TECHNICAL NOTE

SUPPORT FOR THE LOCAL PLAN: TRANSPORT MODELLING AND TRANSPORT ASSESSMENT

TRANSPORT EVIDENCE REVIEW

IDENTIFICATION TABLE

<table>
<thead>
<tr>
<th>Client/Project owner</th>
<th>Portsmouth City Council</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
<td>Support for the Local Plan: Transport Modelling and Transport Assessment</td>
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<td>Title of Document</td>
<td>Transport Evidence Review</td>
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<tr>
<td>Number of pages</td>
<td>48</td>
</tr>
</tbody>
</table>

TABLE OF CONTENTS

1. INTRODUCTION 3

1.1 OVERVIEW 3

1.2 PROJECT BACKGROUND 3

1.3 STRUCTURE OF THIS REPORT 4

2. EVIDENCE REVIEW 5

2.1 OVERVIEW 5

2.2 PORTSMOUTH CITY COUNCIL PLANNING AND TRANSPORT DOCUMENTS 5

2.3 NEW LOCAL PLAN DOCUMENTS 6

2.4 DEVELOPMENT SITE PLANNING DOCUMENTS 7

2.5 ADDITIONAL TRANSPORT ASSESSMENTS 10

2.6 PORTSMOUTH CITY COUNCIL STRATEGIES 11

2.7 OTHER RELEVANT DOCUMENTS 11

2.8 SUMMARY 13

3. DEVELOPMENT SITES 15

3.1 OVERVIEW 15

3.2 TIPNER, PORT SOLENT AND HORSEA ISLAND 15
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>LAKESIDE BUSINESS PARK</td>
<td>17</td>
</tr>
<tr>
<td>3.4</td>
<td>PORTSMOUTH CITY CENTRE</td>
<td>18</td>
</tr>
<tr>
<td>3.5</td>
<td>ST JAMES’ HOSPITAL AND LANGSTONE CAMPUS</td>
<td>19</td>
</tr>
<tr>
<td>3.6</td>
<td>PORTSMOUTH INTERNATIONAL PORT</td>
<td>21</td>
</tr>
<tr>
<td>3.7</td>
<td>SOUTHSEA SEAFRONT</td>
<td>21</td>
</tr>
<tr>
<td>3.8</td>
<td>SUMMARY</td>
<td>22</td>
</tr>
<tr>
<td>4.</td>
<td>CONGESTION HOTSPOTS</td>
<td>23</td>
</tr>
<tr>
<td>4.1</td>
<td>OVERVIEW</td>
<td>23</td>
</tr>
<tr>
<td>4.2</td>
<td>TIPNER, PORT SOLENT AND HORSEA ISLAND</td>
<td>23</td>
</tr>
<tr>
<td>4.3</td>
<td>LAKESIDE BUSINESS PARK</td>
<td>26</td>
</tr>
<tr>
<td>4.4</td>
<td>PORTSMOUTH CITY CENTRE</td>
<td>28</td>
</tr>
<tr>
<td>4.5</td>
<td>ST JAMES’ HOSPITAL AND LANGSTONE CAMPUS</td>
<td>29</td>
</tr>
<tr>
<td>4.6</td>
<td>PORTSMOUTH INTERNATIONAL PORT</td>
<td>30</td>
</tr>
<tr>
<td>4.7</td>
<td>SOUTHSEA SEAFRONT</td>
<td>31</td>
</tr>
<tr>
<td>4.8</td>
<td>SUMMARY</td>
<td>32</td>
</tr>
<tr>
<td>5.</td>
<td>PROPOSED MITIGATIONS</td>
<td>33</td>
</tr>
<tr>
<td>5.1</td>
<td>OVERVIEW</td>
<td>33</td>
</tr>
<tr>
<td>5.2</td>
<td>TIPNER, PORT SOLENT AND HORSEA ISLAND</td>
<td>33</td>
</tr>
<tr>
<td>5.3</td>
<td>LAKESIDE BUSINESS PARK</td>
<td>34</td>
</tr>
<tr>
<td>5.4</td>
<td>PORTSMOUTH CITY CENTRE</td>
<td>35</td>
</tr>
<tr>
<td>5.5</td>
<td>ST JAMES’ HOSPITAL AND LANGSTONE CAMPUS</td>
<td>36</td>
</tr>
<tr>
<td>5.6</td>
<td>PORTSMOUTH INTERNATIONAL PORT</td>
<td>36</td>
</tr>
<tr>
<td>5.7</td>
<td>SOUTHSEA SEAFRONT</td>
<td>37</td>
</tr>
<tr>
<td>5.8</td>
<td>SUMMARY</td>
<td>37</td>
</tr>
<tr>
<td>6.</td>
<td>REVIEW OF TIPNER BRIDGE FEASIBILITY STUDY</td>
<td>37</td>
</tr>
<tr>
<td>6.1</td>
<td>INTRODUCTION</td>
<td>37</td>
</tr>
<tr>
<td>6.2</td>
<td>BRIDGE PURPOSE</td>
<td>38</td>
</tr>
<tr>
<td>6.3</td>
<td>ENGINEERING CONSIDERATIONS</td>
<td>38</td>
</tr>
<tr>
<td>6.4</td>
<td>COST IMPLICATIONS</td>
<td>41</td>
</tr>
<tr>
<td>6.5</td>
<td>ACCESS CONSIDERATIONS</td>
<td>42</td>
</tr>
<tr>
<td>6.6</td>
<td>SUMMARY</td>
<td>43</td>
</tr>
<tr>
<td>7.</td>
<td>CONCLUSION</td>
<td>46</td>
</tr>
<tr>
<td>7.1</td>
<td>SUMMARY</td>
<td>46</td>
</tr>
<tr>
<td>7.2</td>
<td>NEXT STEPS</td>
<td>46</td>
</tr>
</tbody>
</table>
1. INTRODUCTION

1.1 Overview

1.1.1 Portsmouth City Council, ‘the Council’, is developing a new strategy for the city though a new Local Plan for Portsmouth. The plan will set out the planning strategy for meeting future development needs in the city for the period up to 2036. Once adopted, the Local Plan will replace policies in existing planning policy documents and form the basis for taking decisions on planning applications.

