

Supplementary Planning Guidance

DEVELOPING CONTAMINATED LAND

Approved by the Executive Member
for Planning, Regeneration,
Economic Development & Property
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*Prepared jointly with the Environmental Health
and Trading Standards Service's
Contaminated Land Team.*

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1. INTRODUCTION

- 1.1 This policy guidance note is one of a series which forms supplementary planning guidance (SPG) to **policy DC21** of the **Portsmouth City Local Plan: First Review**. The Modified Plan was published in June 2004. It also provides supplementary guidance to policy E40 of the adopted City Local Plan (December 1995). This note provides additional information on the approach which Portsmouth City Council will expect developers to adopt when dealing with sites which are, or may, be contaminated.
- 1.2 This SPG note is published for public consultation. Where necessary, revisions will be made as a result of comments received by consultees and other interested parties before its formal approval by the City Council. The contents of this note will be taken into account as a material consideration when determining planning applications where contamination is an issue.

Summary of the SPG

- *A large number of sites within Portsmouth are contaminated.*
- *Technical surveys and detailed information will be required for such sites as part of the planning process.*
- *This could have a significant impact on developer timescales.*

CONTAMINATED LAND IN PORTSMOUTH

- 1.3 Portsmouth's constrained coastal location and industrial and military past has resulted in a complex development history and a legacy of pollution, with a large number of sites having been contaminated by their previous uses. Moreover, significant areas have been reclaimed from the sea via landfill. Depending on the fill material, these may be capable of producing landfill gas, or may be underlain by peat and marine silts which can also produce gas. In addition, there are many former brick pits and quarries where clay, gravel and chalk were extracted for use in the construction industry. These pits were backfilled prior to the introduction of the Control of Pollution Act in 1974, and there is little or no information on the nature of the fill materials used. The potential for contamination in Portsmouth is therefore clearly widespread.
- 1.4 Problems associated with previously polluting land uses and MoD activities are not confined to particular parts of Portsmouth, but can be found throughout the city. The City Council has reviewed the history of all parts of the city to establish where there may be legitimate concerns about contaminated land. Information is being catalogued in a database of historic land uses, to enable the identification of sites which have the potential for contamination. This information will be used, together with the council's statutory planning powers, to ensure that any potential contamination problems are proactively addressed at the time of development. It is available to outside parties by contacting the Environmental Health & Trading Standards Service. A fee is charged for collating and providing this information.
- 1.5 The City Council has published a *Contaminated Land Inspection Strategy (June 2001)* to comply with the requirements of Part IIA of the Environment Act 1990. It also has a *Corporate Contaminated Land Strategy (March 2000)*, which sets out the broader policy issues in relation to land owned, leased or sold by the council. View at <http://portsmouth/pcc/residents/environmentandwaste/ewe/cplPBCInd.cfm>

NATIONAL CONTEXT

- 1.6 The Government's key objectives for 'brownfield' land and other sites which may be affected by contamination are set out in the DTLR's recent draft technical advice note "*Development on Land Affected by Contamination*" (March 2002). This highlights the Government's commitment to encouraging the redevelopment and beneficial re-use of previously developed land, while at the same time ensuring that any unacceptable risks to human health, buildings and the environment from contamination are identified and properly dealt with, as part of the development process. Once finalised and approved, the new technical advice note is intended to update and replace the advice currently set out within Planning Policy Guidance Note 23 "*Planning and Pollution Control*".
- 1.7 In line with the Government's approach, the City Council will continue to promote the development of brownfield sites and to support the appropriate, safe development of previously used land. The guidance in this SPG note is consistent with the approach set out in the DTLR's *Statutory Guidance on Contaminated Land (Circular 02/2000)* and the March 2002 Draft Technical Advice. The council will seek to ensure that any potential problems are identified by the developer as early as possible in the development process, and that developers address contamination issues positively and proactively **before** development commences.
- 1.8 Developers will also be encouraged to seek sustainable solutions to the remediation of contaminated land wherever possible. For example, the remediation of chemical contamination on site by experienced contractors can represent a more environmentally friendly option than the removal, transportation and disposal of contaminated material to sites some distance away, provided that the remediation provides a robust long term solution for the proposed land use. It is accepted that both the economic and environmental factors should be incorporated into selecting the remedial method used (Environment Agency reference 1).

WHAT IS CONTAMINATED LAND?

- 1.9 The statutory definition of contaminated land, in relation to sites that are previously used or already developed, is contained within *Part IIA of the Environmental Protection Act 1990 (section 78A(2))*. It comprises any land which appears to the local authority to be causing, or capable of causing significant harm, due to substances in, on or under it. A similar definition relates to the pollution of controlled waters. However, the mere presence of pollutants on a site does not necessarily mean that a local authority must take action to remedy the situation. Action will only need to be taken if the contamination presents a significant risk to a receptor, and a pathway exists by which the contaminant can reach the receptor.



- 1.10 Contamination may be present in a variety of forms. The contaminated substance could be in a solid state in the soil, dissolved or suspended in liquid, or present as a gas or vapour. It could even be in the form of radionuclides emitted from a substance on the site or an adjacent site. Moreover, the contaminants may arise not only from the application site itself, but also from adjacent land. It is immaterial whether the presence of the contaminants arises from human activities or whether they are

present naturally, the contamination must still be considered in a risk based framework.

CONTAMINATION AND THE PLANNING SYSTEM

- 1.11 Developers must be aware of the potential for land contamination at all stages in the planning process. Contamination can threaten public health and safety as well as the wider environment and economic activities through its impact on land users and neighbours. **Land contamination, or the possibility of it, is therefore a material planning consideration in the preparation of development plans, and in reaching decisions on planning applications.**
- 1.12 The Government's recent draft technical advice note gives clear guidance that a broader definition of contamination than that contained in Part IIA of the EPA (see paragraph 1.9 above) should be adopted when considering planning applications for the development or redevelopment of contaminated sites. The guidance contained in this SPG note will therefore be relevant in cases where the contamination in question does not fall within the statutory definition, as well as where it does. It will apply to any development site affected by contamination, or suspected of being so, where there could be risks to people, human activities or the environment.
- 1.13 However, where the land has been, or might be, considered to be contaminated under the statutory Part IIA definition, there will be an additional requirement on developers. In such circumstances, the land must, as a consequence of the development, no longer meet that definition in relation to the new use. In other words, the developer must deal with the contamination by an appropriate process of treatment, containment or removal. This approach is consistent with the DTLR's draft technical advice note.
- 1.14 Government policy towards tackling contaminated land through the planning system is that new development should deal with any unacceptable risks to health or to the environment, taking into account the land's actual or intended use - the '**suitable for use**' approach (see paragraphs 4.2 and 4.3 of PPG23). Any land which may contain potentially harmful substances must therefore be subject to a **formal risk assessment** prior to its development. All risks, both short and long term, must be identified and addressed by the developer via an appropriate risk management process, in order for the LPA to be confident that the site is suitable for its proposed end use.

