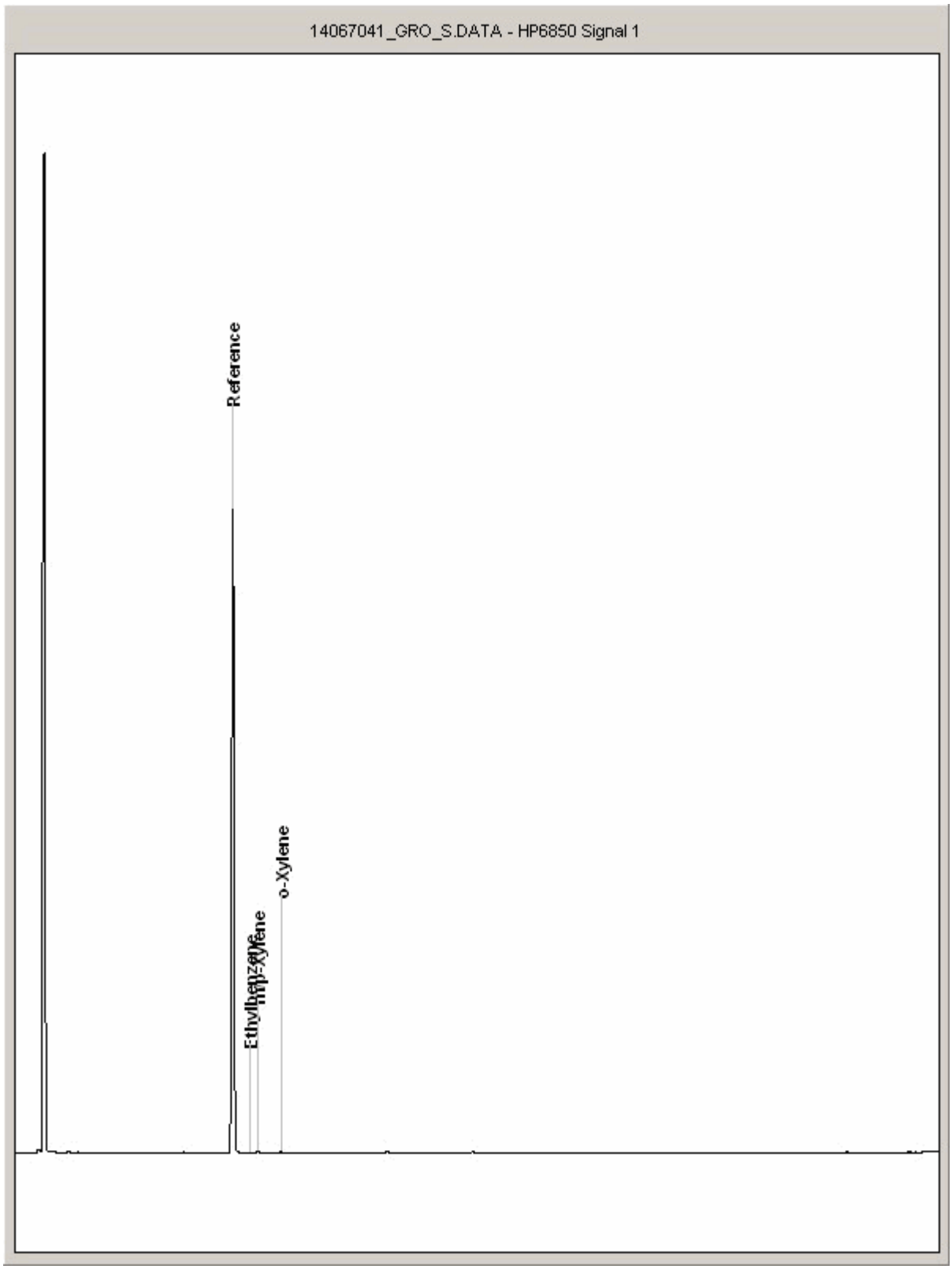
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14067041
Sample ID : WS208

Depth : 0.30



CERTIFICATE OF ANALYSIS

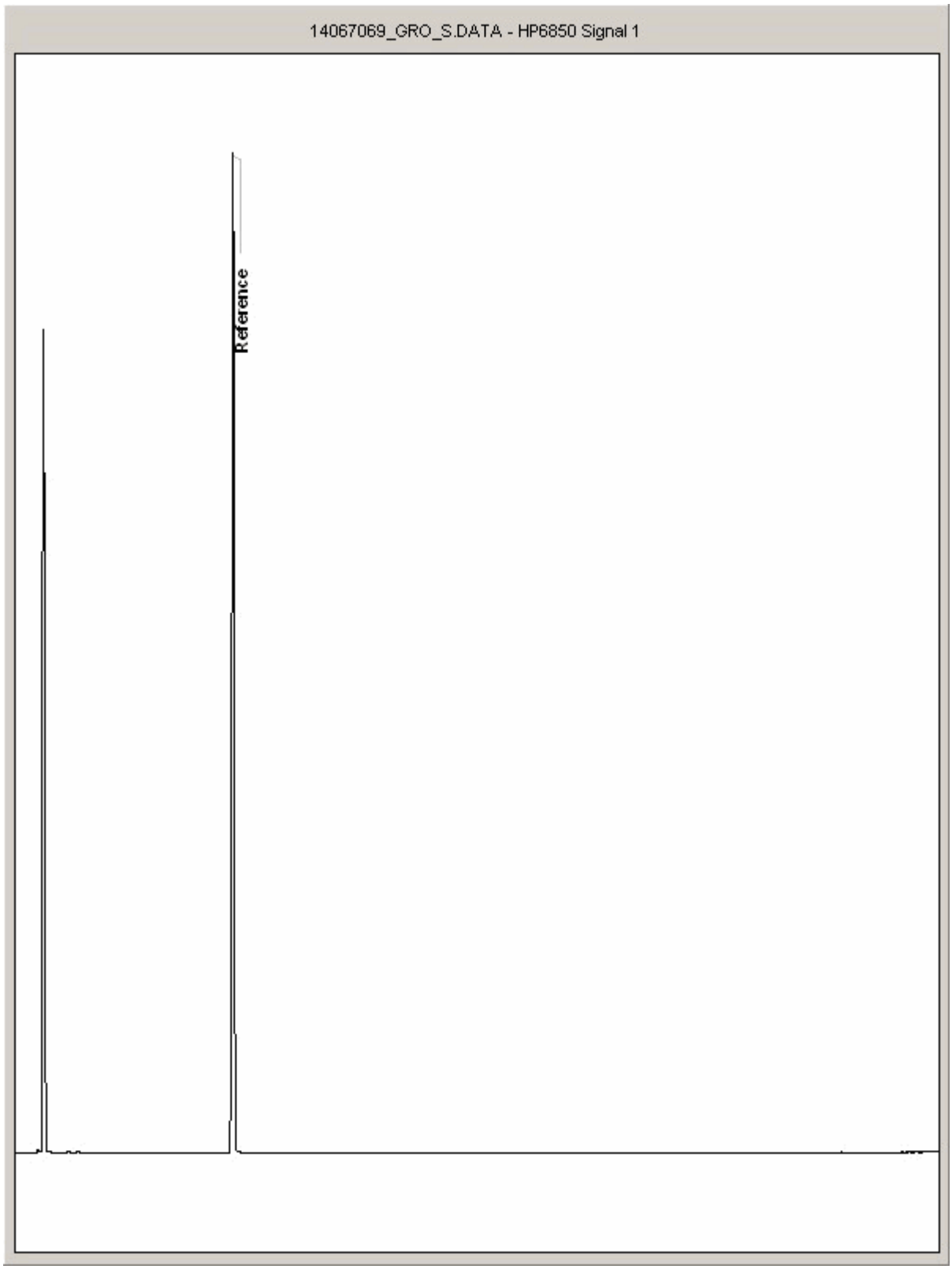
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14067069
Sample ID : WS208

Depth : 1.00



CERTIFICATE OF ANALYSIS

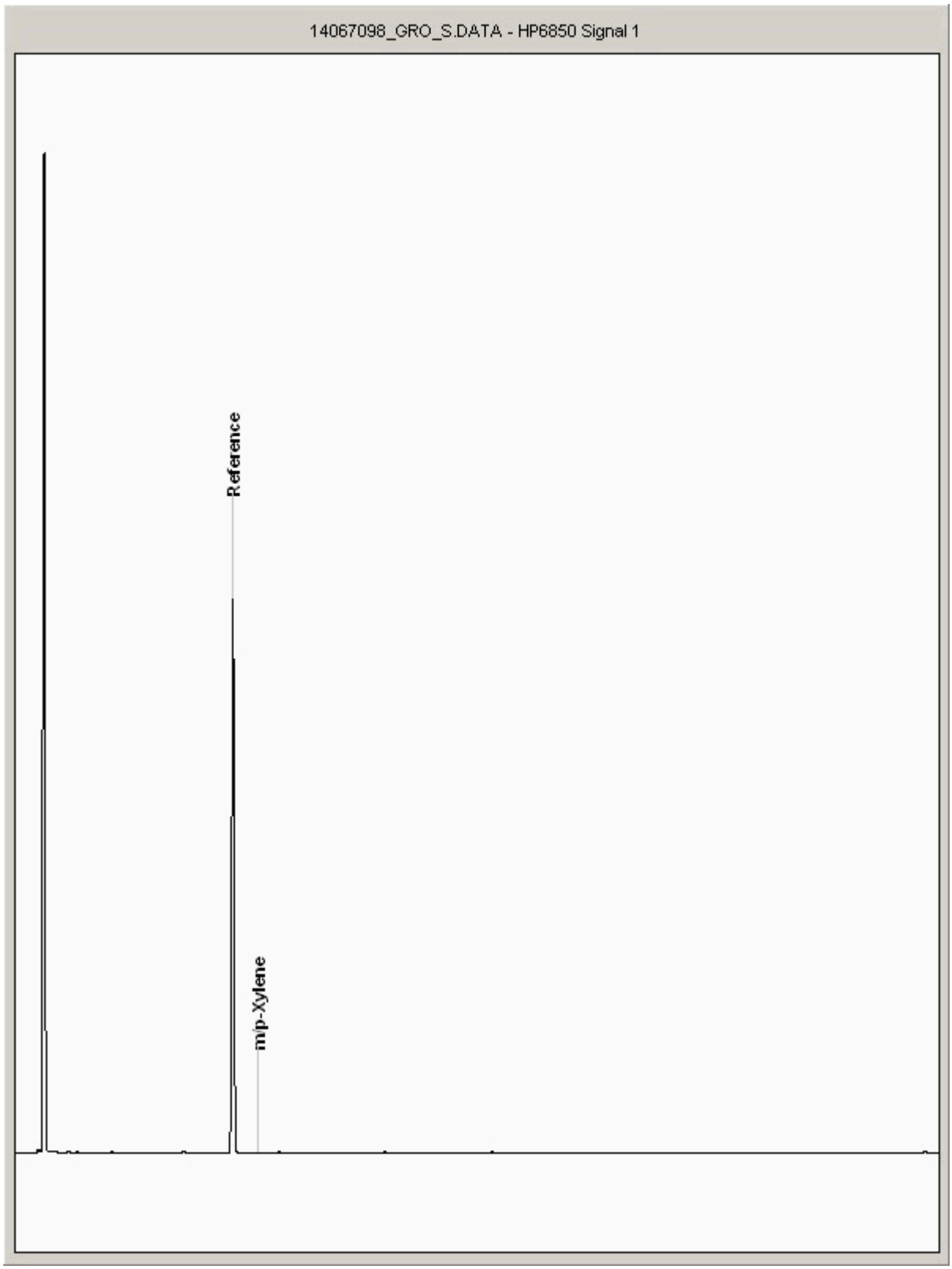
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14067098
Sample ID : WS212

Depth : 0.20



CERTIFICATE OF ANALYSIS

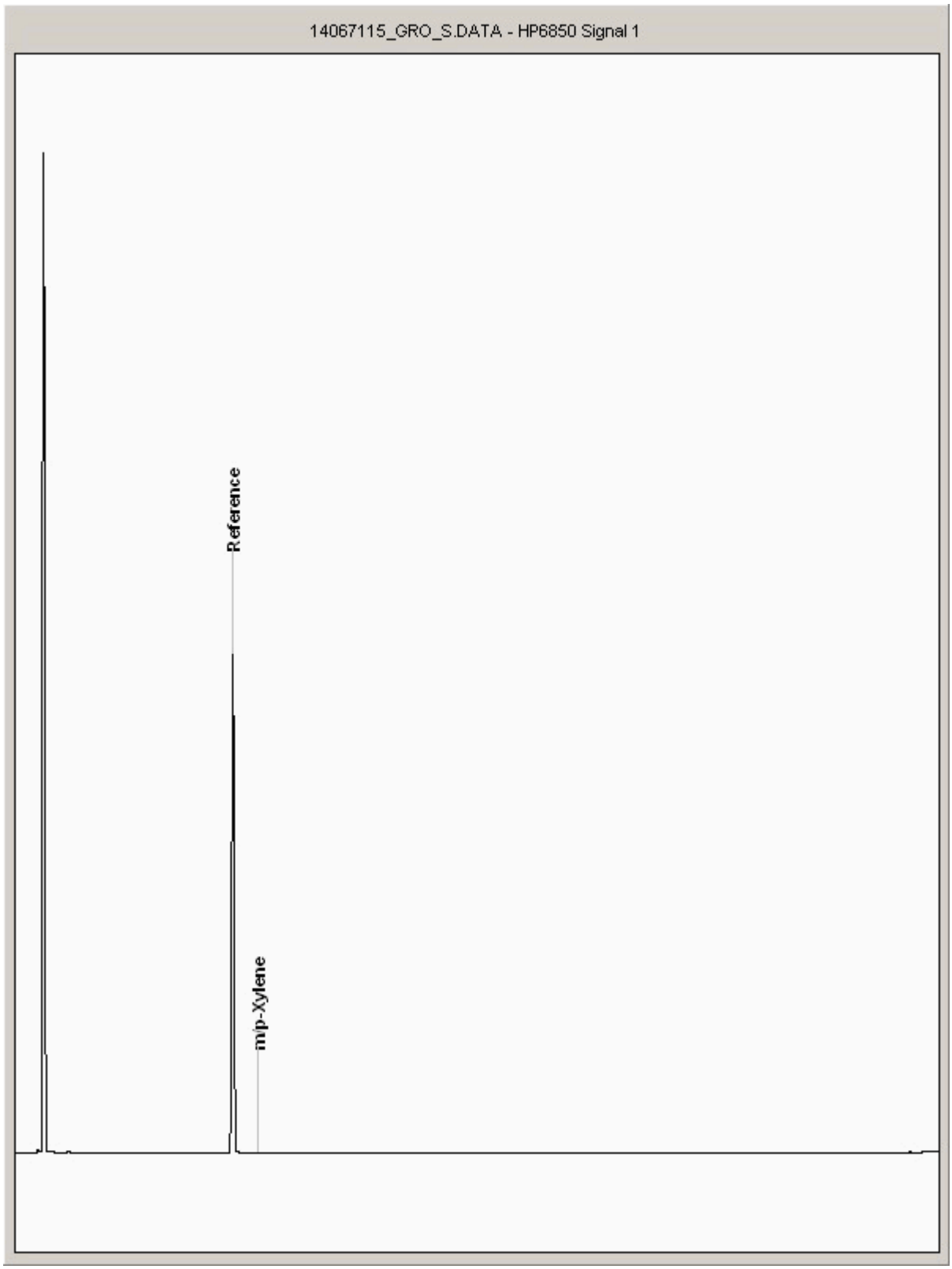
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14067115
Sample ID : HP215

Depth : 0.20



CERTIFICATE OF ANALYSIS

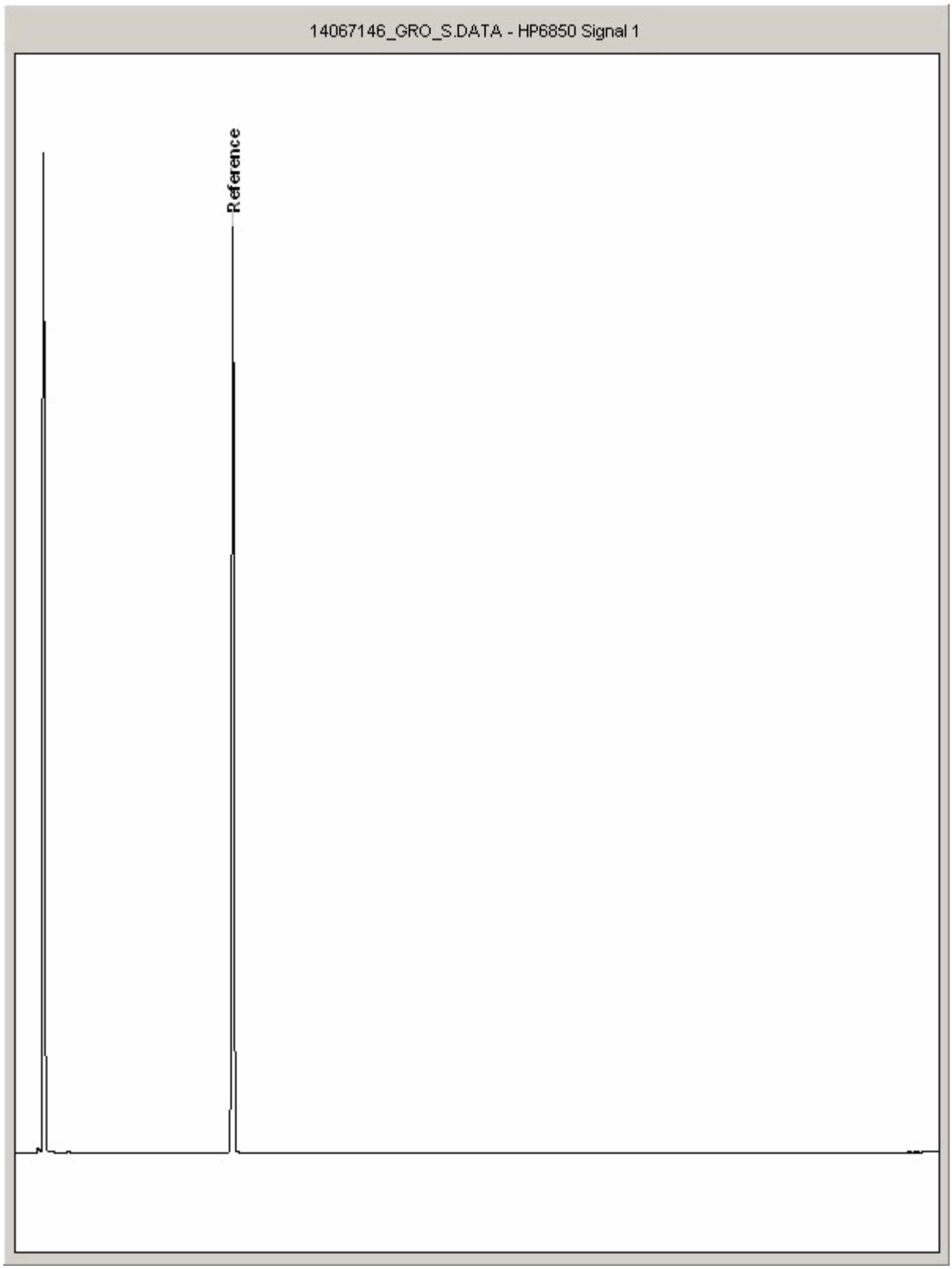
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14067146
Sample ID : WS211

Depth : 0.20



CERTIFICATE OF ANALYSIS

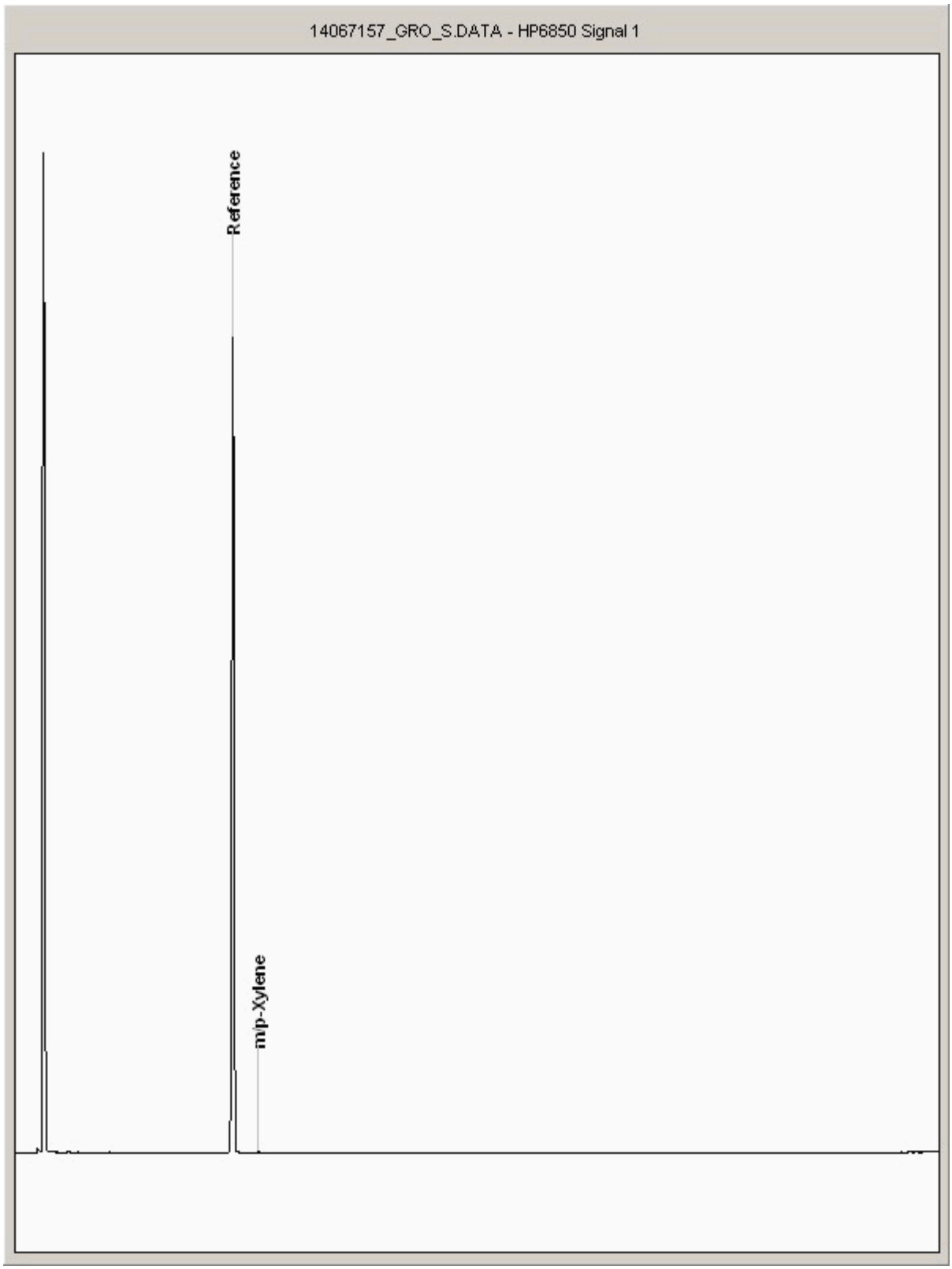
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14067157
Sample ID : WS204

Depth : 0.20



CERTIFICATE OF ANALYSIS

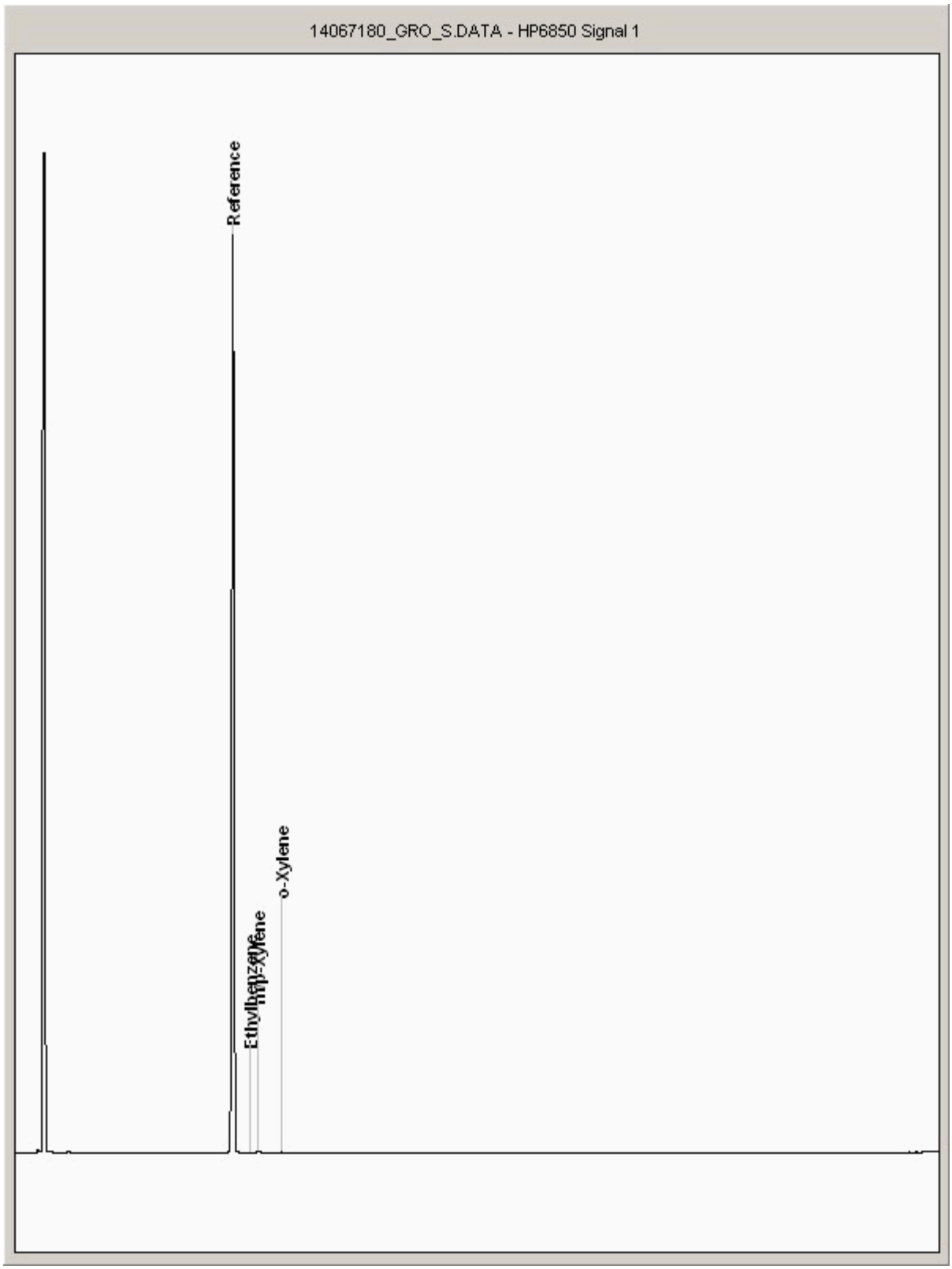
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14067180
Sample ID : WS204

Depth : 1.00



CERTIFICATE OF ANALYSIS

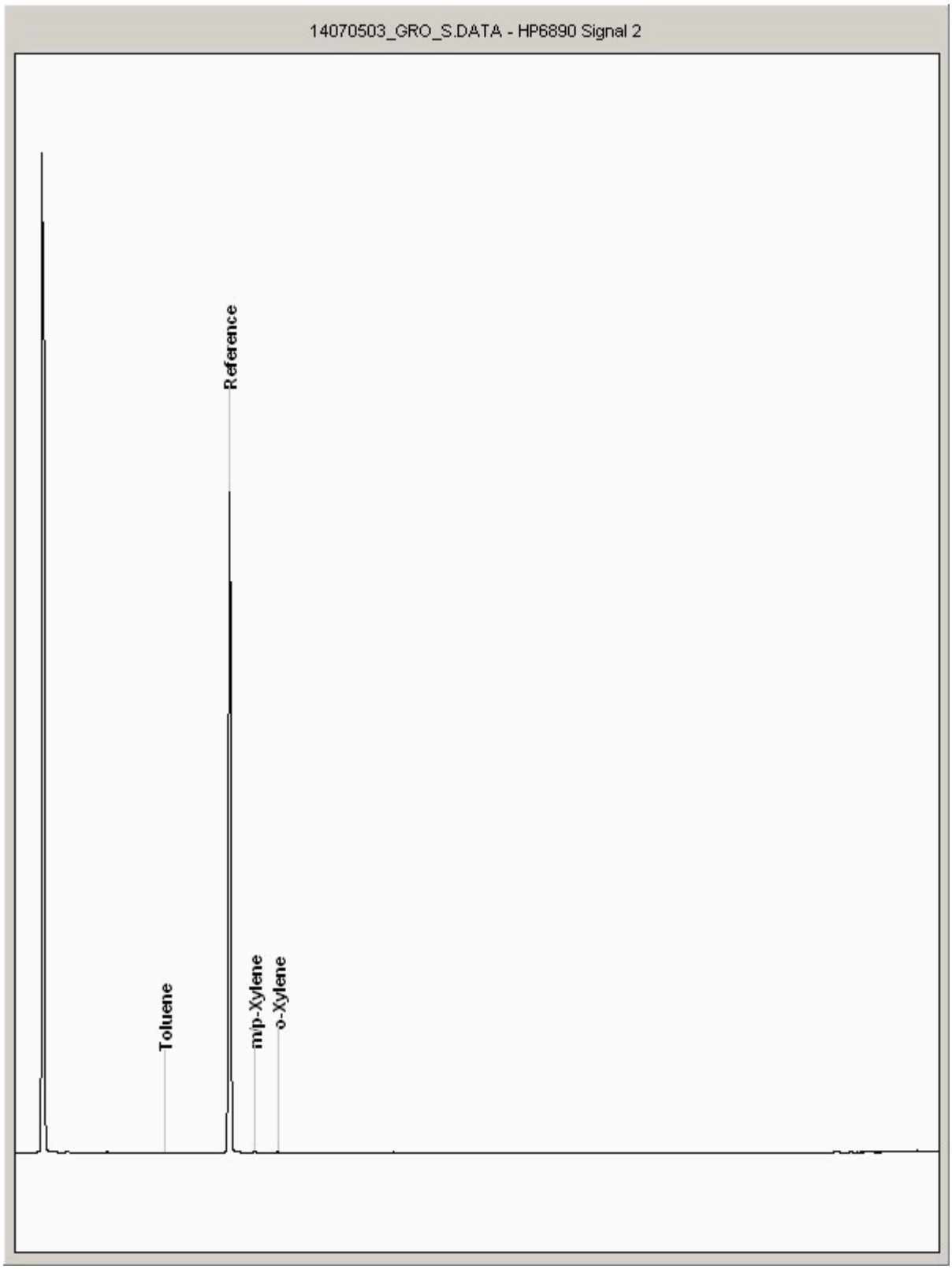
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14070503
Sample ID : TP210

Depth : 0.20



CERTIFICATE OF ANALYSIS

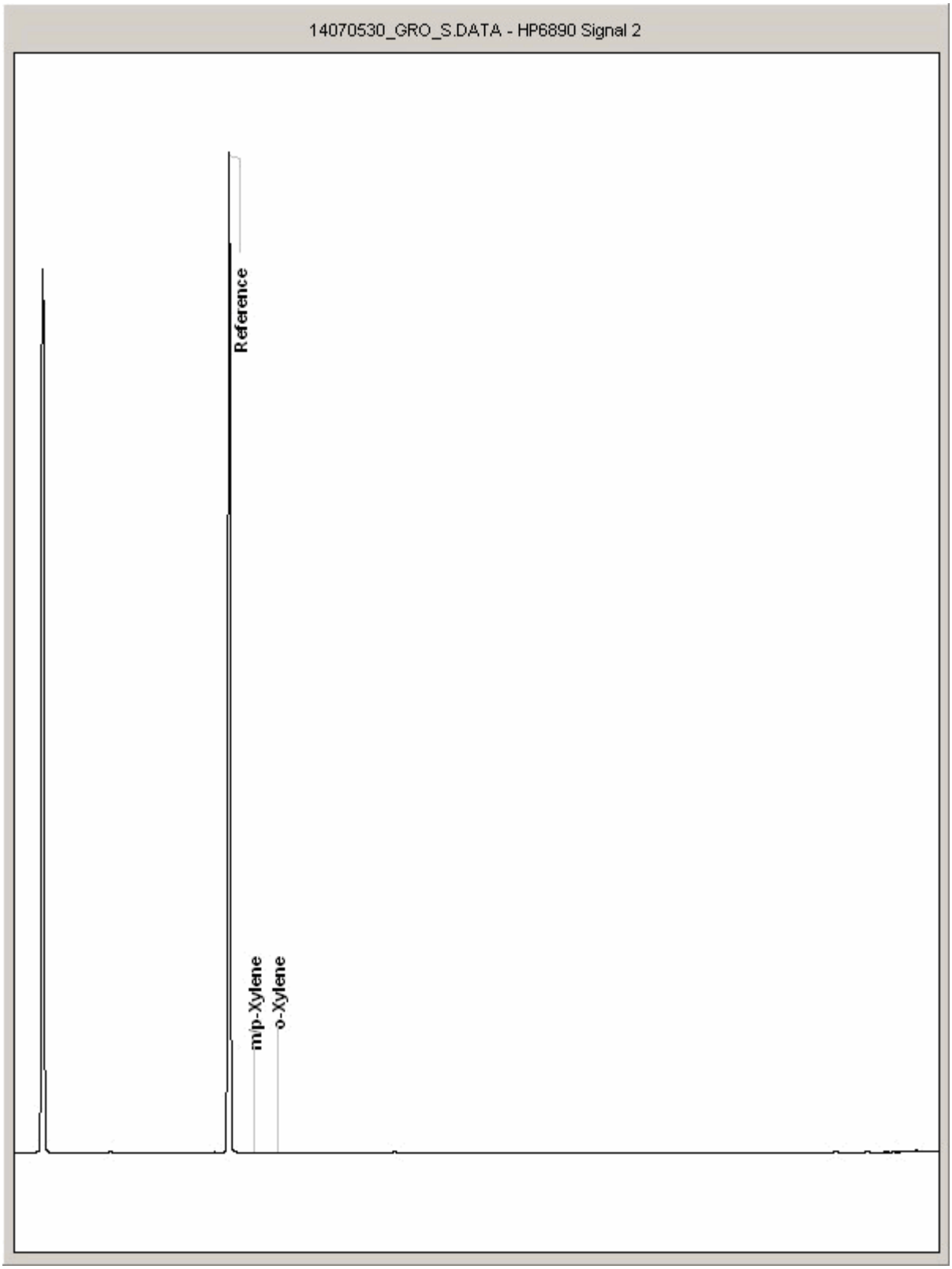
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14070530
Sample ID : TP210

Depth : 0.80



CERTIFICATE OF ANALYSIS

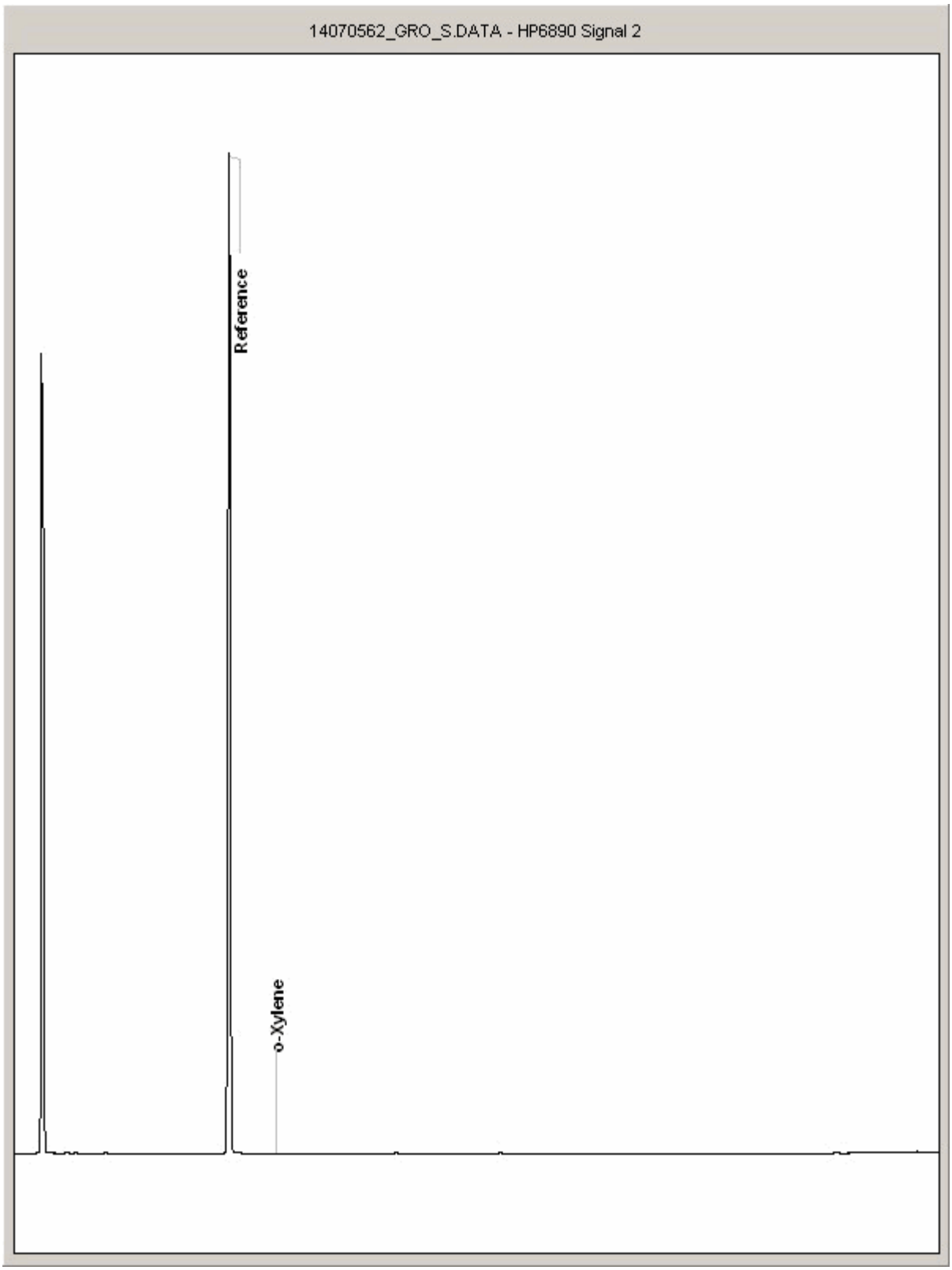
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14070562
Sample ID : WS203

Depth : 1.50



CERTIFICATE OF ANALYSIS

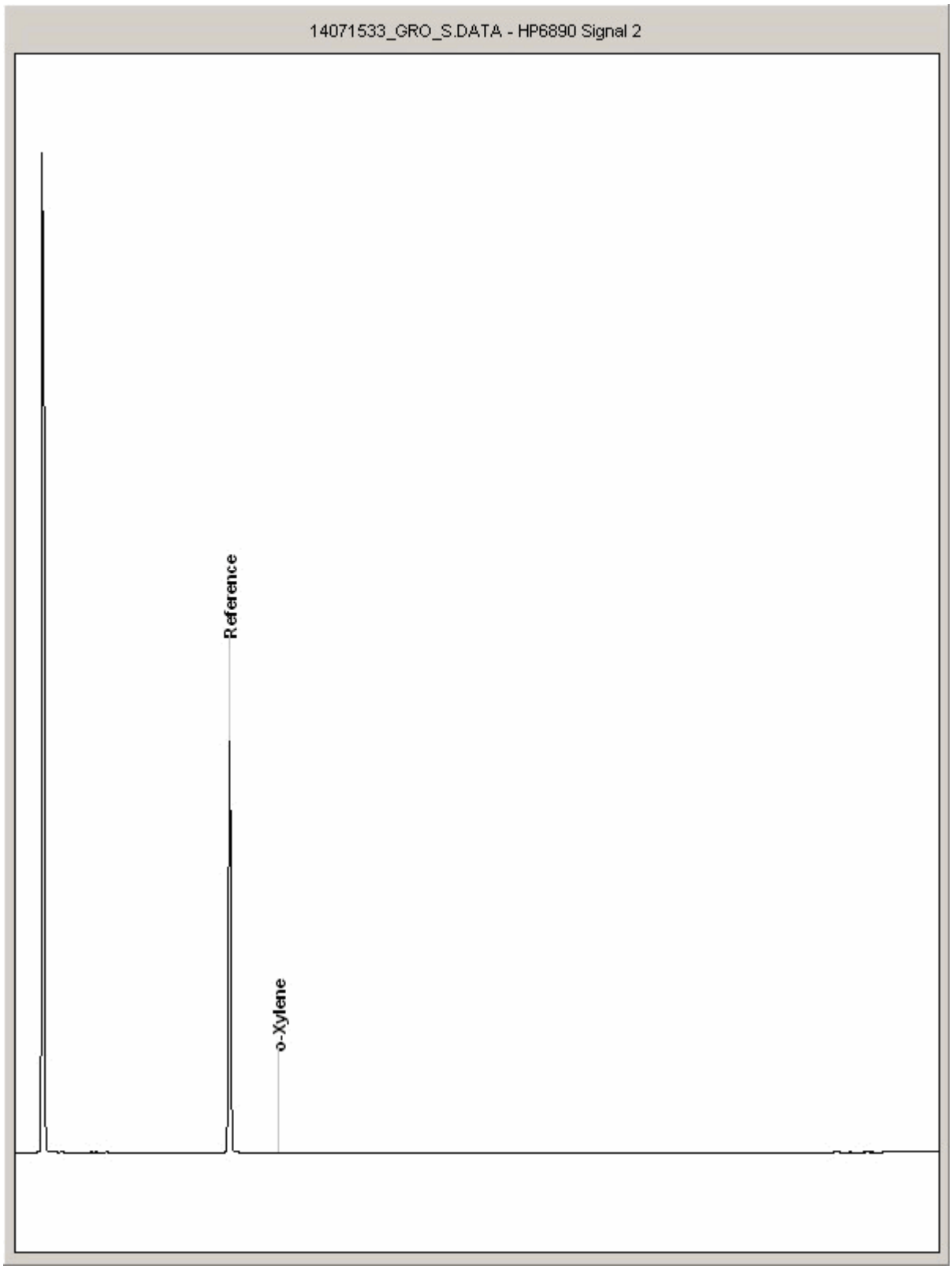
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14071533
Sample ID : WS206