1.1.2 SYSTRA Ltd has been commissioned by the Council to provide evidence and support in the development of this Local Plan, in the form of a full plan-level Transport Assessment. The key purpose of this assessment is the evaluation of the impact of proposed development sites on the surrounding transport network.

1.1.3 This study will be conducted in four parts, as follows;

- Part 1: A review of existing high level analysis to support assessment of strategic sites in the city and identification of key issues, constraints and opportunities
- Part 2: Analysis of the impact of development in the new Local Plan
- Part 3: An assessment of possible mitigation measures to support growth
- Part 4: On-going advice and support to the Council related to the above.

1.1.4 This document summarises the evidence review conducted in Part 1, and will inform the next stages of the project. It will also provide a basis for the regulation 18 Local Plan Consultation that the Council is planning to undertake in the coming months.

1.1.5 All documents included in this Evidence Review have been provided by the Council.

1.2 Project Background

1.2.1 The new Local Plan for Portsmouth will set out the planning strategy for meeting future development needs in the city for the period up to 2036, and builds on the previous work completed in The Portsmouth Plan (2012) and the Portsmouth City Local Plan (2006). The new Local Plan is expected to be completed by June 2020.

1.2.2 Initial consultation for the Local Plan was conducted in 2017 through the release of a Local Plan Issues and Options (July 2017) document. The document, along with supporting material, was published for consultation on 3 August 2017 and was open for comment for 8 weeks. All responses from this consultation have now been processed and have been considered as part of this Evidence Review.

1.2.3 It is our understanding that the Council will complete further consultation in the coming months in accordance with regulation 18 of The Town and County Planning (Local Planning) (England) Regulations 2012. Additional consultation will then be undertaken in the summer of 2019 in accordance with regulation 19.

1.2.4 It is noted that several separate studies are currently underway by the Council and will be run in parallel with the Local Plan support being conducted by SYSTRA. These studies include the preparation of a new Local Transport Plan for the city (LTP4) and an air quality study for London Road. SYSTRA will work closely with the Council to ensure that any major developments from these studies are incorporated in the Local Plan modelling, and vice versa.
1.3 Structure of this report

1.3.1 This report contains the following sections:

- Section 2: Evidence Review – documents that have been included as part of the evidence review.
- Section 3: Development Sites – summary of the sites that are the focus of this study.
- Section 4: Congestion Hotspots – reviews the capacity issues that have previously been identified in the literature in proximity to the development sites.
- Section 5: Proposed Mitigations – outlines the mitigations that have previously been proposed to alleviate congestion issues.
- Section 6: Review of Tipner Bridge Feasibility Study – provides a detailed assessment of the suitability of this feasibility study.
- Section 7: Conclusions and next steps for the study.
2. EVIDENCE REVIEW

2.1 Overview

2.1.1 Portsmouth City Council has provided several documents for assessment as part of this Evidence Review, including overarching planning documents, specific planning documents for the development sites, relevant Transport Assessments, Council Strategies, and other relevant reports.

2.1.2 These documents have been reviewed to summarise the evolution of the development sites, previously identified congestion hotspots, and proposed mitigation measures. This section outlines the documents considered.

2.2 Portsmouth City Council Planning and Transport Documents

The Portsmouth Plan (2012)

2.2.1 The Portsmouth Plan is an overarching planning policy that was developed by the Council and adopted in January 2012. The Plan outlines the housing, employment and retail development that Portsmouth would need to develop to 2027, and replaced a large number of policies in the Portsmouth City Local Plan (2006). The plan also demonstrates what infrastructure will be needed to enable this development, although it is important to consider the allocations specified for each strategic site in relation to the proposed infrastructure.

2.2.2 It is worth noting that The Portsmouth Plan specified 7,100-8,400 new homes, 240,000m² of new employment floorspace, and over 50,000m² of new retail floorspace over the period 2010-2027. There was a clear focus within the plan for development to deliver the new housing at the key strategic sites.


2.2.3 The Portsmouth City Local Plan 2001-2011 was prepared as the local development plan covering the whole of the Portsmouth City Council administrative area, and was adopted in July 2006. As for The Portsmouth Plan, this plan provided a framework to guide development in Portsmouth up to 2011 and beyond. This plan replaced the previous City Local Plan, which was adopted in December 1995.

2.2.4 A number of the policies in the Portsmouth City Local Plan 2001-2011 were deleted in July 2009 to align with the Portsmouth Plan.

Local Transport Plan 3 – Strategy for South Hampshire (2011)

2.2.5 This document was the third Local Transport Plan (LTP3) for Portsmouth, and outlines how the transport challenges within both Portsmouth and the wider South Hampshire sub-region will be addressed through mitigations. The plan covers the period up to 2031, and was developed in conjunction with Hampshire County Council (HCC) and Southampton City Council (SCC).

2.2.6 Through the development of LTP3, several key congestion hotspots were identified, which has been documented in Section 4. The report also includes numerous mitigation options relevant to the Strategic Sites, which have been included in the commentary in Section 5.
2.2.7 As mentioned previously, Portsmouth City Council is intending to develop a new Local Transport Plan for the city (LTP4) in 2018/19.

**Transport Delivery Plan 2012-2026 (2013)**

2.2.8 The *Transport Delivery Plan 2012-2026* is a document prepared by Transport for South Hampshire (TfSH), which is a partnership comprising of the Council, HCC, and SCC. The plan identifies a series of schemes to be delivered in the region for the period up to 2026, and is supported by the *Transport for South Hampshire Evidence Base – Case and Options for Intervention* (2012). The *Delivery Plan* is currently under review by the Council.

2.2.9 Several relevant schemes were identified in the Delivery Plan, including the Tipner-Horsea link, which is discussed further in Section 3 and 6 of this report, and the Eastern Corridor Capacity Improvements Project.