MEASURES TO DEAL WITH CONTAMINATED SITES

- 1.15 The manner in which the City Council will seek to address the development of contaminated sites will depend on the nature and extent of the anticipated problems. Solutions to ensure that such sites are 'suitable for the intended use' could include:
- *choosing a sensible land use in areas of contamination, to minimise or remove the need for remediation (e.g hard landscape end uses);*
 - *raising ground levels to provide an appropriate depth of clean cap/cover over the materials, provided that the contaminated substances are not mobile;*
 - *using remediation technologies (for example bioremediation or cement stabilisation) to alter the nature of the chemicals to prevent them being a problem;*

- *removing and disposing of the contamination in a safe, legal and sustainable manner, where other options are not viable or appropriate;*
- *a combination of these solutions.*

Developers should note that some remediation methods will require an application for a Waste Management Licence from the Environment Agency. Approval of even mobile plant licence can take some time, so this needs to be built in to the development timescale. For more information contact the Environment Agency.

- 1.16 The technical appendices to this SPG give detailed guidance on the manner in which the City Council will expect specific contamination issues to be addressed. For sites where there is **chemical contamination** of the ground or waters, the City Council's approach will depend on the anticipated level of contamination (Annex A). For any site where water contamination is known or is likely to be an issue, the application and supporting information will also be referred to the Environment Agency for comment. Specific guidance on developments where **landfill gas** may be an issue is given in Annex B. The widespread reclamation / filling of land over past years means that this is a significant issue in some parts of the city, and, due to the relative shortage of developable land in Portsmouth and the Government's drive towards the re-use of brownfield land, increasingly, the City Council is receiving applications to develop such sites.
- 1.17 While there are differences in the technical approach to dealing with chemical contamination and landfill gas, the basic processes of pre-application discussion, site investigation, risk assessment, proposed remediation, active remediation and verification is common to all sites where contamination is an issue. The City Council's requirements upon developers applying for planning permission to develop contaminated sites are set out in section 2.
- 1.18 It should be noted that there are some parts of the city where the history of the site has caused contamination over a wide area, resulting in the need for a **comprehensive area-based remediation strategy**. In such areas it may not be appropriate to permit small-scale redevelopment which might prejudice the long-term comprehensive remediation of the larger area at a later date, in the wider public interest. Examples of sites in Portsmouth which are in need of widespread area based remediation include; the Tipner Regeneration Area, the Glory Hole at Eastney and Burrfields Road Clay Pits.
- 1.19 It is important to recognise that whilst contamination may pose risks to human health, it can also pose significant risks to the natural environment. For example, surface waters, ground water and ecosystems. In this context the natural environment may not only act as a receptor for contamination, but may also act as a pathway by which effects of historic contamination may be dispersed.

2. PLANNING APPLICATIONS AND PROCESS

- 2.1 **Policy DC21 (Contaminated Land)** of the City Plan Review states that permission will only be granted for development on or near contaminated land where appropriate and sufficient measures can be taken to deal with the contamination. Such measures must address the long-term safety of the development, including future management of the site. **Policy E40 (Public Health and Safety)** provides the equivalent policy context in the adopted City Plan. These policies are set out in Annex C. They will be the starting point in assessing any planning applications relating to sites on which contamination is known, or suspected, to be an issue.

PRE-APPLICATION DISCUSSIONS

- 2.2 The identification of contamination as an issue, or potential issue, will be based on initial information provided by the developer or information from the City Council's own database. The City Council will require developers to provide any further information necessary to determine the planning application, and may ask for reports on the investigation of contamination. **Anyone wishing to progress development on such sites should always liaise with the City Council in advance of submitting a planning application.** This will enable them to discuss what information is already available and what site investigation data will be needed, along with potentially appropriate land uses and draft remediation proposals. Planning officers will take advice on contamination issues from the City Council's Environmental Health officers, along with the Environment Agency where necessary.
- 2.3 Where contamination is known, or is suspected, to be a significant issue for the long-term safety of a site, the City Council will, in the first instance, encourage developers to seek to address contamination issues via the **appropriate use** of sites. The City Council may therefore support **less sensitive, low risk land uses**, for example commercial uses, on contaminated sites (chemical or gas) or 'soft end' uses on recent former landfill sites, so long as these are consistent with other plan policies. Developers should also consider carefully the **design and layout of the development**, especially in the case of larger sites affected by chemical contamination, where the contamination may not be evenly spread. For example, less sensitive uses, such as car parking or commercial buildings, could be placed over areas of higher contamination, enabling the sensitive uses, such as housing, to be located on areas of lower contamination (i.e. zoning the site). This has the benefit of mitigating the potential risks and it is also likely to reduce the cost to the developer of undertaking remedial measures.

DETERMINING PLANNING APPLICATIONS

Sites affected by significant levels of contamination

- 2.4 Where contamination is considered by the LPA to be a very significant issue and the developer is pursuing a sensitive end use or uses, consideration will only be given to approval of a planning application subject to conditions (see para 2.5) **if** the developer can demonstrate to the City Council's satisfaction that the effects of contamination can be safely and permanently reduced to an acceptable, safe level, via an effective remediation strategy. In such circumstances, developers will be required to **include with their planning application** information from **desk study** and **intrusive investigation** or **monitoring** (in the case of landfill gas), in accordance with BS10175. The application will not be registered until this information is provided. The required information will need to include a **quantified risk assessment** undertaken by a competent person, which is appropriate for the site and

the proposed uses, and which addresses all of the sources, pathways and receptors identified as being present. The risk assessment will need to demonstrate that remedial measures are available to deal with any hazards, in both the short and long-term. Detailed requirements in relation to chemical contamination and landfill gas are set out in Annexes A and B.