Depth : 0.30



CERTIFICATE OF ANALYSIS

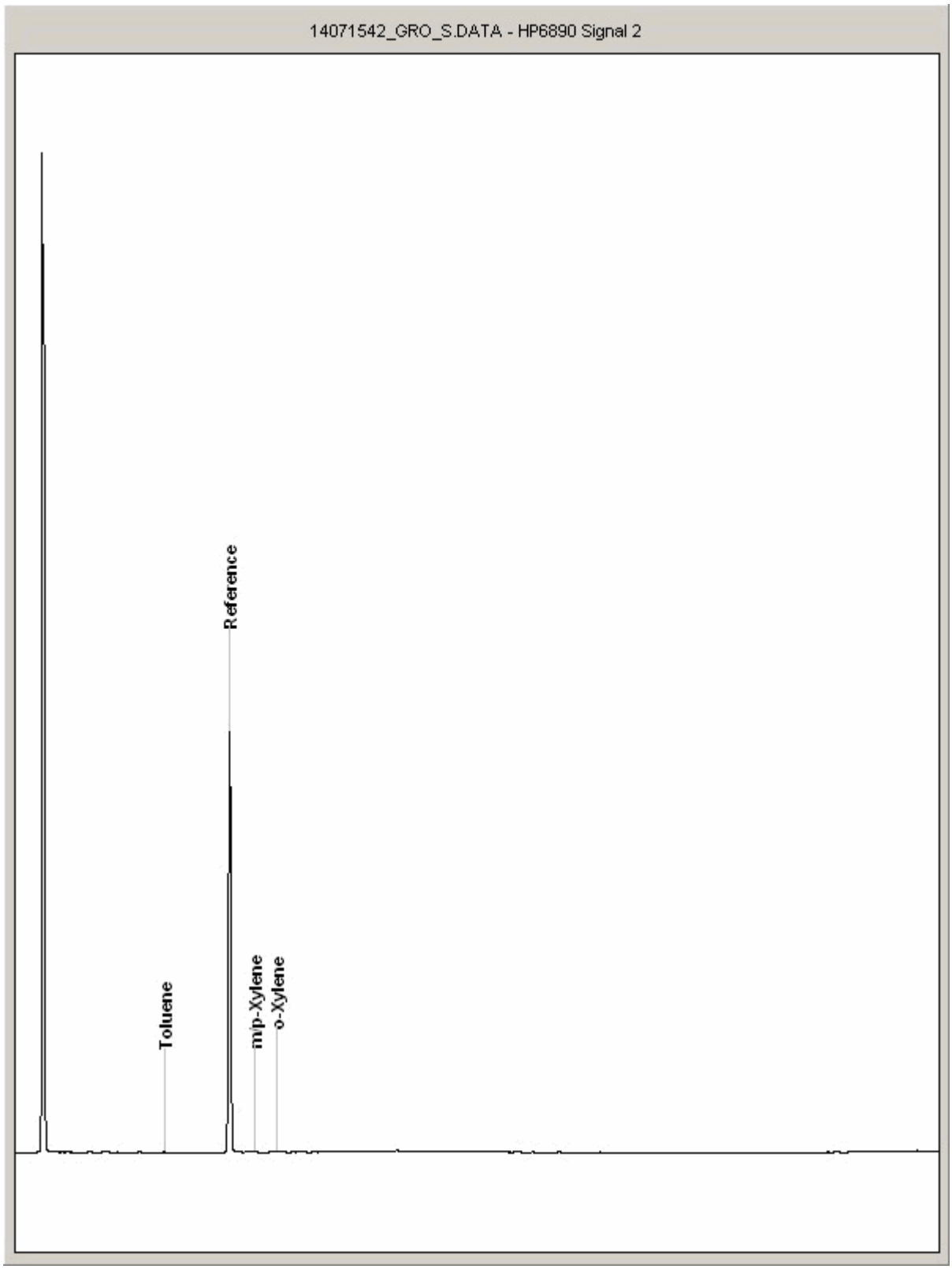
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14071542
Sample ID : WS206

Depth : 1.00



CERTIFICATE OF ANALYSIS

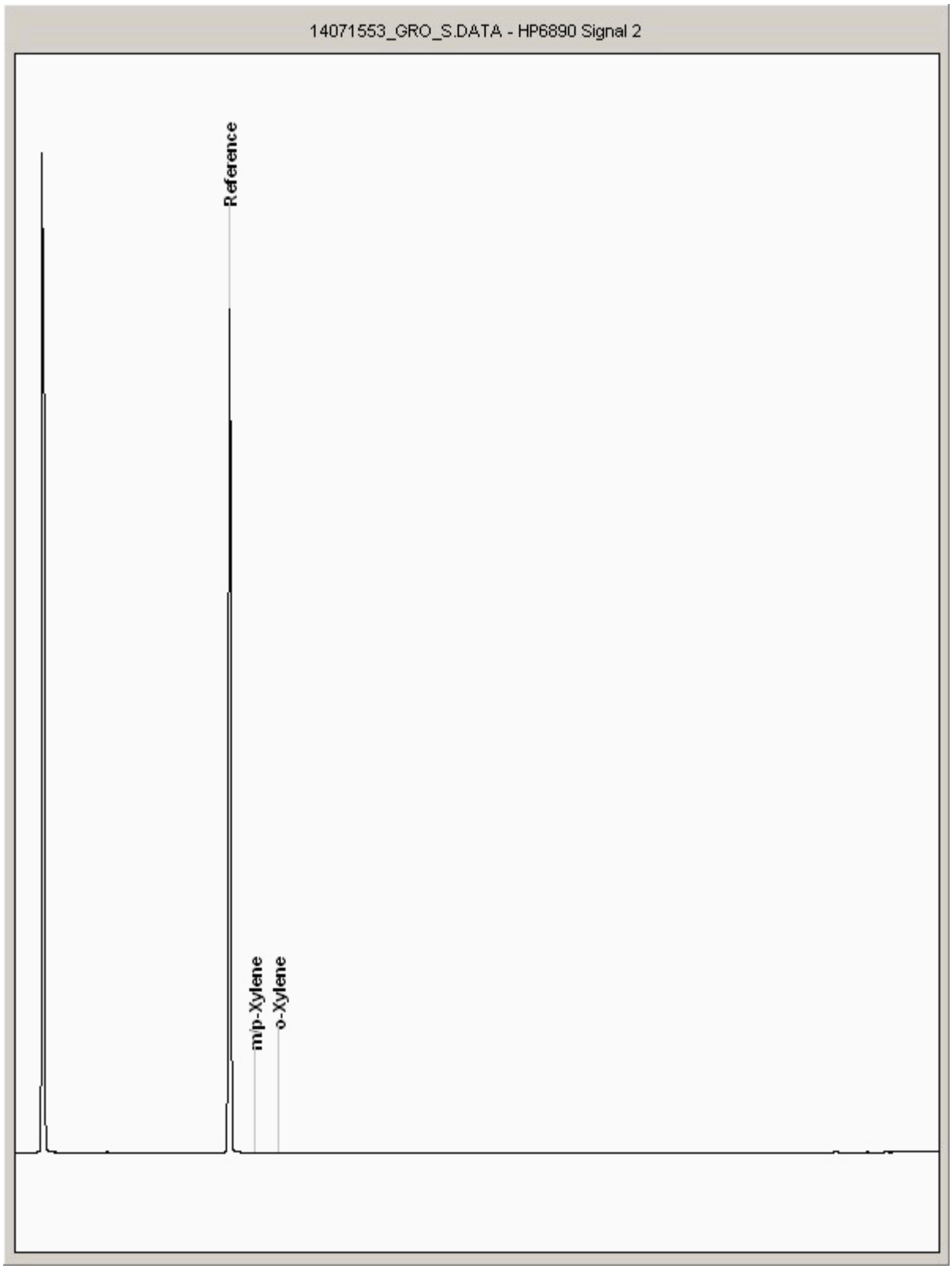
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14071553
Sample ID : WS209

Depth : 1.00



CERTIFICATE OF ANALYSIS

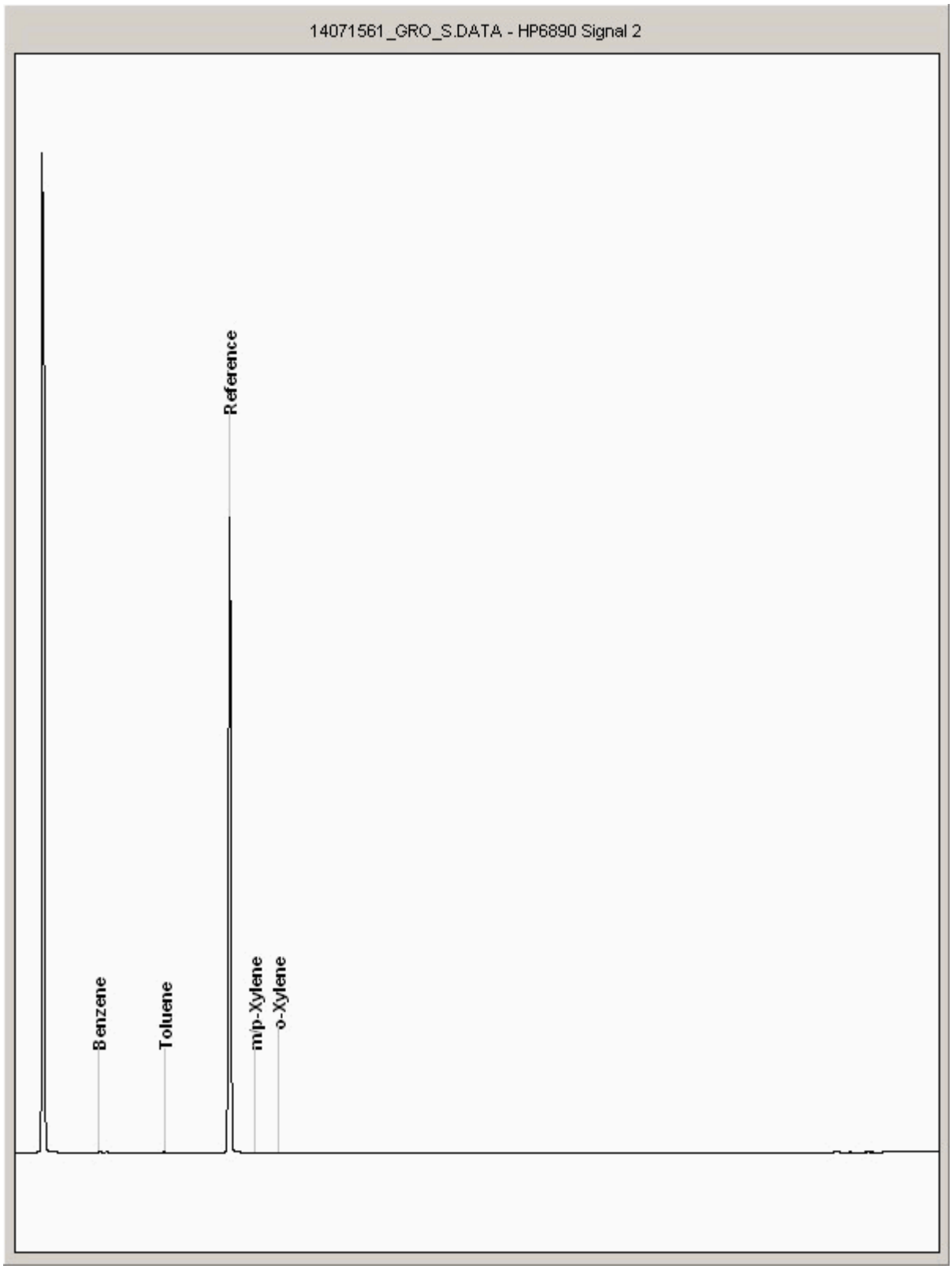
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14071561
Sample ID : TP203

Depth : 0.40



CERTIFICATE OF ANALYSIS

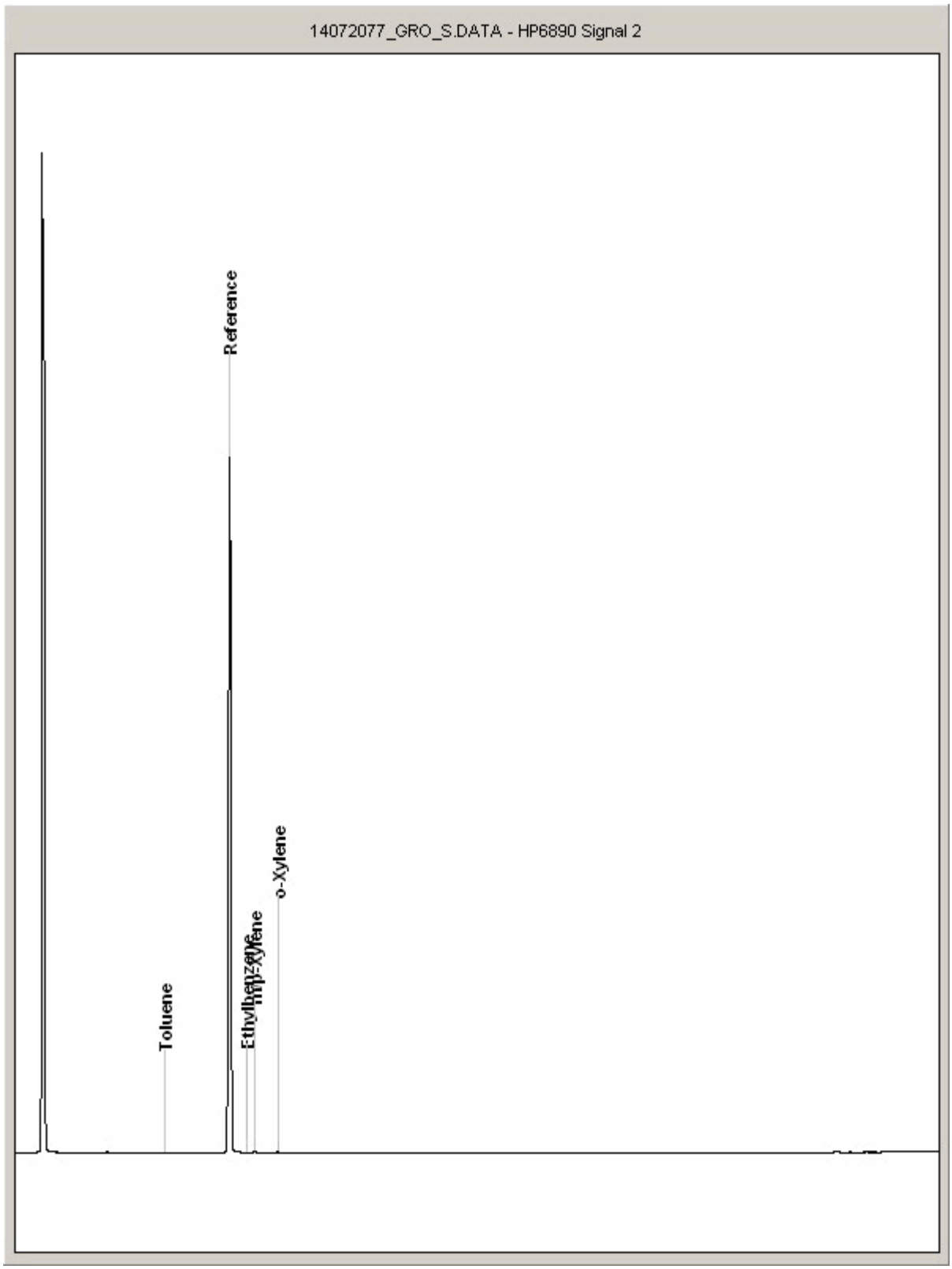
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072077
Sample ID : WS205

Depth : 1.00



CERTIFICATE OF ANALYSIS

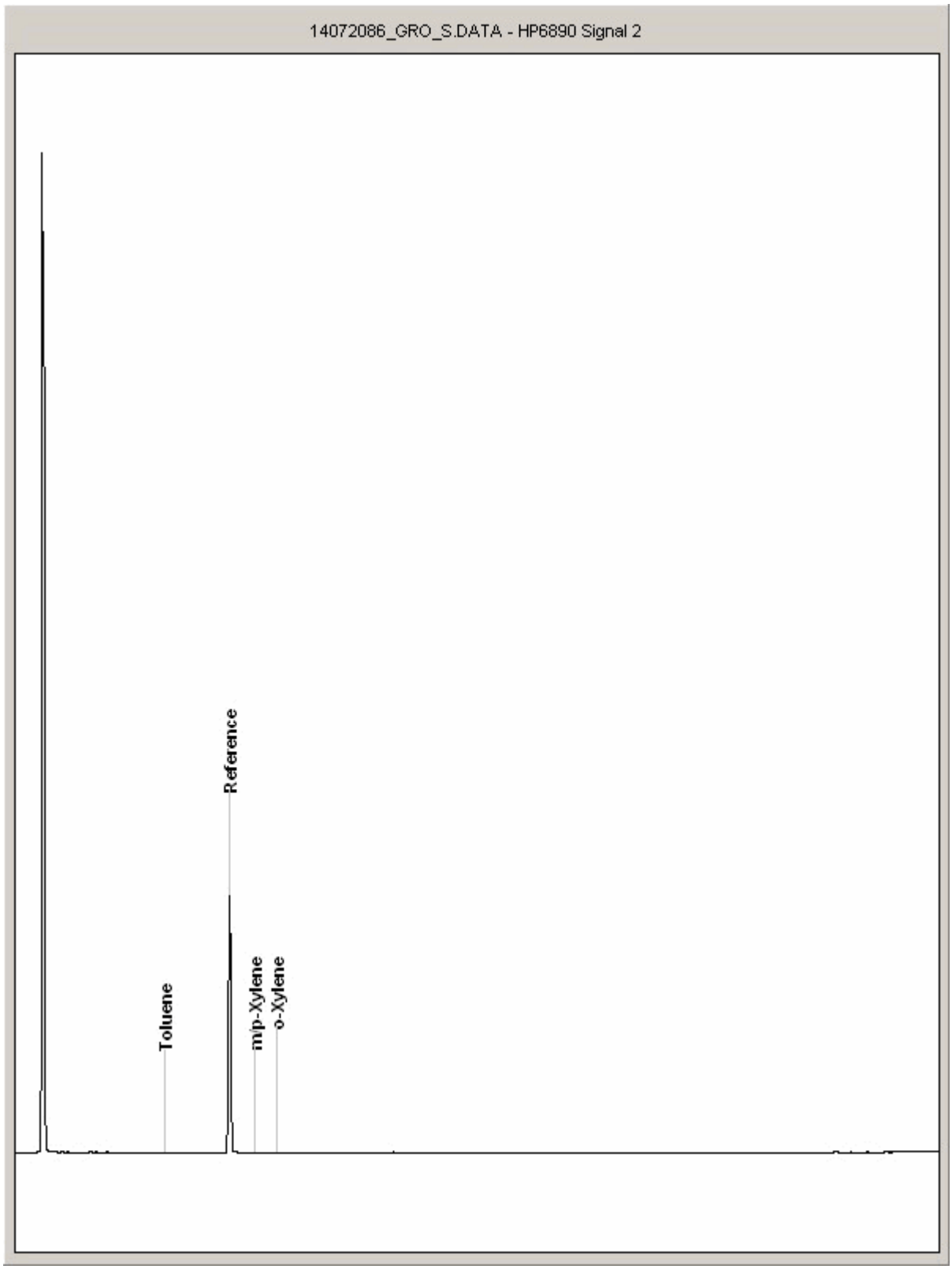
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072086
Sample ID : WS203

Depth : 0.30



CERTIFICATE OF ANALYSIS

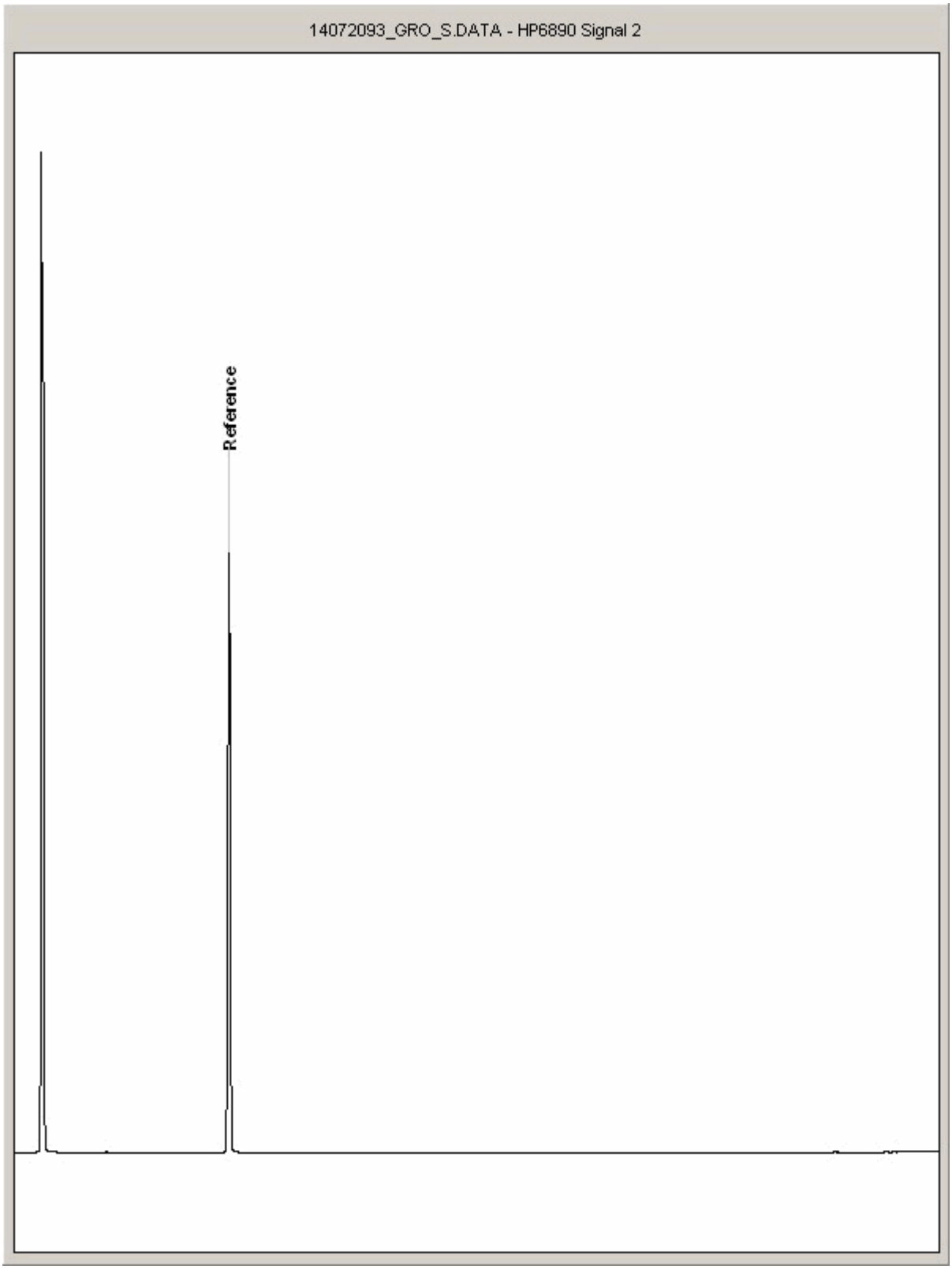
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072093
Sample ID : HP208

Depth : 0.80



CERTIFICATE OF ANALYSIS

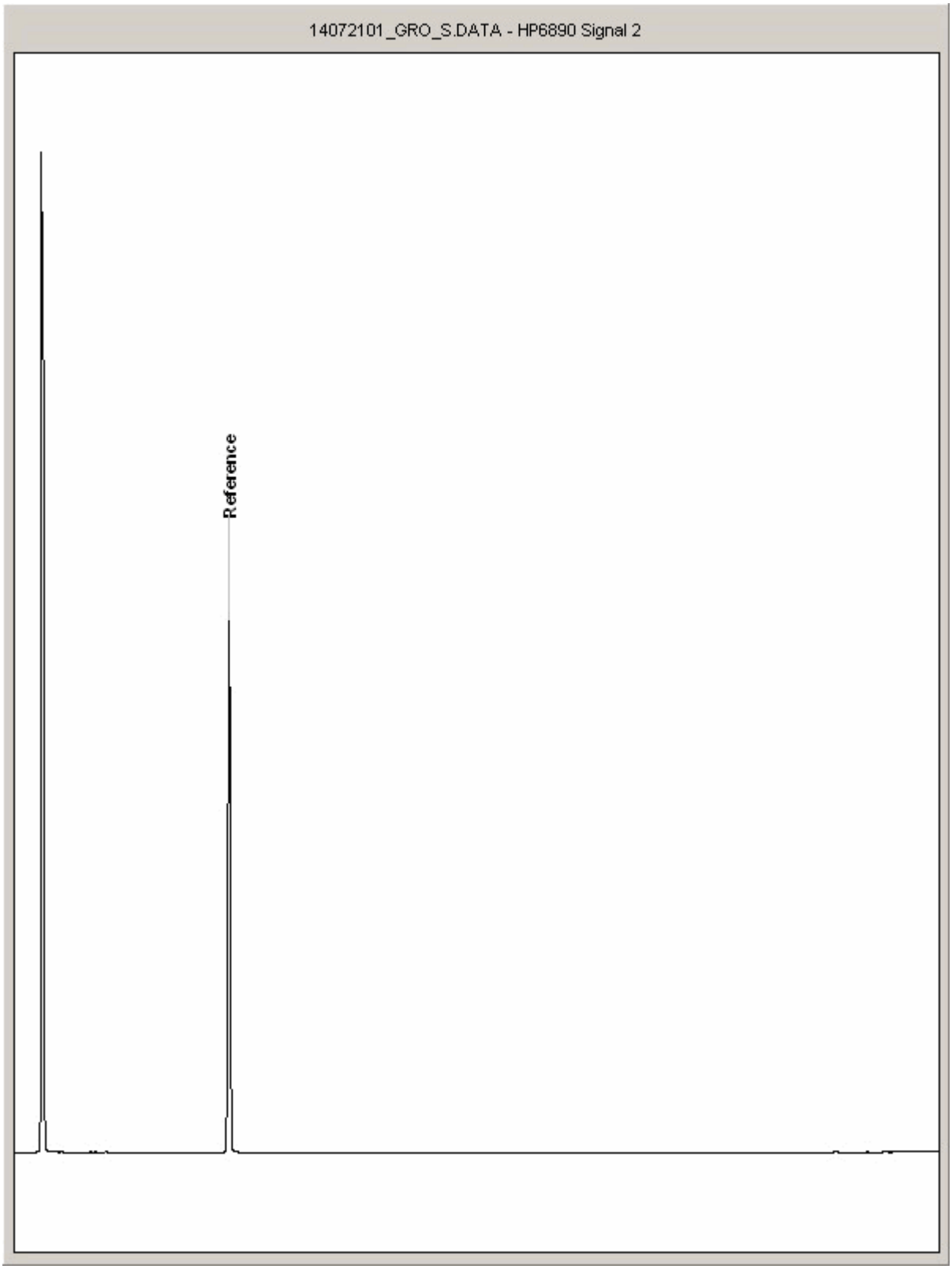
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072101
Sample ID : HP208

Depth : 0.15



CERTIFICATE OF ANALYSIS

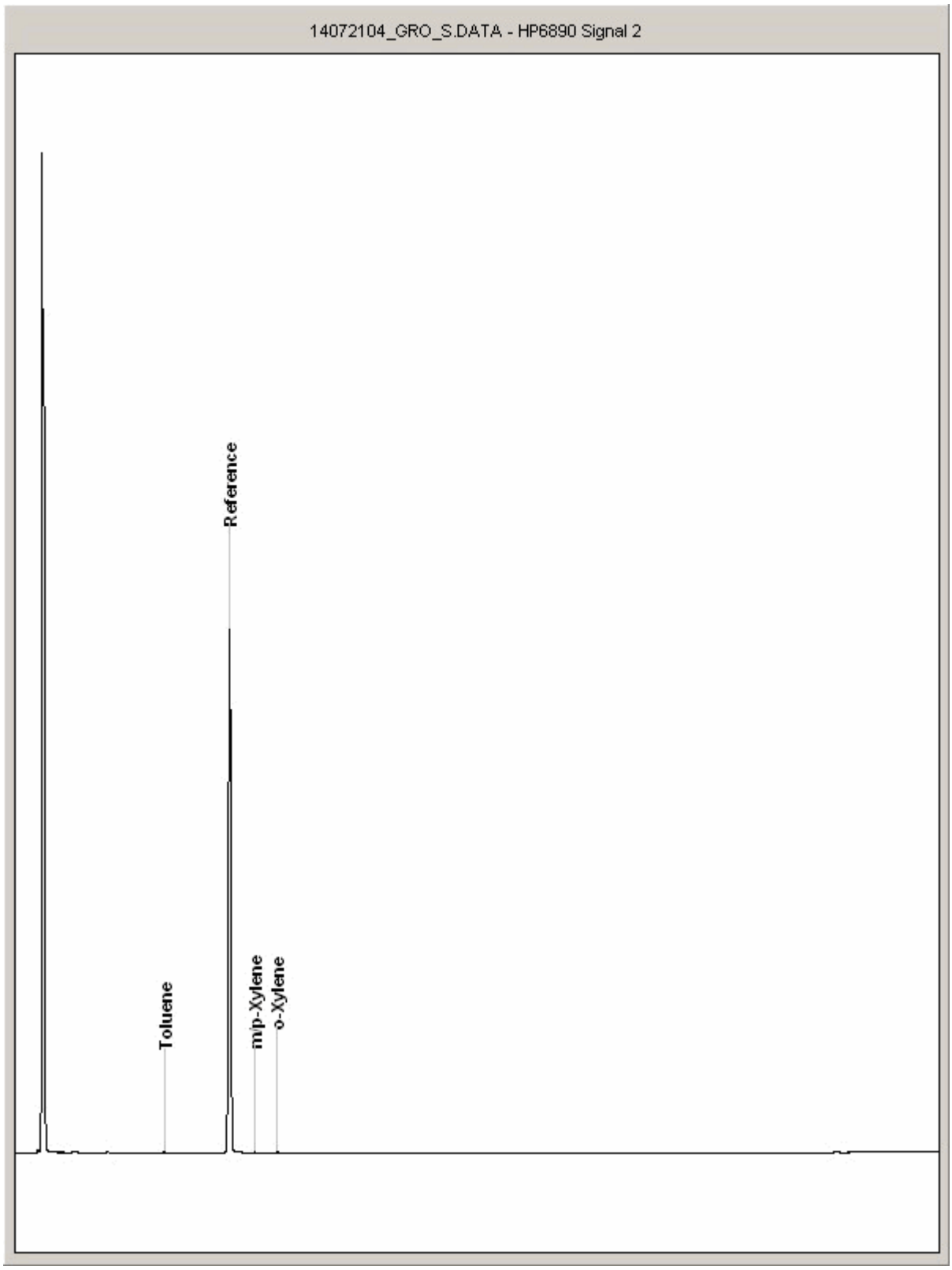
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072104
Sample ID : WS211

Depth : 0.65



CERTIFICATE OF ANALYSIS

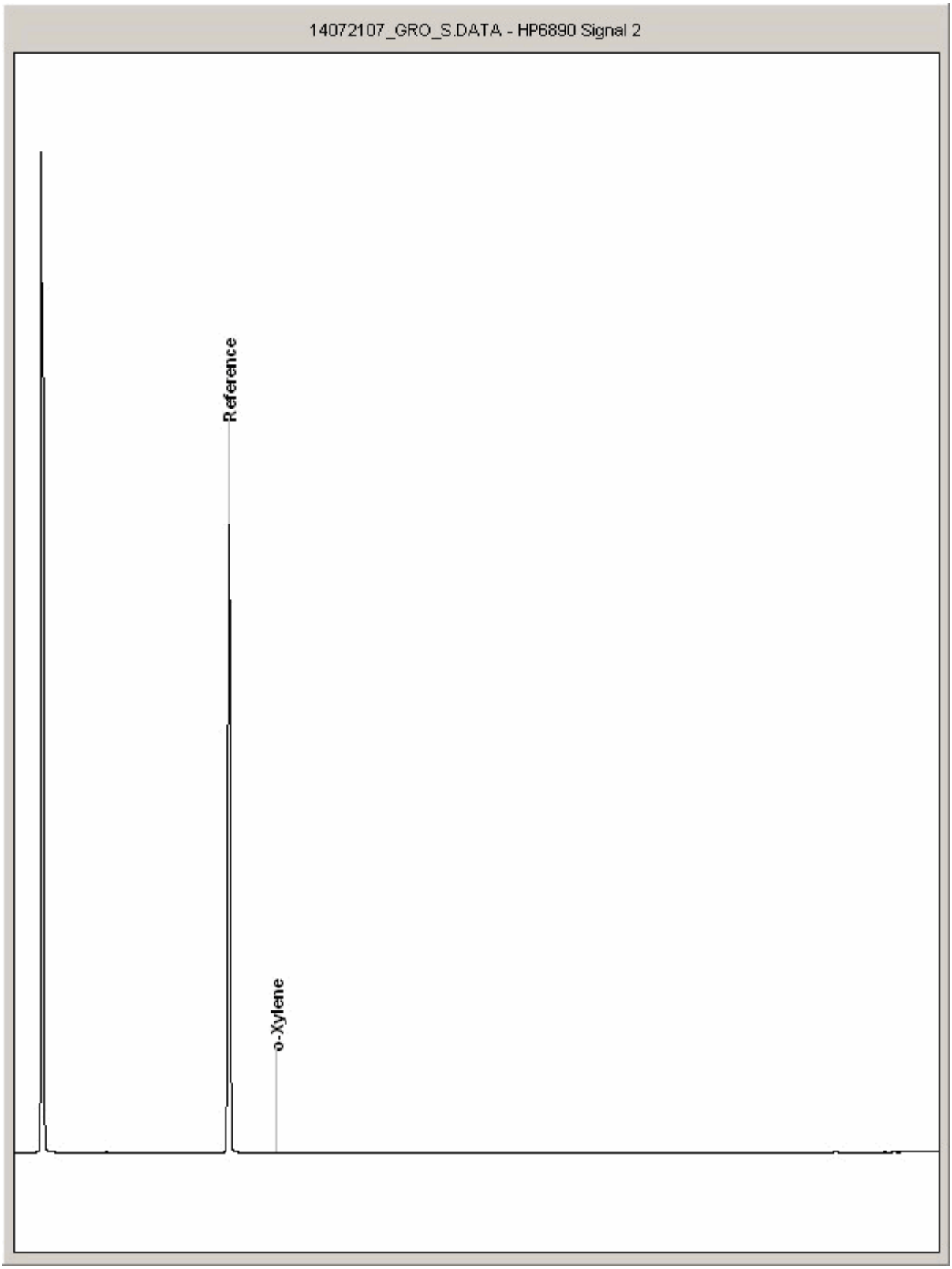
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072107
Sample ID : WS212

Depth : 0.65



CERTIFICATE OF ANALYSIS

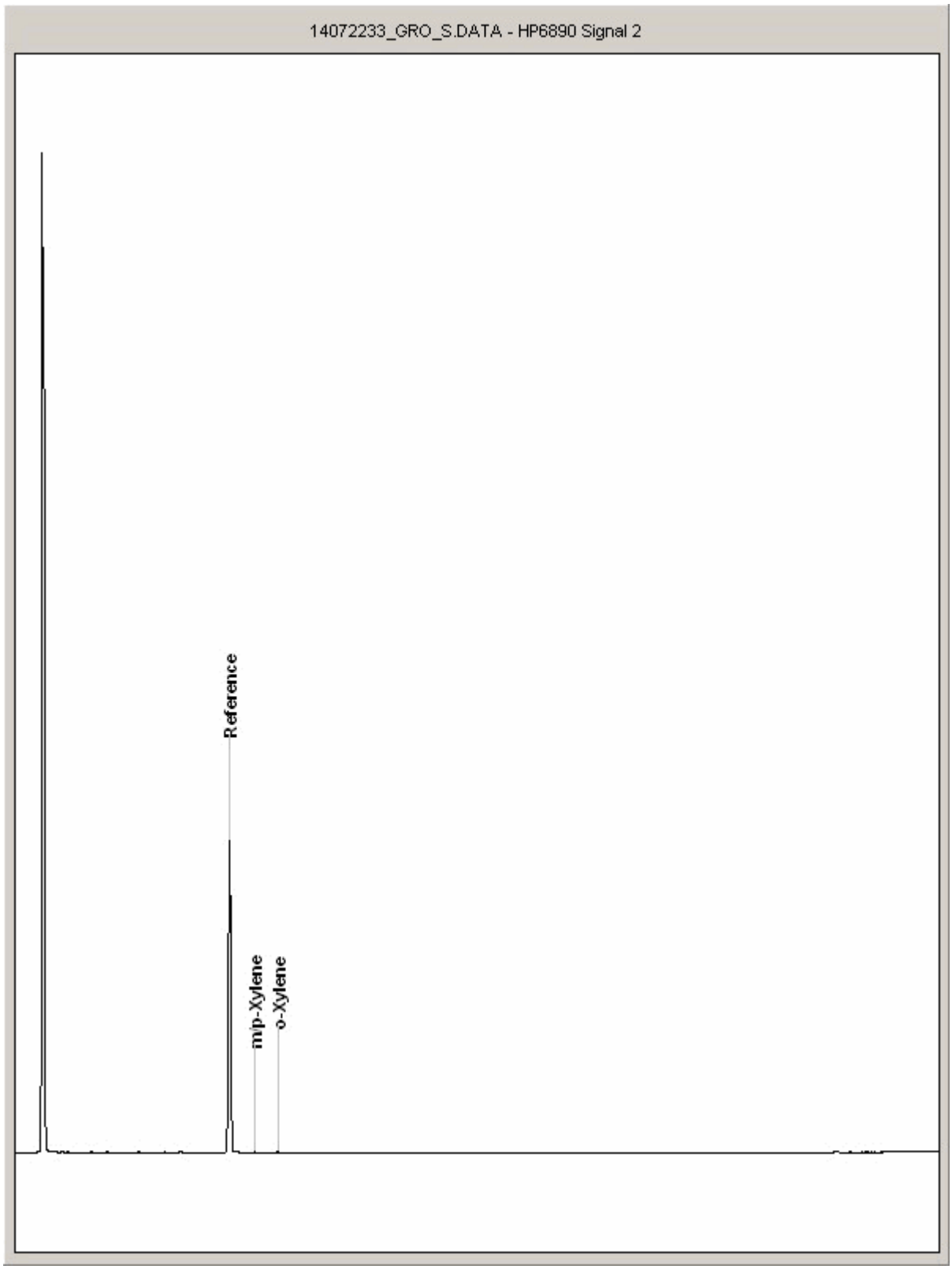
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072233
Sample ID : WS202

Depth : 1.00



CERTIFICATE OF ANALYSIS

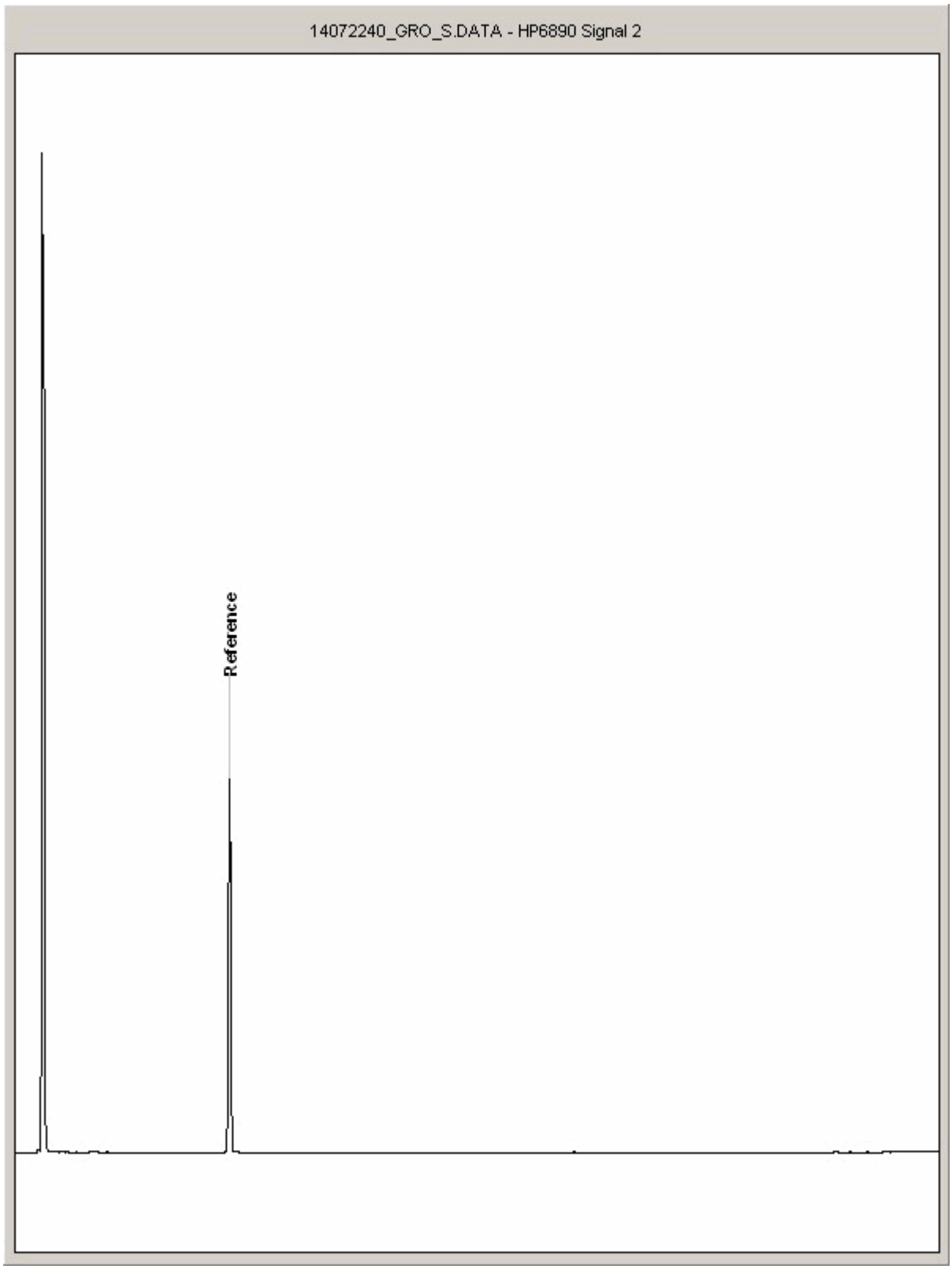
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072240
Sample ID : WS202