**Infrastructure Delivery Plan (2011)**

2.2.10 The *Infrastructure Delivery Plan* is a document that reviews Portsmouth’s infrastructure needs from 2012 to 2027, alongside the structures in place to deliver infrastructure in the future. The document sits alongside The *Portsmouth Plan*, the city’s Local Development Framework Core Strategy, and aims to further strengthen the relationship between the Sustainable Community Strategy and Local Development Framework.

2.2.11 The plan discussed the transport infrastructure required for the strategic sites of Tipner, Port Solent & Horsea North Harbour; Somerstown & North Southsea; and City Centre.

**2.3 New Local Plan Documents**

**Local Plan Issues and Options Consultation (2017)**

2.3.1 Initial consultation for the Local Plan was conducted in 2017 through the release of a *Local Plan Issues and Options* document. The document, along with supporting material, was published for consultation on 3 August 2017 and was open for comment for 8 weeks. This consultation is considered the first stage of the preparation of the Local Plan.

2.3.2 The document proposes several strategic sites and opportunity areas that are consistent with development sites assessed in this report. However, it is important to note that not all opportunity areas have been included in this study (e.g. Somerstown) as they have not been confirmed as strategic sites in the same way as other areas in the city.

**Portsmouth Local Plan Issues and Opportunities Consultation Summary of Responses (2017)**

2.3.3 Following the consultation, Portsmouth City Council prepared a report to summarise the responses, which was published in November 2017. The document focuses on the issues raised, and also sets out an initial officer response to the summary points. This is not the Council’s final response to the subjects raised, but has been included to help all parties understand the further development of the Local Plan.
2.3.4 The purpose of the **Sustainability Appraisal Scoping Report** is to promote sustainable development in the preparation of the new Local Plan through improved integration of social, environmental and economic considerations. The document was published in March 2017, and outlines the Council’s draft objectives for the city’s development, the key planning issues facing the city and the Council’s proposed approach and/or potential mitigations to address them.

2.3.5 The **Interim Sustainability Appraisal of The Portsmouth Local Plan Review: Issues and Options Paper** has then been developed by the Council as an ‘Interim’ appraisal of the policy options in the *Portsmouth Local Plan Issues and Options* (2017) document. This paper was published in August 2017.

2.3.6 The **Authority Monitoring Report** is an annual report produced by the Council to demonstrate how the Council’s planning policies are contributing towards regenerating the city and bringing forward sustainable development, while safeguarding the environment. The most recent report covers the monitoring period of 1 April 2016 to 31 March 2017 and includes a review of what effect Portsmouth planning policies have on development of major regeneration sites.

2.4 **Development Site Planning Documents**

- **Tipner, Port Solent and Horsea Island Concept Statement (2011) and Tipner, Port Solent and Horsea Island: Bridge Feasibility Study (2010)**

2.4.1 The **Tipner, Port Solent and Horsea Island Concept Statement** has been prepared by Portsmouth City Council in partnership with Savills Planning & Regeneration, and was published in March 2011. The purpose of the document is to explain and support two strategic development allocations in the *Portsmouth Plan* and to facilitate any future planning applications. The document provides evidence to demonstrate that the strategic allocations are achievable, and that they represent effective and deliverable site allocations. As noted in the report, it is not a Supplementary Planning Document (SPD) and as such does not include detailed requirements or expand on the planning policy in the Portsmouth Plan.

2.4.2 In addition to the Concept Statement, the **Tipner, Port Solent and Horsea Island: Bridge Feasibility Study** has been produced to provide supporting evidence. This study reflects a partnering approach between Peter Brett Associates (PBA), Atkins and Savills, on behalf of Portsmouth, and was published in June 2010.

2.4.3 A planning application (09/01568/FUL) was submitted in December 2009 for the construction of a new motorway junction off the M275, comprising northbound and southbound on/off slips, and a dedicated busway southbound alongside the M275. The Environmental Statement
for the application includes an assessment of the Transport and Access impacts (Chapter 7), which was then supplemented with an Addendum to Transport Assessment that was produced by Atkins (February 2010).

2.4.4 The traffic and transport implications of this interchange were assessed as part of the application, although it is noted that “the sufficiency of its capacity will be a matter to be considered when subsequent planning applications are made”, and “the capacity of this junction is likely to limit the quantum of development achievable at Tipner”.


2.4.5 A planning application (08/02342/OUT) was submitted for the Lakeside Business Park in December 2008 and was granted conditional outline permission in October 2010. The application outlines application for 69,030 sqm of gross external floorspace for Class B1(a) offices and 21,140 sqm of other development.

2.4.6 As part of this application, a Transport Assessment was completed by Capita Symonds (December 2008) that details the proposed land use allocations for the site, proposed highway alterations, phasing of development and mitigation measures. The report also contains microsimulation modelling results of key junctions where capacity hotspots are discussed in the context of each development phase.

### Portsmouth City Centre Masterplan (2013)

2.4.7 The *Portsmouth City Centre Masterplan Supplementary Planning Document* (SPD) was adopted by the Council in January 2013. It identifies a number of opportunity sites for development and key public realm opportunities for Commercial Road, North of Market Way, Station Square, Station Street and Guildhall localities, as set out in the Portsmouth Plan.

2.4.8 It is understood that the Council has recently commissioned JLL to undertake an update of this masterplan to inform the emerging new Local Plan.

### City Centre Road Scheme Transport Technical Note (2018)

2.4.9 A planning application (17/02066/CS3) was submitted in December 2017 in an effort to unlock development opportunities within the City Centre. The proposal would upgrade and realign the existing road network around the A3 southwards from the junction with Princess Royal Way to the junction with Unicorn Road in Portsmouth City Centre.

2.4.10 As part of this application, a Technical Note has been produced by WSP (April 2018) that includes assessment of the scheme using the Solent Sub-Regional Transport Model (SRTM), as well as providing additional junction capacity assessments.