- 2.5 Site investigation and risk assessment may need to characterise the impact that the proposed development may have on controlled waters, as well as the effects that landfill gas and soil contaminants may have on human health. In such cases, when determining a planning application or assessing compliance with planning conditions, comments will be sought from the Environment Agency. On some sites, it may be appropriate to add specific conditions to address the potential impacts on controlled waters.

Sites affected by lesser levels of contamination

- 2.6 In circumstances where either the history of the site, or available information, suggests that some contamination is present, but not to such an extent as to necessitate the measures outlined in paragraph 2.4 above being undertaken prior to determination of the application, permission may be granted subject to a condition requiring:

- *provision of a detailed desk study documenting the site history and any potential contamination issues;*
- *intrusive investigation to delineate the nature and extent of the contaminants present;*
- *submission of a detailed remediation design document, incorporating appropriate indicative drawings, method statements etc. for approval by the City Council¹;*
- *nomination of an appropriate competent person to oversee and validate the work; and*
- *provision of sufficient validation information to demonstrate that the work was completed in accordance with the agreed design (section 2.9 to 2.13 below refers).*

Bullets 1 to 4 will need to be undertaken **prior to the commencement of development**, and bullet 5 **prior to occupation**. The majority of applications involving contaminated sites fall into this category. Basic guidance for applicants and potential developers is set out in the City Council's Planning Advice Note; '*Investigating Contaminated Land*'. Annex D gives some sample conditions.

- 2.7 In these circumstances, the extent of the site investigation will depend on the desk study findings, but should be agreed in advance with the City Council, to ensure that it will be adequate to address the condition. Where the site investigation and subsequent risk assessment identifies the need for remediation, a competent person (CLR12, 1997, Section 2.2.3) must design an appropriate remediation strategy. The remediation strategy and the justification for the methods proposed should be in accordance with current good practice².

¹ *The detailed design must specifically address all migration pathways and protection of services.*
² *See Section 2.7 of the Environment Agency Research and Development Report 66, 'Guidance for the Safe Development of Housing on Land Affected by Contamination'. Further guidance on the design and specification of remedial measures is also given in the CIRIA reports, Remedial Treatment for Contaminated Land, in particular volumes SP104 to SP112.*

- 2.8 Where planning permission is granted subject to a condition requiring information to be submitted prior to the commencement of development (see Annex D, sample condition 1) developers **must** ensure that the requirements of the condition are complied with, to enable the condition to be discharged **before any development commences on site**. Failure to do so will result in the development being unauthorised. This condition may be discharged on a phased basis, after each of the separate requirements is complied with. Developers must also ensure that, where a remediation scheme is required, the agreed scheme must be fully implemented, and validated, **before the development is first occupied** (see sample condition 2). Failure to have this condition discharged prior to occupation of the development will lead to a breach of condition, for which the developer may be liable to prosecution and to enforcement action. On large development sites it may be possible to have a staged completion of the remediation and validation works, to enable a phased occupation of the development, subject to prior written agreement with the LPA.

VERIFYING COMPLETE WORKS

- 2.9 For both chemical contamination and gas remediation schemes, the developer will be required to provide written verification that all works have been completed in accordance with the agreed design. This is because much of the remediation work will have taken place below ground level, or be buried beneath structures or hard landscape areas, and consequently it will not be possible for the City Council to confirm by inspection that the works have been completed satisfactorily. The detail required to verify that the works were completed in accordance with the agreed details will vary depending on the complexity of the remediation project.
- 2.10 Whilst ideally validation on all sites should be by independent professionals, for small projects, where there is a limited amount of contamination to remove, and/or placement of a 'precautionary' membrane and/or provision of ventilated areas forms part of the scheme, it would be acceptable for the Engineer or Site Manager supervising the work to provide:
- written assurances that all works were completed in accordance with the agreed details (this should specifically refer to the relevant design report and any relevant drawing references etc.);
 - copies of drawings detailing any minor amendments to the design of the remediation scheme which happened on site (i.e. 'as built' construction drawings);
 - some photographic evidence of key construction elements related to the remediation works (e.g. photographs of the completed excavation, membrane placement or sealed service penetrations); and
 - verification that materials imported to replace contaminated materials, or to create soft landscaping, were from a clean source, with appropriate validation test data for the volume of material imported, and/or materials left in situ or reused at the site.
- 2.11 Larger, more complex schemes may involve significant areas of contamination remediation, the removal of migration pathways, or the need for specific gas control measures. In such cases, the remediation programme should be carefully documented in order to demonstrate that the remedial goals have been achieved. A validation report will need to be provided by a competent experienced

engineer/consultant **independent** from the main contractor, who has specifically witnessed the works. That person would need to provide and certify all the information set out in paragraph 2.10. They must also provide a more comprehensive photographic record and a Construction Quality Assurance (CQA) report to certify that all works were completed in accordance with the agreed design.³

- 2.12 The developer or their independent representative should agree with officers from the City Council's Environmental Health & Trading Standards (EHTS) Service regarding the extent of the validation documentation needed **before** works commence. This will ensure that adequate records are kept to enable the planning condition regarding site investigation and remediation to be discharged upon completion of the scheme.
- 2.13 In some circumstances, particularly where remediation is required to address risks from methane and / or volatiles, monitoring data will need to be collected during and post construction (from boreholes, underfloor voids, collection pipework etc.) to demonstrate that the remedial measures have achieved the design criteria. This will also be appropriate where bio-remediation or in-situ remediation of chemical contamination is proposed. The extent of the monitoring to be undertaken must be agreed in advance with EH&TS officers as part of the remediation design. The data should be included in the final validation report, along with the consultants' interpretation of it, to confirm that the design criteria were met.
- 2.14 Where the remediation measures will require any ongoing maintenance or control, the competent person will need to submit, with the validation report, an Operations and Maintenance Manual (OMM). This document must set out the maintenance and control procedures, specify who will be responsible for them, and indicate the frequency of maintenance and inspection needed, etc. In addition, it must clearly set out any emergency procedures to be followed in the event of an incident.