Depth : 0.30



CERTIFICATE OF ANALYSIS

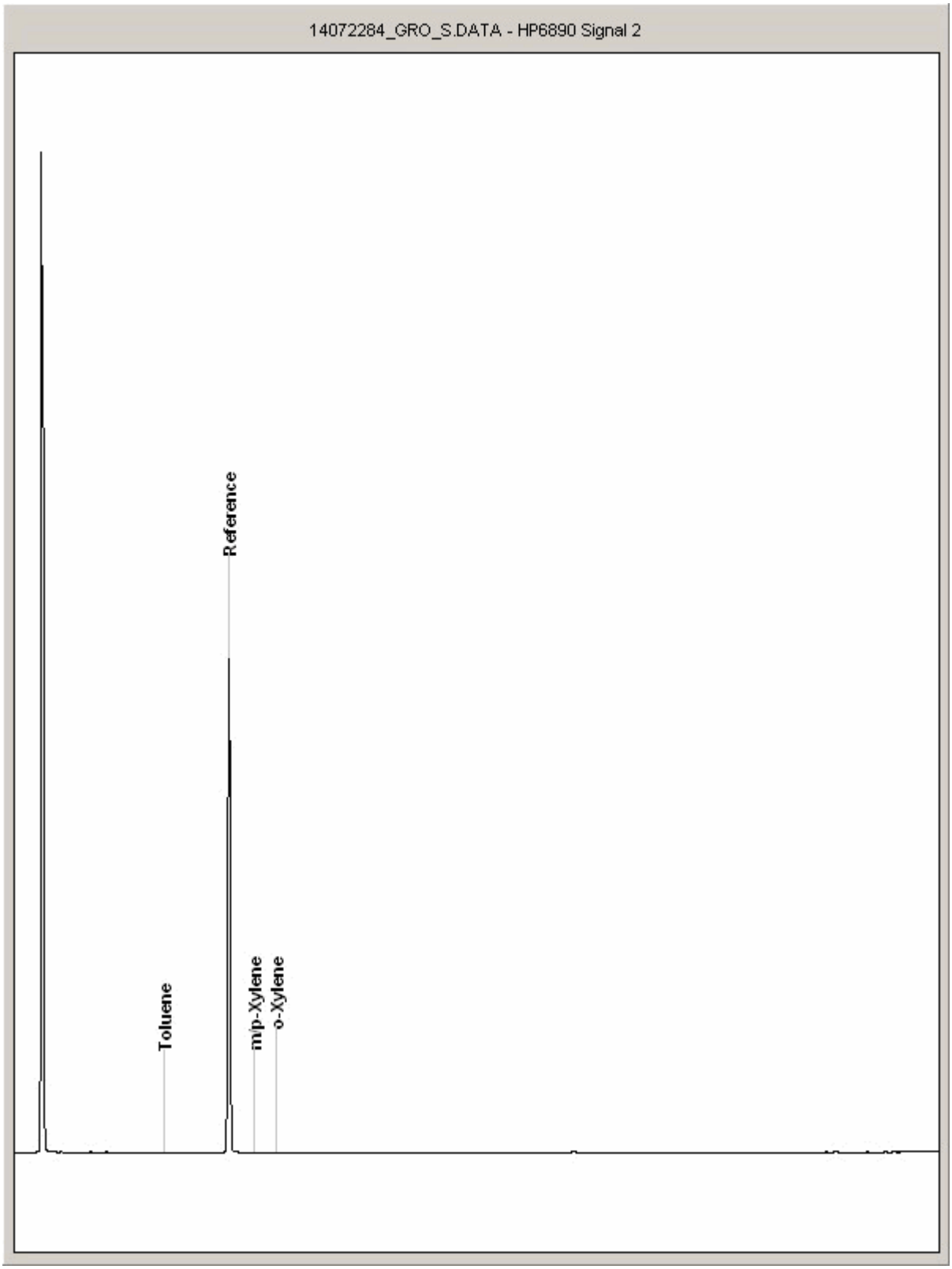
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072284
Sample ID : WS205

Depth : 0.30



CERTIFICATE OF ANALYSIS

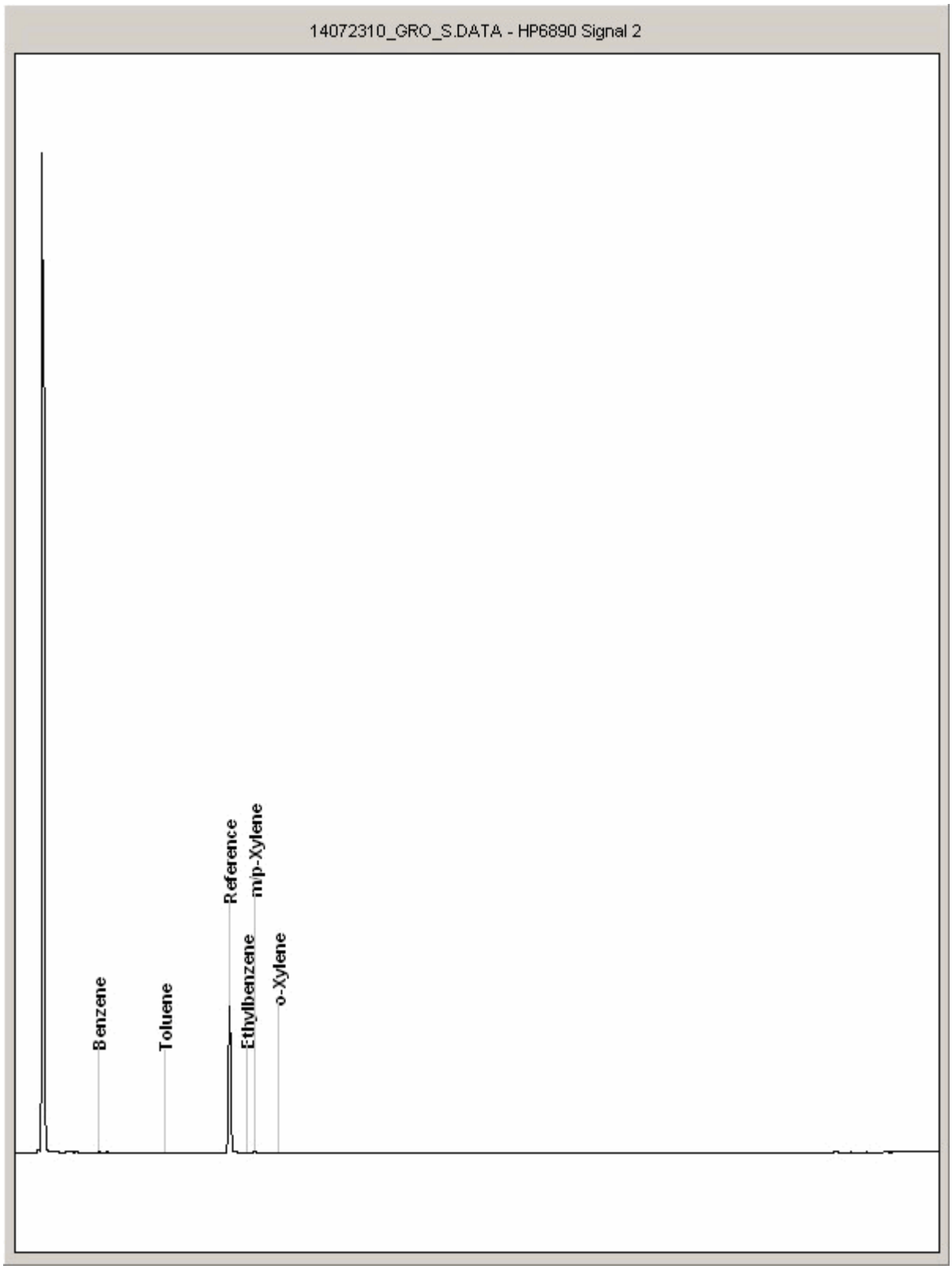
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072310
Sample ID : TP207

Depth : 0.85



CERTIFICATE OF ANALYSIS

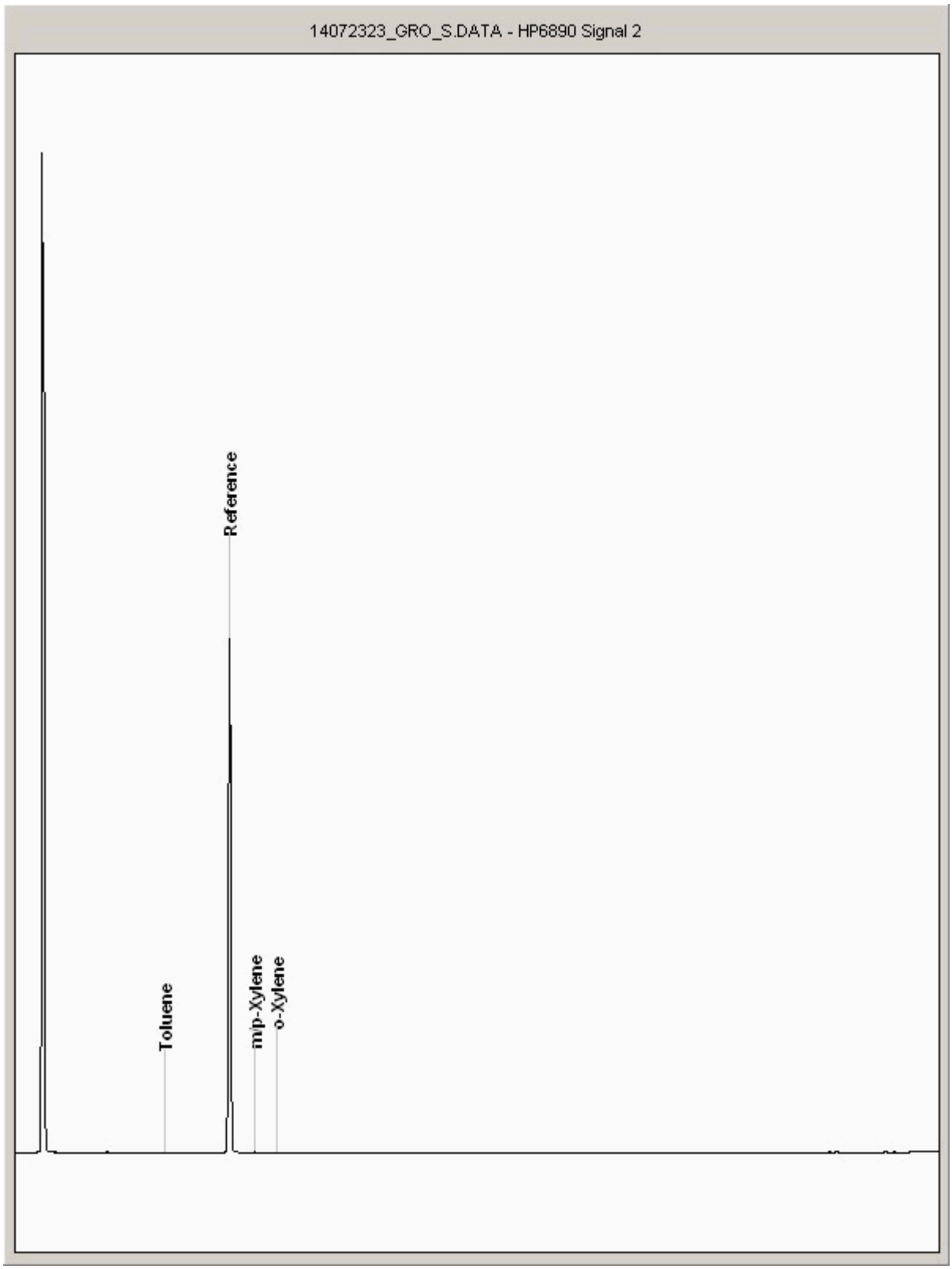
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14072323
Sample ID : TP207

Depth : 0.50



CERTIFICATE OF ANALYSIS

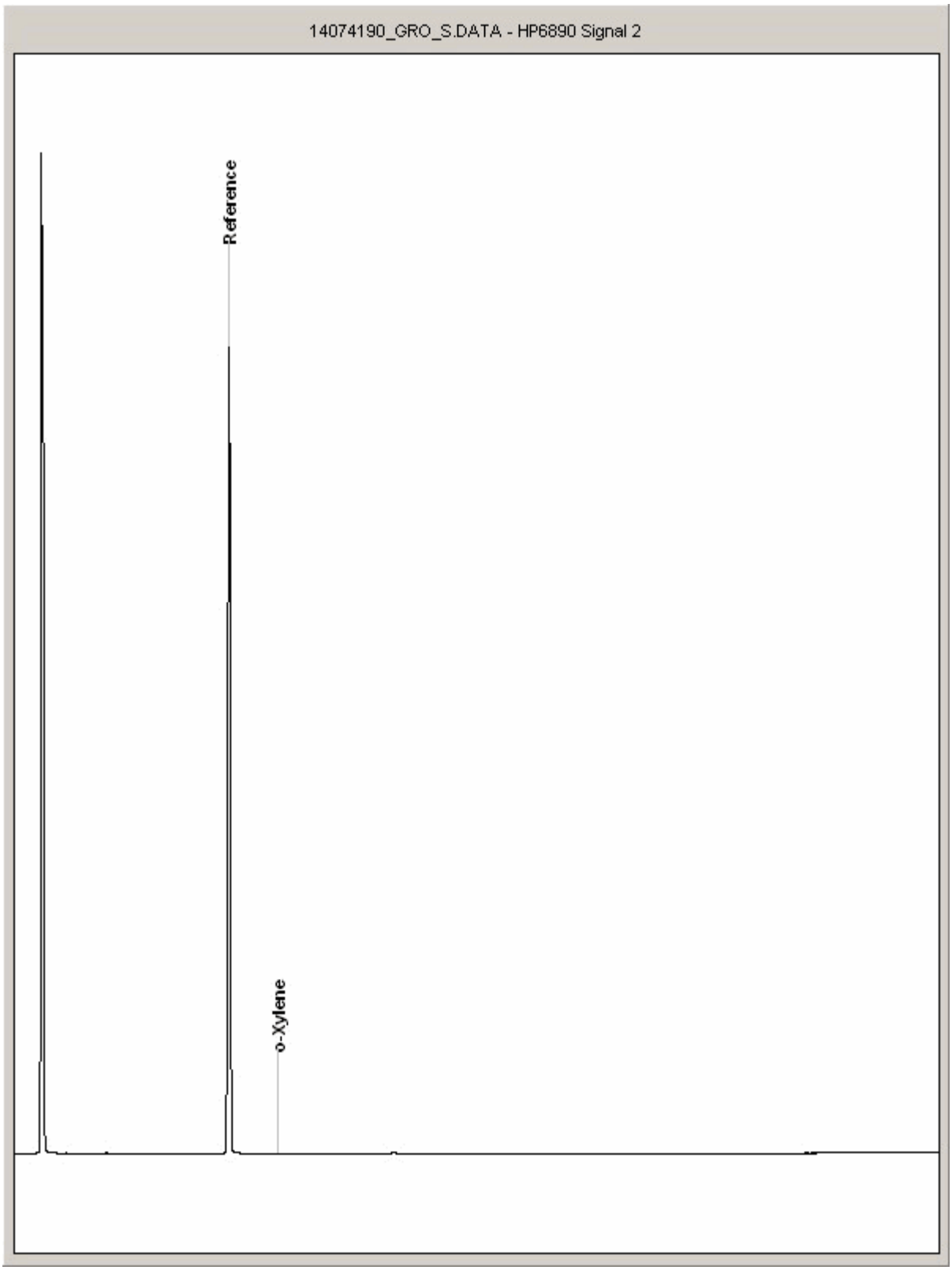
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14074190
Sample ID : TP214

Depth : 0.30



CERTIFICATE OF ANALYSIS

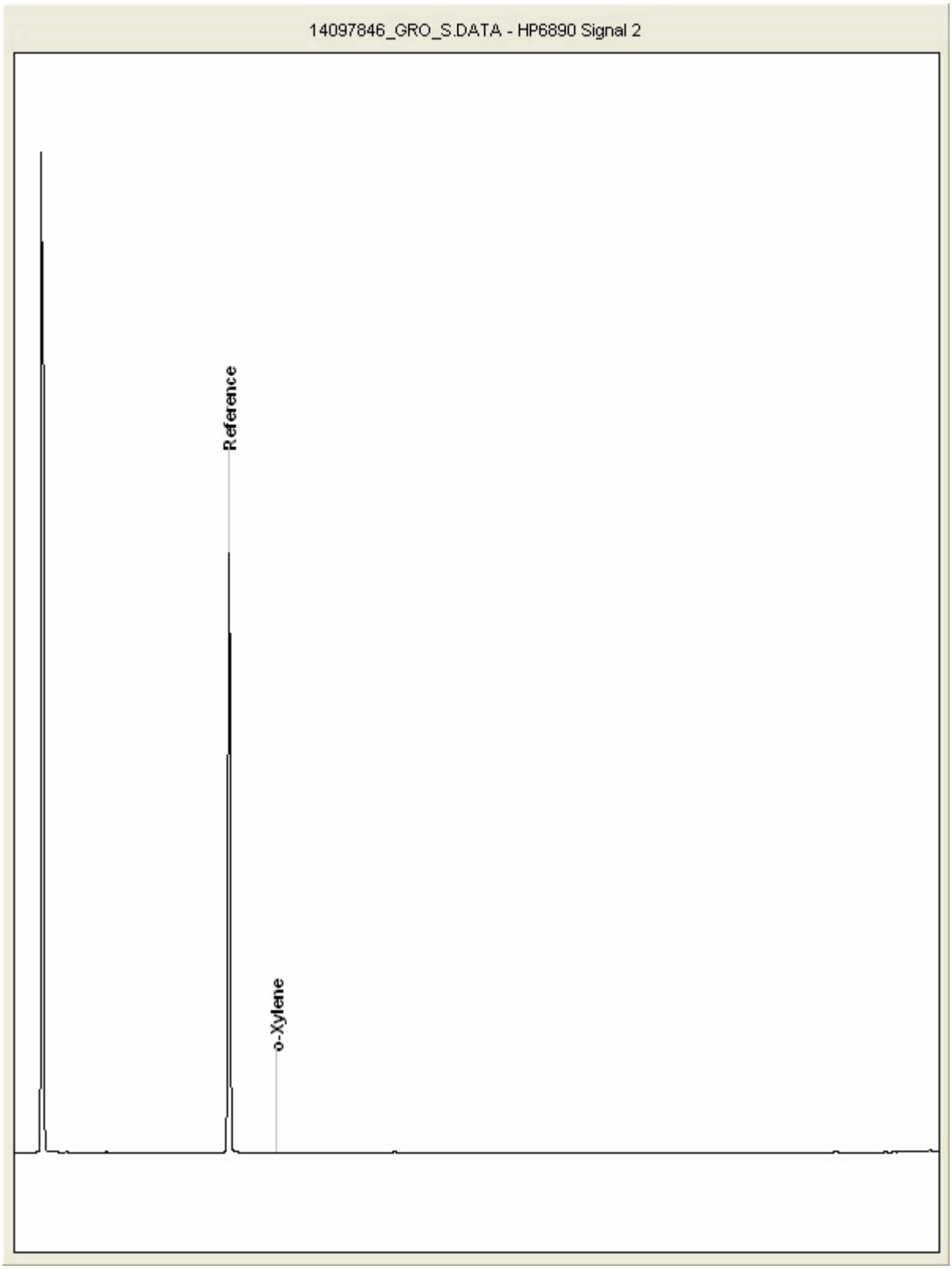
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14097846
Sample ID : HP209

Depth : 0.65



CERTIFICATE OF ANALYSIS

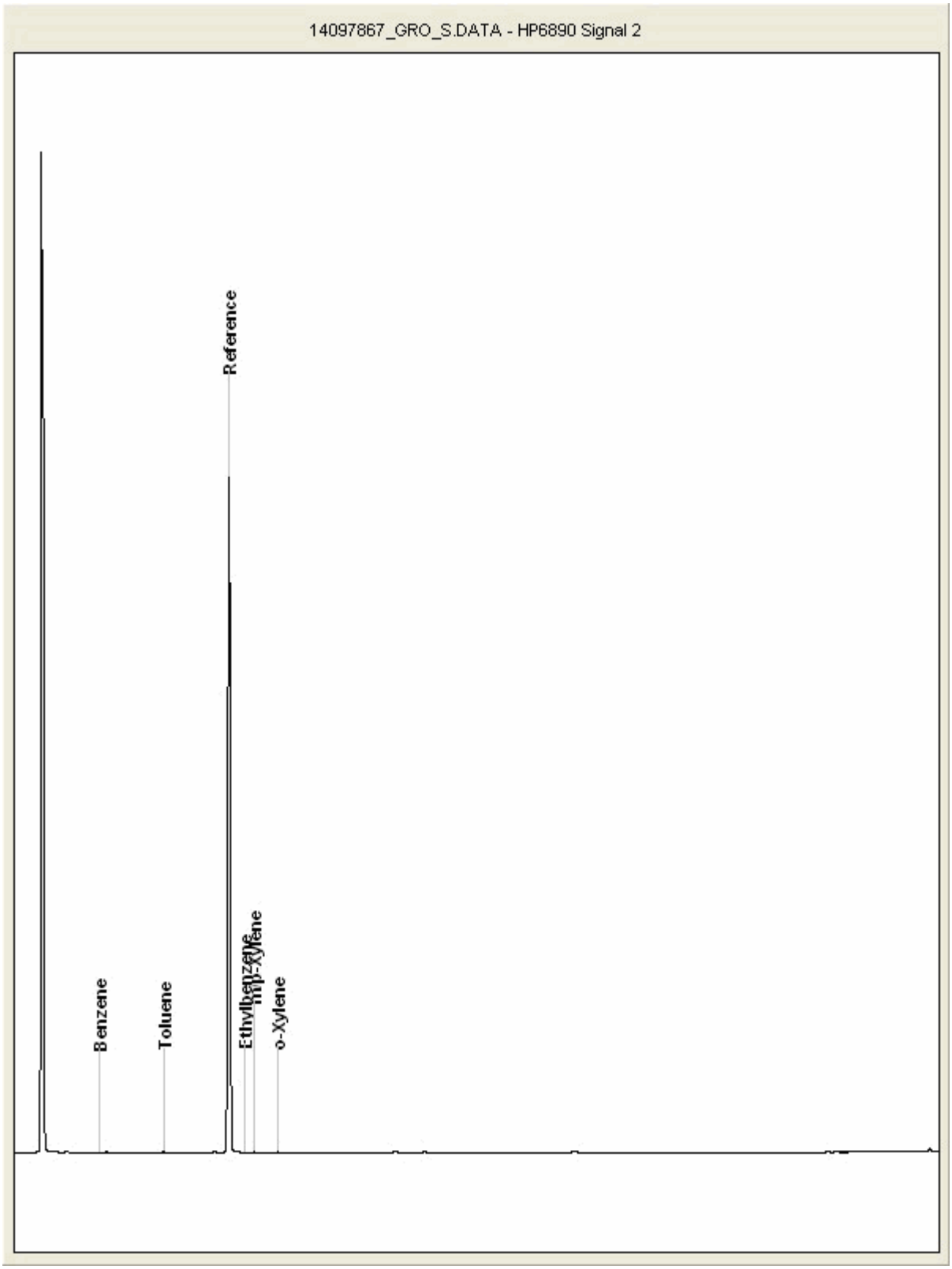
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14097867
Sample ID : HP210

Depth : 0.75



CERTIFICATE OF ANALYSIS

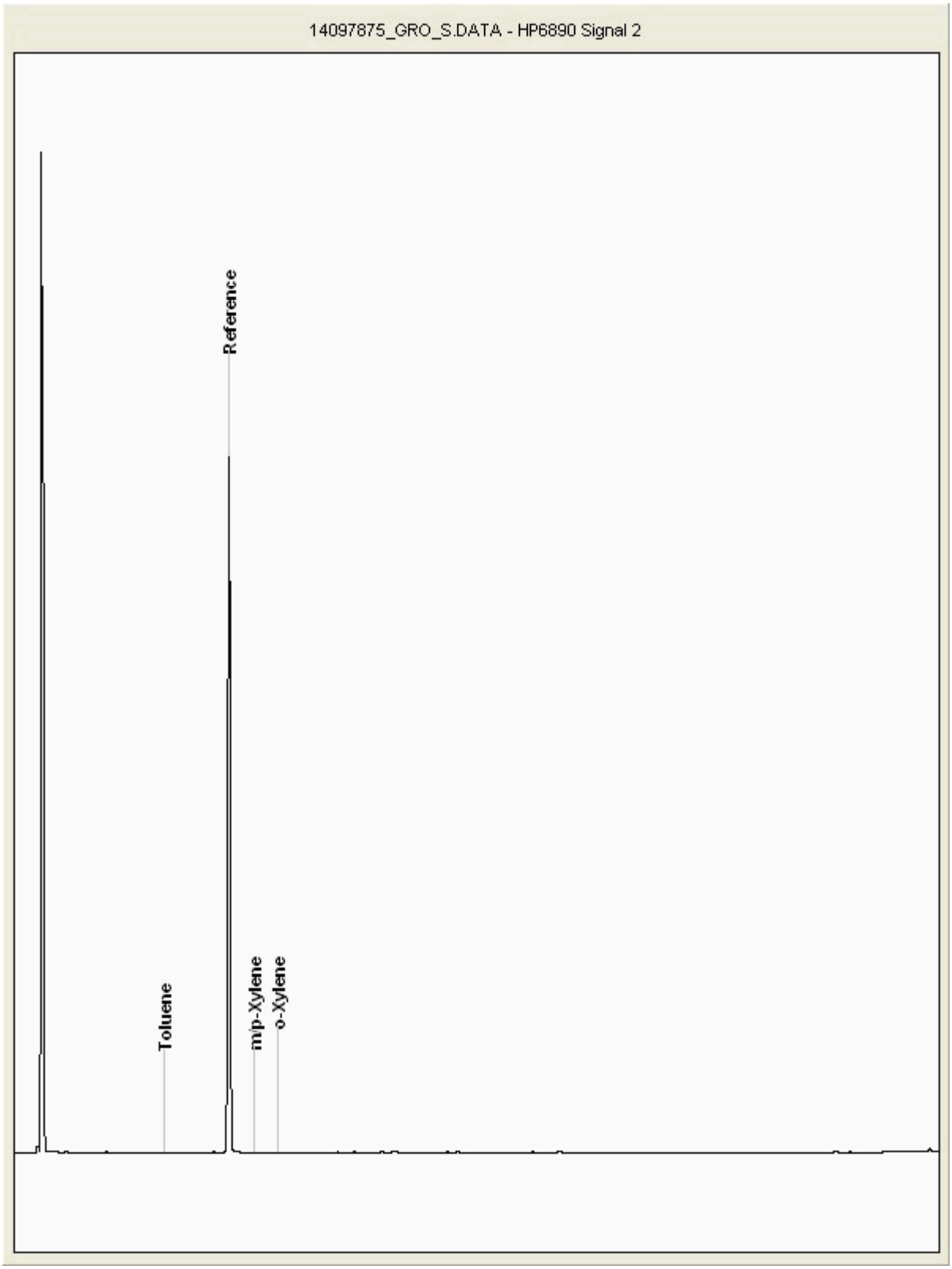
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14097875
Sample ID : WS207

Depth : 0.70



CERTIFICATE OF ANALYSIS

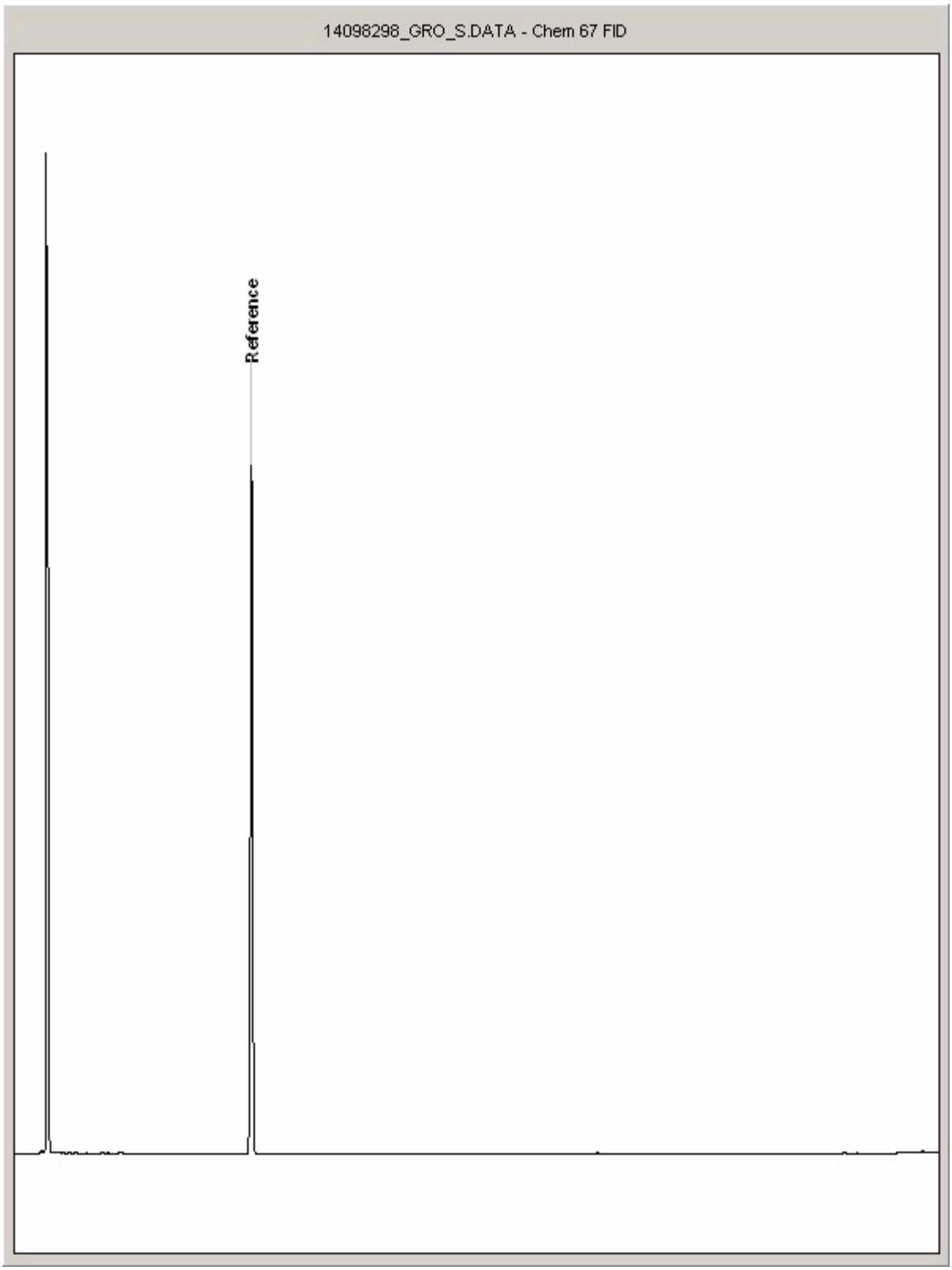
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14098298
Sample ID : HP210

Depth : 0.25



CERTIFICATE OF ANALYSIS

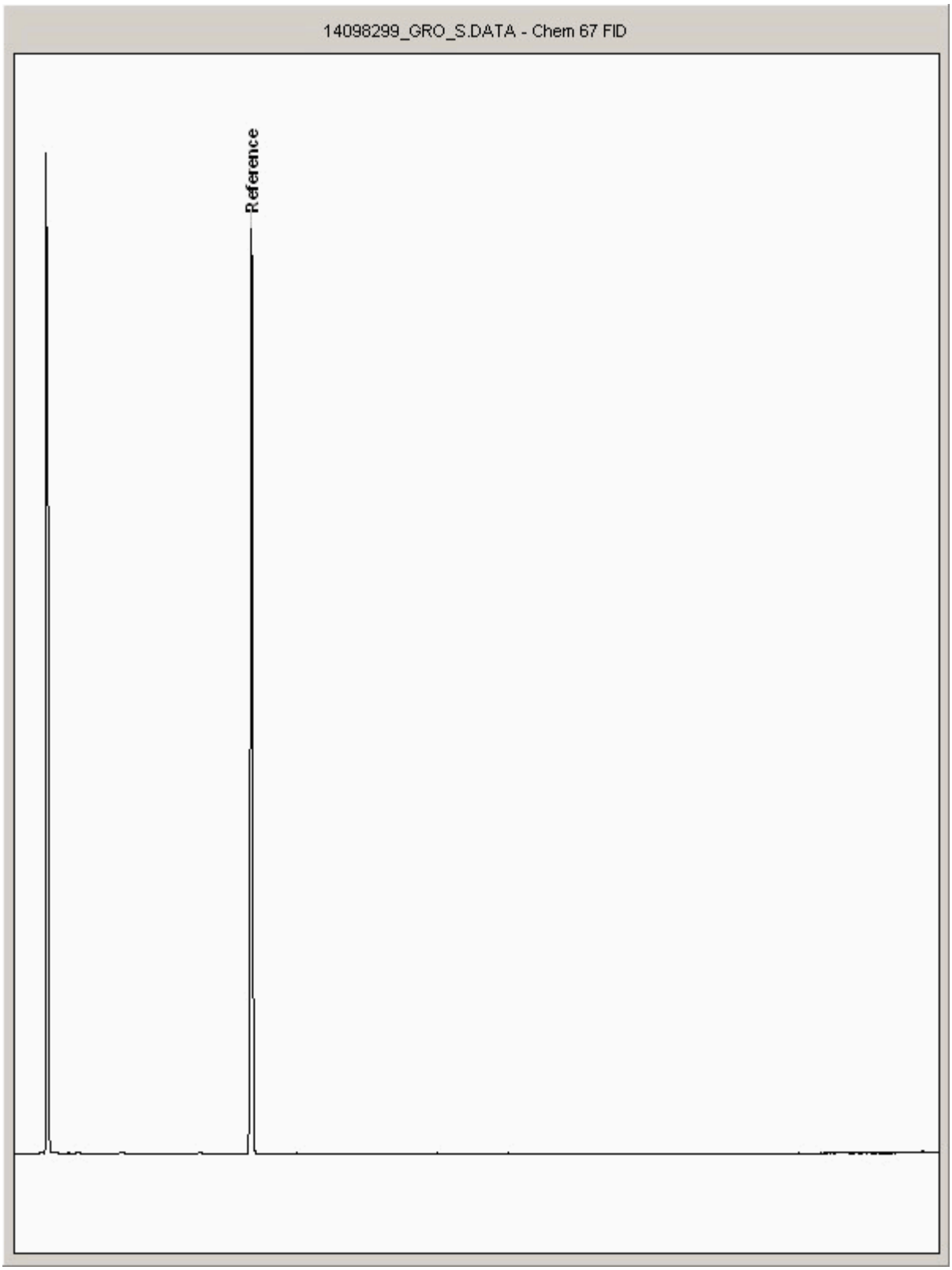
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14098299
Sample ID : HP209

Depth : 0.30



CERTIFICATE OF ANALYSIS

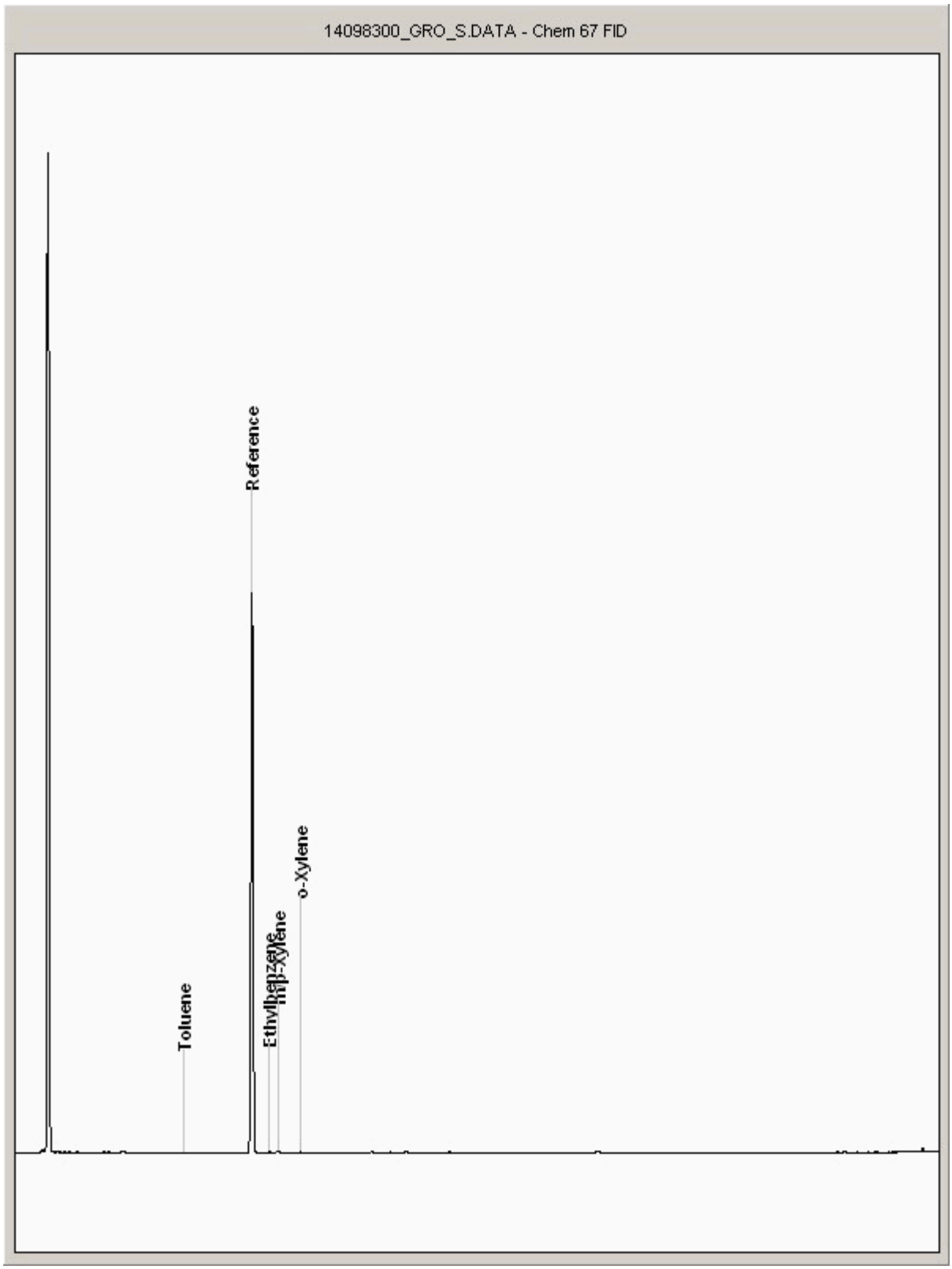
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14098300
Sample ID : WS207

Depth : 0.20



CERTIFICATE OF ANALYSIS

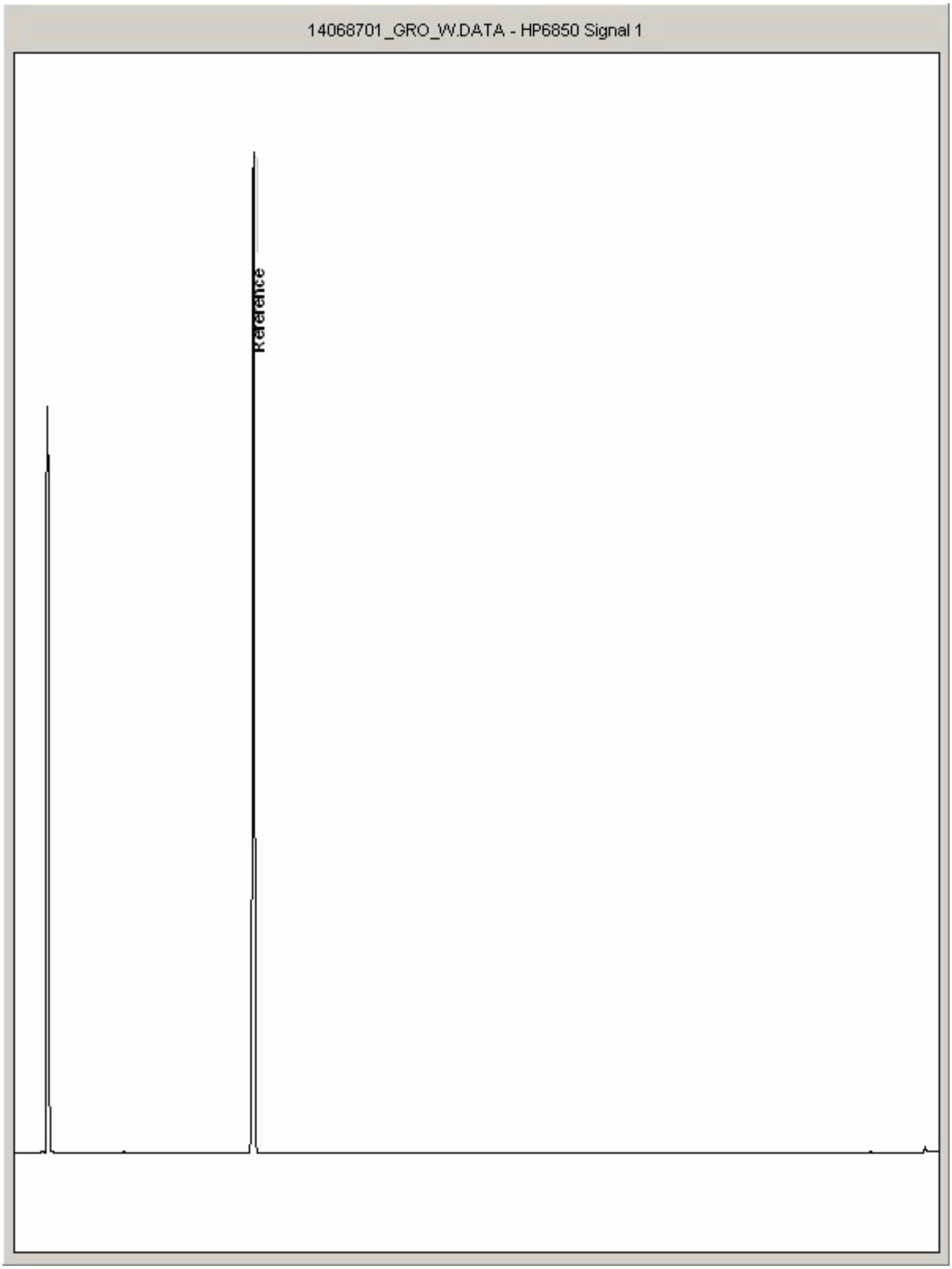
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 14068701
Sample ID : WS212

Depth : 0.65



CERTIFICATE OF ANALYSIS

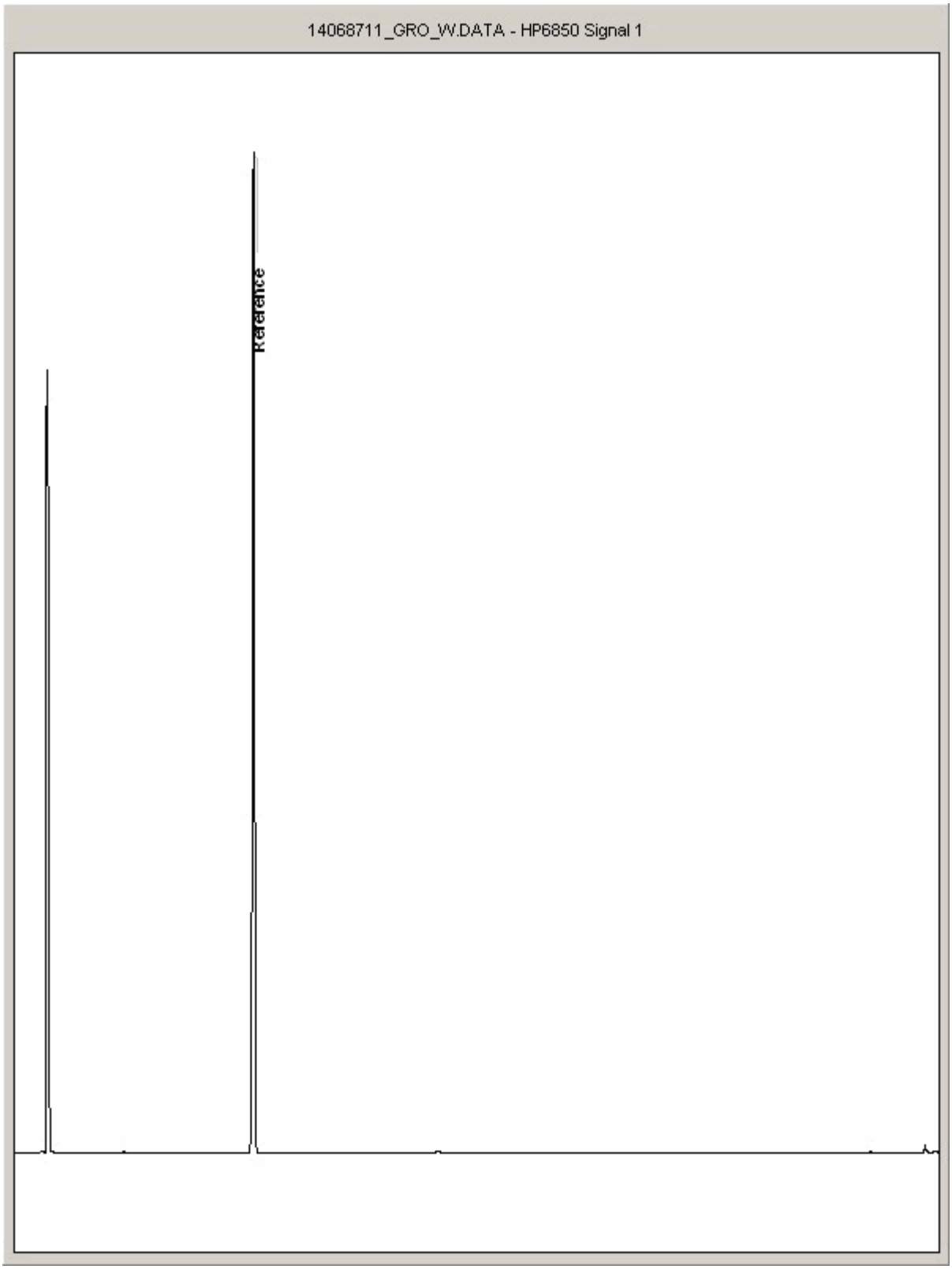
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 14068711
Sample ID : WS202