### St James’ Hospital Planning Application (2018)

2.4.11 A planning application (18/00288/OUT) has been submitted for the St James’ Hospital site to construct 107 dwellings. Included in this submission is a Transport Assessment (February 2018) that assesses the development impact. Following highway comments from Portsmouth City Council, WSP submitted a response on 25 April 2018 to provide clarification. At this point in time, no decision has been reached regarding this application.
The **Southsea Town Centre Area Action Plan** was developed by Portsmouth City Council to outline the vision for the town centre’s future role and establish policies to guide its development. These policies provide the statutory framework for the development of the area and have been used by the Council to assess development proposals and determine planning applications. The Area Action Plan identifies the removal of roundabout and creation of a new road junction, which is discussed further in Section 5.

The **Southsea Seafront Strategy 2010-2026** has been developed by the Council to outline a plan of future improvements for the seafront. The Seafront masterplan provides landowners and developers with guidance about what type of development is appropriate and how planning applications will be assessed. It also acts as a guide for future council investment in the area and provide a framework for funding bids.

This Area Action Plan was produced by the Council in 2012 with the aim of supporting the regeneration of the Somerstown and North Southsea area. The plan covers the period 2010-2027 and is used as a material consideration in determining planning applications. At the present time, this area has not been identified in the emerging Local Plan as a single strategic site, although individual sites within the Somerstown area are likely to come forward for redevelopment during the Plan period. Therefore the area has not been considered further in this initial review of strategic sites, but it will be included in the city-wide transport assessment.

The **Port Master Plan - Portsmouth International Port Planning to 2026**

The Port Master Plan is an overview of the Port’s strategy through to 2026, as produced by Portsmouth International Port. The plan investigates how the Port can retain its current success whilst also building its business in the future. The document includes both an Economic Impact Study (Portsmouth University) and Traffic Forecast (STS International), which both indicate that the passenger cruise industry represents an key area of growth for Portsmouth.
2.5 Additional Transport Assessments


2.5.1 This report was produced by Peter Brett Associates on behalf of Gosport Borough Council, Portsmouth City Council, Fareham Borough Council and Havant Borough Council. The report summarised the traffic impacts on the Designated Road Network and its junctions arising from developments as specified within the proposed housing and employment in the Local Development Framework (LDF) up to 2026. The document was published in August 2009, and provides an analysis of the available traffic data, a description of the development proposals and an indication of the impacts of the developments at critical junctions across the study area.

Transport for South Hampshire Evidence Base – Case and Options for Intervention (2012)

2.5.2 The Transport for South Hampshire Evidence Base was produced by MVA Consultancy (now SYSTRA) to support the development of the Transport Delivery Plan (2013). The report includes a policy review, assessment of the study area and travel patterns, analysis of the transport network and the case for intervention. In terms of Portsmouth specifically, the report outlines several barriers, including congestion on links to Portsea Island and around Portsmouth City Centre that will potentially constrain access to the port and new developments. It is noted that this report outlines 12,483 residential dwellings to be developed in Portsmouth from 2010 to 2026, as well as 234,917 m² of employment.

Portsmouth Western Corridor Transport Strategy (2010)

2.5.3 The Portsmouth Western Corridor Transport Strategy was produced by Atkins for Portsmouth City Council. It considered the impact of, and mitigation measures required, for all proposals in the Portsmouth Plan. The report presented the modelling and appraisal of proposed scenarios, and the preferred strategy for the Portsmouth Western Corridor.

Stubbington Avenue / London Road Feasibility Study (2018)

2.5.4 The Stubbington Avenue / London Road Feasibility Study was a project undertaken by Atkins, whom were appointed by Portsmouth City Council. The report provided a feasibility study of the signalisation of the existing roundabout to improve the operational safety of the junction. Modelling was completed using Junctions 9 and LinSig.


2.5.5 The Optimisation of Road Traffic Management Control Systems, or ORTMCS, is a study that was established by Portsmouth City Council to explore potential improvements to road traffic management controls in order to achieve possible air quality improvements. The study included a phase of micro-simulation where mitigation measures were tested, which have been discussed in further detail in Section 5.
2.5.6 The Air Quality Source Apportionment Study is a study conducted by AECOM for Portsmouth City Council. The study undertook a Source Apportionment Study of road traffic sources as part of the Local Air Quality Management and Assessment process. Dispersion modelling and source apportionment calculations were carried out to quantify the contributions of different road vehicle types.

2.6 Portsmouth City Council Strategies

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<th>Air Quality Strategy 2017-2027 (2017)</th>
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2.6.1 The Air Quality Strategy sets out Portsmouth’s air quality aims between 2017 – 2027 and how they will be achieved via various mitigation techniques. The strategy was published in February 2017, and summarises the statutory requirements, progress so far, strategic objectives and various approaches and actions that the Council intend to take. The document reiterates that future revisions of Portsmouth’s strategic plans should fully recognise air quality issues and where possible minimise their impacts.

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<th>Street Lighting Strategy (2017)</th>
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2.6.2 The Portsmouth Street Lighting Strategy is a high-level document produced by the Council to emphasise the importance of street lighting for road safety, crime reduction, street environment, as well as its role in encouraging walking, cycling and public transport use. While important, the content of the strategy is not considered relevant to this study.

2.7 Other relevant documents

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<tr>
<th>PUSH Spatial Position Statement – Partnership for Urban South Hampshire (2016)</th>
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2.7.1 This Position Statement has been prepared jointly by the Partnership for Urban South Hampshire (PUSH), which includes the unitary authorities of Portsmouth, Southampton and the Isle of Wight, Hampshire County Council, and several district authorities. The document was published in June 2016 and details important issues concerning the distribution of future development across South Hampshire, potential major development locations in the long-term, and key infrastructure to support sustainable growth.

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<th>Tipner Park &amp; Ride Feasibility Study (2006)</th>
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2.7.2 The document outlines provision of 104,350 new homes in the PUSH region between 2011-34, with 14,560 planned for construction in Portsmouth. It also includes provision for 971,000m² additional B-Class Floorspace, with 120,000m² allocated to Portsmouth.