TIMESCALES AND PROGRAMMING

- 2.15 Developers should note that site investigation works alone can take **up to 3 months** to complete. **Sufficient time must be set aside in the development programme to enable the necessary reports and drawings to be prepared and allow a period of time for consultation and approval of the reports with the City Council's Planning Service, before proceeding to the next phase.** It is important that developers realise that planning officers will need to refer all reports/drawings/information to a competent person experienced in the development of contaminated land (namely an officer within the Environmental Health and Trading Standards Service's Contaminated Land Team). Reports for sites where the presence of landfill gas or the potential for pollution of controlled waters is an issue may also need to be referred to the Environment Agency (see paragraph 2.5). For this reason, developers must allow a **minimum** period of **28 days** from the date of submission of their reports for consultation prior to approval. It should be noted that remediation works may also need to commence in advance of development, and allowances should be made for this when calculating timescales.

³ *It is recognised that changes to the agreed design may be required due to unforeseen ground conditions etc. The report must highlight any changes that have occurred and why. Full justification should be provided to demonstrate that the changes are acceptable and that the remediation objectives have been met. Any significant change to any of the agreed design details must be submitted to the City Council's Planning Service in writing and agreed **in advance** of the works taking place.*

- 2.16 Developers should also be aware that the conditions applied to any planning consent associated with a contaminated or potentially contaminated site will be of a phased nature (see Annex D). A 28 day period will therefore be needed between consultation and approval of each phase of the development process. The **minimum** likely timescale requirements for each phase (assuming a simple site and a 'prior to commencement of development' condition) are set out in the table below. These are offered as a guide to assist developers when preparing their development programme. **Longer timescales will apply where sites are badly contaminated, and/or the technical studies and remediation strategy need to be undertaken before permission is granted.**
- 2.17 Where developers submit the details and seek approval of the documentation in accordance with the requirements of the planning conditions, a phased discharge may be possible. The development cannot be occupied until all of the requirements of the 'prior to occupation' condition have been met and the details have been accepted by the Planning Service.
- 2.18 Where developers proceed from one phase to the next without first obtaining the acceptance of the Planning Service to the necessary documentation, they do so at their own risk. If the information provided proves to be inadequate, the developer will be responsible for resubmitting adequate documentation and undertaking any additional site investigation or remediation works subsequently shown to be necessary. This could have a major cost implication, especially if construction work has already commenced and subsequently needs to be aborted to facilitate the additional work. If the City Council becomes aware that the developer is not submitting the necessary documentation in a phased manner to comply with the condition, a 'stop notice' may be served.

Minimum likely timescales for development involving contaminated land

<i>Phase 1:</i>	<i>Preparation of desk study report and site investigation design (unless already available from pre-purchase audit)</i>	<i>4 weeks</i>
	<i>Consultation/approval of report/SI design by Planning Service</i>	<i>4 weeks</i>
<i>Phase 2:</i>	<i>Contamination investigation, analysis and report</i>	<i>4 weeks</i>
	<i>Landfill gas investigation(absolute minimum period see B11)</i>	<i>8 weeks</i>
	<i>Risk assessment (if required)</i>	<i>4 weeks</i>
	<i>Consultation/approval of report and conclusions</i>	<i>4 weeks</i>
<i>Phase 3:</i>	<i>Preparation of remediation design documents</i>	<i>4 weeks</i>
	<i>Consultation/approval of design report</i>	<i>4 weeks</i>
<i>Phase 4:</i>	<i>On site work supervised/validated by the competent person</i>	<i>(site specific timescale)</i>
	<i>Preparation of a comprehensive validation report</i>	<i>4 weeks</i>
	<i>Consultation/approval of validation report</i>	<i>4 weeks</i>

CONTACTS:

For further information or guidance on the contents of this note, please contact the following:

Planning Service: *(for advice on planning applications)*

General Enquiries ☎ (023) 9283 4334

Environmental Health & Trading Standards Service - Contaminated Land Team:

(for advice on technical issues relating to contaminated land)

Environmental Protection Officer (East) – Alison Darlow ☎ (023) 9284 1399

Environmental Protection Officer (West) – Sarah Haines ☎ (023) 9284 1679

ANNEX A

SITES AFFECTED BY CHEMICAL CONTAMINATION – TECHNICAL ADVICE

Sites involving significant levels of contamination

- A1 As set out in paragraph 2.3, the City Council will, in the first instance, encourage developers to seek to address contamination issues via both the **appropriate use** of sites and via **design and layout**. In some circumstances, however, chemical contamination may be so significant that highly sensitive uses (such as housing with gardens) would not be considered appropriate.
- A2 Developments involving sensitive uses on sites significantly affected by chemical contamination will only be permitted if the contamination can be safely and permanently reduced to acceptable safe levels via an **effective remediation strategy**. The safe levels should be assessed by rigorous **quantitative risk assessment** (eg 'CLEA' - Contaminated Land Exposure Assessment) taking account of all hazards, pathways and receptors. The assessment should also address issues such as public perception and wider environmental impacts. If significant levels of contamination are likely to remain near to the surface⁴ below such sites, there will continue to be a presumption against highly sensitive end uses, such as housing with gardens.
- A3 Where there are wider potential environmental impacts, it is important to assess the effects of the contamination on the natural environment, for both the construction and operational phases, and identify appropriate remedial targets for controlled waters (which includes surface waters, coastal waters and groundwater (EA reference 2 & 3)). In addition, it is recommended that the remedial methodology inform the surface water drainage arrangements (and possibly vice versa). For example, soakaways should not be located in areas where contamination remains unremediated, and considerable caution should be exercised if the developer is considering the use of sustainable drainage systems on contaminated sites.
- A4 Where a developer's remediation strategy is reliant upon source removal involving **'dig and dump'** to make the site safe for its proposed use, the City Council will need to consider the effects of such issues as excavation (dust, noise, volatile emissions) and lorry movements on local communities. A balance will need to be struck between the overall social and economic benefits of the development (including the remediation proposals) and the temporary impacts of the remediation process. It is important that developers consider both local environmental issues (such as nuisance) and the wider sustainability implications of their proposals (particularly in relation to the transportation of material for disposal) when determining their remediation strategies. It is advisable to contact the Environment Agency to discuss detailed methods to be used in undertaking remediation to ensure that the activities

⁴ *The interpretation of what would be considered "near to the surface" will depend on the type and level of contamination present. For example if volatiles/hydrocarbons are present, "near to the surface" may be considered as above 3m depth, whereas with insoluble metals it may be 2m for high concentrations or 1m for only slightly elevated concentrations. Volatile contaminants should only be left in the ground at trace levels, in particular in the vapour phase. This is because if they migrate to the surface and/or enter buildings, very low concentrations can cause an odour nuisance. They can also cause risks to human health and an explosion hazard.*

occurring on site are compliant with Waste Licensing and other environmental protection legislation.