Depth : 1.00



CERTIFICATE OF ANALYSIS

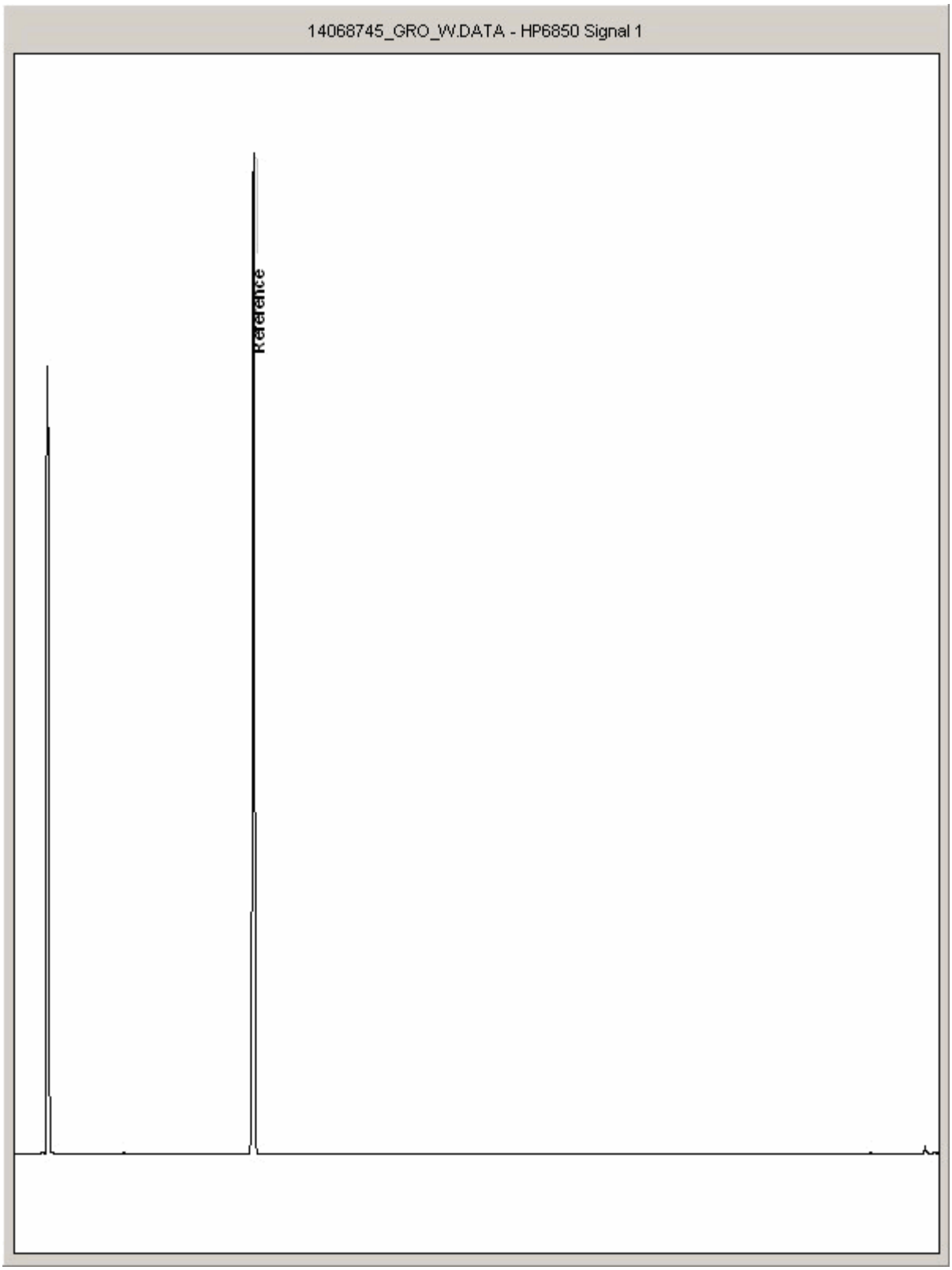
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 14068745
Sample ID : BH202

Depth : 0.30



CERTIFICATE OF ANALYSIS

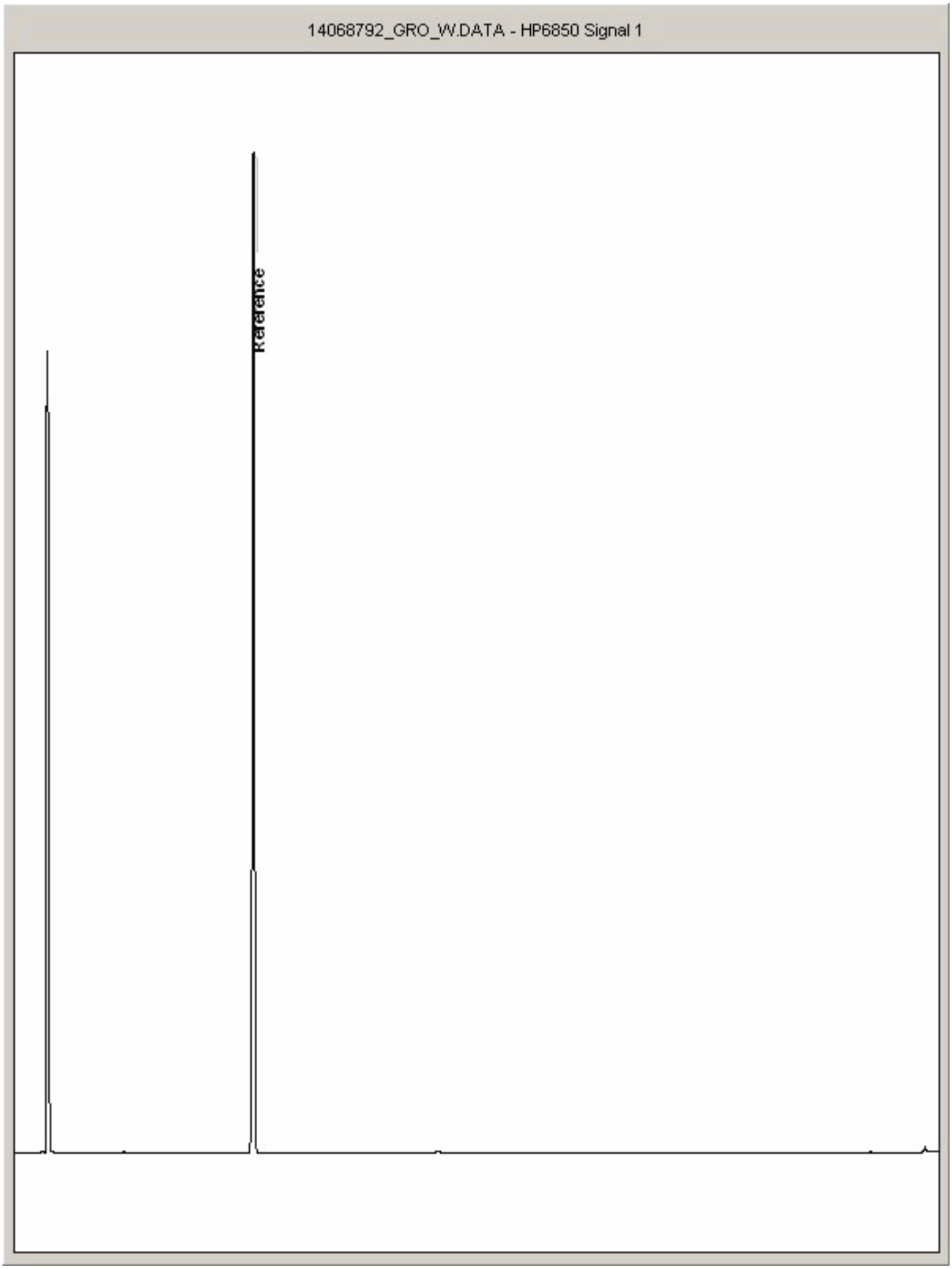
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 14068792
Sample ID : BH207

Depth : 0.70



CERTIFICATE OF ANALYSIS

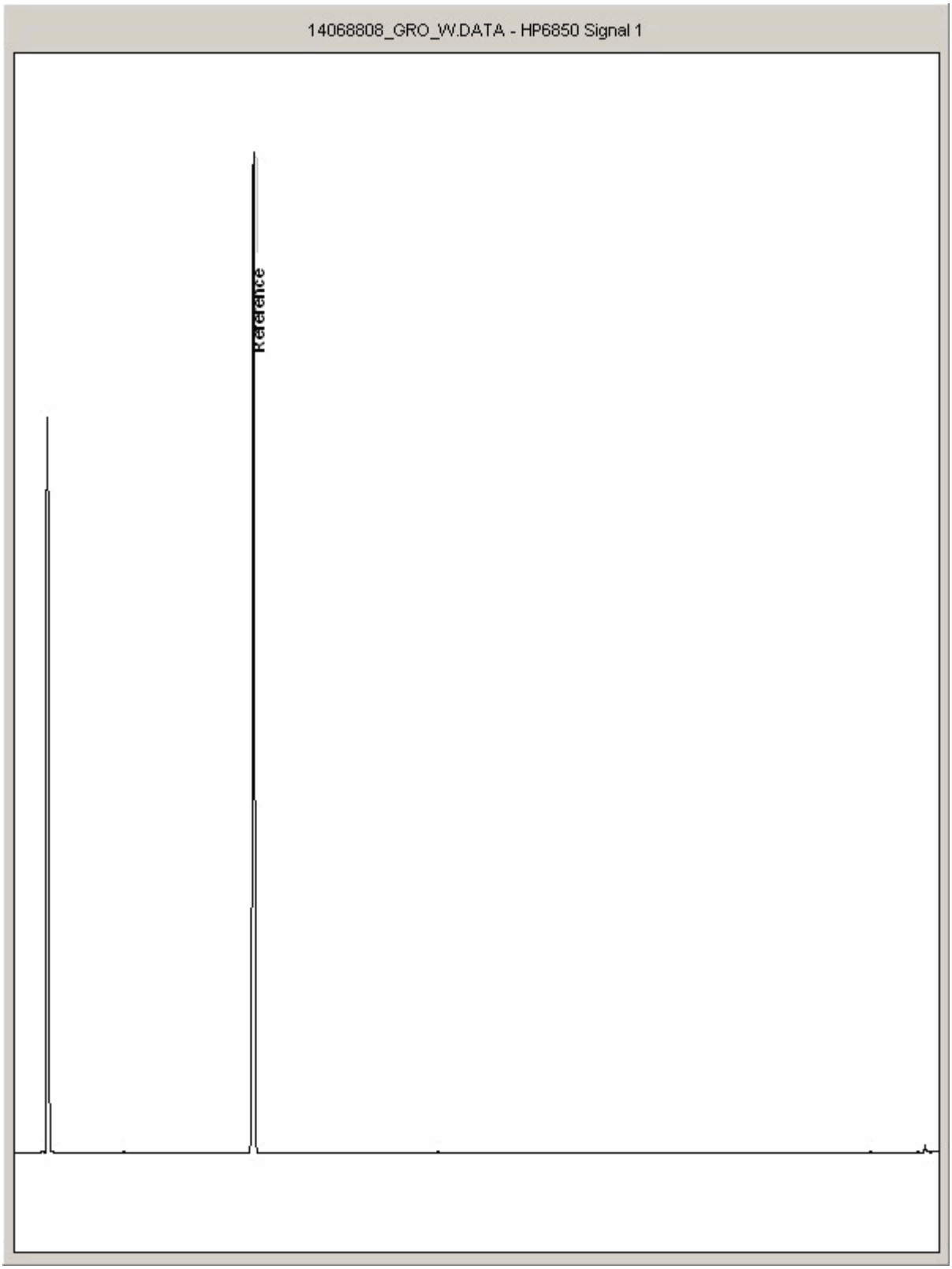
SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 14068808
Sample ID : WS204

Depth : 0.20



ALcontrol Laboratories

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Registered 556152-0916 Registered office: Linköping, Sweden

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REPORT

issued by an Accredited Laboratory

Report No. 16317715

Assigner

ALcontrol Laboratories
Units 7-8, Hawarden Busin. Prk

Manor Road, Hawarden
CH53US Deeside, UK

Applies to

Information about the project ***Soil***

Project number : 160823-40

Information about sample and sampling

Sampling date	: 2016-08-18	Date of Arrival	: 2016-09-05
Sample name	: 14082807	Time of Arrival	: 1430
Depth of sampling	: -		
Sampler	: -		

Results of the analyses

Test method	*Analysis / Investigation of*	*Result*	*Uncertainty*	*Unit*
SS-EN 11465	Dry substance	90.5	±9.05	%
GC-HRMS alt. GC-MS-MS	2378 TCDD	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDD	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDD	<2	±0.70	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDD	2.3	±0.80	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDD	<2	±0.70	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDD	21	±6.3	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDD	100	±30	ng/kg DS
GC-HRMS alt. GC-MS-MS	2378 TCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	23478 PeCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	234678 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDF	11	±3.3	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234789 HpCDF	<5	±1.5	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDF	14	±4.2	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Lower Bound	0.70	±0.70	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Upper Bound	6.2	±2.2	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Lower Bound	0.60	±0.70	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Upper Bound	6.7	±2.3	ng/kg DS

The stated uncertainty of measurement is calculated using a coverage k = 2. Measurement uncertainty for accredited microbiological analyses are available from the laboratory upon request.

Linköping 2016-09-09
The report has been reviewed and approved by

Mats Lindgren
Responsible reviewer
Control numbers 8488 3864 8168 2227

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ALcontrol Laboratories

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REPORT

issued by an Accredited Laboratory

Report No. 16317713

Assigner

ALcontrol Laboratories
Units 7-8, Hawarden Busin. Prk

Manor Road, Hawarden
CH53US Deeside, UK

Applies to

Information about the project ***Soil***

Project number : 160823-40

Information about sample and sampling

Sampling date	: 2016-08-17	Date of Arrival	: 2016-09-05
Sample name	: 14082851	Time of Arrival	: 1430
Depth of sampling	: -		
Sampler	: -		

Results of the analyses

Test method	*Analysis / Investigation of*	*Result*	*Uncertainty*	*Unit*
SS-EN 11465	Dry substance	93.1	±9.31	%
GC-HRMS alt. GC-MS-MS	2378 TCDD	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDD	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDD	<2	±0.70	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDD	3.0	±1.1	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDD	2.0	±0.70	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDD	200	±60	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDD	1300	±390	ng/kg DS
GC-HRMS alt. GC-MS-MS	2378 TCDF	16	±4.8	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	23478 PeCDF	2.9	±0.87	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDF	2.6	±0.78	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDF	2.5	±0.75	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	234678 HxCDF	4.5	±1.4	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDF	19	±5.7	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234789 HpCDF	<5	±1.5	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDF	13	±3.9	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Lower Bound	8.1	±2.8	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Upper Bound	12	±4.2	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Lower Bound	6.5	±2.3	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Upper Bound	11	±3.9	ng/kg DS

The stated uncertainty of measurement is calculated using a coverage k = 2. Measurement uncertainty for accredited microbiological analyses are available from the laboratory upon request.

Linköping 2016-09-09
The report has been reviewed and approved by

Mats Lindgren
Responsible reviewer
Control numbers 8681 3761 8167 2523

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REPORT

issued by an Accredited Laboratory

Report No. 16317714

Assigner

ALcontrol Laboratories
Units 7-8, Hawarden Busin. Prk

Manor Road, Hawarden
CH53US Deeside, UK

Applies to

Information about the project ***Soil***

Project number : 160823-40

Information about sample and sampling

Sampling date	: 2016-08-18	Date of Arrival	: 2016-09-05
Sample name	: 14082833	Time of Arrival	: 1430
Depth of sampling	: -		
Sampler	: -		

Results of the analyses

Test method	*Analysis / Investigation of*	*Result*	*Uncertainty*	*Unit*
SS-EN 11465	Dry substance	85.6	±8.56	%
GC-HRMS alt. GC-MS-MS	2378 TCDD	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDD	6.5	±2.0	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDD	3.7	±1.3	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDD	12	±4.2	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDD	4.9	±1.7	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDD	87	±26	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDD	220	±66	ng/kg DS
GC-HRMS alt. GC-MS-MS	2378 TCDF	14	±4.2	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDF	8.0	±2.4	ng/kg DS
GC-HRMS alt. GC-MS-MS	23478 PeCDF	15	±4.5	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDF	17	±5.1	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDF	13	±3.9	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	234678 HxCDF	10	±3.0	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDF	57	±17	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234789 HpCDF	<5	±1.5	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDF	38	±11	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Lower Bound	20	±7.0	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Upper Bound	23	±8.0	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Lower Bound	20	±7.0	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Upper Bound	22	±7.7	ng/kg DS

The stated uncertainty of measurement is calculated using a coverage k = 2. Measurement uncertainty for accredited microbiological analyses are available from the laboratory upon request.

Linköping 2016-09-09
The report has been reviewed and approved by

Mats Lindgren
Responsible reviewer
Control numbers 8582 3868 8168 2729

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REPORT

issued by an Accredited Laboratory

Report No. 16317716

Assigner

ALcontrol Laboratories
Units 7-8, Hawarden Busin. Prk

Manor Road, Hawarden
CH53US Deeside, UK

Applies to

Information about the project ***Soil***

Project number : 160823-40

Information about sample and sampling

Sampling date	: 2016-08-19	Date of Arrival	: 2016-09-05
Sample name	: 14082722	Time of Arrival	: 1430
Depth of sampling	: -		
Sampler	: -		

Results of the analyses

Test method	*Analysis / Investigation of*	*Result*	*Uncertainty*	*Unit*
SS-EN 11465	Dry substance	87.9	±8.79	%
GC-HRMS alt. GC-MS-MS	2378 TCDD	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDD	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDD	<2	±0.70	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDD	<2	±0.70	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDD	<2	±0.70	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDD	22	±6.6	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDD	210	±63	ng/kg DS
GC-HRMS alt. GC-MS-MS	2378 TCDF	28	±8.4	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	23478 PeCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	234678 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDF	9.2	±2.8	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234789 HpCDF	<5	±1.5	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDF	17	±5.1	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Lower Bound	3.3	±1.2	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Upper Bound	8.8	±3.1	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Lower Bound	3.1	±1.1	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Upper Bound	9.2	±3.2	ng/kg DS

The stated uncertainty of measurement is calculated using a coverage k = 2. Measurement uncertainty for accredited microbiological analyses are available from the laboratory upon request.

Linköping 2016-09-09
The report has been reviewed and approved by

Mats Lindgren
Responsible reviewer
Control numbers 8385 3661 8164 2923

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ALcontrol Laboratories

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Ackred. nr 1006
Provning
ISO/IEC 17025

REPORT

issued by an Accredited Laboratory

Report No. 16317718

Assigner

ALcontrol Laboratories
Units 7-8, Hawarden Busin. Prk

Manor Road, Hawarden
CH53US Deeside, UK

Applies to

Information about the project ***Soil***

Project number : 160823-40

Information about sample and sampling

Sampling date	: 2016-08-19	Date of Arrival	: 2016-09-05
Sample name	: 14082755	Time of Arrival	: 1430
Depth of sampling	: 0.2 m		
Sampler	: -		

Results of the analyses

Test method	*Analysis / Investigation of*	*Result*	*Uncertainty*	*Unit*
SS-EN 11465	Dry substance	86.5	±8.65	%
GC-HRMS alt. GC-MS-MS	2378 TCDD	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDD	2.1	±0.63	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDD	<2	±0.70	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDD	2.7	±0.95	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDD	2.3	±0.80	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDD	19	±5.7	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDD	84	±25	ng/kg DS
GC-HRMS alt. GC-MS-MS	2378 TCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	23478 PeCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	234678 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDF	14	±4.2	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234789 HpCDF	<5	±1.5	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDF	<10	±3.0	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Lower Bound	2.0	±0.70	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Upper Bound	6.3	±2.2	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Lower Bound	2.9	±1.0	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Upper Bound	6.9	±2.4	ng/kg DS

The stated uncertainty of measurement is calculated using a coverage k = 2. Measurement uncertainty for accredited microbiological analyses are available from the laboratory upon request.

Linköping 2016-09-09
The report has been reviewed and approved by

Frida Björklund
Responsible reviewer
Control numbers 8185 3561 8163 2020

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Ackred. nr 1006
Provning
ISO/IEC 17025

REPORT

issued by an Accredited Laboratory

Report No. 16317712

Assigner

ALcontrol Laboratories
Units 7-8, Hawarden Busin. Prk

Manor Road, Hawarden
CH53US Deeside, UK

Applies to

Information about the project ***Soil***

Project number : 160823-40

Information about sample and sampling

Sampling date	: 2016-08-19	Date of Arrival	: 2016-09-05
Sample name	: 14082904	Time of Arrival	: 1430
Depth of sampling	: -		
Sampler	: -		

Results of the analyses

Test method	*Analysis / Investigation of*	*Result*	*Uncertainty*	*Unit*
SS-EN 11465	Dry substance	80.4	±8.04	%
GC-HRMS alt. GC-MS-MS	2378 TCDD	2.6	±0.78	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDD	15	±4.5	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDD	7.2	±2.5	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDD	12	±4.2	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDD	9.2	±3.2	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDD	92	±28	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDD	280	±84	ng/kg DS
GC-HRMS alt. GC-MS-MS	2378 TCDF	34	±10	ng/kg DS
GC-HRMS alt. GC-MS-MS	12378 PeCDF	21	±6.3	ng/kg DS
GC-HRMS alt. GC-MS-MS	23478 PeCDF	37	±11	ng/kg DS
GC-HRMS alt. GC-MS-MS	123478 HxCDF	29	±8.7	ng/kg DS
GC-HRMS alt. GC-MS-MS	123678 HxCDF	28	±8.4	ng/kg DS
GC-HRMS alt. GC-MS-MS	123789 HxCDF	<2	±0.60	ng/kg DS
GC-HRMS alt. GC-MS-MS	234678 HxCDF	31	±9.3	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234678 HpCDF	130	±39	ng/kg DS
GC-HRMS alt. GC-MS-MS	1234789 HpCDF	8.1	±2.4	ng/kg DS
GC-HRMS alt. GC-MS-MS	OCDF	95	±29	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Lower Bound	47	±16	ng/kg DS
Calculated acc. NATO	I-PCDD/F-TEQ Upper Bound	47	±16	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Lower Bound	46	±16	ng/kg DS
Calculated acc. WHO2005	WHO-PCDD/F-TEQ Upper Bound	46	±16	ng/kg DS

The stated uncertainty of measurement is calculated using a coverage k = 2. Measurement uncertainty for accredited microbiological analyses are available from the laboratory upon request.

Linköping 2016-09-12
The report has been reviewed and approved by

Mats Lindgren
Responsible reviewer
Control numbers 8785 3867 8165 2825

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SDG:	160823-40	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377359
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt . However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect .

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
5	**Samples exceeded holding time before presevation was performed**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than : - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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WSP PB BBC
3rd Floor, Kings Orchard,
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BS2 0HQ

Attention: Martin Weil

CERTIFICATE OF ANALYSIS

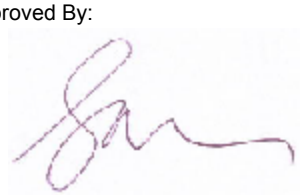
Date:	06 September 2016
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	160823-46
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	376685

We received 31 samples on Friday August 19, 2016 and 2 of these samples were scheduled for analysis which was completed on Tuesday September 06, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:



Sonia McWhan

Operations Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
ilac-MRA
UKAS TESTING
1291

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14027654	#3			
14027645	BH202		3.00	
14027644	BH202		4.00	
14027643	BH202		5.00	
14027642	BH202		6.00	
14027641	BH203	ES1	0.30	
14027640	BH203	ES3	1.00	
14027639	BH205	ES4	2.50	
14027650	BH201 ENO SAMPLE 9192126		2.90 - 3.00	15/08/2016
14027653	CLEAN SKIP			
14027648	HP201		0.20	16/08/2016
14027647	HP201		0.90	16/08/2016
14027652	MG SKIP			
14027651	NO ID			
14027646	WS203		0.50	
14027638	WS207		0.50	
14027637	WS207		1.50	
14027636	WS207		1.70	
14027635	WS207		3.00	
14027634	WS208		1.50	
14027633	WS208		2.00	
14027632	WS208		3.00	
14027631	WS208		4.00	
14027630	WS208		5.00	
14027629	WS210		2.50	
14027628	WS210		3.80	
14027627	WS210		5.00	
14027626	WS211		3.00	
14027625	WS211		4.00	
14027624	WS211		5.00	
14027649	WS308		3.00	

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	14027653	14027652
			Customer Sample Reference	CLEAN SKIP	MG SKIP
			AGS Reference		
			Depth (m)		
			Container	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2		X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 2		X	X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2		X	X
CEN Readings	All	NDPs: 0 Tests: 2		X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2		X	X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2		X	X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2		X	X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2		X	X
Fluoride	All	NDPs: 0 Tests: 2		X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2		X	X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X	X
Loss on Ignition in soils	All	NDPs: 0 Tests: 2		X	X
Mercury Dissolved	All	NDPs: 0 Tests: 2		X	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X	X
Mineral Oil	All	NDPs: 0 Tests: 2		X	X

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	14027653			14027652		
			Customer Sample Reference	CLEAN SKIP			MG SKIP		
			AGS Reference						
			Depth (m)						
			Container	1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)
PAH by GCMS	All	NDPs: 0 Tests: 2			X			X	
PAH Value of soil	All	NDPs: 0 Tests: 2			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 2			X			X	
pH	All	NDPs: 0 Tests: 2	X			X			
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2	X			X			
Sample description	All	NDPs: 0 Tests: 2			X			X	
Total Dissolved Solids	All	NDPs: 0 Tests: 2	X			X			
Total Organic Carbon	All	NDPs: 0 Tests: 2			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2				X			X

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
14027653	CLEAN SKIP		Light Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
14027652	MG SKIP		Dark Brown	Sandy Clay	0.063 - 2.00 mm	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	CLEAN SKIP	MG SKIP				
			Depth (m)	.	.				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	-	-				
			Sampled Time	.	.				
			Date Received	19/08/2016	19/08/2016				
			SDG Ref	160823-46	160823-46				
			Lab Sample No.(s)	14027653	14027652				
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		13 §	13 §				
Loss on ignition	<0.7 %	TM018		3.89 § M	4.81 § M				
Mineral oil >C10-C40	<1 mg/kg	TM061		20.4 §	15.7 §				
Mineral Oil Surrogate % recovery**	%	TM061		83.7 §	79.1 §				
Organic Carbon, Total	<0.2 %	TM132		0.573 § M	0.565 § M				
pH	1 pH Units	TM133		7.53 § M	7.66 § M				
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 § #	<0.6 § #				
PCB congener 28	<0.003 mg/kg	TM168		<0.003 § M	<0.003 § M				
PCB congener 52	<0.003 mg/kg	TM168		<0.003 § M	<0.003 § M				
PCB congener 101	<0.003 mg/kg	TM168		<0.003 § M	<0.003 § M				
PCB congener 118	<0.003 mg/kg	TM168		<0.003 § M	<0.003 § M				
PCB congener 138	<0.003 mg/kg	TM168		<0.003 § M	<0.003 § M				
PCB congener 153	<0.003 mg/kg	TM168		<0.003 § M	<0.003 § M				
PCB congener 180	<0.003 mg/kg	TM168		<0.003 § M	<0.003 § M				
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168		<0.021 §	<0.021 §				
Arsenic	<0.6 mg/kg	TM181		7.48 § M	11.5 § M				
Cadmium	<0.02 mg/kg	TM181		0.0681 § M	0.437 § M				
Chromium	<0.9 mg/kg	TM181		17.2 § M	23.3 § M				
Copper	<1.4 mg/kg	TM181		50.8 § M	32.6 § M				
Lead	<0.7 mg/kg	TM181		208 § M	158 § M				
Mercury	<0.14 mg/kg	TM181		<0.14 § M	<0.14 § M				
Nickel	<0.2 mg/kg	TM181		12.2 § M	21.3 § M				
Selenium	<1 mg/kg	TM181		<1 § #	1.55 § #				
Zinc	<1.9 mg/kg	TM181		52.1 § M	78.9 § M				
ANC @ pH 4	<0.03 mol/kg	TM182		0.0513 §	0.203 §				
ANC @ pH 6	<0.03 mol/kg	TM182		0.0308 §	0.0628 §				
Polyaromatic hydrocarbons, Total 17	<10 mg/kg	TM213		<10 §	<10 §				

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	CLEAN SKIP	MG SKIP			
			Depth (m)	.	.			
			Sample Type	Soil/Solid	Soil/Solid			
			Date Sampled	-	-			
			Sampled Time	.	.			
			Date Received	19/08/2016	19/08/2016			
			SDG Ref	160823-46	160823-46			
			Lab Sample No.(s)	14027653	14027652			
			AGS Reference					
Naphthalene-d8 % recovery**	%	TM218		98.2 §	92.3 §			
Acenaphthene-d10 % recovery**	%	TM218		95.8 §	90.4 §			
Phenanthrene-d10 % recovery**	%	TM218		96.1 §	90.7 §			
Chrysene-d12 % recovery**	%	TM218		92.8 §	88.3 §			
Perylene-d12 % recovery**	%	TM218		93.4 §	87.3 §			
Naphthalene	<0.009 mg/kg	TM218		<0.009 § M	0.0548 § M			
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 § M	<0.012 § M			
Acenaphthene	<0.008 mg/kg	TM218		<0.008 § M	0.117 § M			
Fluorene	<0.01 mg/kg	TM218		<0.01 § M	0.0584 § M			
Phenanthrene	<0.015 mg/kg	TM218		0.0686 § M	0.386 § M			
Anthracene	<0.016 mg/kg	TM218		<0.016 § M	0.137 § M			
Fluoranthene	<0.017 mg/kg	TM218		0.11 § M	0.401 § M			
Pyrene	<0.015 mg/kg	TM218		0.0993 § M	0.896 § M			
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0358 § M	0.0531 § M			
Chrysene	<0.01 mg/kg	TM218		0.0228 § M	0.281 § M			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0747 § M	0.319 § M			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0314 § M	0.133 § M			
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0502 § M	0.346 § M			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0407 § M	0.147 § M			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 § M	0.0646 § M			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0511 § M	0.369 § M			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.585 §	3.76 §			

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	CLEAN SKIP	MG SKIP				
			Depth (m)	.	.				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	-	-				
			Sampled Time	.	.				
			Date Received	19/08/2016	19/08/2016				
			SDG Ref	160823-46	160823-46				
			Lab Sample No.(s)	14027653	14027652				
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		80 §	87 §				
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 § M	<0.044 § M				
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089		<0.005 § #	<0.005 § #				
Benzene	<0.01 mg/kg	TM089		<0.01 § M	<0.01 § M				
Toluene	<0.002 mg/kg	TM089		<0.002 § M	<0.002 § M				
Ethylbenzene	<0.003 mg/kg	TM089		<0.003 § M	<0.003 § M				
m,p-Xylene	<0.006 mg/kg	TM089		<0.006 § M	<0.006 § M				
o-Xylene	<0.003 mg/kg	TM089		<0.003 § M	<0.003 § M				
sum of detected mpo xylene by GC	<0.009 mg/kg	TM089		<0.009 §	<0.009 §				
sum of detected BTEX by GC	<0.024 mg/kg	TM089		<0.024 §	<0.024 §				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 §	<0.01 §				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01 §	<0.01 §				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01 §	<0.01 §				
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01 §	<0.01 §				
Aliphatics >C12-C16	<0.1 mg/kg	TM173		<0.1 §	<0.1 §				
Aliphatics >C16-C21	<0.1 mg/kg	TM173		<0.1 §	<0.1 §				
Aliphatics >C21-C35	<0.1 mg/kg	TM173		8.65 §	1.88 §				
Aliphatics >C35-C44	<0.1 mg/kg	TM173		1.05 §	<0.1 §				
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		9.7 §	1.88 §				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 §	<0.01 §				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 §	<0.01 §				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01 §	<0.01 §				
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01 §	<0.01 §				
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		<0.1 §	<0.1 §				
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		0.394 §	0.362 §				
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		9.42 §	7.22 §				
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		2.39 §	3.02 §				
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		0.743 §	0.919 §				
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		12.2 §	10.6 §				
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		21.9 §	12.5 §				
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		9.82 §	7.58 §				

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	CLEAN SKIP	MG SKIP			
			Depth (m)	.	.			
			Sample Type	Soil/Solid	Soil/Solid			
			Date Sampled	-	-			
			Sampled Time	.	.			
			Date Received	19/08/2016	19/08/2016			
			SDG Ref	160823-46	160823-46			
			Lab Sample No.(s)	14027653	14027652			
			AGS Reference					
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.1 § M	<0.1 § M			
Benzene	<0.009 mg/kg	TM116		<0.09 § M	<0.09 § M			
Toluene	<0.007 mg/kg	TM116		<0.07 § M	<0.07 § M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.04 § M	<0.04 § M			
p/m-Xylene	<0.01 mg/kg	TM116		<0.1 § #	<0.1 § #			
o-Xylene	<0.01 mg/kg	TM116		<0.1 § M	<0.1 § M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.1 § #	<0.1 § #			

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	CLEAN SKIP SOLID 27/08/2016 10:49:10 160823-46 14027653 TM048	02/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	MG SKIP SOLID 30/08/2016 08:54:17 160823-46 14027652 TM048	02/09/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	160823-46
Lab Sample Number(s)	14027652
Sampled Date	
Customer Sample Ref.	MG SKIP
Depth (m)	

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.565	3	5	6
Loss on Ignition (%)	4.81	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	15.7	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.66	-	>6	-
ANC to pH 6 (mol/kg)	0.0628	-	-	-
ANC to pH 4 (mol/kg)	0.203	-	-	-

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00282	<0.00051	0.0282	<0.0051	0.5	2	25
Barium	0.0392	<0.0002	0.392	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00637	<0.0012	0.0637	<0.012	0.5	10	70
Copper	0.0132	<0.00085	0.132	<0.0085	2	50	100
Mercury Dissolved (CVAF)	0.0000203	<0.00001	0.000203	<0.0001	0.01	0.2	2
Molybdenum	0.00423	<0.00062	0.0423	<0.0062	0.5	10	30
Nickel	0.00122	<0.00044	0.0122	<0.0044	0.4	10	40
Lead	0.00227	<0.0001	0.0227	<0.001	0.5	10	50
Antimony	0.0188	<0.00016	0.188	<0.0016	0.06	0.7	5
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	0.1	0.5	7
Zinc	0.00262	<0.0013	0.0262	<0.013	4	50	200
Chloride	3.4	<2	34	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	25.9	<2	259	<20	1000	20000	50000
Total Dissolved Solids	111	<5	1110	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.04	<3	60.4	<30	500	800	1000

Leach Test Information

Date Prepared	30-Aug-2016
pH (pH Units)	8.18
Conductivity (µS/cm)	140.00
Temperature (°C)	22.10
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

06/09/2016 17:56:38

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.104	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	160823-46
Lab Sample Number(s)	14027653
Sampled Date	
Customer Sample Ref.	CLEAN SKIP
Depth (m)	

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.573	3	5	6
Loss on Ignition (%)	3.89	-	-	10
Sum of BTEX (mg/kg)	<0.024	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	20.4	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.53	-	>6	-
ANC to pH 6 (mol/kg)	0.0308	-	-	-
ANC to pH 4 (mol/kg)	0.0513	-	-	-

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000723	<0.00051	0.00723	<0.0051	0.5	2	25
Barium	0.0397	<0.0002	0.397	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.0012	<0.0012	<0.012	<0.012	0.5	10	70
Copper	0.0203	<0.00085	0.203	<0.0085	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00341	<0.00062	0.0341	<0.0062	0.5	10	30
Nickel	0.00136	<0.00044	0.0136	<0.0044	0.4	10	40
Lead	0.00172	<0.0001	0.0172	<0.001	0.5	10	50
Antimony	0.0371	<0.00016	0.371	<0.0016	0.06	0.7	5
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	0.1	0.5	7
Zinc	0.00177	<0.0013	0.0177	<0.013	4	50	200
Chloride	8.5	<2	85	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	205	<5	2050	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	11.9	<3	119	<30	500	800	1000

Leach Test Information

Date Prepared	30-Aug-2016
pH (pH Units)	8.41
Conductivity (µS/cm)	274.00
Temperature (°C)	22.20
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
06/09/2016 17:56:38

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM213	In-house Method	Rapid Determination of PAHs by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	14027653	14027652
Customer Sample Ref.	CLEAN SKIP	MG SKIP
AGS Ref.		
Depth		
Type	SOLID	SOLID
ANC at pH4 and ANC at pH 6	31-Aug-2016	31-Aug-2016
Anions by Kone (w)	01-Sep-2016	01-Sep-2016
Asbestos ID in Solid Samples	02-Sep-2016	02-Sep-2016
CEN 10:1 Leachate (1 Stage)	30-Aug-2016	30-Aug-2016
CEN Readings	02-Sep-2016	02-Sep-2016
Dissolved Metals by ICP-MS	01-Sep-2016	01-Sep-2016
Dissolved Organic/Inorganic Carbon	03-Sep-2016	03-Sep-2016
EPH CWG (Aliphatic) GC (S)	02-Sep-2016	02-Sep-2016
EPH CWG (Aromatic) GC (S)	02-Sep-2016	02-Sep-2016
Fluoride	01-Sep-2016	01-Sep-2016
GRO by GC-FID (S)	02-Sep-2016	02-Sep-2016
Hexavalent Chromium (s)	01-Sep-2016	01-Sep-2016
Loss on Ignition in soils	05-Sep-2016	05-Sep-2016
Mercury Dissolved	01-Sep-2016	01-Sep-2016
Metals in solid samples by OES	02-Sep-2016	05-Sep-2016
Mineral Oil	01-Sep-2016	01-Sep-2016
PAH by GCMS	31-Aug-2016	31-Aug-2016
PAH Value of soil	31-Aug-2016	31-Aug-2016
PCBs by GCMS	31-Aug-2016	31-Aug-2016
pH	01-Sep-2016	01-Sep-2016
Phenols by HPLC (W)	02-Sep-2016	02-Sep-2016
Sample description	27-Aug-2016	27-Aug-2016
Total Dissolved Solids	01-Sep-2016	01-Sep-2016
Total Organic Carbon	02-Sep-2016	06-Sep-2016
TPH CWG GC (S)	02-Sep-2016	02-Sep-2016
VOC MS (S)	02-Sep-2016	02-Sep-2016

CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

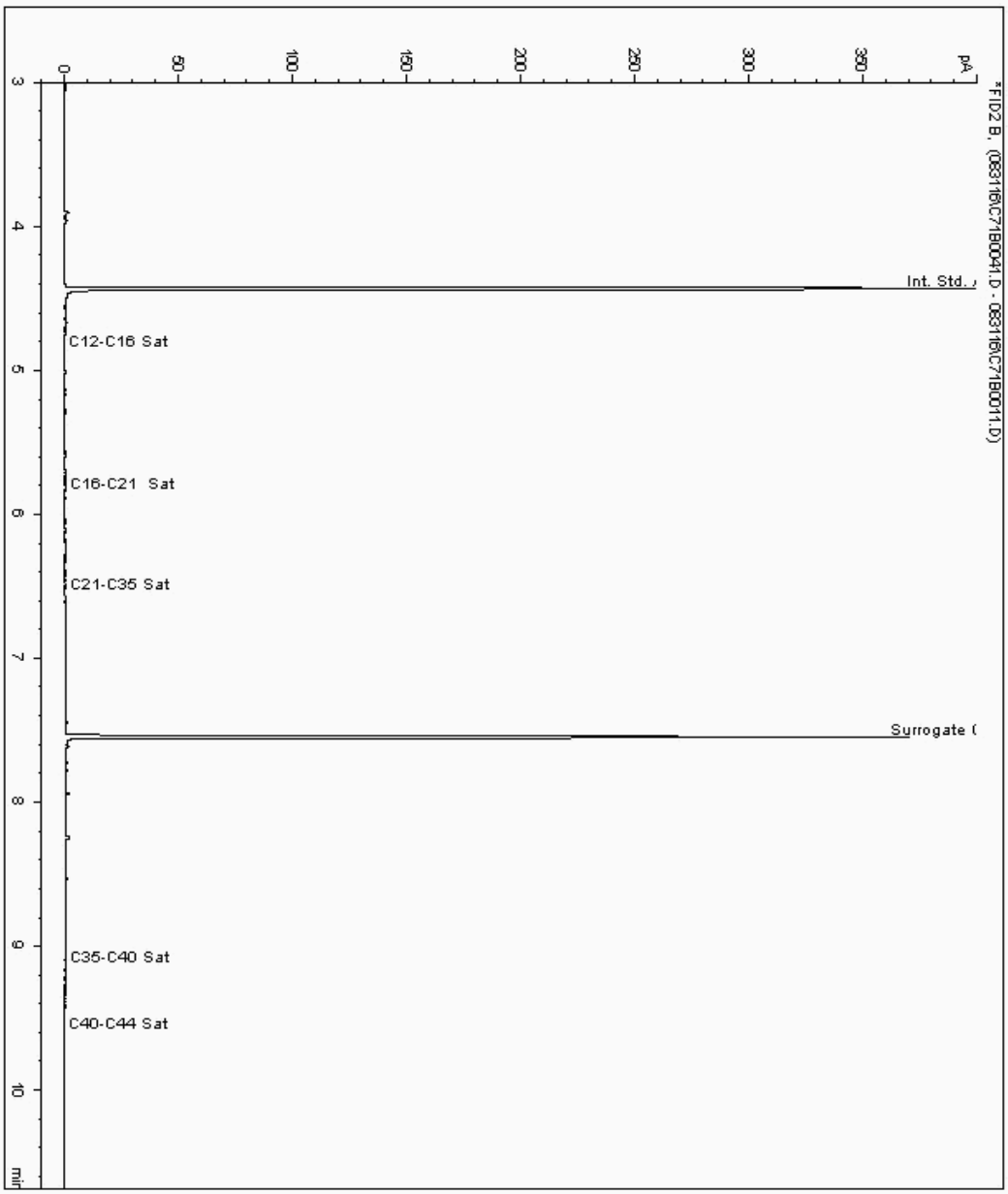
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14054412
Sample ID : MG SKIP