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<th>Tipner Park &amp; Ride Feasibility Study (2006)</th>
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2.7.3 This report assesses the feasibility of providing a park and ride facility at Tipner. The study was completed by Atkins, and reviews the policy context that will influence the type of facility provided, forecasting usage and site design and site access criteria. It is worth noting that the economic assessment for the Park & Ride found that based on the forecast level of usage and a charge of £2 per day, the estimated revenue from a park and ride facility at Tipner is £1.5 million in 2008 rising to £2.3 million in 2026.

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<th>Tipner Park &amp; Ride Feasibility Study (2006)</th>
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2.7.4 While the outline proposal for the park and ride is for an initial 500 space car park, which is a similar order of magnitude to the 665 spaces currently, the demand forecasts and economic
assessment of the study has assessed the potential expansion of the facility to 1,500-2,000 spaces. For example, the site construction cost estimates has assumed the capacity requirement is 1,878 spaces, and there is no additional capital cost incorporated into the financial appraisal. There does not appear to be any analysis of the scale of development to trigger this expansion, although it is noted that the study does briefly consider the viability of expansion via a modular / multi-storey car park, with an example provided for three 700 space car parks (2,100 spaces total).

2.7.5 The feasibility study provides a series of demand forecasts, with an estimated 1,044 car spaces required for 2008, and 1,541 required by 2026 for the scenario with Northern Quarter (City Centre North) development impacts. This corresponds with an hourly trip generation of around 620 vehicles in the 2026 PM peak hour, which has been adopted in the junction modelling for the Tipner interchange. The modelling also assumed that the Tipner development has 1,500 residential units and 25,000sqm of commercial area, and indicates that the interchange would have sufficient capacity for this magnitude of development split 50/50 east and west of the M275. Potential capacity issues are expected with the commercial area being 100% east or 100% west of the M275.

2.7.6 It is noted that the future land use assumed for the feasibility study varies significantly to the current land use allocations and access arrangements in the Local Plan. For example, the City Centre North scheme is no longer being taken forward in the Local Plan, and it is now proposed that allocations at Tipner East will have primary access via Twyford Avenue instead of the Tipner interchange. These revisions will be considered in Part 3 of this study.

South East Hampshire BRT Future Phases Study (2012) and South East Hampshire Rapid Transport Stage 1 Report (2018)

2.7.7 The South East Hampshire BRT Future Phases Study was undertaken by Atkins in association with Ernst & Young and Albion Economics. The study presents a series of recommendations for the development of a comprehensive Bus Rapid Transit (BRT) network in South East Hampshire. The study provided a programme of viable infrastructure measures which would provide an improvement in quality, journey times, and reliability of bus services.

2.7.8 The South East Hampshire Rapid Transport Stage 1 Report is the first phase of work in the development of an updated Outline Business Case for Rapid Transit in South East Hampshire. It builds upon work previously undertaken to develop a Bus Rapid Transit Proposition, with the original Outline Business Case previously prepared in 2011. Atkins were commissioned to update this work in 2017, in which schemes were reviewed, new schemes identified and potential avenues for funding investigated.

2.7.9 It is noted that in June 2018, Portsmouth and South East Hampshire submitted an application for funding through the Transforming Cities Fund for South East Hants Rapid Transit (SEHRT) along four corridors; Fareham–Portsmouth, Waterlooville–Portsmouth, Havant–Portsmouth, and Fareham – Gosport. There has been no decision on this application at this point in time.

2.7.10 The BRT study will be considered in both the SRTM strategic modelling and the development of mitigation options undertaken in Part 2 and Part 3 of this project.

Eastern Corridor Improvement Project (2018)
2.7.11 The Eastern Corridor Improvement project has been undertaken by Portsmouth City Council to identify short, medium and long term schemes along the Eastern corridor. The purpose of the schemes is to reduce congestion, improve safety and encourage cyclists.

Strategic Housing Land Allocation Assessment (2015)

2.7.12 The Portsmouth Strategic Housing Land Allocation Assessment (SHLAA) was produced by the Council in 2015. The document details committed and potential future residential sites with a view to bring these forward between 2015/16 and 2026/27.

2.7.13 The assessment does note that the city can exceed the housing requirement of 12,254 dwellings between 2006/07 and 2026/27 as laid out in the Portsmouth Plan. The SHLAA states that Portsmouth will deliver a total of 12,743 dwellings in the same time period, providing an excess of 499 homes from the target set out in the Portsmouth Plan.

2.7.14 As part of the evidence base for the new Local Plan, the Council are undertaking a Housing and Employment Land Availability Assessment (HELAA) which is due for completion in September 2018. The HELAA will build upon the work of the 2015 SHLAA to assesses the capacity and delivery potential of the city for the new Local Plan period; 2016 to 2036.

Transport for South East Economic Connectivity Review (2018)

2.7.15 The Economic Connectivity Review is a vision statement that has been produced to guide the development of Transport for the South East. The review was conducted by Cambridge Econometrics and is the first step in developing a transport strategy for the South East, making the case for funding and the risks if investment is not forthcoming.

2.8 Summary

2.8.1 A wide range of literature has been reviewed as part of this Evidence Review. It is clear from the above summaries that there are many housing, employment and retail growth scenarios that have been considered throughout a variety of planning documents and transport assessments, as is demonstrated in Table 1.