- A5 Where a developers' remediation strategy is dependent on a **cover system**⁵, the design of this system must ensure that the protective functions are not impaired:
- when services are repaired or new services need to be installed at a later date; or
 - where 'normal' construction works are undertaken, for example excavation of ponds, erection of fence posts, construction of foundations for out buildings etc.
- In order to achieve this, the developer will normally be expected to ensure that a minimum of 1 metre of clean cover is present at the end of the works. A physical barrier is usually provided at the base of the cover to prevent inadvertent contact with the remaining contaminated ground.
- A6 The future **maintenance arrangements** for any proposed development, including ongoing management of remedial measures where necessary, will also be important considerations. The City Council will need to be satisfied that where a remediation strategy is reliant upon future maintenance and site controls to ensure its effectiveness, an appropriate, realistic and viable maintenance strategy is proposed. Where this is reliant upon the future site occupiers or a management company, the City Council will need to be satisfied that the persons or organisation responsible will have the ability and means (including funding) to undertake such functions. In some cases it may be necessary to require future monitoring to ensure that the integrity of any containment scheme is maintained or that proper management is in place (for example, for groundwater remediation schemes)⁶.

Sites affected by lesser levels of contamination

- A7 In circumstances where either the history of the site, or available information, suggests that **some** contamination is present, permission may be granted subject to a condition requiring the completion of a desk study and intrusive investigation prior to the commencement of development. Basic guidance for applicants and potential developers is set out in the City Council's Planning Advice Note; *'Investigating Contaminated Land'*. Annex D gives some sample conditions.
- A8 In these circumstances, the extent of the site investigation will depend on the desk study findings, but should be agreed in advance with the City Council, to ensure that it will be adequate to address the condition. Where the site investigation and subsequent risk assessment identifies a need for remediation, a competent person must design an appropriate remediation strategy. The remediation strategy and the methods proposed should be in accordance with current good practice⁷. Once the remediation measures are agreed with the City Council, the condition will only be

⁵ *Developers should note that cover systems will not always be a suitable form of remediation on contaminated sites. For example, cover systems are not effective against contaminants that can move laterally through the ground. They will not be suitable in isolation where gases are present in the ground or groundwater contamination is a significant issue.*

⁶ *Planning conditions may also be necessary to protect or enhance existing remediation measures associated with a previous development.*

⁷ *See Section 2.7 of the Environment Agency Research and Development Report 66, 'Guidance for the Safe Development of Housing on Land Affected by Contamination'. Further guidance on the design and specification of remedial measures is also given in the CIRIA reports, Remedial Treatment for Contaminated Land, in particular volumes SP104 to SP112.*

discharged once written verification has been received confirming that **all** works were completed in accordance with the agreed remediation design (section 2.9 to 2.14 refers).

- A9 Where any contamination is found to be present it will be essential to consider the potential risks to the natural environment. In this context the text at paragraph A3 will also be relevant for these sites.

- A10 For large development sites it may be possible to have a staged completion of the remediation and validation works, to enable a phased occupation of the development, subject to the prior written agreement of the LPA..

ANNEX B

MEASURES ASSOCIATED WITH LANDFILL GAS – TECHNICAL ADVICE

- B1 The City Council has had considerable experience of development involving landfill sites and the remediation of areas that were developed prior to the introduction of guidance on such matters. This has demonstrated the need to formulate a strategy to ensure that only developments which can be guaranteed safe in the long-term are supported by the City Council. The City Council's detailed requirements for proposals affecting landfill are set out below.

Characteristics of landfill gas

- B2 Landfill gas is predominantly made up of methane and carbon dioxide with many other trace gases. The gas is generated by the degradation of organic materials such as domestic waste, peat, dredging spoils and timber, and so can be created by either man-made or natural deposits. In a landfill setting, the gas either moves through the waste mass and vents to the atmosphere at the site surface, or migrates laterally off-site through the ground. If the gas enters an enclosed space and mixes with air, there is the risk of explosion or fire. Where the gas displaces oxygen, this can pose an asphyxiation risk. Moreover, some trace gases such as hydrogen sulphide are toxic and odorous, while others such as benzene are carcinogenic.
- B3 The development of a site can have a significant impact on landfill gas generation and migration. It can alter gas generation rates by changing the ground water level, or by introducing or removing oxygen. It can also block traditional venting pathways by the introduction of buildings and hardstandings, or it can open up new pathways for migration, for example, along service routes or via foundations.
- B4 For the purposes of this guidance, a gassing site/landfill is defined as one which is known to be generating, or has the potential to generate, significant quantities of landfill gas. This will normally include sites where household, industrial and commercial waste, or combinations thereof, have been, or are being, landfilled. It will also include sites underlain by a significant layer of peat or alluvial sediments.

Redevelopment of sites involving landfill gas

- B5 Landfills can, with great care, be brought back into beneficial use. Ideally, the most appropriate use for gassing landfills is a **soft end use**, such as amenity open space, as set out in PPG 10, draft WMP No 26E and WMP No 27. However, there is often pressure to redevelop for a **hard end (built development) use**, and, given the correct approach, this may be possible to achieve. A number of different building techniques can be used to prevent ingress of gases into buildings⁸ (for example, one piece floor slab, incorporation of a gas membrane and inclusion of passive under-floor ventilation). Whole site solutions may also be produced to mitigate site risks. Each application has to be considered on a site specific basis to determine if it can be made suitable for use in both the short and long-term. It is the latter which presents the greatest difficulty, as materials may degrade, be prejudiced by subsequent works at the site, or even site settlement.
- B6 As with sites affected by chemical contamination (paragraph A5), **future management** is an important consideration for gassing sites, especially where a hard

⁸ CIRIA 149: 'Protecting Development from Methane' sets out the various construction methods in more detail.

end use is proposed. It is preferable to have a site under the ownership and management of a single organisation rather than multiple owners. For example, it is far more difficult to control the actions of a number of individual owners or householders than the actions of employees in general industrial or commercial developments. Furthermore, Health and Safety legislation will also be applicable to the managers and employees of commercial organisations. Individual householders, and especially children, are less aware of the need to maintain safety systems in their own home. Due diligence audits carried out by qualified environmental consultants are extremely rare in the case of a house or flat purchase.