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199805-
Date Acquired : 01/09/2016 02:45:18 PM
Units : ppb
Dilution: MG SKIP[] ->



CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

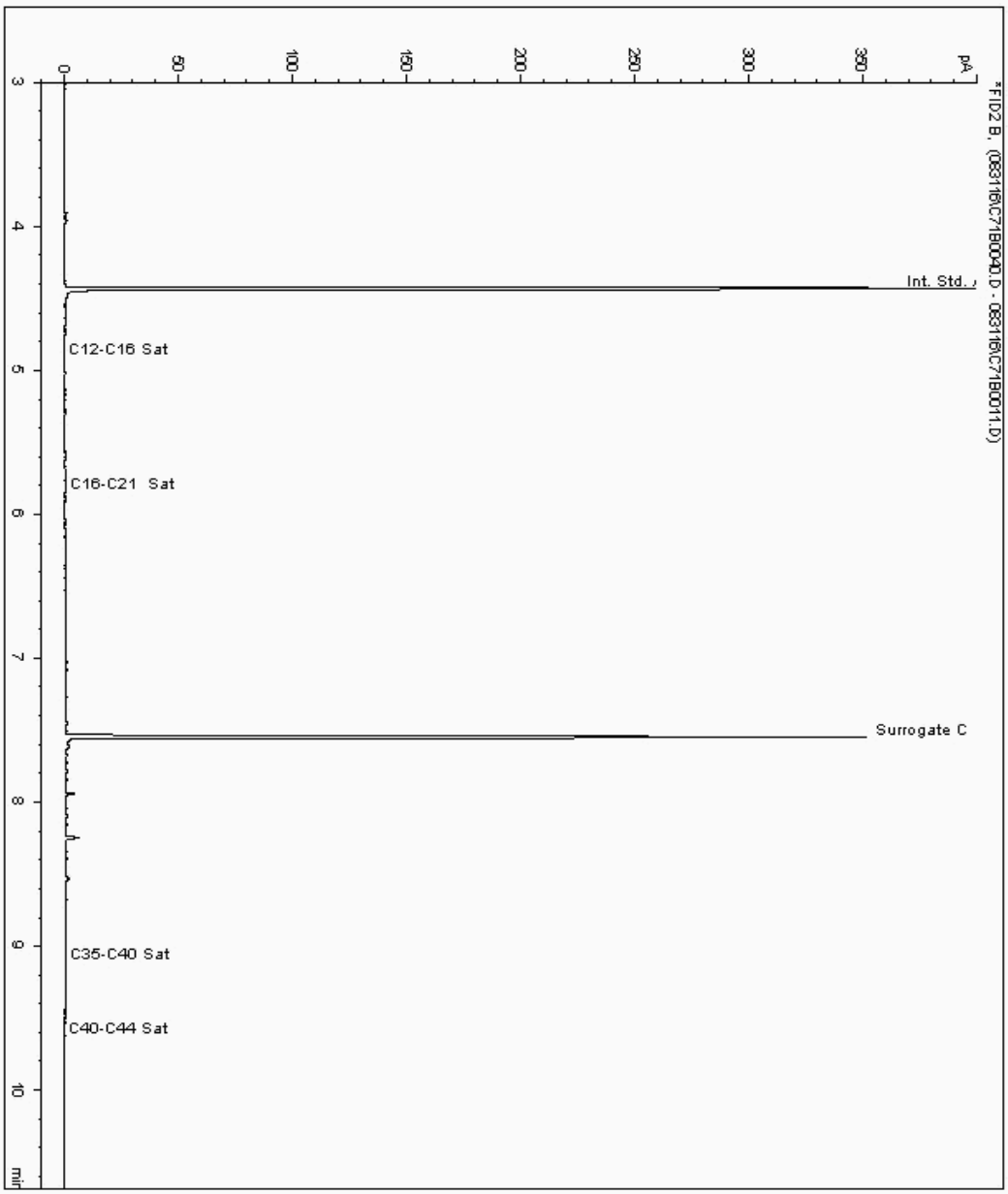
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14054485
Sample ID : CLEAN SKIP

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 13199818-
Date Acquired : 01/09/2016 02:24:37 PM
Units : ppb
Dilution: CLEAN SKIP[] ->



CERTIFICATE OF ANALYSIS

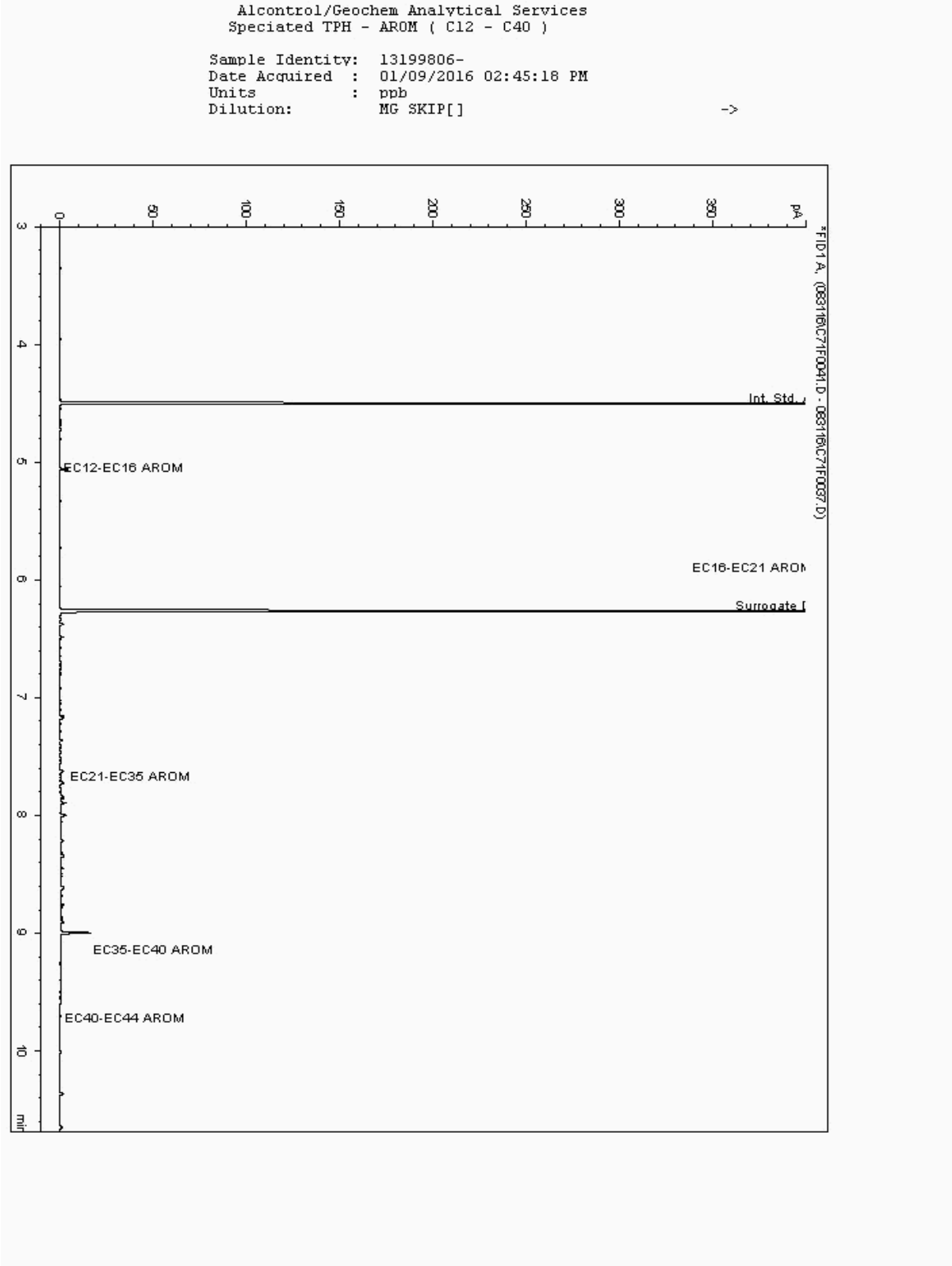
SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14054412
Sample ID : MG SKIP

Depth :



CERTIFICATE OF ANALYSIS

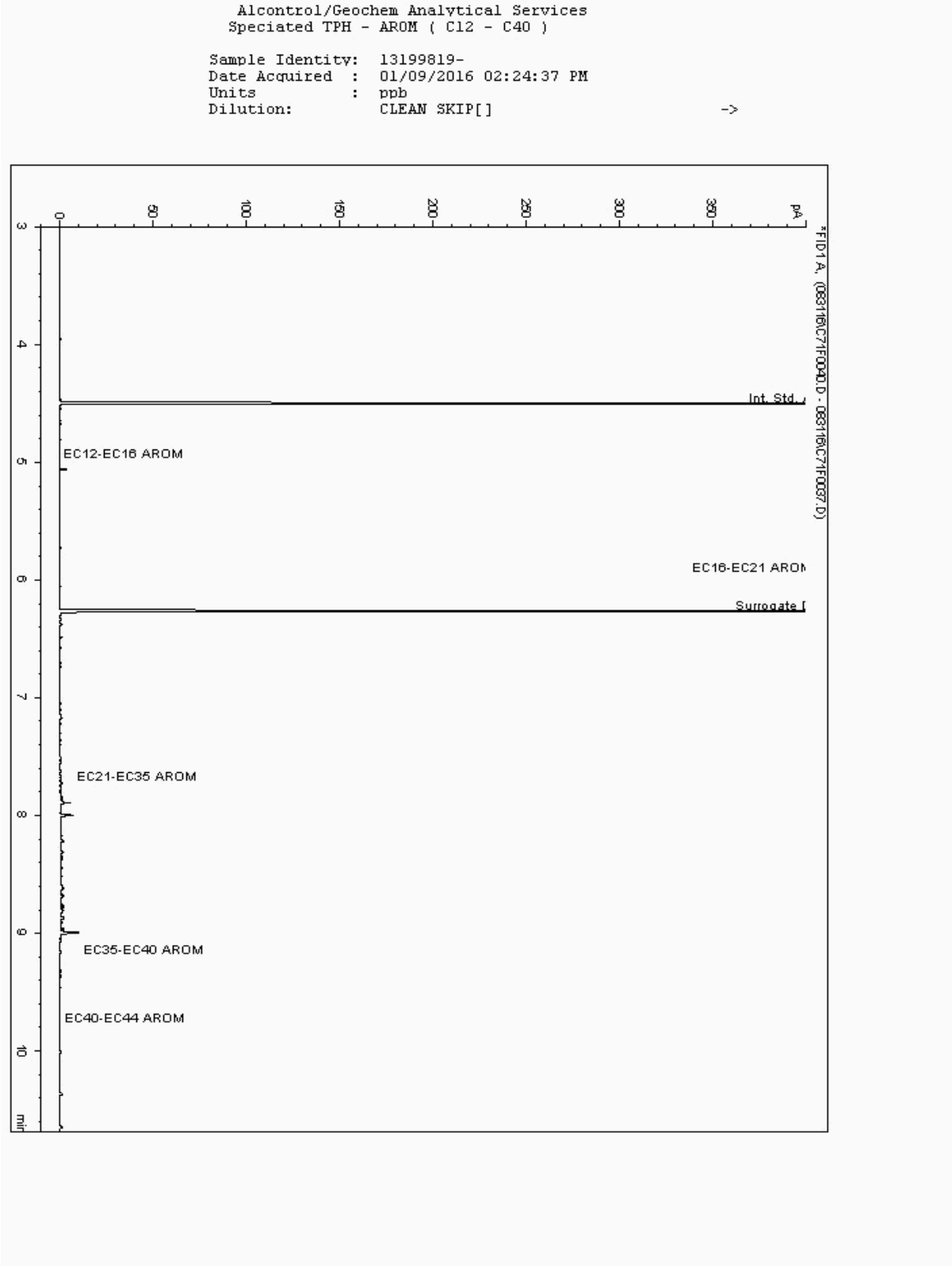
SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14054485
Sample ID : CLEAN SKIP

Depth :



CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: Mineral Oil

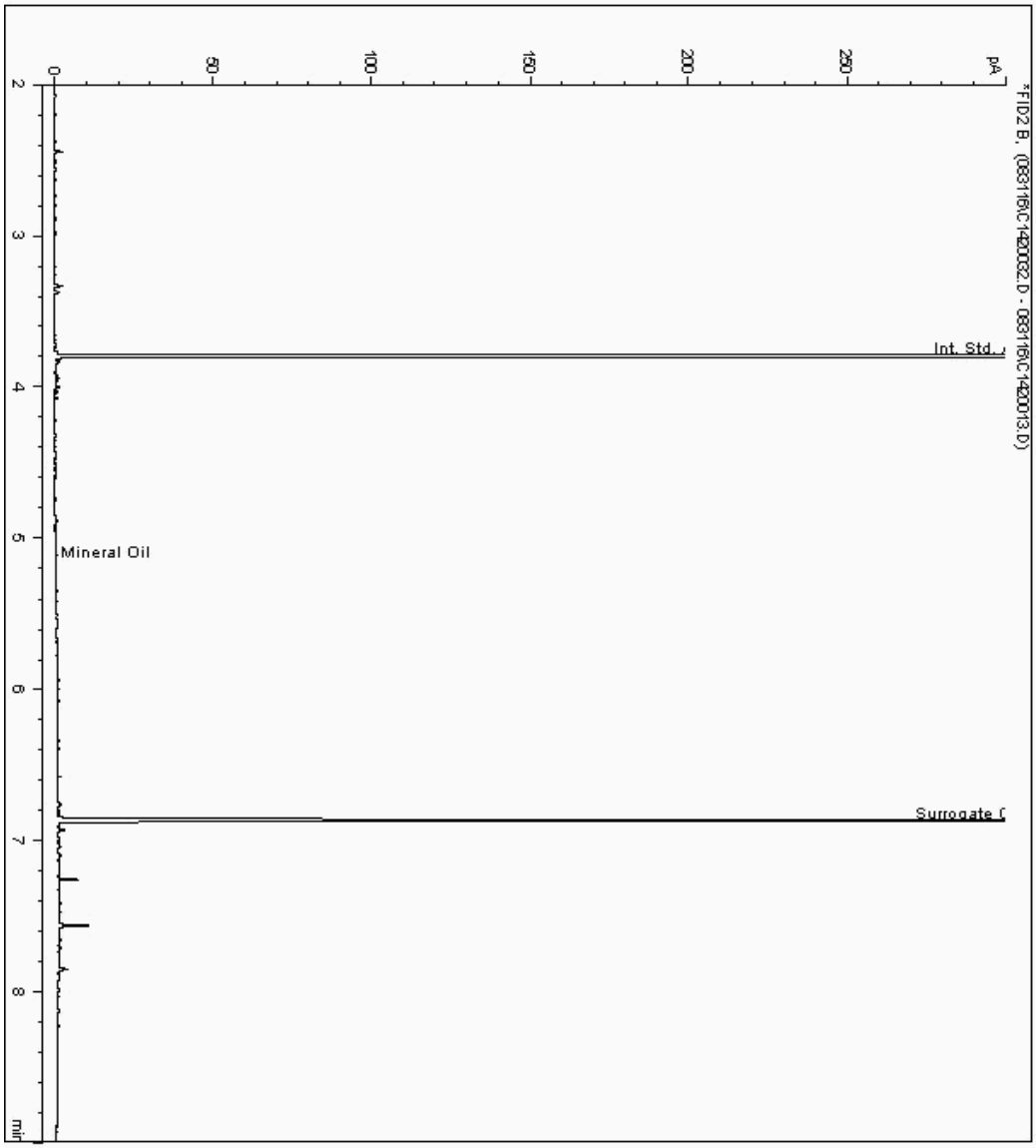
Sample No : 14061997
Sample ID : CLEAN SKIP

Depth :

Alcontrol/Geochem Analytical Services
Mineral Oil Range Organics (C10 - C40)

Sample Identity : 13199839-
Date Acquired : 01/09/16 00:04:32 PM
Units : mg/kg
Sample Multiplier : 0.000
Dilution : 1.0 ->

#	Compound Name	Main Peak Area	Amount
1	Int. Std. A	620.1	50.000
2	Mineral Oil	226.8	20.435
3	Surrogate C	450.8	41.850
	Combined Peak Area	1297.8	



CERTIFICATE OF ANALYSIS

SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: Mineral Oil

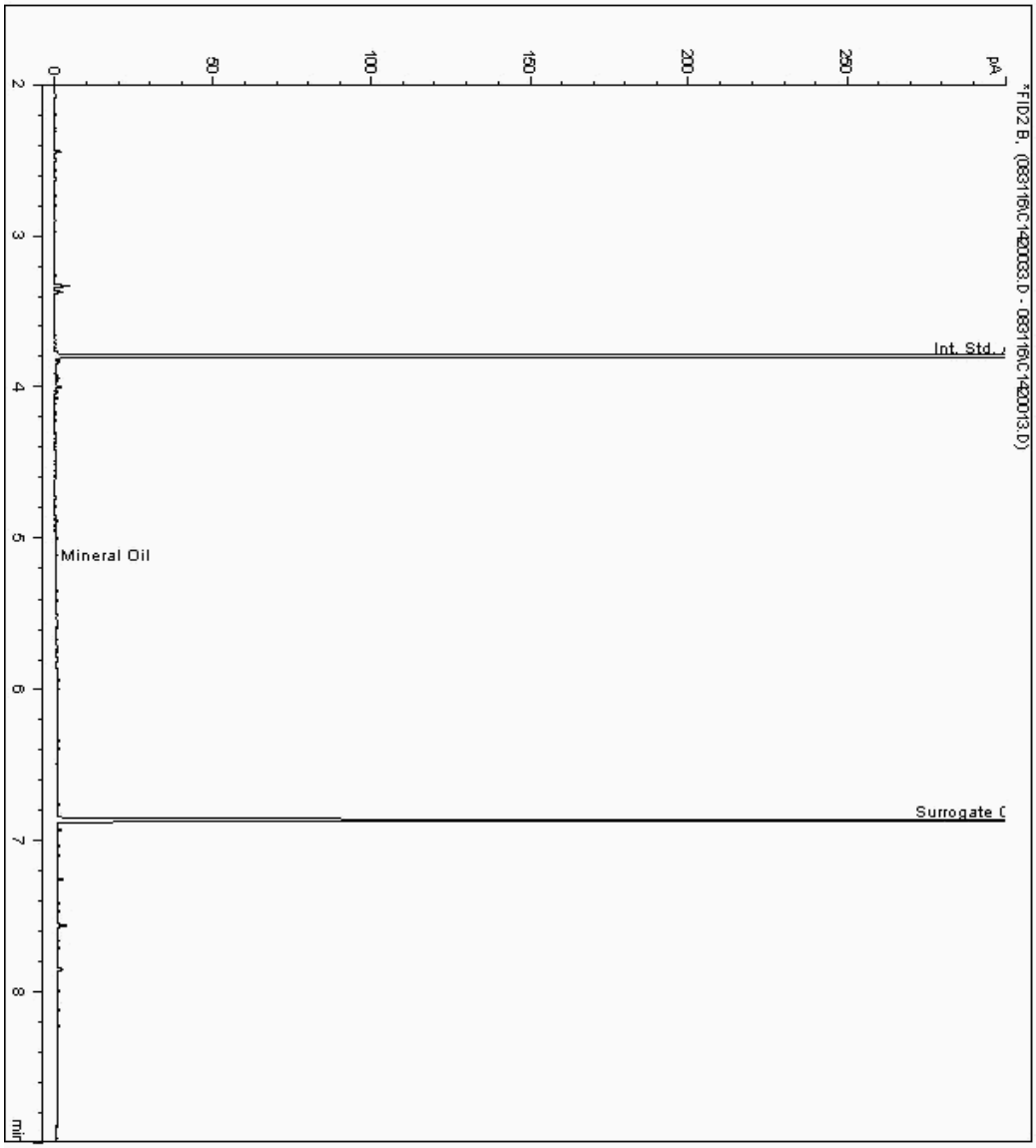
Sample No : 14062233
Sample ID : MG SKIP

Depth :

Alcontrol/Geochem Analytical Services
Mineral Oil Range Organics (C10 - C40)

Sample Identity : 13199827-
Date Acquired : 01/09/16 00:27:34 PM
Units : mg/kg
Sample Multiplier : 0.000
Dilution : 1.0 ->

#	Compound Name	Main Peak Area	Amount
1	Int. Std. A	600.5	50.000
2	Mineral Oil	167.7	15.604
3	Surrogate C	412.7	39.573
	Combined Peak Area	1180.9	



CERTIFICATE OF ANALYSIS

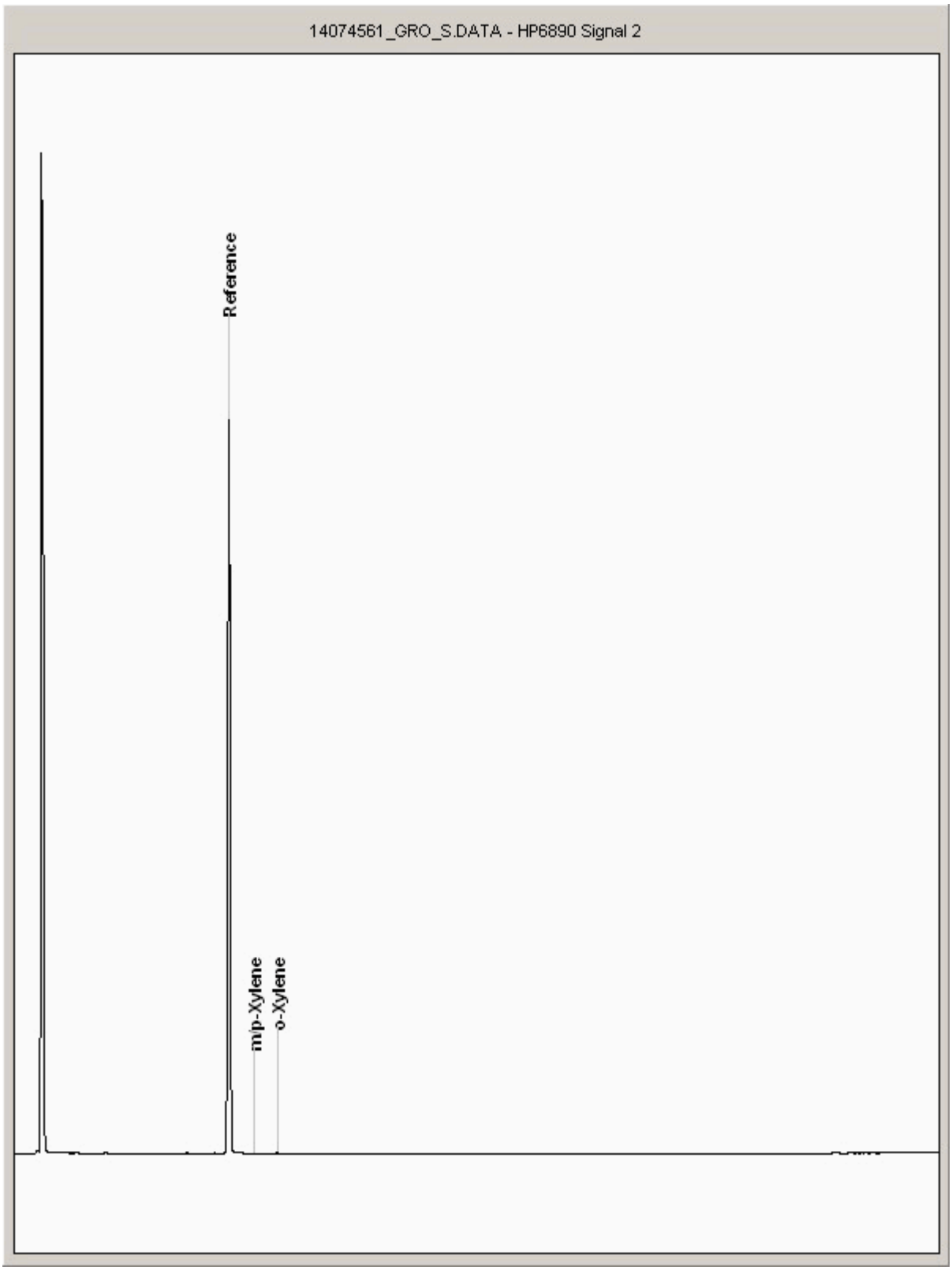
SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14074561
Sample ID : CLEAN SKIP

Depth :



CERTIFICATE OF ANALYSIS

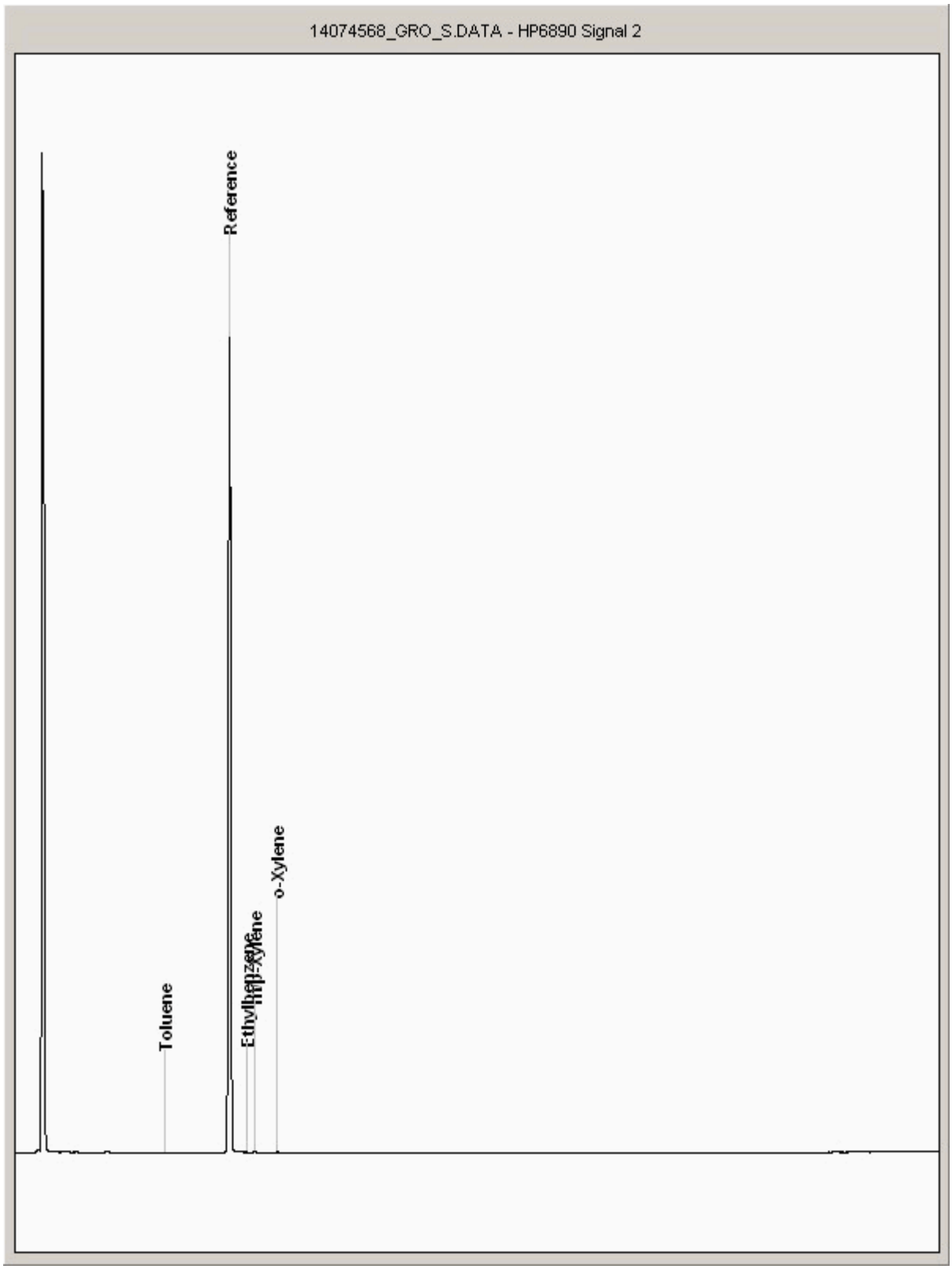
SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14074568
Sample ID : MG SKIP

Depth :



SDG:	160823-46	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	376685
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt . However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect .

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

General

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than : - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

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WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Martin Weil

CERTIFICATE OF ANALYSIS

Date:	08 September 2016
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	160826-38
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	377060

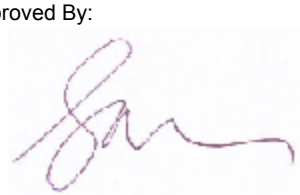
This report has been revised and directly supersedes 377059 in its entirety.

We received 21 samples on Friday August 26, 2016 and 21 of these samples were scheduled for analysis which was completed on Thursday September 08, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:



Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14045974	BH202	BLK	2.50 - 2.50	19/08/2016
14045983	BH202	BLK	5.00 - 5.00	19/08/2016
14045987	BH202	BLK	6.35 - 6.35	19/08/2016
14045937	BH203	BLK	1.00 - 1.00	16/08/2016
14045978	BH203	D	3.50 - 3.50	16/08/2016
14045992	BH203	D	4.50 - 4.50	16/08/2016
14045997	BH203	D	5.50 - 5.50	16/08/2016
14046001	BH203	D	7.50 - 7.50	16/08/2016
14046005	BH203	D	9.50 - 9.50	16/08/2016
14045959	BH204	D	10.00 - 10.00	15/08/2016
14046009	BH204	D	2.00 - 2.00	15/08/2016
14046012	BH204	D	3.30 - 3.30	15/08/2016
14046017	BH204	D	3.80 - 3.80	15/08/2016
14045940	BH204	D	5.00 - 5.00	15/08/2016
14045943	BH204	D	5.50 - 5.50	15/08/2016
14045947	BH204	D	5.90 - 5.90	15/08/2016
14045957	BH204	D	8.50 - 8.50	15/08/2016
14045962	BH209	D	3.00 - 3.00	11/08/2016
14045967	BH209	BLK	3.50 - 3.50	11/08/2016
14045969	BH209	D	4.00 - 4.00	11/08/2016
14045972	BH209	D	5.00 - 5.00	11/08/2016

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			14045974	14045983	14045987	14045937	14045978	14045992	14045997	14046001	14046005	14045959	14046009	14046012	14046017	14045940	14045943	14045947	14045957	14045962	14045967	14045969	14045972
Lab Sample No(s)																							
Customer Sample Reference			BH202	BH202	BH202	BH203	BH203	BH203	BH203	BH203	BH203	BH204	BH204	BH204	BH204	BH204	BH204	BH204	BH204	BH209	BH209	BH209	BH209
AGS Reference			BLK	BLK	BLK	BLK	D	D	D	D	D	D	D	D	D	D	D	D	D	D	BLK	D	D
Depth (m)			2.50 - 2.50	5.00 - 5.00	6.35 - 6.35	1.00 - 1.00	3.50 - 3.50	4.50 - 4.50	5.50 - 5.50	7.50 - 7.50	9.50 - 9.50	10.00 - 10.00	2.00 - 2.00	3.30 - 3.30	3.80 - 3.80	5.00 - 5.00	5.50 - 5.50	5.90 - 8.50	8.50 - 8.50	3.00 - 3.00	3.50 - 3.50	4.00 - 4.00	5.00 - 5.00
Container			Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container	Geolabs container
Geotechnical Testing*	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

CERTIFICATE OF ANALYSIS

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH202	BH202	BH202	BH203	BH203	BH203
			Depth (m)	2.50 - 2.50	5.00 - 5.00	6.35 - 6.35	1.00 - 1.00	3.50 - 3.50	4.50 - 4.50
			Sample Type	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils
			Date Sampled	19/08/2016	19/08/2016	19/08/2016	16/08/2016	16/08/2016	16/08/2016
			Sample Time	.	.	.	.	.	.
			Date Received	26/08/2016	26/08/2016	26/08/2016	26/08/2016	26/08/2016	26/08/2016
			SDG Ref	160826-38	160826-38	160826-38	160826-38	160826-38	160826-38
			Lab Sample No.(s)	14045974	14045983	14045987	14045937	14045978	14045992
			AGS Reference	BLK	BLK	BLK	BLK	D	D
PSD Wet/Dry sieve*	-	SUB		See Attached	See Attached	See Attached	See Attached		
BRE SD1 Extended suite*	-	SUB						See Attached	See Attached

CERTIFICATE OF ANALYSIS

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH203	BH203	BH203	BH204	BH204	BH204
			Depth (m)	5.50 - 5.50	7.50 - 7.50	9.50 - 9.50	10.00 - 10.00	2.00 - 2.00	3.30 - 3.30
			Sample Type	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils
			Date Sampled	16/08/2016	16/08/2016	16/08/2016	15/08/2016	15/08/2016	15/08/2016
			Sample Time	.	.	.	.	.	.
			Date Received	26/08/2016	26/08/2016	26/08/2016	26/08/2016	26/08/2016	26/08/2016
			SDG Ref	160826-38	160826-38	160826-38	160826-38	160826-38	160826-38
			Lab Sample No.(s)	14045997	14046001	14046005	14045959	14046009	14046012
			AGS Reference	D	D	D	D	D	D
Moisture Content (GEOTECH)*	-	SUB					See Attached	See Attached	
Plasticity Index 4 point*	-	SUB					See Attached	See Attached	
Saturated Moisture Content*	-	SUB	See Attached	See Attached	See Attached				
BRE SD1 Extended suite*	-	SUB							See Attached

CERTIFICATE OF ANALYSIS

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH204	BH204	BH204	BH204	BH204	BH209
			Depth (m)	3.80 - 3.80	5.00 - 5.00	5.50 - 5.50	5.90 - 5.90	8.50 - 8.50	3.00 - 3.00
			Sample Type	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils	GeoTech Soils
			Date Sampled	15/08/2016	15/08/2016	15/08/2016	15/08/2016	15/08/2016	11/08/2016
			Sample Time	.	.	.	.	.	.
			Date Received	26/08/2016	26/08/2016	26/08/2016	26/08/2016	26/08/2016	26/08/2016
			SDG Ref	160826-38	160826-38	160826-38	160826-38	160826-38	160826-38
			Lab Sample No.(s)	14046017	14045940	14045943	14045947	14045957	14045962
			AGS Reference	D	D	D	D	D	D
Moisture Content (GEOTECH)*	-	SUB		See Attached	See Attached		See Attached	See Attached	See Attached
Plasticity Index 4 point*	-	SUB		See Attached	See Attached		See Attached	See Attached	
BRE SD1 Extended suite*	-	SUB				See Attached			

CERTIFICATE OF ANALYSIS

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH209	BH209	BH209			
			Depth (m)	3.50 - 3.50	4.00 - 4.00	5.00 - 5.00			
			Sample Type	GeoTech Soils	GeoTech Soils	GeoTech Soils			
			Date Sampled	11/08/2016	11/08/2016	11/08/2016			
			Sample Time	.	.	.			
			Date Received	26/08/2016	26/08/2016	26/08/2016			
			SDG Ref	160826-38	160826-38	160826-38			
			Lab Sample No.(s)	14045967	14045969	14045972			
			AGS Reference	BLK	D	D			
Plasticity Index 4 point*	-	SUB				See Attached			
PSD Wet/Dry sieve*	-	SUB		See Attached					
Saturated Moisture Content*	-	SUB			See Attached	See Attached			
BRE SD1 Extended suite*	-	SUB			See Attached	See Attached			

CERTIFICATE OF ANALYSIS

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
SUB		Subcontracted Test		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

Test Completion Dates

Lab Sample No(s)	14045974	14045983	14045987	14045937	14045978	14045992	14045997	14046001	14046005	14045940
Customer Sample Ref.	BH202	BH202	BH202	BH203	BH203	BH203	BH203	BH203	BH203	BH204
AGS Ref.	BLK	BLK	BLK	BLK	D	D	D	D	D	D
Depth	2.50 - 2.50	5.00 - 5.00	6.35 - 6.35	1.00 - 1.00	3.50 - 3.50	4.50 - 4.50	5.50 - 5.50	7.50 - 7.50	9.50 - 9.50	5.00 - 5.00
Type	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH
Geotechnical Testing*	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016

Lab Sample No(s)	14045943	14045947	14045957	14045959	14046009	14046012	14046017	14045962	14045967	14045969
Customer Sample Ref.	BH204	BH204	BH204	BH204	BH204	BH204	BH204	BH209	BH209	BH209
AGS Ref.	D	D	D	D	D	D	D	D	BLK	D
Depth	5.50 - 5.50	5.90 - 5.90	8.50 - 8.50	10.00 - 10.00	2.00 - 2.00	3.30 - 3.30	3.80 - 3.80	3.00 - 3.00	3.50 - 3.50	4.00 - 4.00
Type	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH	GEOTECH
Geotechnical Testing*	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016	08-Sep-2016

Lab Sample No(s)	14045972
Customer Sample Ref.	BH209
AGS Ref.	D
Depth	5.00 - 5.00
Type	GEOTECH
Geotechnical Testing*	08-Sep-2016

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 32206

Client's Reference: **SDG 160826-38**

Report Date: **08-09-2016**

Client **ALcontrol Laboratories**
Hawarden Business Park
Manor Road
Flintshire
CH5 3US

Contract Title: **City Deal Tipner West**

For the attention of: **Alcontrol GSTL**

Date Received: **31-08-2016**

Date Commenced: **31-08-2016**

Date Completed: **08-09-2016**

Test Description	Qty
Moisture Content - * UKAS	7
Plasticity 4 Point Limit (ALC) - * UKAS	7
PSD-Wet Sieve/Dry Sieve 1377 : 1990 Part 2 : 9.2 - * UKAS	5
Saturated Moisture Content (SMC)	5
BRE Suite SD1	6
Disposal of Samples on Project	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:
Alex Wynn (Associate Director) - Benjamin Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Jon Tatam (Administrative/Quality Assistant) - Paul Evans (Quality/Technical Manager) - Vaughan Edwards (Managing Director)

GEO Site & Testing Services Ltd
Unit 4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

Client ref: SDG 160826-38

Location: City Deal Tipner West

Contract Number: 32206

Hole Number	Sample Number	Type	Depth (m)	Description of Sample*
BH204		D	10.00	Brown fine sandy silty CLAY with particles of chalk.
BH204		D	2.00	Brown fine sandy silty CLAY.
BH204		D	3.80	Brown fine sandy silty CLAY.
BH204		D	5.00	Brown silty CLAY.
BH204		D	5.90	Brown fine sandy silty CLAY.
BH204		D	8.50	Brown fine sandy silty CLAY.
BH209		D	3.00	Brown fine sandy silty CLAY.
BH209		D	5.00	Brown fine sandy silty CLAY.