<table>
<thead>
<tr>
<th>DOCUMENT</th>
<th>GROWTH PERIOD</th>
<th>HOUSING ALLOCATION</th>
<th>RETAIL ALLOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Plan Issues and Options Consultation (2017)</td>
<td>2011-2034</td>
<td>17,020</td>
<td>120,000m²</td>
</tr>
<tr>
<td>The Portsmouth Plan (2012)</td>
<td>2006-2027</td>
<td>12,754</td>
<td>243,000m²</td>
</tr>
<tr>
<td>Portsmouth City Local Plan 2001-2011 (2006)</td>
<td>1996-2011</td>
<td>9,000</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2005-2016</td>
<td>-</td>
<td>82,900m²</td>
</tr>
<tr>
<td>Local Transport Plan 3 - Strategy for South Hampshire (2011)</td>
<td>2010-2027</td>
<td>7,100 - 8,400</td>
<td>-</td>
</tr>
</tbody>
</table>
### DOCUMENT | GROWTH PERIOD | HOUSING | EMPLOYMENT | RETAIL
---|---|---|---|---
Assessing the Impacts of the Harbours Authorities LDF Proposals on the Strategic Highways Network (2009) | 2006-2026 | 14,701 | 280,000m² | 165,000m²
Portsmouth Western Corridor Transport Strategy (2010) | 2006-2027 | 15,435 | 225,000m² | 68,000m²
PUSH Spatial Position Statement (2016) | 2011-2034 | 14,560 | 120,000m² | -
Transport for South Hampshire Evidence Base (2012) | 2010-2036 | 12,483 | 234,917m² | -

2.8.2 Of the documents reviewed, several include specific allocations for the sites that the Council have selected as the focus of this study. Relevant details for each site are provided in the following section.
3. DEVELOPMENT SITES

3.1 Overview

3.1.1 The Evidence Review has highlighted the evolution of each development site throughout the years. As requested by the Council, the following areas have been investigated:

- Tipner, Port Solent and Horsea Island
- Lakeside Business Park
- Portsmouth City Centre
- St James’ Hospital and Langstone Campus
- Portsmouth International Port
- Southsea Seafront.

3.2 Tipner, Port Solent and Horsea Island

3.2.1 The Tipner site is illustrated in Figure 1 and is identified as being able to deliver a significant proportion of the development within Portsmouth. The site is situated in the northwest of Portsea Island and straddles the M275, a key gateway into the city. It is also within close proximity to the Tipner Park and Ride site, located just off the M275 Junction 1. The land to the west of the M275 contains a number of land uses including an aggregates yard and scrapyard, however this site is deemed to be underused. There is also a former Ministry of Defence (MoD) firing range, which doubles as a feeding site for Brent geese. This is an environmental issue that will need to be addressed. The land to the east of the M275 has now been cleared and was the site of a former greyhound stadium.

3.2.2 The land east of the M275 has been subject to three planning applications, on three separate site areas. Conditional outline permission was granted in March 2012 for 518 dwellings and a combined heat and power plant (10/00849/OUT) accessed from Twyford Avenue. Further conditional outline permission was granted in March 2018 for another 23 dwellings at Range Green and Tipner Lane (13/00202/OUT) accessed from those roads. A third permission was approved in February 2016 for a further 80 dwellings and 235sqm of commercial use (15/01854/REM) also accessed from Twyford Avenue. The three applications total 621 dwellings permitted altogether at Tipner East.

Figure 1. Tipner Development Site (Source: Local Plan Issues and Options Consultation, 2017)
3.2.3 The Tipner site has the benefit of an interchange to enable development of this area (Planning Application 09/01568/FUL). The M275 junction 1 and Tipner Park & Ride site were completed in 2014 and will help to facilitate growth in the area.

3.2.4 Port Solent and Horsea Island have also been identified as areas which could provide opportunities for development. The site is illustrated in Figure 2 and is located in the northwest corner of the city on the northern reaches of Portsmouth Harbour. The land was first reclaimed within the 1970’s. Port Solent consists of residential land use, with some leisure, specialist retail and employment. Horsea Island is located immediately south of Port Solent and had been in the possession of MoD since the 1880’s. Much of this land is now coming into the ownership of the Council following use of the site as a landfill with the south-western part of the Island still in possession of the MoD and currently used by the Defence Diving School.

![Figure 2. Port Solent and Horsea Island (Source: Local Plan Issues and Options Consultation, 2017)](image)

3.2.5 The Local Plan Issues and Options report (2017) most recently identifies Tipner, Port Solent and Horsea Island as potential Strategic Sites that could deliver a number of positive outcomes. Development of these three sites has been considered and promoted through a number of processes including the previous Portsmouth Core Strategy and the City Deal. A comparison of the most recent consultation and that previously proposed in other literature is provided in Table 2.
Table 2. Previous Allocations for Tipner, Horsea Island and Port Solent Development Sites

<table>
<thead>
<tr>
<th>DOCUMENT</th>
<th>PERIOD</th>
<th>SITE</th>
<th>HOUSING</th>
<th>EMPLOYMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Plan Issues and Options Consultation</td>
<td>2011 - 2034</td>
<td>Tipner</td>
<td>1876</td>
<td>-</td>
</tr>
<tr>
<td>(2017)</td>
<td></td>
<td>Port Solent &amp; Horsea</td>
<td>500</td>
<td>25,000m²*</td>
</tr>
<tr>
<td>The Portsmouth Plan (2012)</td>
<td>2006 - 2027</td>
<td>Tipner</td>
<td>480 - 1,250*</td>
<td>25,000m²*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Port Solent &amp; Horsea</td>
<td>500 - 1,000*</td>
<td>-</td>
</tr>
<tr>
<td>Tipner, Portsea &amp; Horsea Island Concept</td>
<td>-</td>
<td>Tipner</td>
<td>1,250*</td>
<td>28,000m²</td>
</tr>
<tr>
<td>Statement (2011)</td>
<td></td>
<td>Port Solent &amp; Horsea</td>
<td>1,000*</td>
<td>35,000m²</td>
</tr>
<tr>
<td>Tipner P&amp;R Feasibility Study (2006)</td>
<td>-</td>
<td>Tipner</td>
<td>1500</td>
<td>-</td>
</tr>
<tr>
<td>Tipner Interchange (09/01568/FUL) (2010)</td>
<td>-</td>
<td>Tipner</td>
<td>1,250</td>
<td>25,000m²</td>
</tr>
</tbody>
</table>

*Note: Allocation dependant on provision of transport infrastructure

3.2.6 The above table alludes to the restrictions to development at the sites without additional infrastructure, namely the construction of a bridge connecting the two sites. Several purposes for the bridge have been considered, including an all traffic link, bus only link and walking & cycling link. The Council has undertaken preliminary assessment of the viability of this bridge, which has been reviewed in more detail in Section 6.