- B7 In view of the above, the City Council will seek a legal (Section 106) agreement with the developer to maintain the site in one ownership. If the land is not to be retained within a single ownership the developer must demonstrate to the satisfaction of the City Council how the control of the remediation measures, future management and funding will be guaranteed in the long term (where appropriate via a Section 106 agreement) before any consent is granted.

Criteria for assessing applications

- B8 The City Council is required to consult the Environment Agency regarding any proposed development **on or within 250 metres of sites notified by the Agency**.⁹ These notified sites are normally former or active landfill sites which are either known to be generating, or have the potential to generate landfill gas, or sites where so little information is known that a precautionary approach is needed. When considering an application in relation to such a site, both the Environment Agency and the City Council will need to take into account the following variables:

- *the site history (desk study);*
- *the nature of the materials (inert, organic, domestic or commercial waste?);*
- *the gas generation potential of the material (depth of waste, degradable content, volume etc.);*
- *the age of the waste (development is not likely to be appropriate if waste is less than 15 years old, unless the material is completely inert);*
- *monitoring information (gas concentration, flow rates in boreholes, the frequency and distribution of gas concentrations, estimated emission rates and whether there is enough data to make a judgement);*
- *any other contamination issues which could impact the development or be detrimental to the gas protection measures;*
- *site geology;*
- *distance from site (proximity to the waste/gas source) and topography;*
- *nature of the proposed development and potential pathways;*
- *availability of a 'competent' person to maintain the measures;*
- *potential for a change in the gas regime with time (for example, an increase in gas generation due to changing groundwater levels);*
- *feasibility of selecting less sensitive land uses.*

This is in line with current good practice guidance (CIRIA 149).

Desk study, site investigation and gas monitoring

- B9 Before determining an appropriate design for both a development and its gas protection measures, the developer must employ a competent consultant to undertake a desk study. This should identify:

⁹ *General Development Procedure Order (1995) Article 10 (1) (x)*

- all potential sources of gas and their generation potential;
- all potential contaminants; and
- all migration pathways.

A site investigation and gas monitoring will be required to confirm the gas regime expected from the desk study. Sufficient wells will be required to characterise the site in terms of the gas regime, the characteristics of the ground and the nature of the organic material present. The number, location and construction of the wells should be agreed in advance with the City Council before installation commences.

- B10 The competent person appointed to undertake the desk study and monitoring should also give due consideration to which gases to test for. Site history and any evidence of odours present on the site or in boreholes should be used to determine an appropriate suite of tests. For example, in addition to methane, carbon dioxide and oxygen it may be appropriate to test for hydrogen sulphide and/or volatile gases.
- B11 The gas monitoring data should record the peak and background gas concentrations, flow rates, differential borehole pressure, atmospheric pressures (including rising or falling pressures) and water levels. A minimum of six sets of gas monitoring data will be required, including at least three visits targeted to periods of low and falling pressure. Where the site is adjacent to the sea, and the groundwater below the site could be subject to tidal variation, representative monitoring must be undertaken across the tidal range, including a spring tide.
- B12 The landfill gas investigation must be undertaken in accordance with current good practice, by a competent and experienced person using properly calibrated and appropriate equipment¹⁰. If the results of the gas monitoring give unusual or variable results, or results that are not consistent with the desk study, further monitoring beyond the six sets of data may be required.

Specific types of development

- B13 The remainder of this section sets out development constraints and relevant issues for different types of development.

Houses on or within 50m of a landfill or gassing site

- B14 The City Council will not normally support proposals to build houses on a gassing landfill or a site that has the potential to generate significant quantities of landfill gas, or within 50 metres of the boundary of such a site. This is because gas entry routes may still occur into buildings despite the provision of gas control measures. This could be due to defective construction, or by gas protection measures being compromised by the occupiers, either intentionally or by accident. For example, the conversion of integral garages into habitable rooms or the construction of new walls or services could damage the gas membrane.
- B15 Where private gardens accompany the houses, there is also the potential for the subsequent erection of conservatories, greenhouses and sheds, unknown to the planning authority, even if permitted development rights are removed. Such structures, erected by occupiers, are unlikely to contain purpose-designed anti-gas

¹⁰ Guidance on gas monitoring can be found in:
'The Monitoring of Landfill Gas', Second Edition, published by the Institute of Waste Management.
'Methane Investigation Strategies', Raybould et al, 1995 (CIRIA 150).

ingress measures, which could lead to a risk of landfill gas building up in any confined space. Other miscellaneous works to gardens could also have an adverse impact. For example, the creation of hardstandings, disabled access ramps or raised flowerbeds may block gas venting pathways, while the construction of ponds or swimming pools may breach capping layers.

B16 The following circumstances could, however, provide exceptions to the above:

- Sites where a waste licence has been issued which specifically excludes biodegradable material, **and** records (inspection reports and monitoring results) indicate beyond reasonable doubt that the specific requirement of the licence was (and where relevant, is being) complied with throughout the operational life of the site. In such circumstances, monitoring / risk assessment must demonstrate that no unacceptable risk to current or subsequent occupiers will arise (see below).
- Sites where a thorough, risk-based site characterisation has been carried out which has demonstrated that landfill gas is not present in significant quantities, and the notified site does not have the potential to subsequently generate significant quantities of landfill gas (i.e. the site has stabilised both biologically and physically). Such a risk assessment, and proposed remediation measures, must demonstrate that no unacceptable risk to current or subsequent occupiers exists from gas or other contaminants.
- Sites where comprehensive site investigation and monitoring have been undertaken, demonstrating that the majority of the site has stabilised (biologically and physically), although there is evidence of small area(s) where elevated gas concentrations remain, referred to as hot spot(s). Such areas may be dealt with by careful delineation and treatment or removal of gassing wastes, or revisions to building layouts, such that houses and gardens remain outside the sphere of influence. A 50 metre 'stand off zone' is recommended, however, this will need to be a site specific decision.