Note: Results on this table are in summary format and may not meet the requirements of the relevant standards, additional information is held by the laboratory

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GEO SITE & TESTING SERVICES LTD

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Ben Sharp (Contracts Manager)

Date: 8.9.16

UKAS TESTING
2788

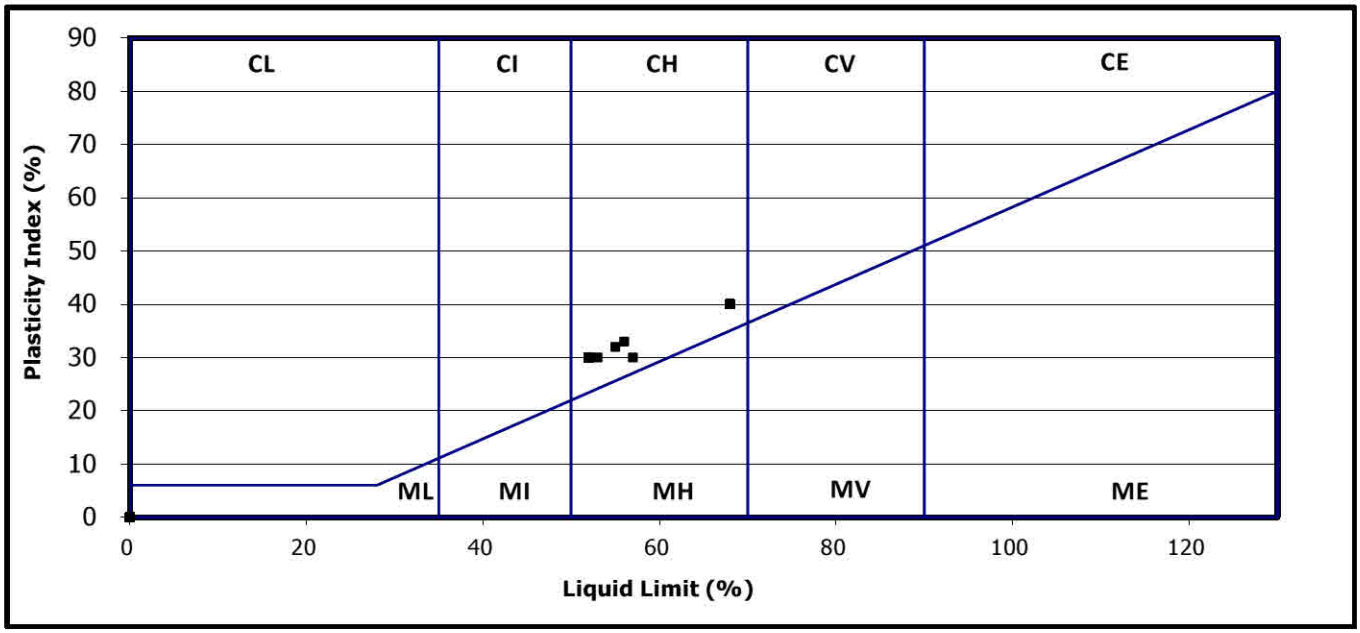
Test Report: **Method of the Determination of the plastic limit and plasticity index**
BS 1377 : Part 2 : 1990 Method 5

Client ref: **SDG 160826-38**
Location: **City Deal Tipner West**
Contract Number: **32206**

Hole/ Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3/4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
BH204	D	10.00	9.2	57	27	30	94	CH High Plasticity
BH204	D	2.00	23	56	23	33	100	CH High Plasticity
BH204	D	3.80	19	52	22	30	100	CH High Plasticity
BH204	D	5.00	17	68	28	40	100	CH High Plasticity
BH204	D	5.90	18	52	22	30	100	CH High Plasticity
BH204	D	8.50	15	53	23	30	100	CH High Plasticity
BH209	D	3.00	18					
BH209	D	5.00	20	55	23	32	100	CH High Plasticity

Symbols: **NP : Non Plastic** **# : Liquid Limit and Plastic Limit Wet Sieved**

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.
BS 5930:1999+A2:2010



For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Ben Sharp (Contracts Manager)
Date: 8.9.16

UKAS TESTING 2788

Test Report: **Method for Saturation Moisture Content of Chalk**

BS 1377 : Part 2 : 1990 Section 3.3

Client Ref: **SDG 160826-38**

Location : **City Deal Tipner West**

Contract Number: **32206**

Borehole Number	Sample Number	Depth (m)		Moisture Content % Clause 3.2	Bulk Density Mg/m^3 Clause 7.2	Dry Density Mg/m^3 Clause 7.2	Saturation Moisture Content % Clause 3.3.6.	Remarks
		From	to					
BH203		**5.50**		**26**	**1.77**	**1.41**	**34**	
BH203		**7.50**		**23**	**1.76**	**1.43**	**33**	
BH203		**9.50**		**24**	**1.76**	**1.42**	**34**	
BH209		**4.00**		**26**	**1.72**	**1.37**	**36**	
BH209		**5.00**		**22**	**1.88**	**1.54**	**28**	

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GEO Site & Testing Services Limited

Emma Sharp - Office Manager
Checked By 8-9-16 Date

Ben Sharp - Contracts Manager
Approved By 8-9-16 Date

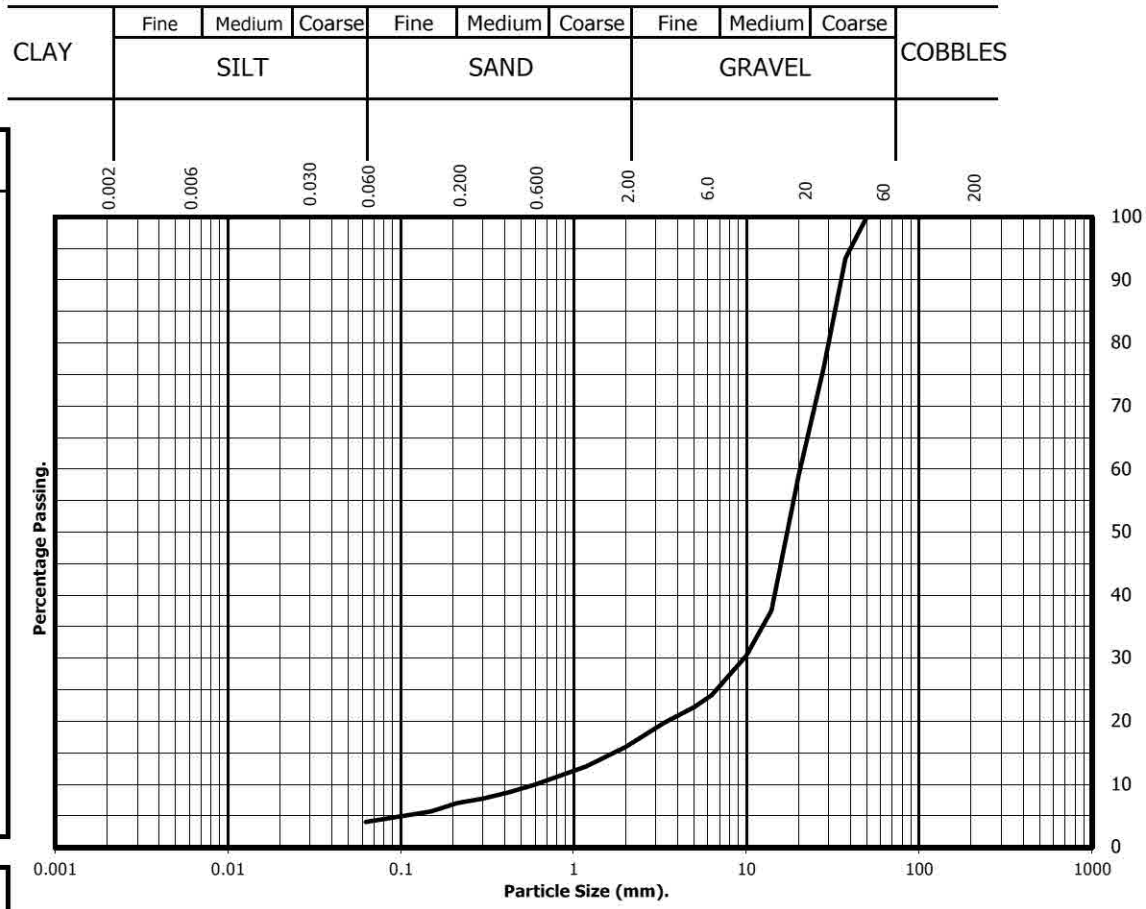
Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.
Wet Sieve, Clause 9.2

Client ref:	**SDG 160826-38**	**Sample Number:**	
Contract Number:	**32206**	**Depth from (m):**	**2.50**
Hole Number:	**BH202**	**Depth to (m):**	
		Sample Type:	**B**

Location: **City Deal Tipner West**

Description: **Brown slightly silty fine to coarse sandy fine to coarse GRAVEL.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	93
28	76
20	59
14	38
10	30
6.3	24
5.0	22
3.35	20
2.00	16
1.18	13
0.60	10
0.425	9
0.300	8
0.212	7
0.150	6
0.063	4

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	4	12	84	0	Total Percentage

Remarks:
#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Ben Sharp (Contracts Manager)

Date: 8.9.16

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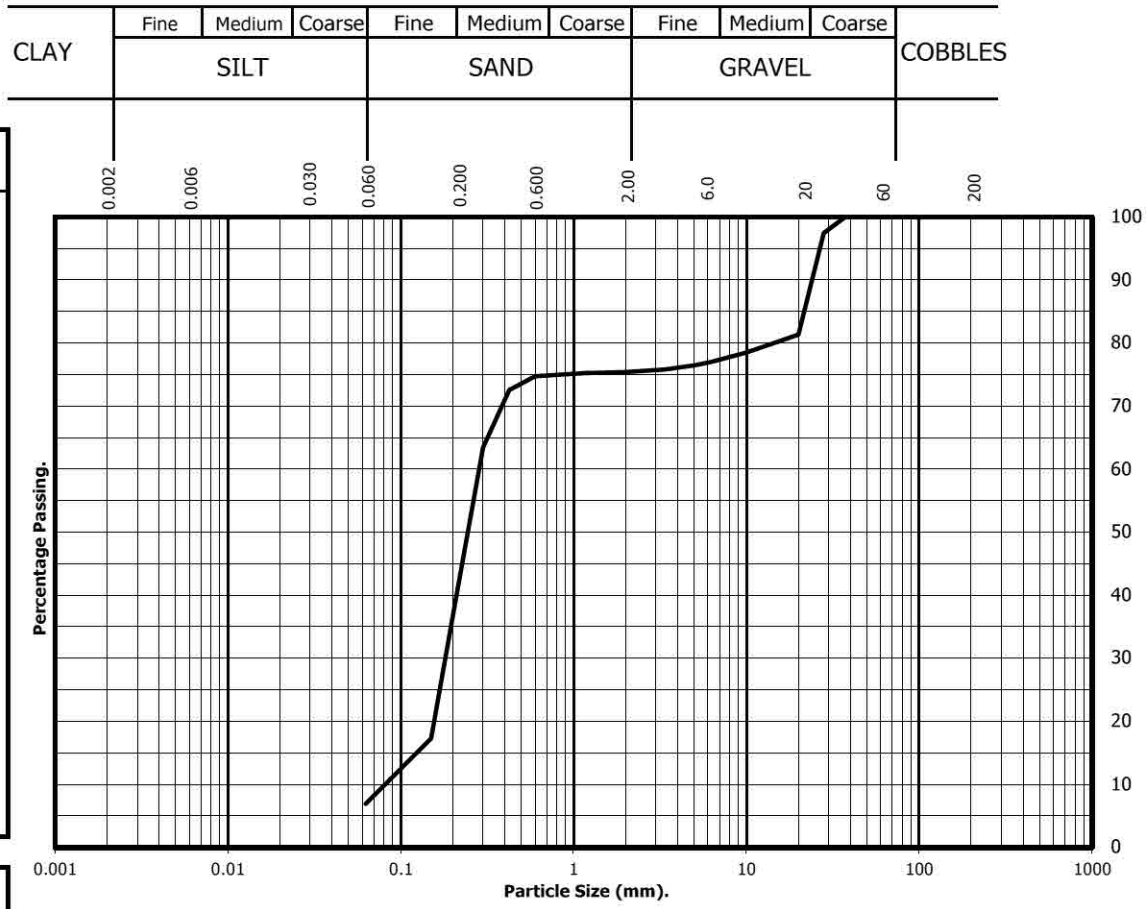
Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.
Wet Sieve, Clause 9.2

Client ref:	**SDG 160826-38**	**Sample Number:**	
Contract Number:	**32206**	**Depth from (m):**	**5.00**
Hole Number:	**BH202**	**Depth to (m):**	
		Sample Type:	**B**

Location: **City Deal Tipner West**

Description: **Brown slightly silty fine to coarse gravelly fine to coarse SAND.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	97
20	81
14	80
10	78
6.3	77
5.0	76
3.35	76
2.00	75
1.18	75
0.60	75
0.425	73
0.300	63
0.212	40
0.150	17
0.063	7

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	7	68	25	0	Total Percentage

Remarks:
#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Ben Sharp (Contracts Manager)

Date: 8.9.16

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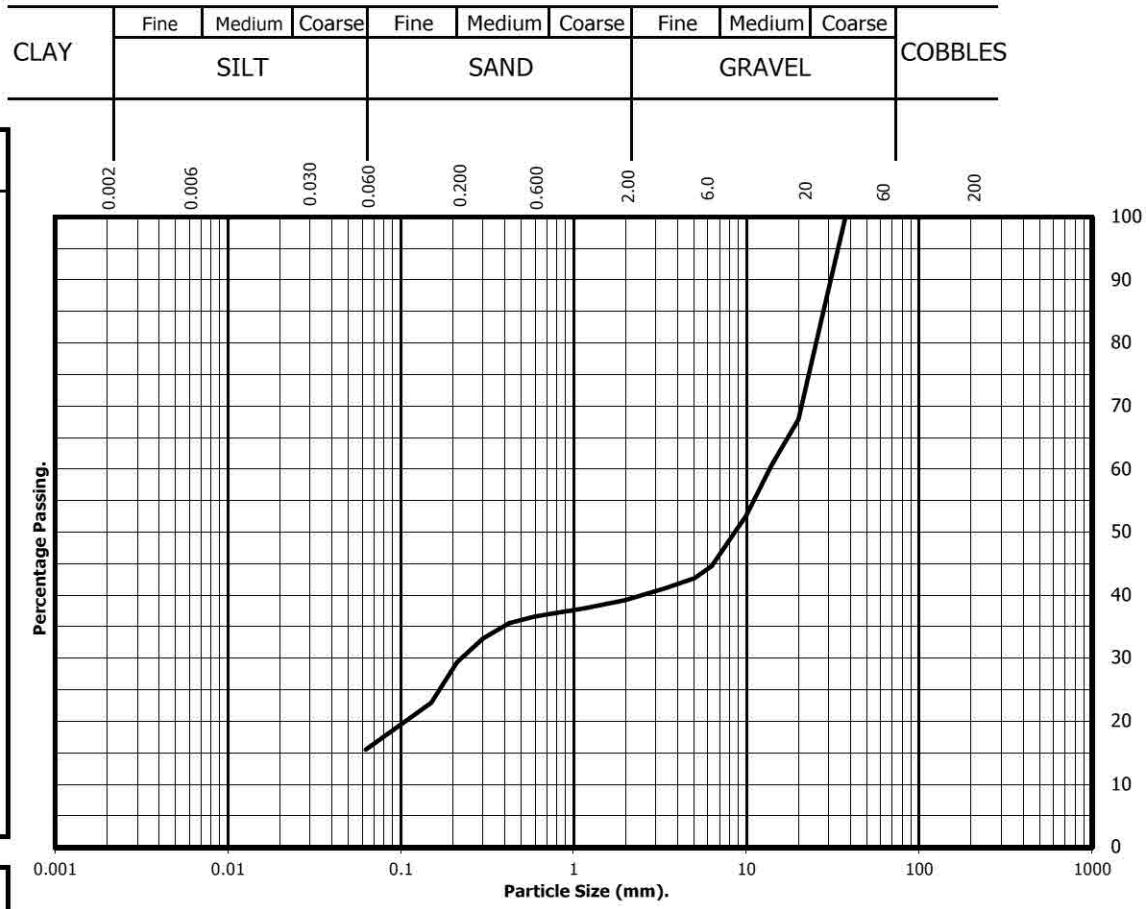
Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.
Wet Sieve, Clause 9.2

Client ref:	**SDG 160826-38**	**Sample Number:**	
Contract Number:	**32206**	**Depth from (m):**	**6.35**
Hole Number:	**BH202**	**Depth to (m):**	
		Sample Type:	**B**

Location: **City Deal Tipner West**

Description: **Brown clayey silty fine to coarse sandy fine to coarse GRAVEL.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	85
20	68
14	61
10	53
6.3	45
5.0	43
3.35	41
2.00	39
1.18	38
0.60	37
0.425	36
0.300	33
0.212	29
0.150	23
0.063	15

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	15	24	61	0	Total Percentage

Remarks:
#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Ben Sharp (Contracts Manager)

Date: 8.9.16

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Test Report:

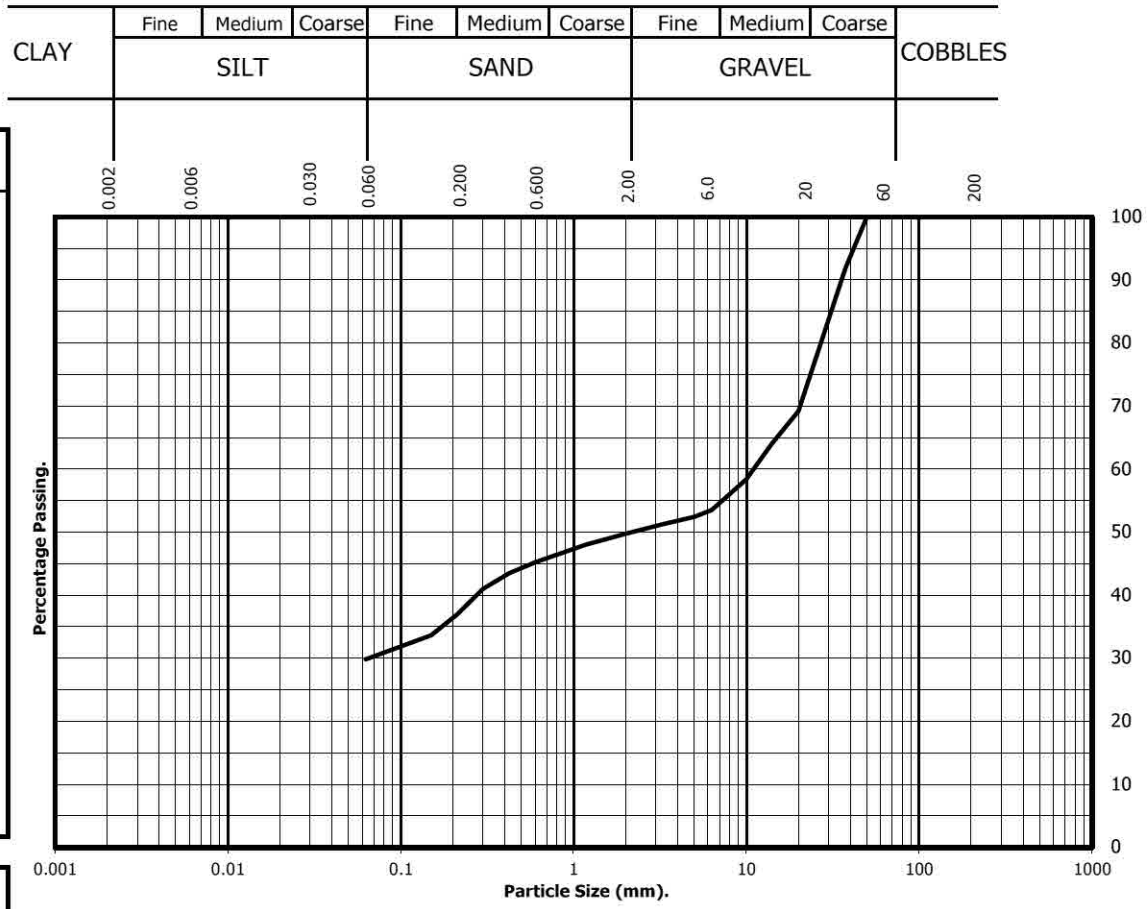
Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**SDG 160826-38**	**Sample Number:**	
Contract Number:	**32206**	**Depth from (m):**	**1.00**
Hole Number:	**BH203**	**Depth to (m):**	
		Sample Type:	**B**

Location: **City Deal Tipner West**

Description: **Brown fine to coarse sandy clayey silty fine to coarse GRAVEL.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	92
28	81
20	69
14	64
10	58
6.3	54
5.0	52
3.35	51
2.00	50
1.18	48
0.60	45
0.425	44
0.300	41
0.212	37
0.150	34
0.063	30

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	30	20	50	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Ben Sharp (Contracts Manager)

Date: 8.9.16

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GEO SITE & TESTING SERVICES LTD

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Test Report:

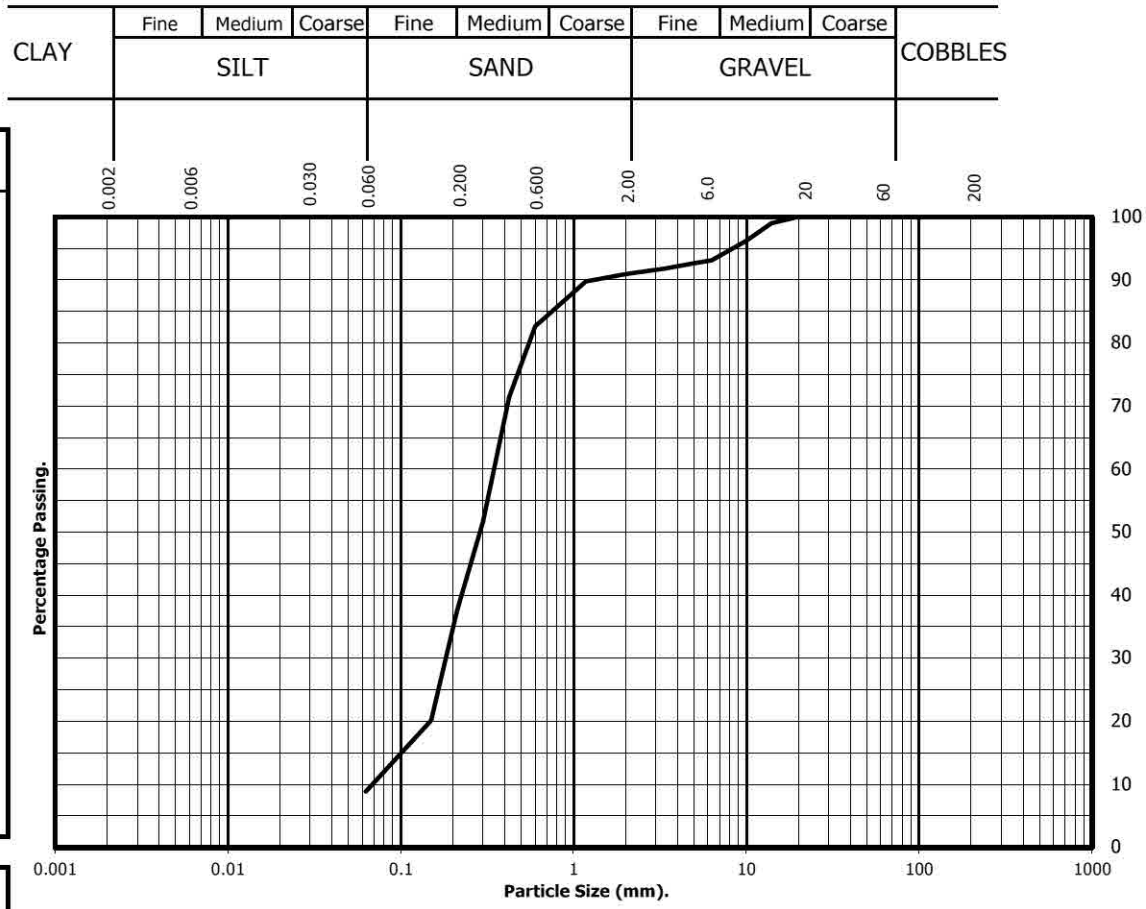
Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**SDG 160826-38**	**Sample Number:**	
Contract Number:	**32206**	**Depth from (m):**	**3.50**
Hole Number:	**BH209**	**Depth to (m):**	
		Sample Type:	**B**

Location: **City Deal Tipner West**

Description: **Brown slightly silty slightly fine to medium gravelly fine to coarse SAND.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	99
10	96
6.3	93
5.0	93
3.35	92
2.00	91
1.18	90
0.60	83
0.425	71
0.300	52
0.212	38
0.150	20
0.063	9

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	9	82	9	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Ben Sharp (Contracts Manager)

Date: 8.9.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

GEO Site & Testing Services Limited

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01554 750752
Fax: 01554 770529
01554 784041
Web: www.geo.uk.com

Certificate of Analysis

Date:	08-09-16
Client:	Alcontrol
Our Reference:	32206
Client Reference:	160826-38
Contract Title:	City Deal Tipner West
Description: (Total Samples)	6
Date Started:	05-09-16
Date Completed:	08-09-16
Test Procedures:	(BRE BR 279)
Notes:	

Solid samples will be disposed 1 month and liquids 2 weeks after the date of issue of this test certificate

Approved By:

Authorised Signatories:

Emma Sharp	Ben Sharp	Paul Evans
Laboratory Office Manager	Contracts Manager	Quality Manager

Contract No: 32206
Client Ref: 160826-38
Location: City Deal Tipner West
Date: 08-09-2016

Summary of Chemical Analysis

(BRE BR 279)

Hole Number	Sample Number	Sample Type	Depth m	Sulphate Content as SO_4			Chloride Content		pH Value @ 25°C	Total Sulphur % S	Magnesium g/l	Nitrate NO_3 mg/l
				Acid Soluble Sulphate as % SO_4	Aqueous Extract Sulphate as g/l SO_4	Ground-water g/l	Semi Quantative Test Strip mg Cl/l	Quantative g/l				
				BR 279	BR 279	BR 279	BR 279	BR 279	BR 279	BR 279	BR 279	BR 279
BH203		D	3.50	0.14	0.03		NCP		7.72	0.06	<1	10
BH203		D	4.50	0.27	0.02		NCP		6.87	0.10	<1	10-25
BH204		D	3.30	0.27	0.03		NCP		6.94	0.10	<1	10
BH204		D	5.50	0.36	0.03		NCP		7.55	0.13	<1	10
BH209		D	4.00	0.38	0.02		NCP		7.31	0.15	<1	10
BH209		D	5.00	0.26	0.03		NCP		7.13	0.09	<1	10

NCP - No Chloride present

SDG:	160826-38	**Location:**	City Deal Tipner West	**Order Number:**	
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	377060
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	377059

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt . However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect .

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

General

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than : - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ENVIRONMENTAL SOLUTIONS LTD

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UKAS TESTING
4696

CERTIFICATE OF IDENTIFICATION OF ASBESTOS FIBRES

CERTIFICATE NUMBER: ATH/16/08/0174 **DATE SAMPLED**: 18/08/16 **DATE RECEIVED**: 19/08/16 **DATE ANALYSED**: 19/08/16 **OBTAINED**: DELIVERED **NUMBER OF SAMPLES**: 4	**SITE ADDRESS**: TIPNER SHOOTING RANGE, PORTSMOUTH **SITE REFERENCE**: 20000940 **CLIENT:** WSP RISK MANAGEMENT SERVICES **CLIENT ADDRESS:** 2053-2055 D'ALBIAC HOUSE, SECOND FLOOR, CROMER ROAD, LONDON HEATHROW AIRPORT, HOUNSLOW, MIDDLESEX, TW6 1SD, **PHONE NUMBER:** 0208 7594335		
ANALYST NAME & SIGNATURE:	S. Skinner	**AUTHORISER NAME & SIGNATURE:**	B. Hopson
COMMENTS:			

RESULTS

SAMPLE NUMBER	CLIENT NUMBER	SAMPLE LOCATION	FIBRE TYPE DETECTED	COMMENTS
1	TIPNER/MS01	TEXTILE	NADIS	TEXTILE
2	TIPNER/MS02	CEMENT	CHRYSOTILE	CEMENT
3	TIPNER/MS03	TEXTILE	NADIS	TEXTILE
4	TIPNER/MS04	INSULATION AND TEXTILE	NADIS	INSULATION AND TEXTILE

KEY: CHRYSOTILE (WHITE ASBESTOS) - CROCIDOLITE (BLUE ASBESTOS) – AMOSITE (BROWN ASBESTOS)
NADIS (NO ASBESTOS DETECTED IN SAMPLE) - TREMOLITE, ANTHOPHYLLITE & ACTINOLITE (LESS COMMON ASBESTOS FIBRE TYPES)

Note: When a trace of asbestos fibres are reported this represents one or two fibres only
Note: The material type reported is an opinion of the analyst only and does not form part of the ATHENA UKAS accreditation.
Note: Samples will be kept for a minimum of 6 months.
Note: This Certificate of Identification of Asbestos Fibres can only be reproduced in full unless written approval from Athena has been obtained.
Note: If the sample condition or size is deemed unacceptable or unsatisfactory by the analyst, the client will be contacted.
Note: The results relate only to the items tested.

Samples have been analysed to determine the presence of asbestos fibres using Athena Environmental Solutions "in house" method of polarised light microscopy and central stop dispersion staining based on HSG 248. The site address and sample locations are given by the client and Athena are not responsible for the accuracy or competence of these details or of the sampling

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Certificate of Analysis

Report No.: 16-55297-1

Issue No.: **1**
Date of Issue **26/08/2016**

Customer Details:	WSP / Parsons Brinckerhoff, 6th Floor Mountbatten House, Basing View, Basingstoke, RG21 4HJ
Customer Contact:	Martin Weil
Customer Order No.:	RPS0699
Customer Reference:	RPS0699
Quotation Reference:	160804/04
Description:	6 soil samples
Date Received:	19/08/2016
Date Started:	22/08/2016
Date Completed:	26/08/2016
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None

Approved By: **Marco Lattughi, Operational Director**

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service.
This certificate shall not be reproduced except in full without the prior written approval of the laboratory.
Observations and interpretations are outside of the scope of UKAS accreditation.
Results reported herein relate only to the items supplied to the laboratory for testing.

UKAS TESTING 1663

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

RPS Mountainheath Ltd, a trading entity of the Environmental Consultancy Ltd.
A member of the RPS Group plc. RPS Laboratories and RPS Mountainheath terms and conditions apply - copy on request

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Results Summary

Report No.: 16-55297-1

Customer Reference: RPS0699

Customer Order No: RPS0699

					Customer Sample No	**WS207A 0.3**	**WS207A 0.7**	**HP209 0.4**	**HP209 0.65**	**HP210 0.35**	**HP210 0.75**
					RPS Sample No	305355	305356	305357	305358	305359	305360
					Sample Type	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**
					Sample Location	Tipner Range	Tipner Range	Tipner Range	Tipner Range	Tipner Range	Tipner Range
					Sample Depth (m)	0.3m	0.7m	0.4m	0.65m		
					Sampling Date	18/08/2016	18/08/2016	18/08/2016	18/08/2016	18/08/2016	18/08/2016
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**						
description of removed material			in house	n/a		Stones	stones				
soil type			in house	n/a		Type 4	Type 4				
weight of removed material			in house	g		33.8	24.4				
1,4-dithiane	505-29-3		in house	mg/kg	0.05			< 0.05	< 0.05	< 0.05	< 0.05
1,4-thioxane	15980-15-1		in house	mg/kg	0.05			< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-trinitrophenol (picric acid)	88-89-1	M	375	mg/kg as DW	0.1	< 1.0	< 1.0				
2,4-dinitrotoluene	121-14-2	M	375	mg/kg as DW	1	< 1.0	< 1.0				
2,6-dinitrotoluene	606-20-2	M	375	mg/kg as DW	1	< 1.0	< 1.0				
ethylene glycol dinitrate (EGDN)	628-96-2	M	374	mg/kg as DW	0.1	< 0.1	< 0.1				
cyclotetramethylenetetranitramine (HMX)	2691-41-0	M	375	mg/kg as DW	1	< 1.0	< 1.0				
hexanitrostilbene (HNS)	20062-22-0	M	375	mg/kg as DW	0.5	< 0.5	< 0.5				
Bis(2-chloroethyl)sulphide (H-Mustard)	505-60-2		in house	mg/kg	0.1			< 0.1	< 0.1	< 0.1	< 0.1
nitrocellulose (NC)	9004-70-0	U	376	mg/kg	5000	< 5000	< 5000				
nitroglycerine (NG)	55-63-0	M	374	mg/kg as DW	0.1	< 0.1	< 0.1				
pentaerythritol tetranitrate (PETN)	78-11-5	M	375	mg/kg as DW	5	< 5.0	< 5.0				
picrite	556-88-7	M	375	mg/kg as DW	0.1	< 1.00	< 1.00				
1,2-bis(2-chloroethylthio)ethane (Q-Mustard)	3563-36-8		in house	mg/kg	0.1			< 0.1	< 0.1	< 0.1	< 0.1
cyclo-1,3,5-trimethylene-2,4,6-trinitramine (RDX)	121-82-4	M	375	mg/kg as DW	1	< 1.0	< 1.0				
2,4,6-trinitrotoluene (TNT)	118-96-7	M	375	mg/kg as DW	0.5	< 0.5	< 0.5				
N-methyl-N,2,4,6-tetranitroaniline (tetryl)	479-45-8	M	375	mg/kg as DW	1	< 1.0	< 1.0				
Bis(2-chloroethylthioethyl)ether (T-Mustard)	63918-89-8		in house	mg/kg	0.1			< 0.1	< 0.1	< 0.1	< 0.1

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Deviating Samples

Report No.: 16-55297-1

Customer Reference: RPS0699

Customer Order No: RPS0699

Our policy on Deviating Samples and reference list of Holding Times applied can be supplied on request. These have been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling, and it is possible that samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be invalid. The reason for a sample being declared to be deviating is indicated below.
Where no sampling date was supplied, samples have been declared to be deviating. However, if a date of sampling can be supplied, the results may be reissued with the deviating sample status removed.
Where the sample container used was unsuitable, the appropriate Holding Time was exceeded, or the sample is flagged as deviating for some other reason, re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating Sample	Reason for Sample Deviation
305355	WS207A 0.3		18/08/2016	120ml amber glass jar	No	
305356	WS207A 0.7		18/08/2016	1 litre plastic container	No	
305357	HP209 0.4		18/08/2016	120ml amber glass jar	No	
305358	HP209 0.65		18/08/2016	1 litre plastic container	No	
305359	HP210 0.35		18/08/2016	120ml amber glass jar	No	
305360	HP210 0.75		18/08/2016	1 litre plastic container	No	

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Report Information

Key to Report Codes

U	UKAS Accredited
M	MCERTS Accredited
S	Subcontracted to approved laboratory
US	Subcontracted to approved laboratory UKAS Accredited for the test
MS	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SI	Subcontracted to internal RPS Group laboratory
USI	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
MSI	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
DW (in units)	Results are expressed on a dry weight basis

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing

Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

MCERTS Notes

Note 1	This test report shall not be reproduced except in full, without written approval of the Laboratory.
Note 2	All results for soil samples are reported based on the dry weight of soil which has been air-dried in open, shallow trays at temperatures below 30°C and subsequently ground and sieved to pass through a nominal 710µm aperture sieve. Prior to grinding, any material which is retained on a sieve of mesh size 4.75mm is discarded. In most cases, analysis is carried out directly on these prepared soils.
Note 3	Unless otherwise stated, results are not corrected for analytical recoveries.
Note 4	All samples were received in good condition unless otherwise stated. Results provided by the Laboratory are based on samples submitted by clients. Once submitted, samples requiring analysis are stored at 5 ± 3°C. The Laboratory cannot be held responsible for the storage, condition or preservation of samples prior to arrival.
Note 5	Samples were taken by the customer and, unless otherwise stated, sampling locations were not supplied.
Note 6	Soil descriptions are given in order to provide a log of sample matrices submitted and are not intended as full geological descriptions.
Note 7	Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Sample Retention and Disposal

Samples will generally* be retained for the following times prior to disposal:

Perishables, e.g. foodstuffs	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids (including Soils)	1 month from the issue date of this report

*Sample retention may be subject to agreement with the customer for particular projects

ALcontrol Laboratories

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Website: www.alcontrol.com

WSP PB BBC
3rd Floor, Kings Orchard,
1 Queen Street
Bristol
Gloucestershire
BS2 0HQ

Attention: Martin Weil

CERTIFICATE OF ANALYSIS

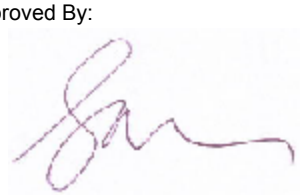
Date:	30 August 2016
Customer:	H_WSP_BRI
Sample Delivery Group (SDG):	160816-85
Your Reference:	70015362
Location:	City Deal Tipner West
Report No:	375448

We received 7 samples on Tuesday August 16, 2016 and 5 of these samples were scheduled for analysis which was completed on Tuesday August 30, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13980062	BH208	ES	0.30	12/08/2016
13980068	BH208	ES	1.00	12/08/2016
13980074	BH209	ES	0.30	11/08/2016
13980078	BH209	ES	1.00	11/08/2016
13980082	BH209	ES	2.10	11/08/2016
13980087	BH209	ES	3.00	11/08/2016
13980091	BH209	ES	5.00	11/08/2016

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			13980062	BH208	ES	0.30	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13980068	BH208	ES	1.00	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13980074	BH209	ES	0.30	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13980078	BH209	ES	1.00	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13980082	BH209	ES	2.10	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2			X		X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5	X		X		X		X
CEN Readings	All	NDPs: 0 Tests: 2			X		X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3	X		X		X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2			X		X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 2			X		X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 5		X		X		X		X		X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 2			X		X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 5		X		X		X		X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5			X		X		X		X		X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 2			X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5	X		X		X		X		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2			X		X
Mercury Dissolved	All	NDPs: 0 Tests: 2			X		X
Metals in solid samples by OES	All	NDPs: 0 Tests: 5		X		X		X		X		X

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

SOLID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			13980062	BH208	ES	0.30	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13980068	BH208	ES	1.00	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13980074	BH209	ES	0.30	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13980078	BH209	ES	1.00	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
			13980082	BH209	ES	2.10	1kg TUB
							250g Amber Jar (AL
							60g VOC (ALE215)
PAH by GCMS	All	NDPs: 0 Tests: 5					X
							X
							X
							X
							X
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 2					
				X			
							X
PCBs by GCMS	All	NDPs: 0 Tests: 2					
				X			
							X
pH	All	NDPs: 0 Tests: 5	X				
				X			
							X
							X
Sample description	All	NDPs: 0 Tests: 5					
				X			
							X
							X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2					
				X			
							X
Total Organic Carbon	All	NDPs: 0 Tests: 4					
				X			
							X
TPH CWG (W)	All	NDPs: 0 Tests: 2					
				X			
							X
TPH CWG GC (S)	All	NDPs: 0 Tests: 5					
				X			
							X
							X
VOC MS (S)	All	NDPs: 0 Tests: 5					
				X			
							X
							X
							X

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
13980062	BH208	0.30	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Brick
13980068	BH208	1.00	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Brick	Vegetation
13980074	BH209	0.30	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Vegetation	Stones
13980078	BH209	1.00	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Vegetation	Stones
13980082	BH209	2.10	Light Brown	Sand	0.063 - 2.00 mm	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH208	BH208	BH209	BH209	BH209
			Depth (m)	0.30	1.00	0.30	1.00	2.10
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	12/08/2016	12/08/2016	11/08/2016	11/08/2016	11/08/2016
			Sampled Time	.	.	.	.	.
			Date Received	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			SDG Ref	160816-85	160816-85	160816-85	160816-85	160816-85
			Lab Sample No.(s)	13980062	13980068	13980074	13980078	13980082
			AGS Reference	ES	ES	ES	ES	ES
Moisture Content Ratio (% of as received sample)	%	PM024		5.1	8	10	4.8	14
Soil Organic Matter (SOM)	<0.35 %	TM132		2.33 #	0.952 #	2.07 #		<0.35 #
pH	1 pH Units	TM133		8.6 M	8.58 M	7.09 M	7.22 M	8.25 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	0.668 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Complex (low level)	<0.5 mg/kg	TM153		<0.5	1.13	0.604		
PCB congener 118	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 81	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 77	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 123	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 114	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 105	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 126	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 167	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 156	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 157	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 169	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
PCB congener 189	<0.003 mg/kg	TM168		<0.003 M	<0.003 M			
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168		<0.036	<0.036			
Arsenic	<0.6 mg/kg	TM181		18.3 M	36.5 M	9.43 M	17.7 M	1.54 M
Cadmium	<0.02 mg/kg	TM181		0.107 M	1.03 M	<0.02 M	<0.02 M	<0.02 M
Chromium	<0.9 mg/kg	TM181		17.3 M	41.2 M	18.3 M	11.9 M	7.46 M
Copper	<1.4 mg/kg	TM181		216 M	305 M	44.7 M	4.3 M	7.45 M
Lead	<0.7 mg/kg	TM181		525 M	1300 M	113 M	15 M	12.4 M
Mercury	<0.14 mg/kg	TM181		2.61 M	4.67 M	0.27 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		20.9 M	71.3 M	14.9 M	5.07 M	9.89 M
Selenium	<1 mg/kg	TM181		<1 #	<10 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		440 M	513 M	61.7 M	14.2 M	32.3 M

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH208	BH208	BH209	BH209	BH209
			Depth (m)	0.30	1.00	0.30	1.00	2.10
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	12/08/2016	12/08/2016	11/08/2016	11/08/2016	11/08/2016
			Sampled Time	.	.	.	.	.
			Date Received	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			SDG Ref	160816-85	160816-85	160816-85	160816-85	160816-85
			Lab Sample No.(s)	13980062	13980068	13980074	13980078	13980082
			AGS Reference	ES	ES	ES	ES	ES
Naphthalene-d8 % recovery**	%	TM218		87.5	104	95.7	87.5	87.8
Acenaphthene-d10 % recovery**	%	TM218		84.4	103	92	84.2	84.1
Phenanthrene-d10 % recovery**	%	TM218		83.7	102	90.6	83.4	82.1
Chrysene-d12 % recovery**	%	TM218		78.8	92.5	82.6	74.6	74.3
Perylene-d12 % recovery**	%	TM218		81.6	93.6	85.3	77.2	77.6
Naphthalene	<0.009 mg/kg	TM218		0.229 M	1.4 M	<0.009 M	<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		0.27 M	2.94 M	<0.012 M	<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		0.329 M	7.46 M	<0.008 M	<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		0.195 M	6.49 M	<0.01 M	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		2.83 M	100 M	0.0355 M	<0.015 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		1.29 M	29.9 M	<0.016 M	<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		9 M	160 M	0.0703 M	<0.017 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		7.99 M	125 M	0.0617 M	<0.015 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		4.88 M	67.9 M	0.0336 M	<0.014 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		3.35 M	50.7 M	0.0373 M	<0.01 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		6.38 M	77.3 M	0.0629 M	<0.015 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		2.37 M	27.9 M	0.0278 M	<0.014 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		5.51 M	63.2 M	0.0465 M	<0.015 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		3.12 M	31 M	0.0296 M	<0.018 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.914 M	9.58 M	<0.023 M	<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		3.65 M	35.2 M	0.0359 M	<0.024 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		52.3	796	0.441	<0.118	<0.118

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH208	BH208				
			Depth (m)	0.30	1.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	12/08/2016	12/08/2016				
			Sampled Time	.	.				
			Date Received	16/08/2016	16/08/2016				
			SDG Ref	160816-85	160816-85				
			Lab Sample No.(s)	13980062	13980068				
			AGS Reference	ES	ES				
Phenol	<0.1 mg/kg	TM157		<0.1	<0.5				
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.5				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.5				
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.5				
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.5				
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.5				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.5				
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.5				
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.5				
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.5				
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.5				
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.5				
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.5				
Dibenzofuran	<0.1 mg/kg	TM157		0.349	2.12				
Carbazole	<0.1 mg/kg	TM157		0.256	2.5				
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.5				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.5				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.5				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.5				
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.5				
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.5				
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.5				
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.5				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.5				
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.5				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.5				
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.5				
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.5				
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.5				
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.5				
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.5				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.5				

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH208	BH208				
			Depth (m)	0.30	1.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	12/08/2016	12/08/2016				
			Sampled Time	.	.				
			Date Received	16/08/2016	16/08/2016				
			SDG Ref	160816-85	160816-85				
			Lab Sample No.(s)	13980062	13980068				
			AGS Reference	ES	ES				
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.5				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.5				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.5				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.5				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.5				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.5				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.5				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.5				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.5				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.5				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.5				
2-Methylnaphthalene	<0.1 mg/kg	TM157		0.371	0.765				
Acenaphthylene	<0.1 mg/kg	TM157		0.232	0.862				
Acenaphthene	<0.1 mg/kg	TM157		0.303	4.1				
Anthracene	<0.1 mg/kg	TM157		1.13	13				
Benzo(a)anthracene	<0.1 mg/kg	TM157		5.99	41.3				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		6	33.2				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		5.44	31.4				
Benzo(a)pyrene	<0.1 mg/kg	TM157		6.63	37.9				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		4.47	22.2				
Chrysene	<0.1 mg/kg	TM157		5.85	39.8				
Fluoranthene	<0.1 mg/kg	TM157		9.86	87.5				
Fluorene	<0.1 mg/kg	TM157		0.179	2.95				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		5.48	25.4				
Phenanthrene	<0.1 mg/kg	TM157		3.62	47				
Pyrene	<0.1 mg/kg	TM157		9.49	72.7				
Naphthalene	<0.1 mg/kg	TM157		0.513	1.17				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		1.13	5.29				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.5				

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH208	BH208	BH209	BH209	BH209
			Depth (m)	0.30	1.00	0.30	1.00	2.10
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	12/08/2016	12/08/2016	11/08/2016	11/08/2016	11/08/2016
			Sampled Time	.	.	.	.	.
			Date Received	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			SDG Ref	160816-85	160816-85	160816-85	160816-85	160816-85
			Lab Sample No.(s)	13980062	13980068	13980074	13980078	13980082
			AGS Reference	ES	ES	ES	ES	ES
GRO Surrogate % recovery**	%	TM089		41	30	80	97	101
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		<0.044 M	0.152 M	<0.044 M	<0.044 M	<0.044 M
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	0.0337	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089		<0.01	0.0467	<0.01	<0.01	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173		3.04	28	1.19	<0.1	0.999
Aliphatics >C16-C21	<0.1 mg/kg	TM173		10.6	74.3	0.467	<0.1	<0.1
Aliphatics >C21-C35	<0.1 mg/kg	TM173		75.7	225	8.88	6.25	3.69
Aliphatics >C35-C44	<0.1 mg/kg	TM173		10.1	75.4	<0.1	<0.1	<0.1
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173		99.5	403	10.5	6.25	4.69
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	0.0239	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089		<0.01	0.0315	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173		8	55.6	1.22	2.5	<0.1
Aromatics >EC16-EC21	<0.1 mg/kg	TM173		53.6	418	1.86	2.27	<0.1
Aromatics >EC21-EC35	<0.1 mg/kg	TM173		223	1340	14.2	6.71	0.628
Aromatics >EC35-EC44	<0.1 mg/kg	TM173		80.5	443	4.8	3.31	0.123
Aromatics >EC40-EC44	<0.1 mg/kg	TM173		28.8	164	1.57	1.44	<0.1
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173		365	2260	22.1	14.8	0.751
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173		465	2660	32.6	21	5.46
Aromatics >EC16-EC35	<0.1 mg/kg	TM173		277	1760	16.1	8.98	0.628