3.2.7 Along with the bridge link, there are several other congestion hotspots that have been identified, or are anticipated, to facilitate the development of the development sites. These are discussed further in Section 4, and include consideration of the partial build scenario at Port Solent only. Section 5 then outlines the potential mitigation options, and how these are impacted by the assessment methodology and assumptions.

3.3 Lakeside Business Park

3.3.1 Lakeside Business Park forms part of an existing office campus, with the space dominated by former IBM office headquarters. Other office space is flexible let offices with on-site parking, the site is also serviced by a shuttle bus service connecting the site with Cosham railway station, Hilsea bus station, The Hard bus station and the Hover terminal in Southsea. Lakeside Business Park resides in the northwest of the Portsmouth City Council administrative area and is serviced by strategic highway links such as the M27 Junction 12 and the A27.

3.3.2 A planning application (08/02342/OUT) was submitted for the Lakeside Business Park in December 2008 that was granted conditional outline permission in October 2010. The application outlines application for 69,030 sqm of gross external floorspace for Class B1(a) offices and 21,140 sqm of other development. The Transport Assessment completed as part of this application identified several congestion hotspots, which are discussed in Section 4, and then proposed mitigation options which are outlined in Section 5.
The Local Plan Issues and Options Consultation report (2017) identifies the Lakeside Business Park as a strategic site. The consultation document identified the business park as a relevant location for significant new office development, though it should be noted the owners and managers of the site have challenged the deliverability and appropriateness of this approach.

3.4 Portsmouth City Centre

3.4.1 Portsmouth City Centre covers a large area, spanning from Victory Retail Park in the northeast to Gunwharf Quays in the southwest. The city centre is a highly accessible area within the city, with many of the trunk roads providing access, such as the M275 and A3. The city centre contains retail space which is in need of regeneration and office space. There are also residential dwellings, the most recent of which being large privately owned and managed student halls of residence, which falls within the boundary of the city centre.

3.4.2 The Portsmouth City Centre Masterplan Supplementary Planning Document (2013) identifies a number of opportunity sites for development and key public realm opportunities, as set out in the Portsmouth Plan (2012). The masterplan was developed to guide future investment in the city centre, particularly by private sector developers and landowners. It is our understanding that the Council is currently in the process of updating the masterplan.

3.4.3 As discussed previously, a planning application (17/02066/CS3) was submitted in December 2017 in an effort to unlock development opportunities within the City Centre. The proposal would upgrade and realign the existing road network around the A3 southwards from the junction with Princess Royal Way to the junction with Unicorn Road in Portsmouth City Centre. This potential scheme is discussed further in Section 5.
Transport Evidence Review

Page 19/48

3.4.4 The Portsmouth City Centre is proposed as an Opportunity Area in the Local Plan Issues and Options Consultation (2017), with a mixed land use comprising of housing, retail and employment. The City Centre area has been highlighted as suffering from capacity issues which are detailed in Section 4, with mitigation measures outlined in Section 5.

3.5 St James’ Hospital and Langstone Campus

3.5.1 The St James’ Hospital and Langstone Campus Strategic Site is situated in the southeast of Portsea Island. St James’ Hospital is a National Health Service (NHS) mental health institute, however, it is understood that the bulk of the site will no longer be required by the NHS. The site is illustrated in Figure 5, and is also home to community features such as a cricket pitch. Adjacent to St James’ Hospital is the University of Portsmouth Langstone Campus, which houses a disused halls of residents and a cluster of teaching buildings, as well as the University sports pitches that are used as a core feeding site for Brent Geese. The primary access route is the east-west link of Locksway Road. This is a single lane road, lined with terraced housing. Locksway Road also has on-street parking for residents, the site is in an area of Portsmouth where car ownership is high.

3.5.2 A planning application (18/00288/OUT) has recently been submitted for the St James’ Hospital site to construct 107 dwellings. Included in this submission is a Transport Assessment (February 2018) that assesses the development impact. In response to highway comments from the Council, WSP provided a series of clarifications on 25 April 2018. At this point in time, no decision has been reached regarding this application.
In 2014, the Council proposed the following site allocations for the development site as an amendment to the *Portsmouth Plan*:\(^1\):

- St James’ Hospital: 370 dwellings
- The University of Portsmouth Langstone Campus: 110 dwellings

Subsequent to that, in 2015, a report to the Cabinet member for Planning Regeneration and Economic Development considered the responses to the 2014 proposals and other information available at that time and concluded the estimated capacity of both sites be revised as follows:

- St James’ Hospital: 280 dwellings
- The University of Portsmouth Langstone Campus: 110 dwellings

It is important to note that after the Issues and Options consultation in 2017, the Council’s Summary of Responses included an initial council response which stated the following:

> “Issues and Options consultation focused on potential residential development of the site. The response received from this consultation, including the response from the landowners, indicates that it is likely that a flexible approach is required and a range of uses should be considered for the site. Identified constraints, including the capacity of local transport networks, and the potential impact upon sensitive ecological sites and species, need further work before the capacity and potential uses of this strategic site can be confirmed."

Several capacity issues in proximity of the site have previously been identified, as detailed in Section 4. Possible mitigation measures that have been proposed are discussed in Section 5.

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\(^1\) *Site Allocations: Lockway Road, Milton, August 2014, Portsmouth City Council*
3.6 **Portsmouth International Port**

3.6.1 Portsmouth International Port site is situated on the western side of Portsmouth in Landport. The port operates European ferry travel, continental cruises and freight ships from its harbour. The port has strong highway transport links and lies just west of the M275 junction 2, with easy access to Portsmouth City Centre and the M275 acting as a gateway to the UK for freight operators. Figure 6 illustrates the location of the Port in relation to the M275.