Managed apartments / flats on or within 50m of a landfill or gassing site

B17 Managed apartments / flats, *without private gardens*, would only be considered where the developer has submitted adequate information to demonstrate that it is a very low risk gassing site where the waste (or other gas source) is nearing stabilisation both physically and biologically. This would require comprehensive site characterisation, risk assessment and the design and construction of comprehensive anti-ingress measures. Private gardens would not be acceptable.

B18 When reviewing such an application the City Council will give due consideration to:

- wider site safety issues (e.g. contamination hazards, combustion hazards, etc.);
- ambient air quality (e.g. from volatile or trace gases);
- the anticipated life expectancy of the protection measures;
- the size and experience of the management company; and
- the operations and maintenance procedures that they propose.

The management company would need to demonstrate that they have the knowledge, experience and resources over the life of the development, to manage and maintain it safely at all times. For example, it would not be acceptable for a large developer to pass the development on to a small management company which is the responsibility of the residents, as they would not have the resources or knowledge to ensure appropriate control in the long term (see also paragraphs B6 and B7). The developer would have to demonstrate that the gas remediation design could operate

efficiently and passively at all times, with minimal requirements for maintenance. An active system would not be considered appropriate for a sensitive end use such as residential apartments.

Houses which are 50 to 250 metres from a landfill or gassing site

- B19 Where there is a proposal for housing within 50 to 250m of a landfill or other gassing site, permission will only be granted subject to conditions requiring site investigation, risk assessment and design control measures to be submitted to and approved by the City Council. If the site in question is significantly gassing, the City Council may require that the investigation and risk assessment be carried out before determining the planning application.
- B20 In certain favourable geological and topographical conditions, engineered containment barriers between the gassing site and the application site could be considered. However, this may only be appropriate where a full characterisation of the gassing landfill has been obtained, or the applicant gains access to the gassing landfill to undertake such work. In such cases the City Council would need to be satisfied that:
- landfill gas could not migrate around the end points of any discontinuous barrier; and
 - the barrier would be effective in the long-term and not require maintenance.

House extensions and conservatories

- B21 Where planning permission is required, extensions or conservatories to existing houses located **on** landfill or other gassing sites will not normally be permitted for the reasons outlined in paragraphs B14 and B15 above. They may, however, be acceptable on existing properties within 50 metres of a gassing landfill/site, subject to the incorporation of appropriate protective measures. A site investigation would not normally be required, given that the existing house may not itself contain control measures and the situation would not be made any worse. Within 50 to 250 metres of the boundary of a gassing landfill, planning officers would not normally have any specific requirements, unless there were protection measures contained within the existing property.

Industrial/commercial development on or adjacent to landfills or other gassing sites

- B22 Industrial and commercial developments on or adjacent to a landfill or other gassing site may be supported by the City Council where the developer has addressed each of the following to the satisfaction of the City Council;
- development of the site will not lead to off-site migration of landfill gas and it does not put existing off-site development at greater risk;
 - the developer provides appropriate site investigation data, a risk assessment and an outline remediation design with the application, in order to demonstrate how contamination/landfill gas issues will be addressed;
 - the strategy for remediation of landfill gas issues is based on effective passive measures which are not heavily dependent on maintenance (i.e. the day to day operation of the protection measures is passive and any active element would be there only as a back-up precaution). Any scheme requiring active measures which need high levels of supervision, human intervention and/or regular maintenance will not be supported by the officers of the City Council as such an

approach is more likely to fail or become inoperative. This policy is also consistent with the need for energy efficiency in buildings;

- the developer has demonstrated that the remediation measures will be robust in the short and long term. Where the measures are reliant on future maintenance, site controls or monitoring, the developer must demonstrate that effective arrangements, that are both realistic and viable, can and will be put in place. In addition, the City Council will need to be satisfied that the organisation responsible for the whole development (all buildings, car park and landscaped areas) will have the ability and means (including funding) to undertake such functions¹¹.

B23 For development sites where the nature of the made ground and the gas generation potential varies spatially across the site, it *may* be appropriate to consider zoning to enable a mixture of uses. This could involve placing the more sensitive land uses, such as apartments, in the area with the least gas generation potential, with some form of barrier or venting trench separating this from the main gas generation source. When zoning a site, other issues such as the extent of any significant ground contamination must also be considered. If zoning is to be undertaken, adequate site investigation and gas monitoring data will be required to give a sufficient level of confidence in the boundaries between zones.

B24 When designing site layouts, developers should give careful consideration to the size and orientation of buildings (along with other planning requirements) in order to maximise the potential for using passive ventilation systems. For example, buildings should not be packed closely together and should be elongated rather than square, with the longest edge taking advantage of the prevailing (south westerly) wind direction. Basements would not be appropriate, while designs requiring drops in the floor slabs should be avoided.

Gas Control Measures

B25 The design and construction of landfill gas control measures is a specialist task that needs to be undertaken with great care, by a suitably qualified, experienced and competent person. Gas detectors that will alarm if flammable / other gases breach the control measures, are normally incorporated into new building design.

B26 Whilst the Building Regulations apply to the construction of buildings, they do not currently deal with gas ventilation and control measures outside of the building footprint, nor do they deal with the protection of services against contamination or remediation. For these reasons, any planning consent on or adjacent to a landfill or gassing site will only be permitted subject to planning conditions requiring:

- sufficient desk study, site investigation and monitoring to enable the gas remediation scheme to be fully evaluated (sections B8 to B12 refer);
- submission and approval of a detailed remediation scheme to address all of the contamination and gas issues, including design calculations where appropriate;

¹¹ *Small organisations, or individual unit holders cannot be relied upon to have the knowledge, experience or the procedures in place to ensure that gas control measures are not breached and are maintained throughout the life of the building. This can result in ventilation trenches and air bricks being blocked by vegetation/ramps/temporary structures etc, the gas membrane(s) being penetrated without appropriate gas tight repairs and gas detectors being removed or not maintained.*

- nomination of an appropriate competent person to oversee and validate the work, and
- provision of sufficient verification information in a validation report to demonstrate that the work was completed in accordance with the agreed design.

B27 The maintenance, calibration of equipment, ongoing monitoring and interpretation of the monitored results is also a specialist task (section 2.14 refers). Planning officers will need to consider whether a specific planning condition or Section 106 agreement will be required to cover these issues, if they are minded to grant planning permission for any building on or adjacent to a gassing landfill.