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

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M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH208	BH208	BH209	BH209	BH209
			Depth (m)	0.30	1.00	0.30	1.00	2.10
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	12/08/2016	12/08/2016	11/08/2016	11/08/2016	11/08/2016
			Sampled Time	.	.	.	.	.
			Date Received	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			SDG Ref	160816-85	160816-85	160816-85	160816-85	160816-85
			Lab Sample No.(s)	13980062	13980068	13980074	13980078	13980082
			AGS Reference	ES	ES	ES	ES	ES
Dibromofluoromethane**	%	TM116		99.4	104			
Toluene-d8**	%	TM116		99.7	99.9			
4-Bromofluorobenzene**	%	TM116		91.5	79.2			
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.06 M			
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.07 #			
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M	<0.06 M			
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.06 M			
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.1 #			
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.07 M			
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.1 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 M	<0.1 M	<0.01 M	<0.01 M	<0.1 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	<0.08 M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.06 M			
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.08 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.07 M			
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.05 M			
Benzene	<0.009 mg/kg	TM116		<0.009 M	<0.09 M	<0.009 M	<0.009 M	<0.09 M
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.09 #			
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.09 M			
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.07 M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Toluene	<0.007 mg/kg	TM116		<0.007 M	<0.07 M	<0.007 M	<0.007 M	<0.07 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.1			
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH208	BH208	BH209	BH209	BH209
			Depth (m)	0.30	1.00	0.30	1.00	2.10
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	12/08/2016	12/08/2016	11/08/2016	11/08/2016	11/08/2016
			Sampled Time	.	.	.	.	.
			Date Received	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			SDG Ref	160816-85	160816-85	160816-85	160816-85	160816-85
			Lab Sample No.(s)	13980062	13980068	13980074	13980078	13980082
			AGS Reference	ES	ES	ES	ES	ES
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.07 M			
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.05 M			
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.05 M			
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.004 M	<0.04 M	<0.004 M	<0.004 M	<0.04 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.01 #	<0.1 #	<0.01 #	<0.01 #	<0.1 #
o-Xylene	<0.01 mg/kg	TM116		<0.01 M	<0.1 M	<0.01 M	<0.01 M	<0.1 M
Styrene	<0.01 mg/kg	TM116		<0.2 #	<0.1 #			
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.05 #			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.16 M			
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.09 M			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.08 M			
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.14 M			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.09 #			
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.08 M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.05 M			
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.11			
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.1 M			
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.14 M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.01 #	<0.1 #	<0.01 #	<0.01 #	<0.1 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.2			
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.2			
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.13 M			

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH208	BH208	BH209	BH209	BH209
			Depth (m)	0.30	1.00	0.30	1.00	2.10
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	12/08/2016	12/08/2016	11/08/2016	11/08/2016	11/08/2016
			Sampled Time	.	.	.	.	.
			Date Received	16/08/2016	16/08/2016	16/08/2016	16/08/2016	16/08/2016
			SDG Ref	160816-85	160816-85	160816-85	160816-85	160816-85
			Lab Sample No.(s)	13980062	13980068	13980074	13980078	13980082
			AGS Reference	ES	ES	ES	ES	ES
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.2 #			

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH208 ES 0.30 SOLID 12/08/2016 00:00:00 18/08/2016 16:32:58 160816-85 13980062 TM048	22/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH208 ES 1.00 SOLID 12/08/2016 00:00:00 17/08/2016 11:51:07 160816-85 13980068 TM048	22/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH209 ES 0.30 SOLID 11/08/2016 00:00:00 17/08/2016 11:44:15 160816-85 13980074 TM048	22/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH209 ES 1.00 SOLID 11/08/2016 00:00:00 17/08/2016 11:36:57 160816-85 13980078 TM048	22/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH209 ES 2.10 SOLID 11/08/2016 00:00:00 17/08/2016 11:32:19 160816-85 13980082 TM048	22/08/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.098	**Natural Moisture Content (%)**	8.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92
Particle Size <4mm	>95%		

Case	
SDG	160816-85
Lab Sample Number(s)	13980068
Sampled Date	12-Aug-2016
Customer Sample Ref.	BH208 ESZ
Depth (m)	1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Mercury Dissolved (CVAF)	0.000286	<0.00001	0.00286	<0.0001	-	-	-
Arsenic	0.00468	<0.00051	0.0468	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Acenaphthene (diss.filt)	0.00525	<0.000015	0.0525	<0.00015	-	-	-
Acenaphthylene (diss.filt)	0.0000983	<0.000011	0.000983	<0.00011	-	-	-
Fluoranthene (diss.filt)	0.00572	<0.000017	0.0572	<0.00017	-	-	-
Anthracene (diss.filt)	0.000176	<0.000015	0.00176	<0.00015	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	0.000035	<0.000022	0.00035	<0.00022	-	-	-
Fluorene (diss.filt)	0.000616	<0.000014	0.00616	<0.00014	-	-	-
Chrysene (diss.filt)	0.000512	<0.000013	0.00512	<0.00013	-	-	-
Chromium	0.00809	<0.0012	0.0809	<0.012	-	-	-
Pyrene (diss.filt)	0.00376	<0.000015	0.0376	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	0.0006	<0.000017	0.006	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	0.000501	<0.000023	0.00501	<0.00023	-	-	-
Benzo(k)fluoranthene (diss.filt)	0.000183	<0.000027	0.00183	<0.00027	-	-	-
Copper	0.019	<0.00085	0.19	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	0.000379	<0.000009	0.00379	<0.00009	-	-	-
Lead	0.0111	<0.0001	0.111	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	0.0000962	<0.000016	0.000962	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	0.000488	<0.000016	0.00488	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	0.00032	<0.000014	0.0032	<0.00014	-	-	-
Nickel	0.00155	<0.00044	0.0155	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	0.0187	<0.000344	0.187	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00575	<0.0013	0.0575	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	23-Aug-2016
pH (pH Units)	8.62
Conductivity (µS/cm)	114.00
Temperature (°C)	21.30
Volume Leachant (Litres)	0.892

Mcerts Certification does not apply to leachates

30/08/2016 15:51:47

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.098	**Natural Moisture Content (%)**	8.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92
Particle Size <4mm	>95%		

Case	
SDG	160816-85
Lab Sample Number(s)	13980068
Sampled Date	12-Aug-2016
Customer Sample Ref.	BH208 ESZ
Depth (m)	1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
MTBE GC-FID	<0.003	<0.003	<0.03	<0.03	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	0.03	<0.01	0.3	<0.1	-	-	-
Aromatics >EC16-EC21	0.061	<0.01	0.61	<0.1	-	-	-
Aromatics >EC21-EC35	0.028	<0.01	0.28	<0.1	-	-	-
Total Aromatics >EC12-EC35	0.119	<0.01	1.19	<0.1	-	-	-
Benzene by GC	<0.007	<0.007	<0.07	<0.07	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	0.123	<0.01	1.23	<0.1	-	-	-
Toluene by GC	<0.004	<0.004	<0.04	<0.04	-	-	-
Ethylbenzene by GC	<0.005	<0.005	<0.05	<0.05	-	-	-
m & p Xylene by GC	<0.008	<0.008	<0.08	<0.08	-	-	-
o Xylene by GC	<0.003	<0.003	<0.03	<0.03	-	-	-
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.11	<0.11	-	-	-
Sum of BTEX by GC	<0.028	<0.028	<0.28	<0.28	-	-	-

Leach Test Information

Date Prepared	23-Aug-2016
pH (pH Units)	8.62
Conductivity (µS/cm)	114.00
Temperature (ºC)	21.30
Volume Leachant (Litres)	0.892

Mcerts Certification does not apply to leachates

30/08/2016 15:51:47

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.094	**Natural Moisture Content (%)**	5.04
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	95.2
Particle Size <4mm	>95%		

Case	
SDG	160816-85
Lab Sample Number(s)	13980078
Sampled Date	11-Aug-2016
Customer Sample Ref.	BH209 ESZ
Depth (m)	1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000604	<0.00051	0.00604	<0.0051	-	-	-
Naphthalene (diss.filt)	<0.0001	<0.0001	<0.001	<0.001	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Acenaphthene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Acenaphthylene (diss.filt)	<0.000011	<0.000011	<0.00011	<0.00011	-	-	-
Fluoranthene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Anthracene (diss.filt)	<0.000015	<0.000015	<0.00015	<0.00015	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Phenanthrene (diss.filt)	<0.000022	<0.000022	<0.00022	<0.00022	-	-	-
Fluorene (diss.filt)	<0.000014	<0.000014	<0.00014	<0.00014	-	-	-
Chrysene (diss.filt)	0.0000213	<0.000013	0.000213	<0.00013	-	-	-
Chromium	<0.0012	<0.0012	<0.012	<0.012	-	-	-
Pyrene (diss.filt)	0.0000154	<0.000015	0.000154	<0.00015	-	-	-
Benzo(a)anthracene (diss.filt)	<0.000017	<0.000017	<0.00017	<0.00017	-	-	-
Benzo(b)fluoranthene (diss.filt)	<0.000023	<0.000023	<0.00023	<0.00023	-	-	-
Benzo(k)fluoranthene (diss.filt)	<0.000027	<0.000027	<0.00027	<0.00027	-	-	-
Copper	<0.00085	<0.00085	<0.0085	<0.0085	-	-	-
Benzo(a)pyrene (diss.filt)	0.0000133	<0.000009	0.000133	<0.00009	-	-	-
Lead	0.000271	<0.0001	0.00271	<0.001	-	-	-
Dibenzo(a,h)anthracene (diss.filt)	0.0000211	<0.000016	0.000211	<0.00016	-	-	-
Benzo(g,h,i)perylene (diss.filt)	0.0000306	<0.000016	0.000306	<0.00016	-	-	-
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000196	<0.000014	0.000196	<0.00014	-	-	-
Nickel	<0.00044	<0.00044	<0.0044	<0.0044	-	-	-
PAH 16 EPA Total by GCMS (diss.filt)	<0.000344	<0.000344	<0.00344	<0.00344	-	-	-
Selenium	<0.00081	<0.00081	<0.0081	<0.0081	-	-	-
Zinc	0.00236	<0.0013	0.0236	<0.013	-	-	-
TPH CWG (W)							
Surrogate Recovery	-	<0	-	<0	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.5	<0.5	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C6-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C8-C10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C10-C12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C12-C16	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	23-Aug-2016
pH (pH Units)	8.10
Conductivity (µS/cm)	19.60
Temperature (ºC)	20.30
Volume Leachant (Litres)	0.895

Mcerts Certification does not apply to leachates

30/08/2016 15:51:47

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	City Deal Tipner West
Mass Sample taken (kg)	0.094	**Natural Moisture Content (%)**	5.04
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	95.2
Particle Size <4mm	>95%		

Case	
SDG	160816-85
Lab Sample Number(s)	13980078
Sampled Date	11-Aug-2016
Customer Sample Ref.	BH209 ESZ
Depth (m)	1.00

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
TPH CWG (W)							
Aliphatics >C16-C21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aliphatics >C21-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aliphatics >C12-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics C6-C7	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >C7-C8	<0.01	<0.01	<0.1	<0.1	-	-	-
MTBE GC-FID	<0.003	<0.003	<0.03	<0.03	-	-	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.1	<0.1	-	-	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.1	<0.1	-	-	-
Benzene by GC	<0.007	<0.007	<0.07	<0.07	-	-	-
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.1	<0.1	-	-	-
Toluene by GC	<0.004	<0.004	<0.04	<0.04	-	-	-
Ethylbenzene by GC	<0.005	<0.005	<0.05	<0.05	-	-	-
m & p Xylene by GC	<0.008	<0.008	<0.08	<0.08	-	-	-
o Xylene by GC	<0.003	<0.003	<0.03	<0.03	-	-	-
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.11	<0.11	-	-	-
Sum of BTEX by GC	<0.028	<0.028	<0.28	<0.28	-	-	-

Leach Test Information

Date Prepared	23-Aug-2016
pH (pH Units)	8.10
Conductivity (µS/cm)	19.60
Temperature (ºC)	20.30
Volume Leachant (Litres)	0.895

Mcerts Certification does not apply to leachates

30/08/2016 15:51:47

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	13980062	13980068	13980074	13980078	13980082
Customer Sample Ref.	BH208	BH208	BH209	BH209	BH209
AGS Ref.	ES	ES	ES	ES	ES
Depth	0.30	1.00	0.30	1.00	2.10
Type	SOLID	SOLID	SOLID	SOLID	SOLID
Ammoniacal Nitrogen		26-Aug-2016		26-Aug-2016	
Asbestos ID in Solid Samples	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
CEN 10:1 Leachate (1 Stage)		23-Aug-2016		23-Aug-2016	
CEN Readings		25-Aug-2016		25-Aug-2016	
Cyanide Comp/Free/Total/Thiocyanate	22-Aug-2016	22-Aug-2016	22-Aug-2016		
Dissolved Metals by ICP-MS		26-Aug-2016		26-Aug-2016	
EPH CWG (Aliphatic) Aqueous GC (W)		30-Aug-2016		30-Aug-2016	
EPH CWG (Aliphatic) GC (S)	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
EPH CWG (Aromatic) Aqueous GC (W)		30-Aug-2016		30-Aug-2016	
EPH CWG (Aromatic) GC (S)	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
GRO by GC-FID (S)	22-Aug-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016
GRO by GC-FID (W)		27-Aug-2016		27-Aug-2016	
Hexavalent Chromium (s)	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
Hexavalent Chromium (w)		27-Aug-2016		27-Aug-2016	
Mercury Dissolved		26-Aug-2016		26-Aug-2016	
Metals in solid samples by OES	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
PAH by GCMS	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
PAH in waters by GC-MS (diss.filt)		30-Aug-2016		30-Aug-2016	
PCBs by GCMS	22-Aug-2016	22-Aug-2016			
pH	22-Aug-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016	22-Aug-2016
Sample description	17-Aug-2016	17-Aug-2016	17-Aug-2016	17-Aug-2016	17-Aug-2016
Semi Volatile Organic Compounds	22-Aug-2016	22-Aug-2016			
Total Organic Carbon	19-Aug-2016	19-Aug-2016	19-Aug-2016		19-Aug-2016
TPH CWG (W)		30-Aug-2016		30-Aug-2016	
TPH CWG GC (S)	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016	23-Aug-2016
VOC MS (S)	23-Aug-2016	23-Aug-2016	22-Aug-2016	22-Aug-2016	23-Aug-2016

CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

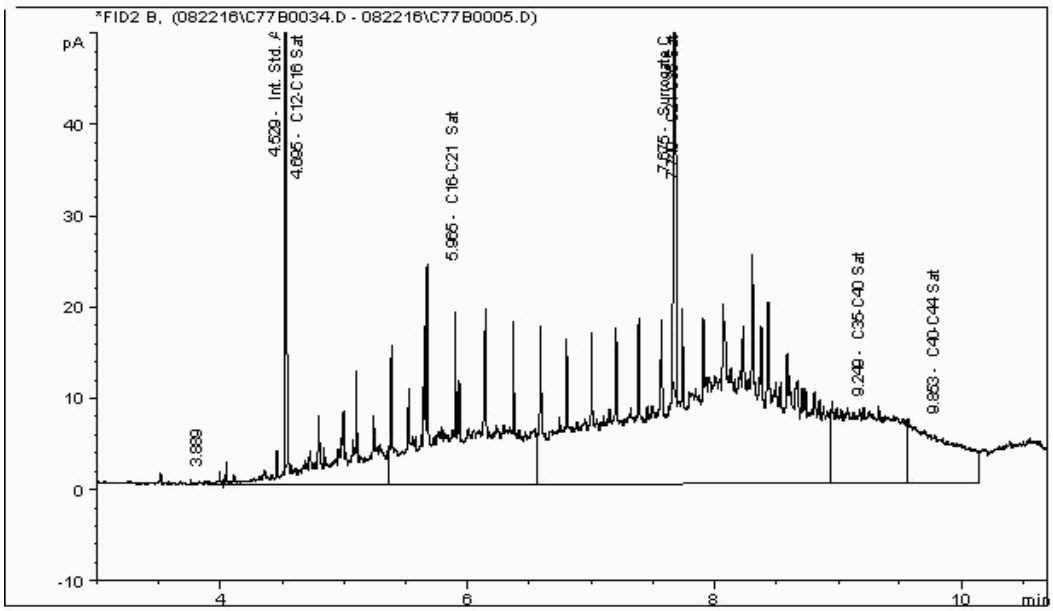
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13983603
Sample ID : BH208

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13141439-
Date Acquired : 8/22/2016 5:06:07 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

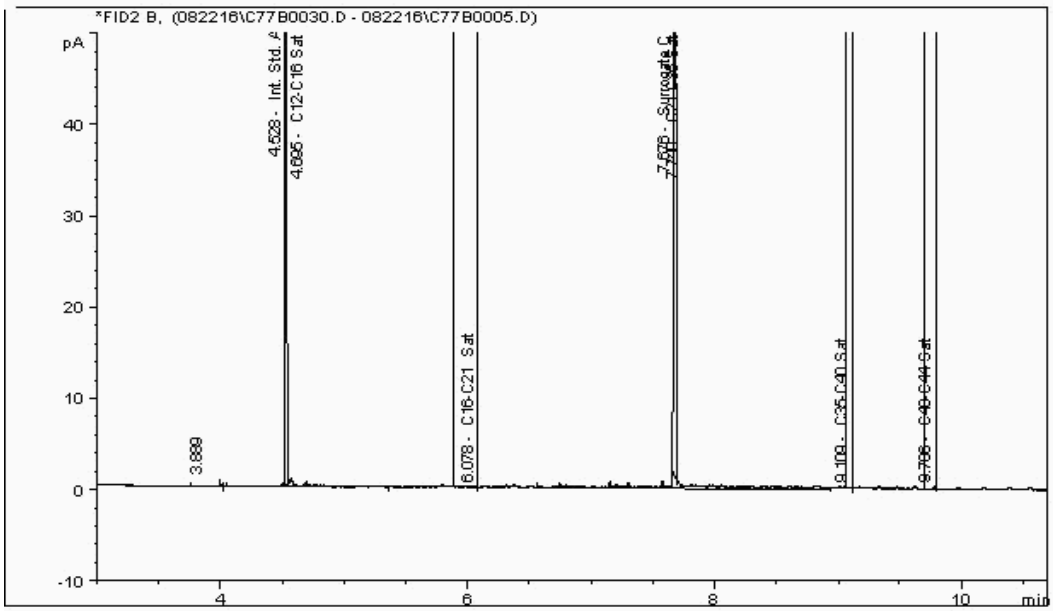
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13983702
Sample ID : BH209

Depth : 2.10

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13141485-
Date Acquired : 8/22/2016 4:00:38 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

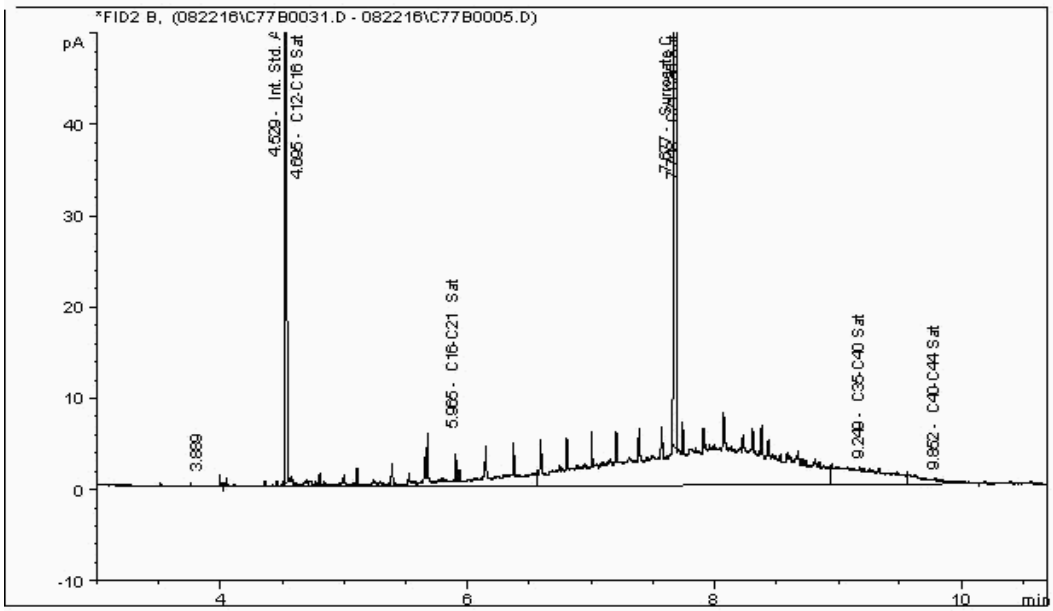
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13983903
Sample ID : BH208

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13141420-
Date Acquired : 8/22/2016 4:21:20 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

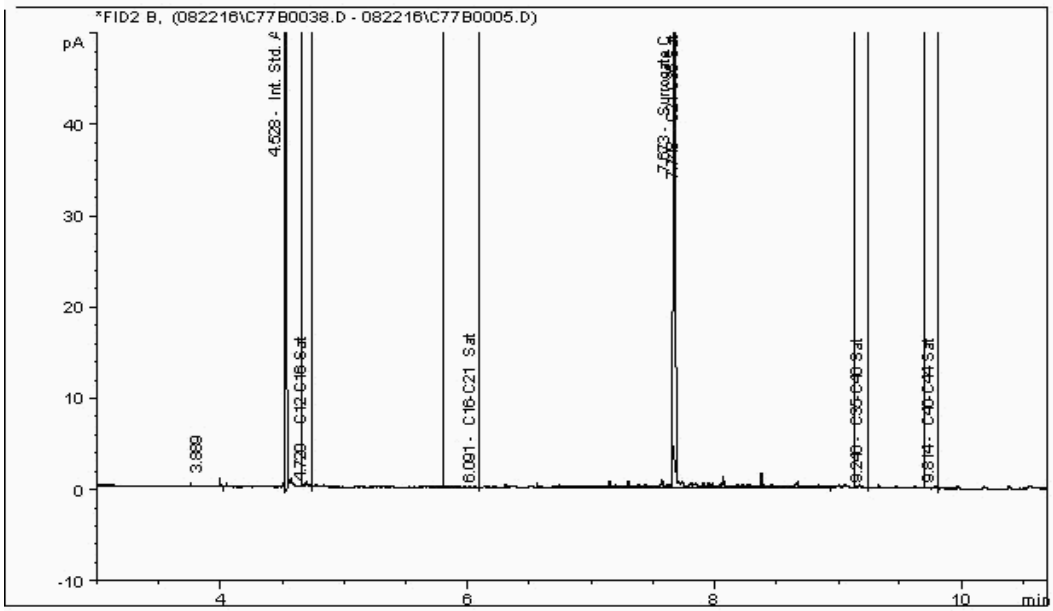
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13984179
Sample ID : BH209

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13141471-
Date Acquired : 8/22/2016 6:01:47 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

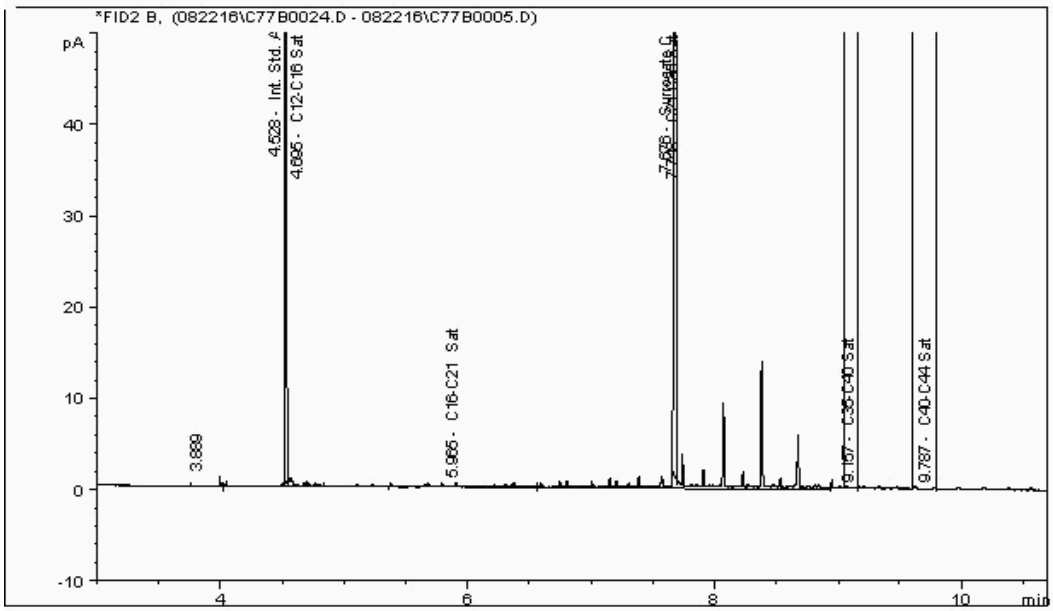
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13984323
Sample ID : BH209

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13141455-
Date Acquired : 8/22/2016 2:23:14 PM
Units : ppb
Dilution:



CERTIFICATE OF ANALYSIS

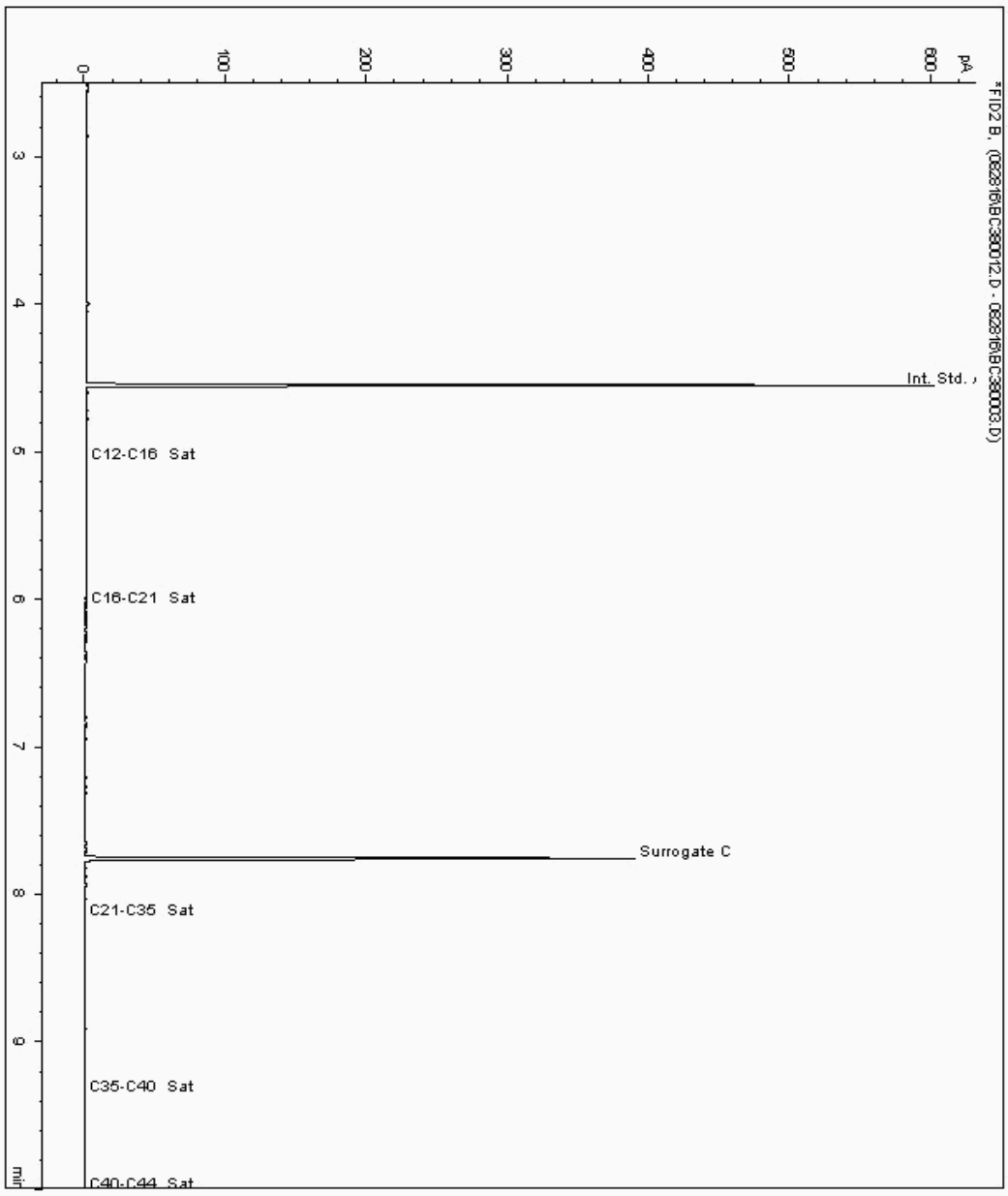
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 14036584 **Sample ID :** BH209 **Depth :** 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 13178816-
Date Acquired : 28/08/16 16:18:25 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.009

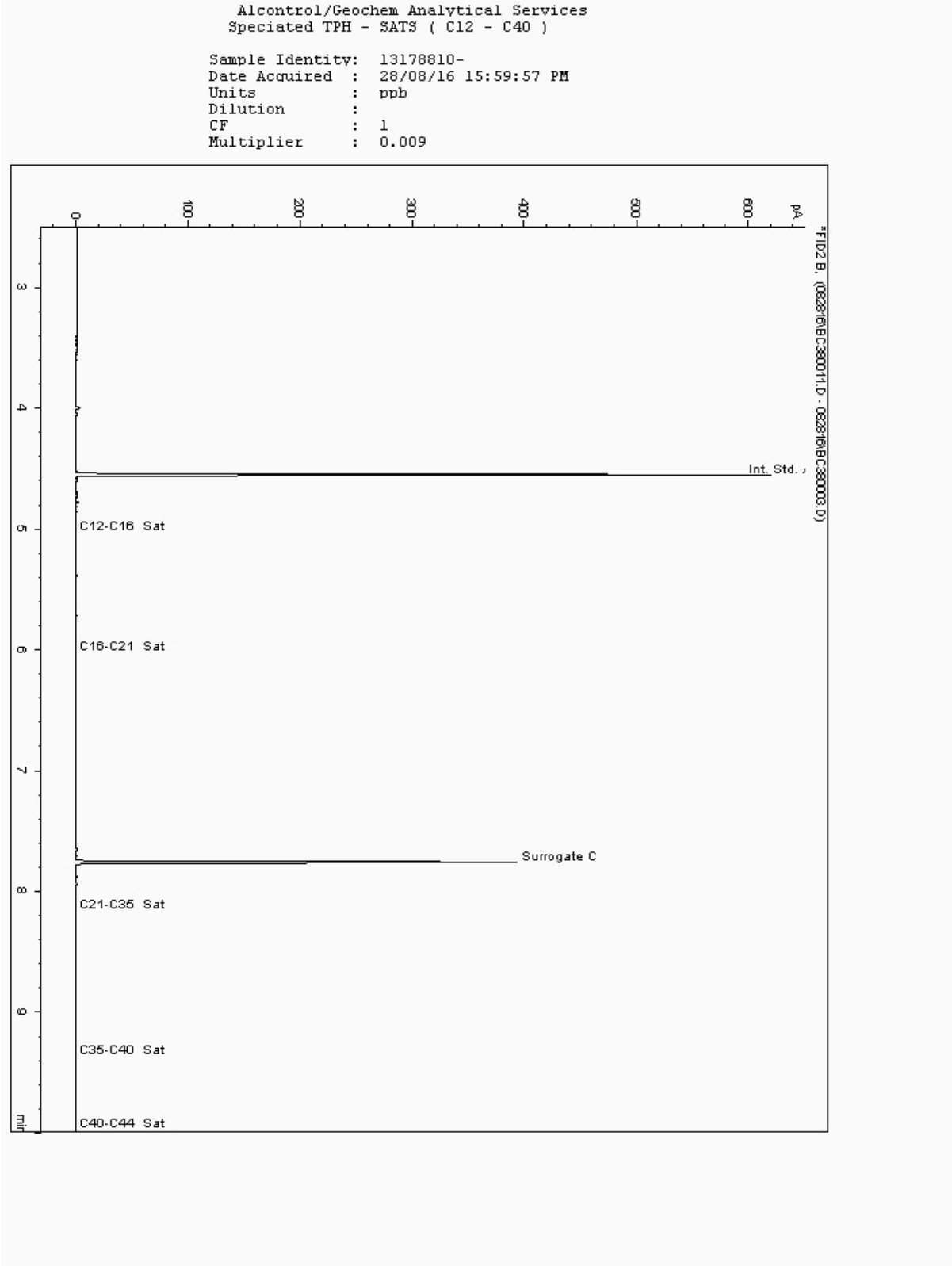


CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 14036681 **Sample ID :** BH208 **Depth :** 1.00



CERTIFICATE OF ANALYSIS

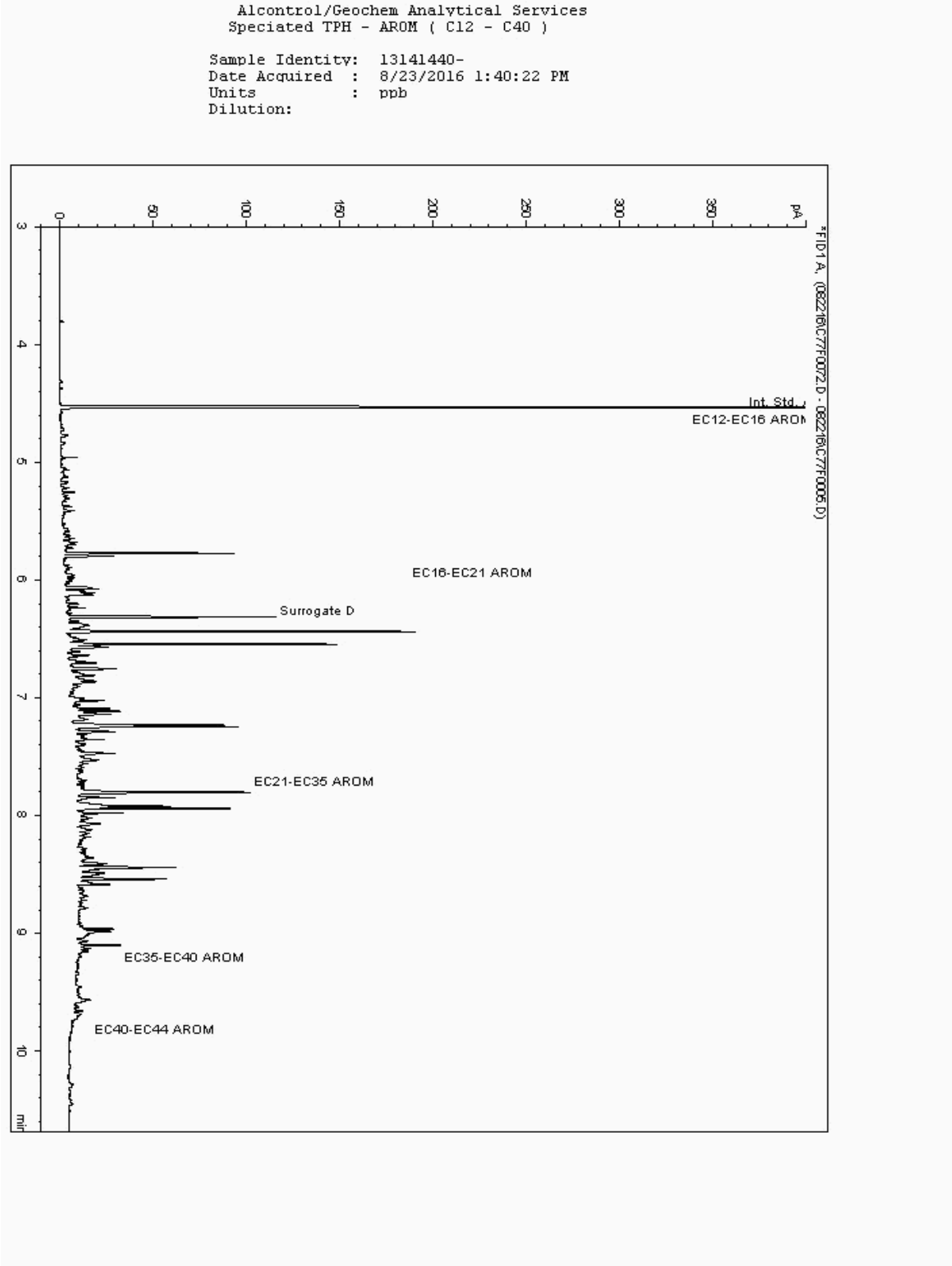
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13983603
Sample ID : BH208

Depth : 1.00



CERTIFICATE OF ANALYSIS

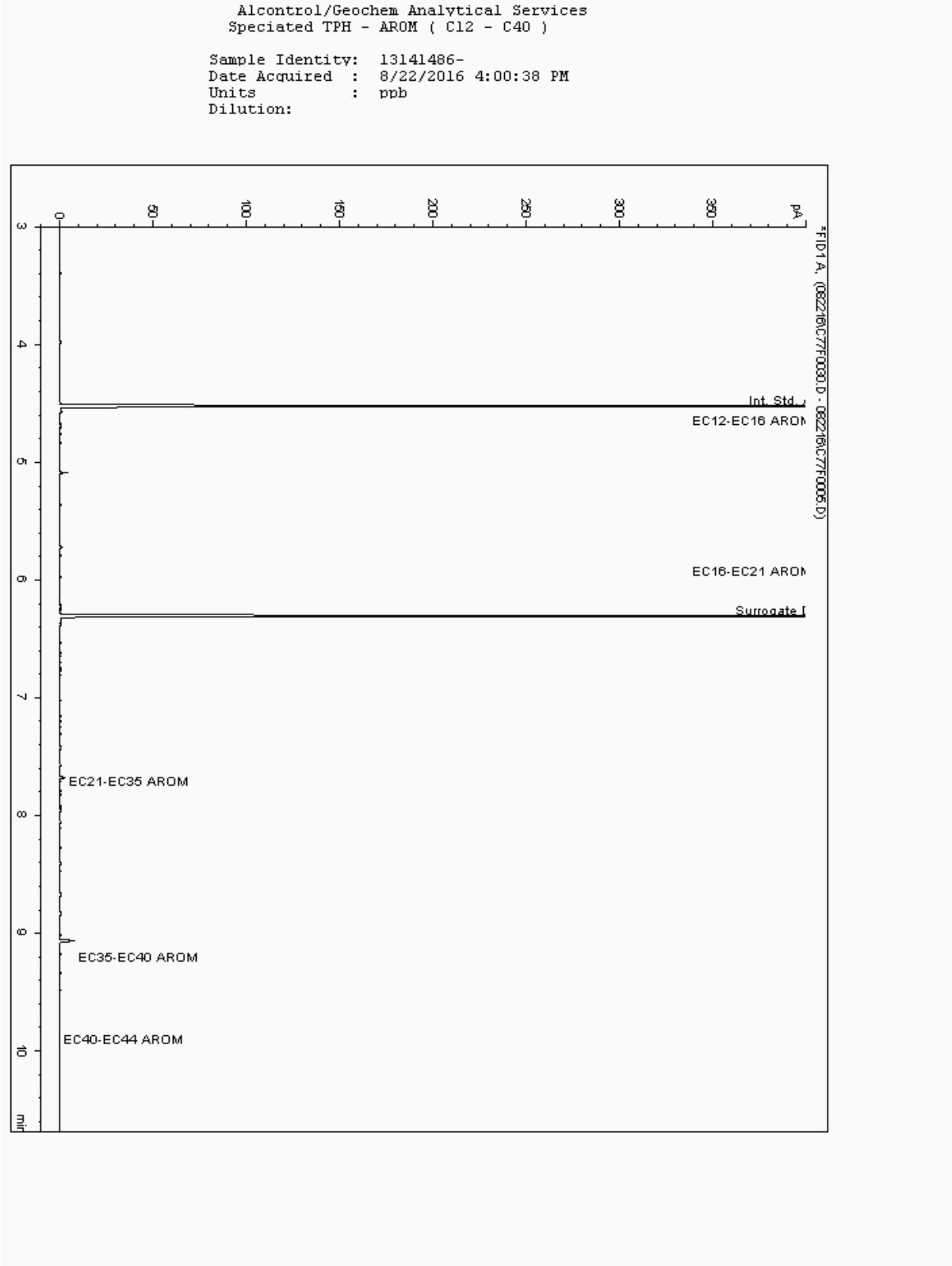
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13983702
Sample ID : BH209

Depth : 2.10



CERTIFICATE OF ANALYSIS

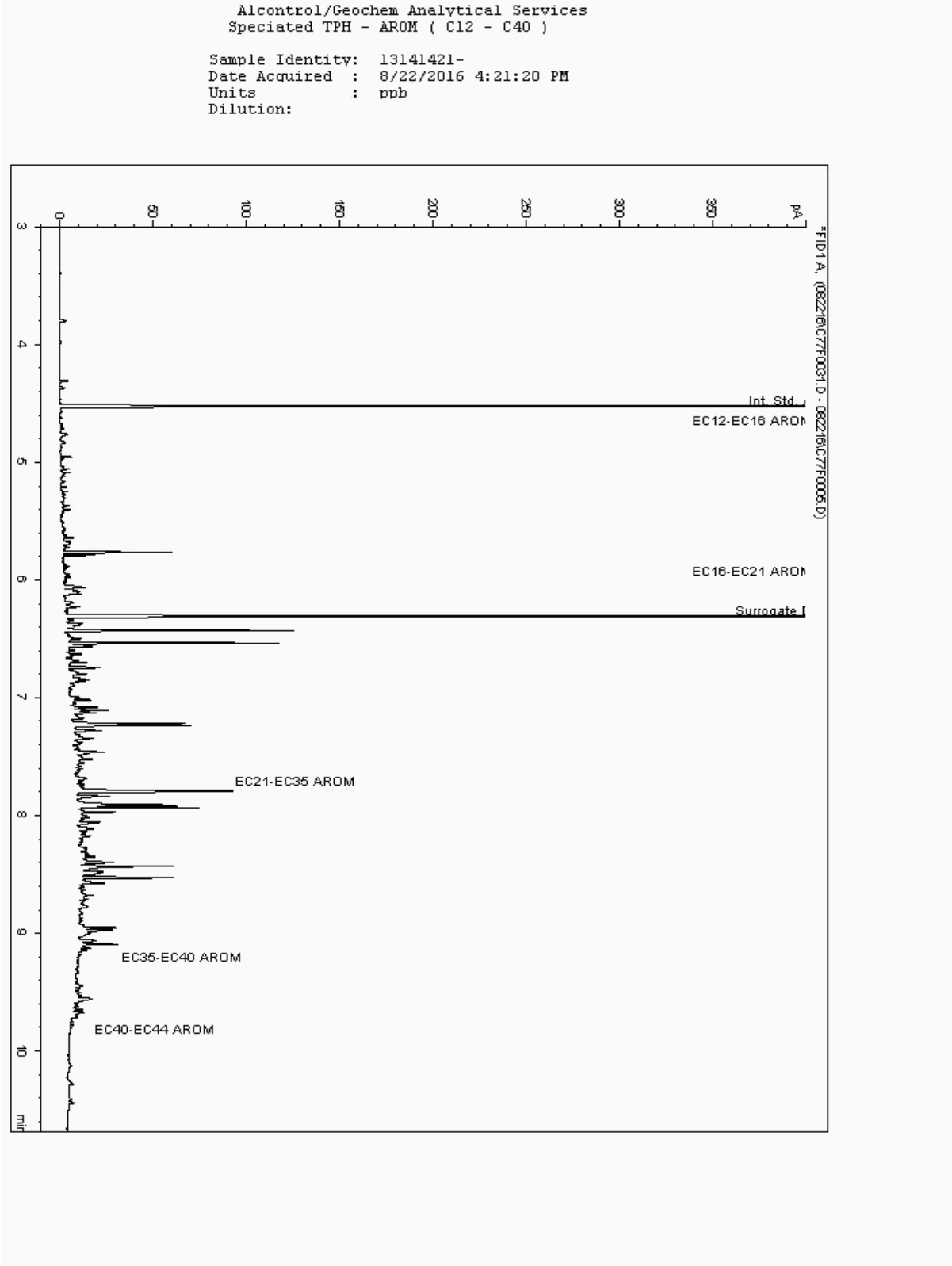
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13983903
Sample ID : BH208