ANNEX C

RELEVANT LOCAL PLAN POLICIES ADDRESSING CONTAMINATED LAND

- **Portsmouth City Local Plan – adopted December 1995**

Public Health and Safety

E40 The city council will not permit development on landfill and/or contaminated sites unless it is satisfied that -

- **ground conditions, particularly regarding subterranean settlement, are sufficiently stable to allow the development;**
- **suitable precautions have been taken to allow the safe venting of methane or any other gases present; and**
- **suitable measures are taken to remove, contain or neutralise harmful substances.**

- **Portsmouth City Local Plan Review (2001-2011)
Modified Plan, June 2004**

DC21 CONTAMINATED LAND

Permission will only be granted for development on or near contaminated land where appropriate and sufficient measures can be taken to deal with the contamination. Such measures must address the long term safety of the development, including the future management of the site.

3.38 Portsmouth's coastal location and long history of industrial and military activities have all left a legacy of pollution throughout the city which must be addressed. Because of this, the council will seek to ensure that any potential problems are identified by the developer as early as possible in the development process. Developers must address contamination issues positively and pro-actively to the satisfaction of the local planning authority before development commences.

3.39 Where contamination is known, or is suspected, to be very significant for the long-term safety of the site, the council will support land uses which provide a low risk beneficial use, whilst ensuring effective remediation. Where contamination is known, or is suspected, to be significant and a sensitive land use (e.g. housing) is proposed, planning applications must be supported by sufficient information from desk study and intrusive investigation to demonstrate that remedial measures are available to deal with any hazards present, in both the short and long term. Developers will be expected to seek sustainable solutions to the remediation of contaminated land. Further specific details of the City Council's requirements for dealing with actual or potentially contaminated sites will be published as Supplementary Planning Guidance (SPG).

ANNEX D

SAMPLE PLANNING CONDITIONS

Sample Condition 1

No works pursuant to this permission shall commence until there has been submitted to and approved in writing by the local planning authority:-

- (a) a desk top study documenting all the previous and existing land uses of the site and adjacent land in accordance with national guidance as set out in Contaminated Land Research Report Nos. 2 and 3 and BS10175:2001;
and, unless otherwise agreed in writing by the Local Planning Authority,
- (b) a site investigation report documenting the ground conditions of the site and incorporating chemical and gas analysis identified as being appropriate by the desk study in accordance with BS10175:2001- Investigation of Potentially Contaminated Sites - Code of Practice;
and, unless otherwise agreed in writing by the Local Planning Authority,
- (c) a detailed scheme for remedial works and measures to be undertaken to avoid risk from contaminants/or gases when the site is developed and proposals for future maintenance and monitoring. Such scheme shall include nomination of a competent person to oversee the implementation of the works.

Reason: In order to ensure that the site is free from prescribed contaminants in accordance with policy E40 of the 1995 Portsmouth City Local Plan.

Sample Condition 2

The development hereby permitted shall not be occupied/brought into use until there has been submitted to the Local Planning Authority verification by the competent person approved under the provisions of condition 3(c) that any remediation scheme required and approved under the provisions of condition 3(c) has been implemented fully in accordance with the approved details (unless varied with the written agreement of the Local Planning Authority in advance of implementation). Unless otherwise agreed in writing by the Local Planning Authority such verification shall comprise;

- (a) as built drawings of the implemented scheme;
- (b) photographs of the remediation works in progress;
- (c) certificates demonstrating that imported and/or material left in situ is free of contamination.

Thereafter the scheme shall be monitored and maintained in accordance with the scheme approved under condition 3(c).

Reason: In order to ensure that the site is free from prescribed contaminants in accordance with policy E40 of the 1995 Portsmouth City Local Plan.

Note:

These are examples of the type of phased planning conditions which may be used where there are potential contamination or landfill gas issues. Normally both conditions would be applied. However, developers should note that the conditions will evolve with time based on experience and site specific circumstances.

ANNEX E

REFERENCES / BACKGROUND PAPERS

Environmental Protection Act 1990 : Part IIA Contaminated Land (inserted by the Environment Act 1995)

PPG 23: *Planning Policy Guidance Note, Planning and Pollution Control* (1994)

CIRIA 149: *Protecting Development from Methane*, Card, 1995

CIRIA 150: *Methane Investigation Strategies*, Raybould et al, 1995

CIRIA Guidance, Remedial Treatments for Contaminated Land, Volumes V to IX, 1995 by Harris, Herbert and Smith

- *Remedial Treatment for Contaminated Land, Volume V: "Excavation and disposal"*, special publication 105, London: CIRIA
- *Remedial Treatment for Contaminated Land, Volume VI: "Contamination and hydraulic measures"*, special publication 106, London: CIRIA
- *Remedial Treatment for Contaminated Land, Volume VII: "Ex-situ remedial methods for soils, sludges and sediments"*, special publication 107, London: CIRIA
- *Remedial Treatment for Contaminated Land, Volume VIII: "Ex-situ remedial methods for contaminated groundwater and other liquids"*, special publication 108, London: CIRIA
- *Remedial Treatment for Contaminated Land, Volume IX: "In-situ methods of remediation"*, special publication 109, London: CIRIA

The Monitoring of Landfill Gas, Second Edition, published by the Institute of Waste Management

Guidance for the Safe Development of Housing on Land Affected by Contamination, R&D Publication 66 (Environment Agency and NHBC), 2000

Draft Environment Agency Policy, *Building on or Adjacent to Gassing Landfill Sites* (policy v9), October 2002

DTLR Draft Technical Advice - *Development on Land Affected by Contamination*, March 2002 (Consultation Draft)

CLR2, *Guidance on Preliminary Site Inspection of Contaminated Land* (DoE, 1994)

CLR3, *Documentary Research on Industrial Sites* (DoE, 1994)

CLR12, *A Quality Approach for Contaminated Land Consultancy* (DoE, 1997)

BS10175 – *Investigation of Potentially Contaminated Sites, Code of Practice* (2001)

Portsmouth City Local Plan, December 1995

Portsmouth City Local Plan Review (2001-2011): Revised Deposit Draft, April 2002

Environment Agency References:

1. *Cost Benefit Analysis for the Remediation of Land Contamination*, Dec 1999, TRP316
2. *Methodology for the Derivation of Remedial Targets for the Protection of Water Resources*, Dec 1999, Publication 20
3. *Piling in Contaminated Land*, National Groundwater & Contaminated Land Centre, 2002