Depth : 0.30



CERTIFICATE OF ANALYSIS

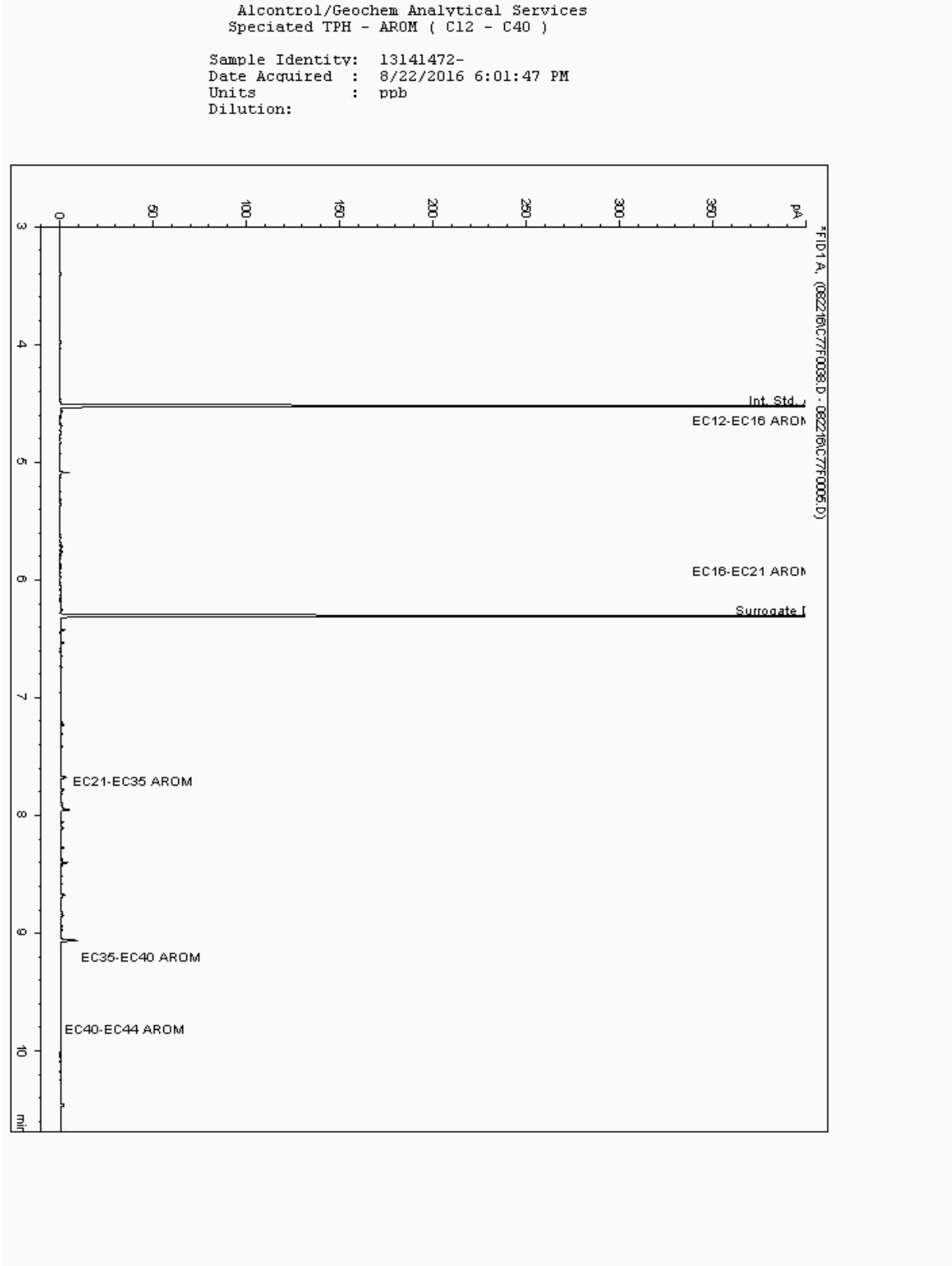
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13984179
Sample ID : BH209

Depth : 1.00



CERTIFICATE OF ANALYSIS

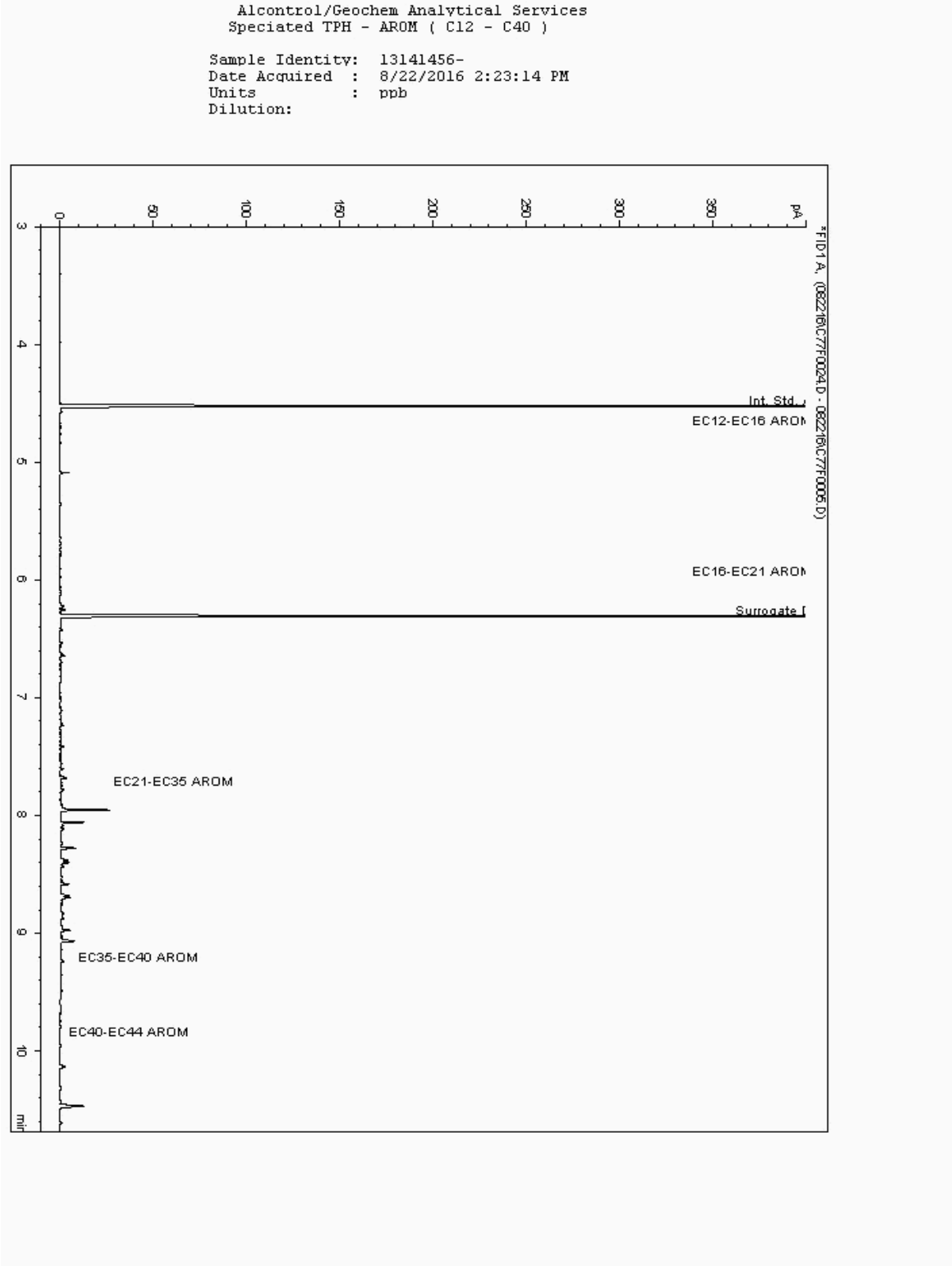
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13984323
Sample ID : BH209

Depth : 0.30

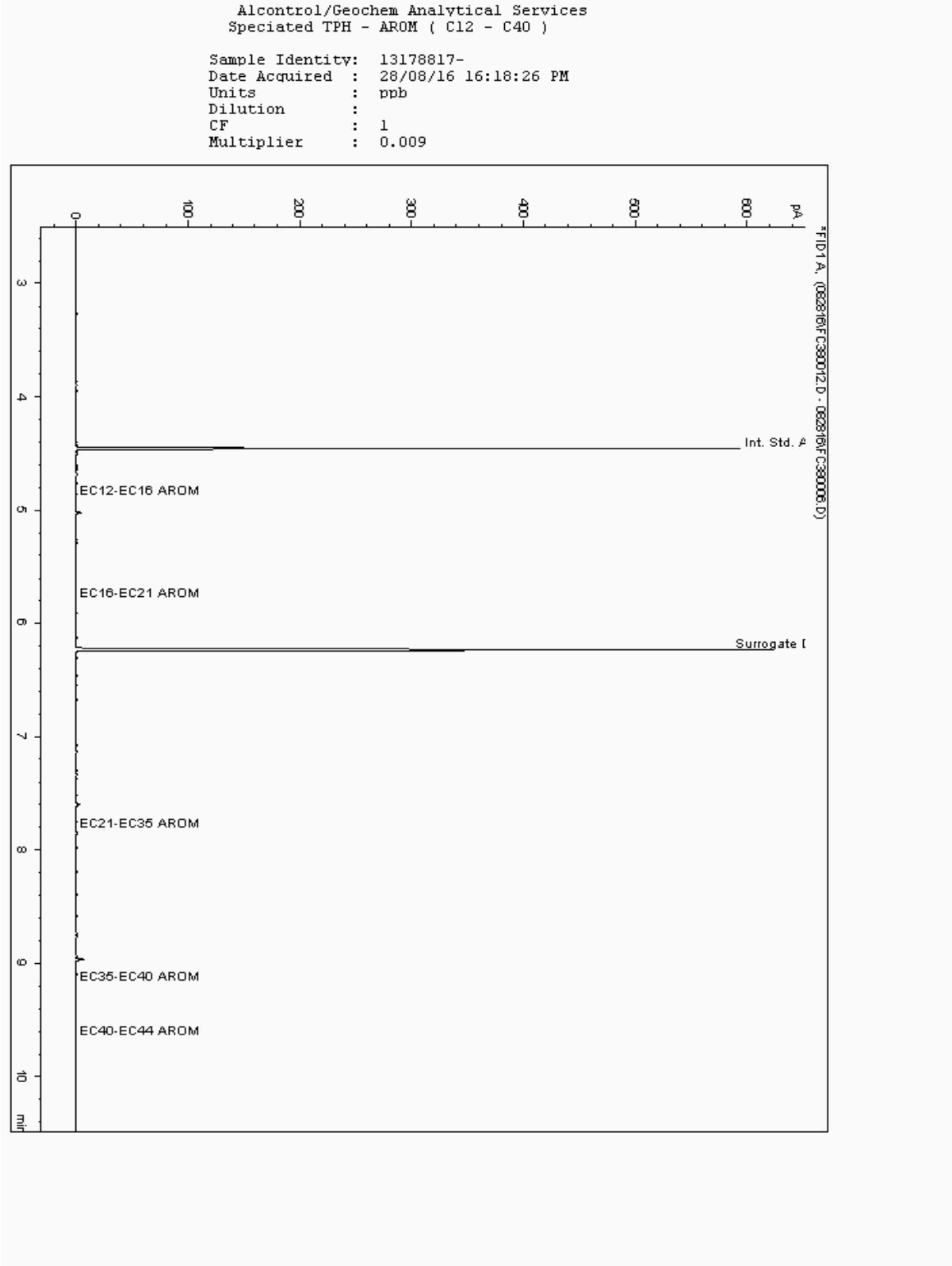


CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 14036584 **Sample ID :** BH209 **Depth :** 1.00

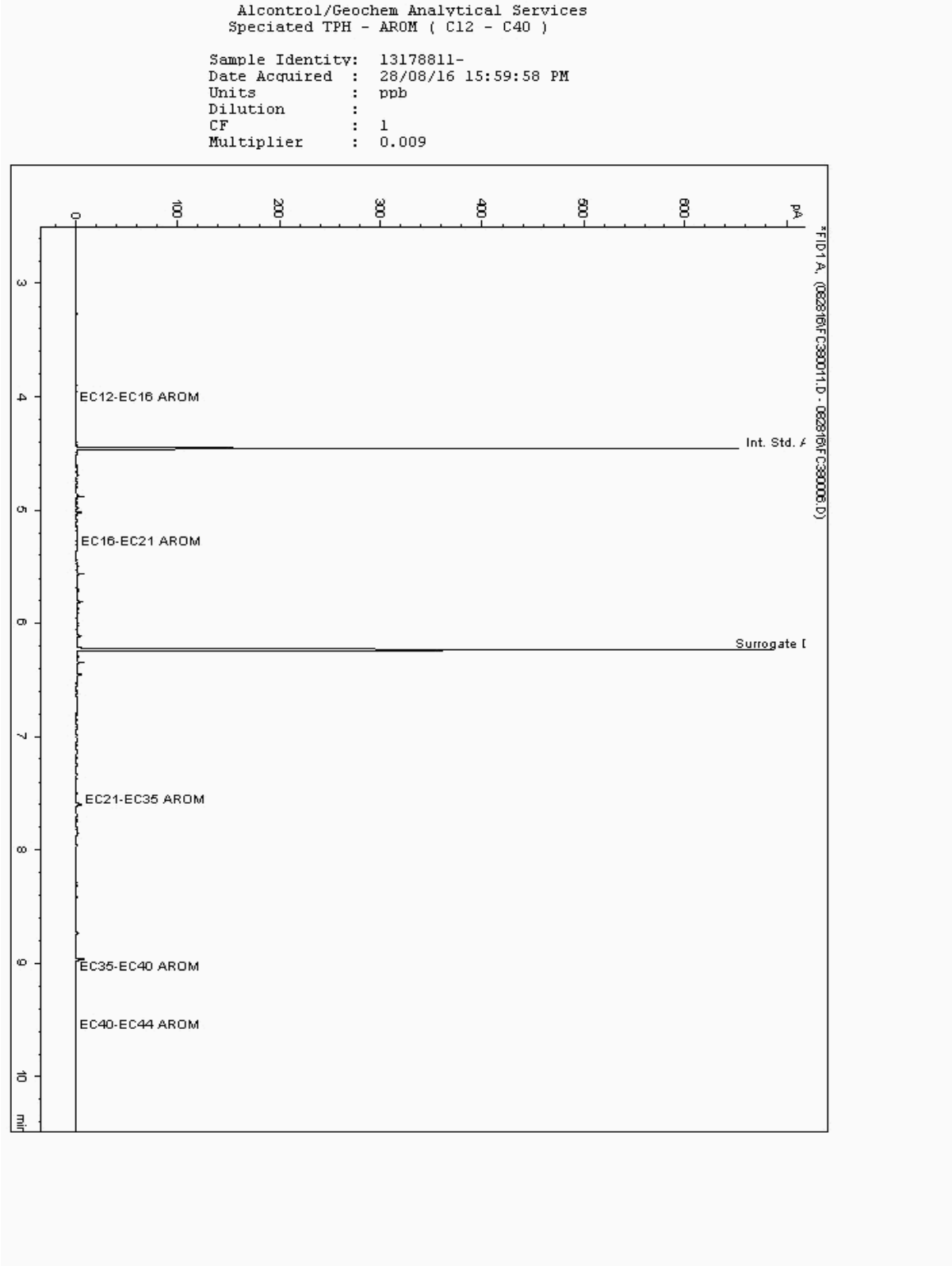


CERTIFICATE OF ANALYSIS

SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 14036681 **Sample ID :** BH208 **Depth :** 1.00



CERTIFICATE OF ANALYSIS

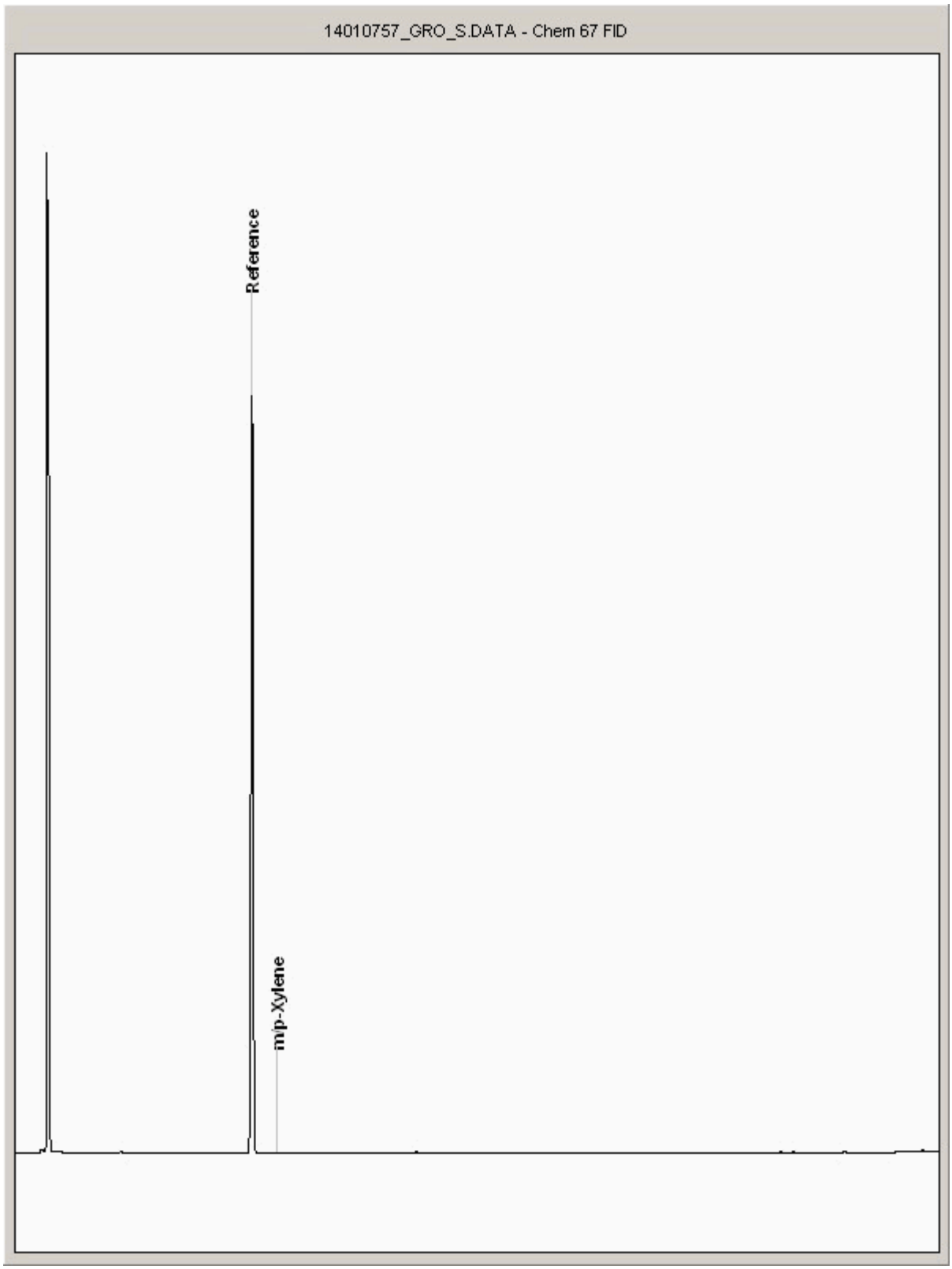
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010757
Sample ID : BH209

Depth : 0.30



CERTIFICATE OF ANALYSIS

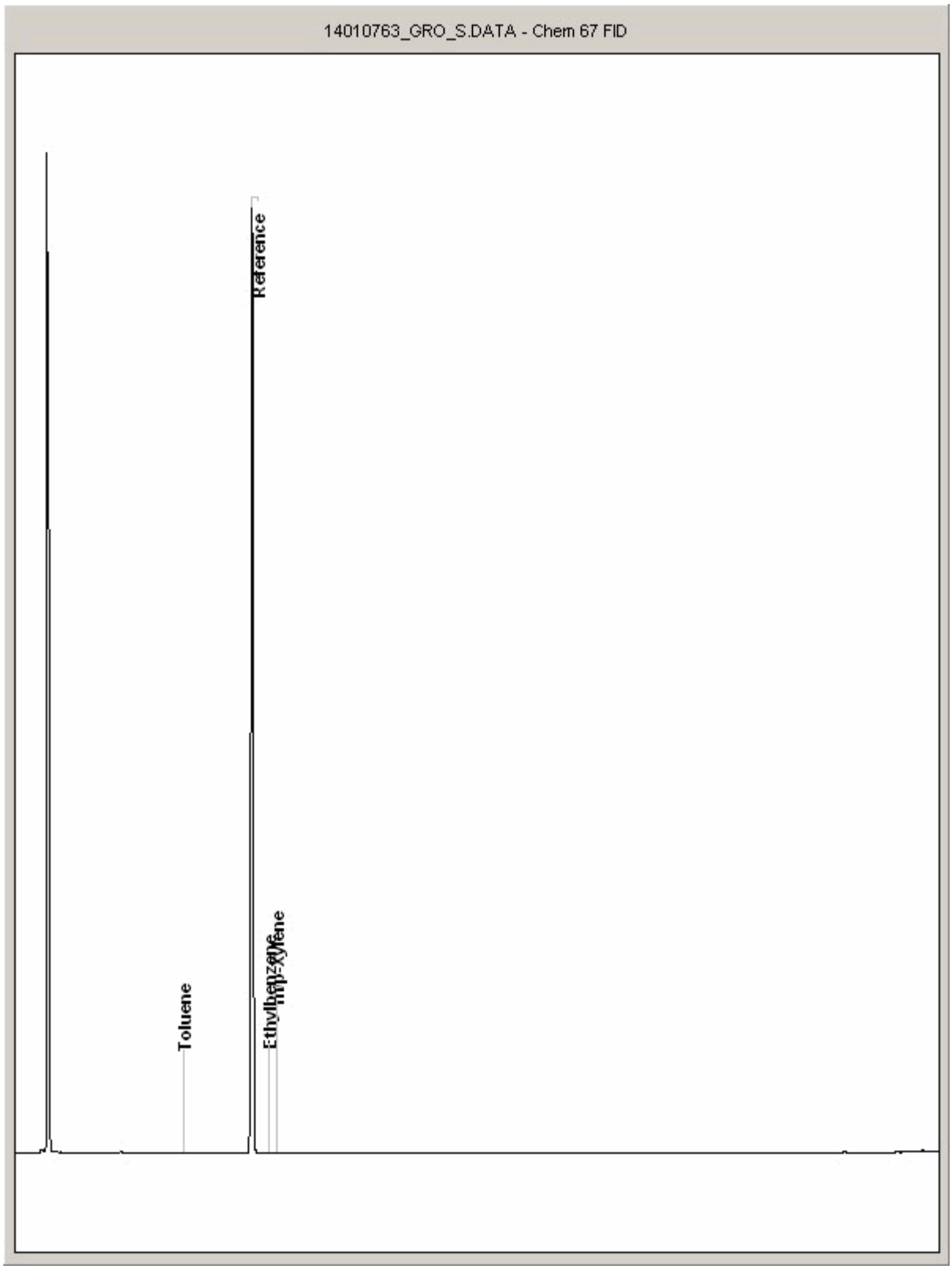
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010763
Sample ID : BH209

Depth : 1.00



CERTIFICATE OF ANALYSIS

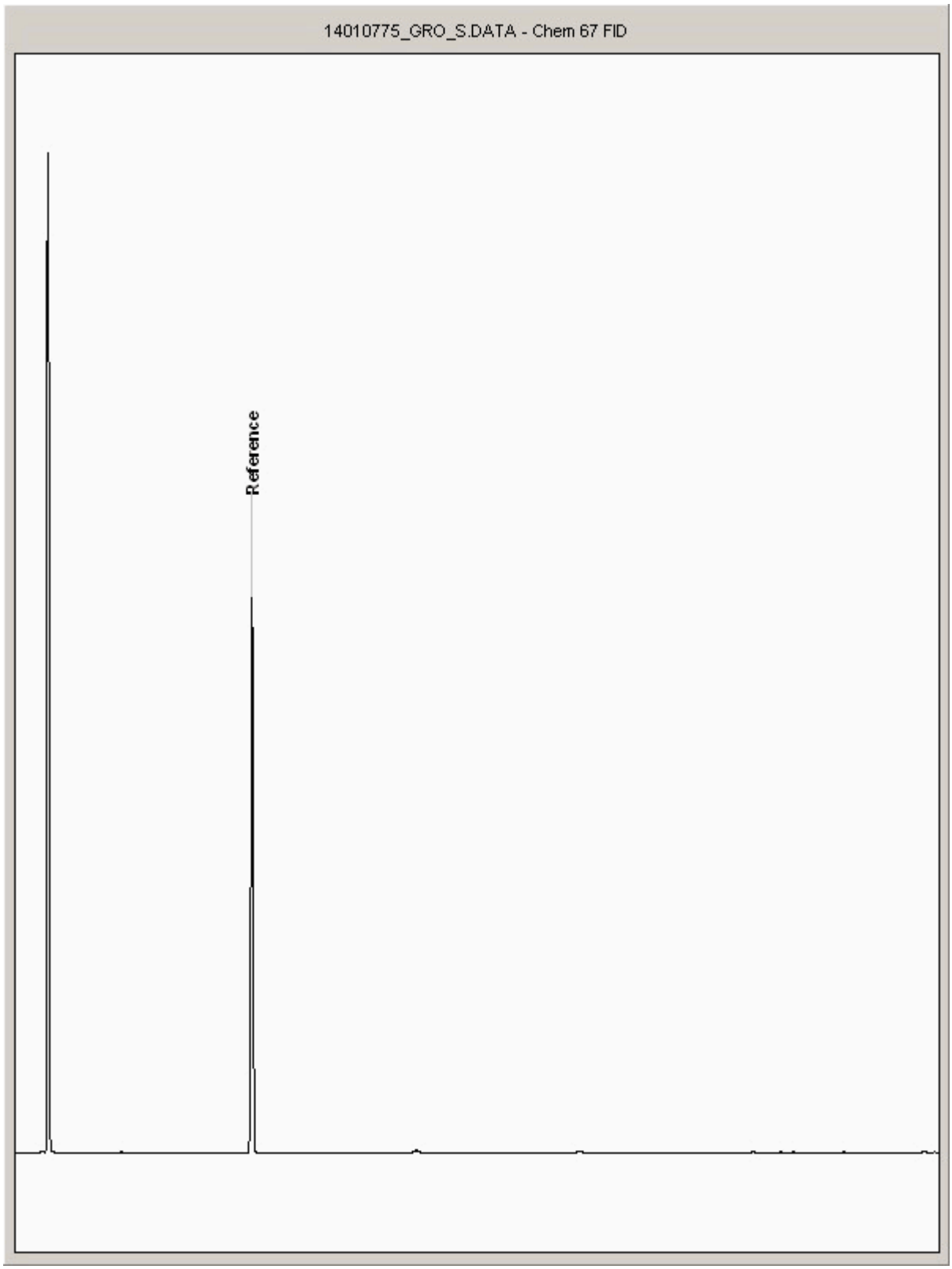
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010775
Sample ID : BH209

Depth : 2.10



CERTIFICATE OF ANALYSIS

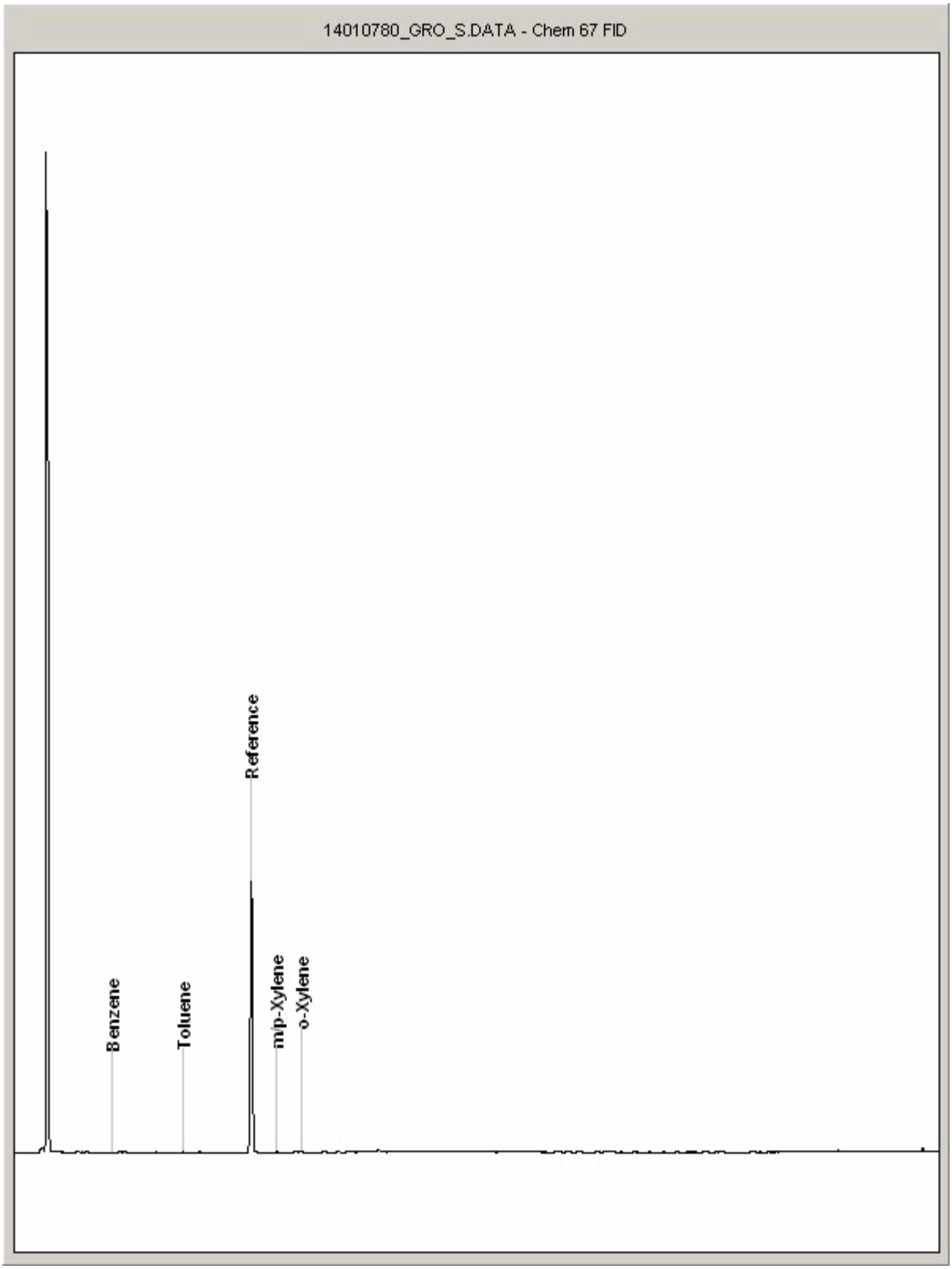
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010780
Sample ID : BH208

Depth : 1.00



CERTIFICATE OF ANALYSIS

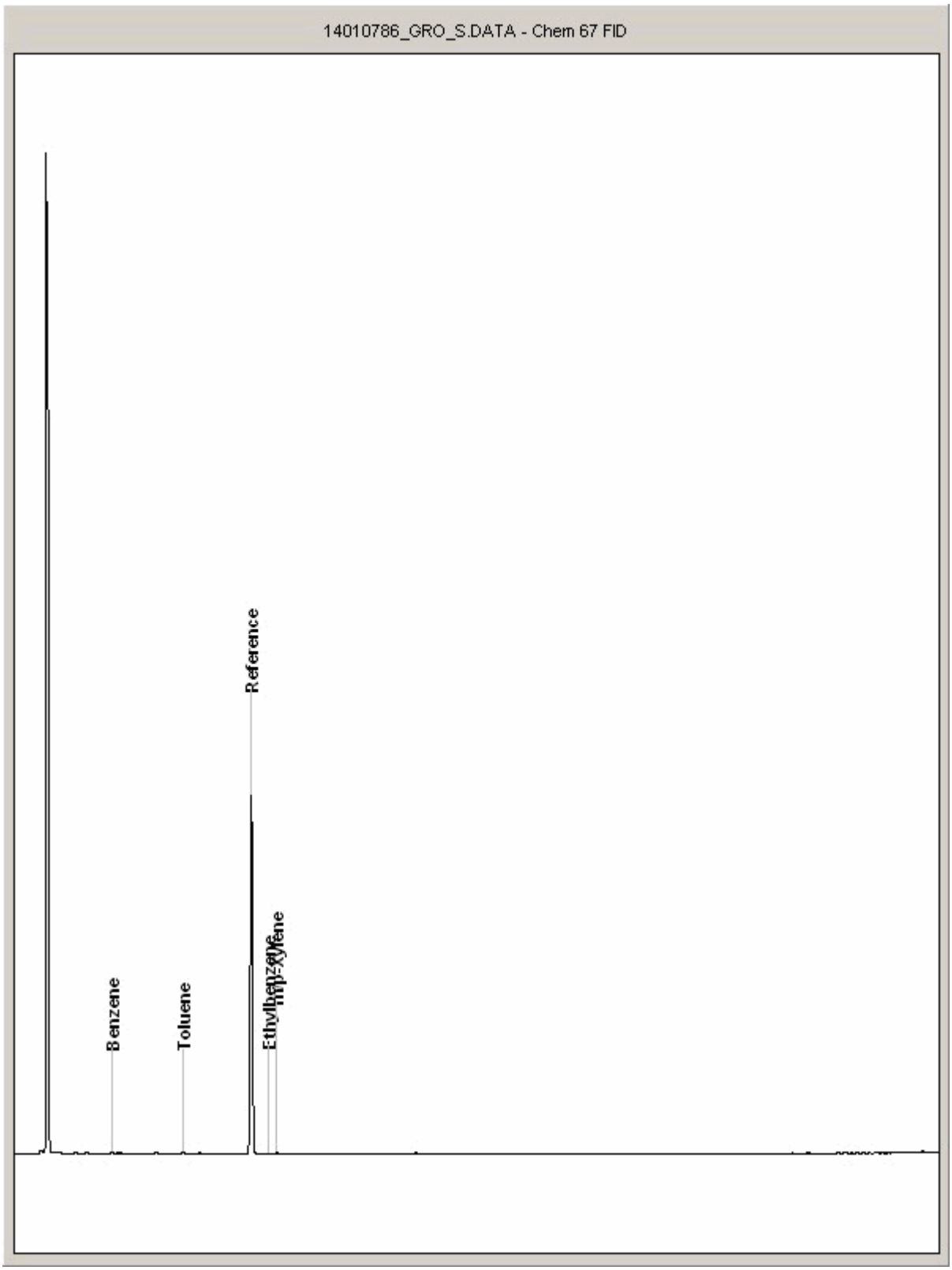
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14010786
Sample ID : BH208

Depth : 0.30



CERTIFICATE OF ANALYSIS

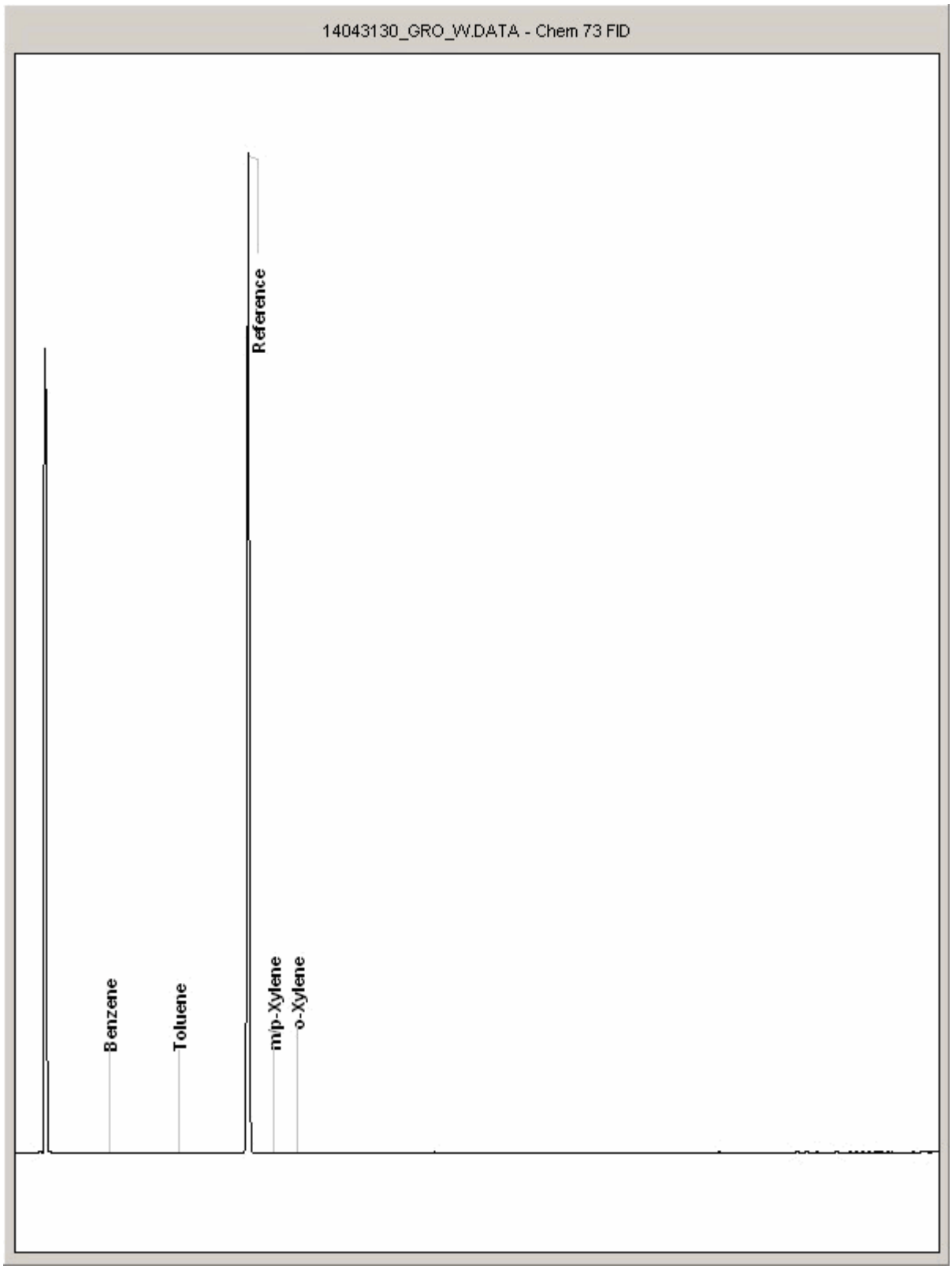
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 14043130
Sample ID : BH208

Depth : 1.00



CERTIFICATE OF ANALYSIS

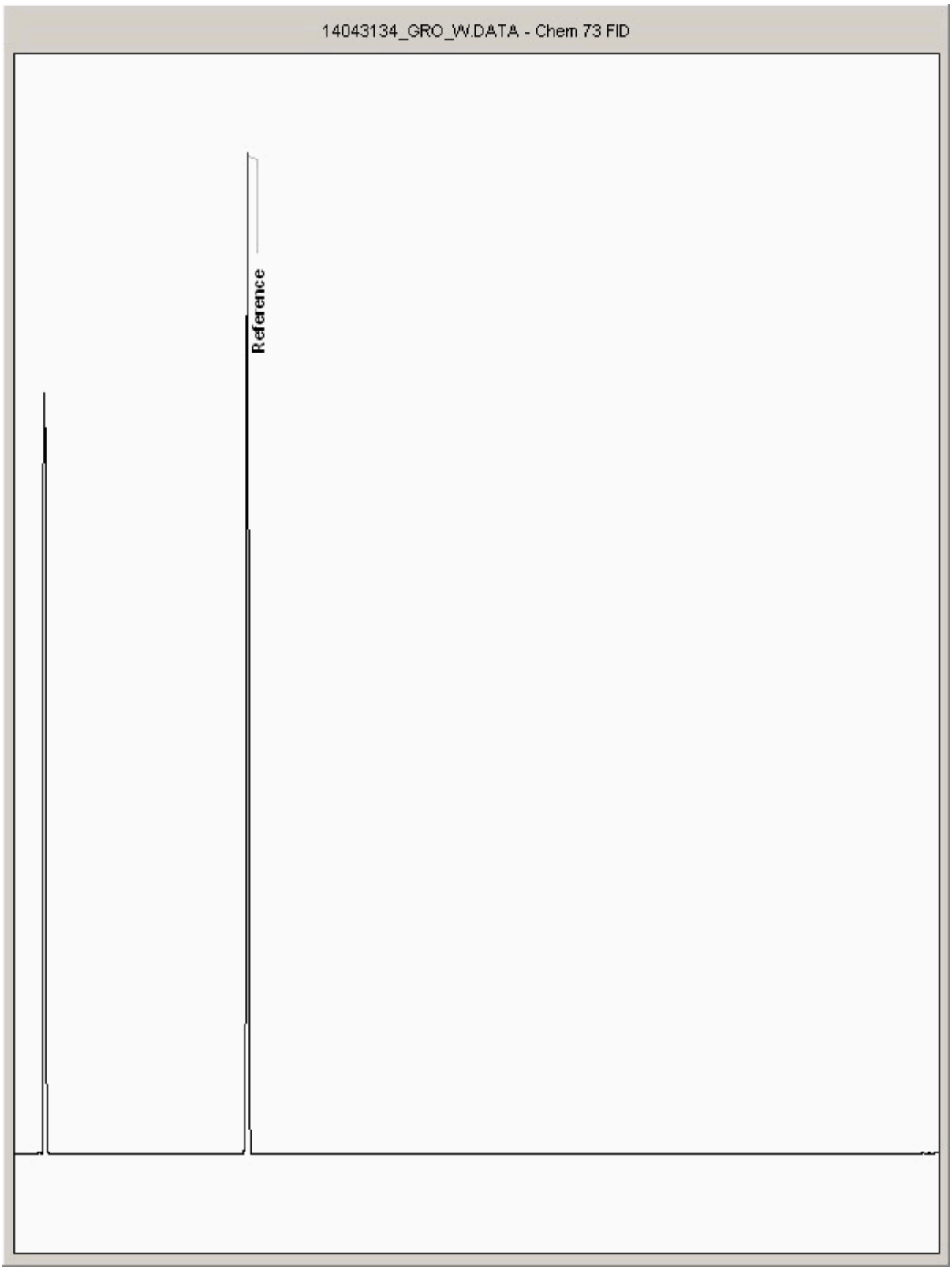
SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 14043134
Sample ID : BH209

Depth : 1.00



SDG:	160816-85	**Location:**	City Deal Tipner West	**Order Number:**	70015362-CLS
Job:	H_WSP_BRI-194	**Customer:**	WSP PB BBC	**Report Number:**	375448
Client Reference:	70015362	**Attention:**	Martin Weil	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt . However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment . Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect .

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

General

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than : - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix G

LIMITATIONS

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.

3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.

4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.

6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:

- **i.** The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
- **ii.** Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.

16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated

with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.

19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.

20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.

28. The data is presented and will be compared with assessment criteria.

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