![Portsmouth International Port](image)

**Figure 6. Portsmouth International Port (Source: OpenStreetMap)**

3.6.2 While the *Local Plan Issues and Options* (2017) report has not identified the Portsmouth International Port as a strategic site, Portsmouth City Council has instructed the project team to include this site in the Evidence Review, particularly regarding the congestion hotspots in proximity to the Port. It is noted that the Port has not been identified as a strategic site for development in any of the literature reviewed.

3.6.3 The traffic forecasts commissioned from STS International, and documented in the *Port Master Plan* (2016), provide the anticipated traffic levels for passengers and freight up to 2026. The plan outlines a number of infrastructure projects, mostly regarding the capacity of the port, that have been identified by Portsmouth International Port as being necessary to continue the Port’s current success.

3.7 **Southsea Seafront**

3.7.1 Southsea Seafront is located close to the city centre and is comprised of predominantly residential properties, many of which are terraced, with a mixture of low and high rise flats. The extent of the area is illustrated in Figure 7.

3.7.2 The *Southsea Seafront Strategy* (2010) and Seafront Masterplan SPD (2013, currently under review) provide landowners and developers with guidance about what type of development is appropriate and how planning applications will be assessed. They also act as a guide for future council investment in the area and provide a framework for funding bids.

3.7.3 Of particular interest regarding the Southsea Seafront is the Southsea Coastal Scheme, which will be responsible for delivering new flood defences along the seafront from Old Portsmouth to Eastney. The aim of this scheme is to create new defences to reduce the risk of flooding to over 8,000 homes and business in Southsea. Consultation for the scheme was undertaken in the summer of 2018, and is expected to impact the road network along the seafront.
3.7.4 Recent discussion with the Council has indicated that there are currently several options that are being considered to accommodate the flood defences, including the removal and re-provisioning of parking, consolidation of footpaths and cycle lanes, and restricting sections of the esplanade to one-way.

![Figure 7. Southsea Seafront (Source: Local Plan Issues and Options Consultation, 2017)](image)

3.7.5 The Seafront is specified as an Opportunity Area in the *Local Plan Issues and Options* report (2017), which identifies it as a key economic area of the city due to its allure as a tourist destination. Several capacity issues have previously been identified in the literature, which are discussed in Section 4, with the associated mitigation measures in Section 5.

3.8 Summary

3.8.1 The evidence review has provided an overview of the development sites and other key areas identified by the Council, with the relevant planning documents and applications previously been submitted. These documents provide important context for the previously identified congestion hotspots and proposed mitigations discussed in Section 4 and Section 5.
4. CONGESTION HOTSPOTS

4.1 Overview

4.1.1 This chapter will present the findings from the Evidence Review in which capacity hotspots have been identified at key junctions in proximity to the development sites. These junctions have been identified following a variety of assessment methodologies and assumptions, especially regarding the allocations at each strategic site. Where congestion hotspots have been identified, the relevant assumptions will be detailed to provide context for the development of the mitigation measures in the following section.

4.2 Tipner, Port Solent and Horsea Island

4.2.1 As detailed in Section 3.2, the Tipner, Port Solent and Horsea Island development sites are a key focus for the Council in the new Local Plan. The literature review has highlighted several junctions in the proximity of these sites that are either currently capacity hotspots, or will experience capacity issues in the future. These junctions are illustrated in Figure 8.

![Figure 8. Tipner, Port Solent and Horsea Island Congestion Hotspots (Source: OpenStreetMap)](image)

4.2.2 The M275 / Tipner interchange was constructed in 2014 following a planning application (09/01568/FUL) submitted in December 2009. Located to the north of the Portsmouth City Centre, the junction contains six exits, four of which are slips providing access to the M275,
and another two accessing Tipner Lane. The eastern Tipner Lane access provides access to a new Park & Ride facility with 665 parking spaces.

4.2.3 The design of the interchange was developed by Atkins using a VISSIM microsimulation model and strategic SATURN model. It is our understanding that these models were used as part of the evidence base for the Tipner Interchange Major Scheme Business Case. Both models assumed 2013 as the opening year, with a future year of 2023 adopted for the VISSIM modelling and 2031 for the SATURN modelling. The following scenarios were tested in the strategic modelling:

- Without Tipner Development traffic or Tipner Interchange
- With Tipner Development traffic without Tipner Interchange
- With Tipner Interchange and Tipner Development traffic (with park and ride)
- With Tipner Interchange and Tipner Development traffic (without park and ride).

4.2.4 The assessments both included allocations of 1,600 residential units, 25,000m² offices and 150 bed hotel at Tipner by 2013, with no allocations at Port Solent and Horsea Island. With the current proposals for the Tipner Bridge utilising this interchange to access the M275, capacity issues may occur with the proposed allocations at Port Solent and Horsea Island. It is noted that the Tipner, Horsea Island & Port Solent Concept Statement (2010) stresses that “the sufficiency of its (the interchanges) capacity will be a matter to be considered when subsequent planning applications are made”, and “the capacity of this junction is likely to limit the quantum of development achievable at Tipner”.

4.2.5 The Tipner interchange was also assessed as a scheme as part of the Western Corridor Study (2010), also completed by Atkins. The primary method of assessment in the study was the SATURN strategic model, which was used to analyse four separate packages, all with a combination of schemes. It is worth noting that Package 1 of the study included development of Tipner only and did not include the Tipner bridge link, whereas Package 2a, 2b and 3 all included the bridge link and allocations at Port Solent and Horsea Island.

4.2.6 As the purpose of the study was to analyse a combination of schemes, the report unfortunately does not provide detail on the performance of individual junctions with each proposed packages. However, from the plots provided, it appears that the interchange will have a volume capacity ratio under 85% for each package, which indicates that the interchange will be able to adequately support the above residential and commercial allocations at Tipner. It is noted that this assessment does not include allocations at Port Solent or Horsea Island.

4.2.7 Tipner interchange was also modelled in the PBA study undertaken in 2009\(^2\). Their assessment included the junction in the 2026 ‘Do Something’ scenario using the SATURN strategic model. The analysis indicated that approximately 1250 vehicles would use the interchange in the 2026 AM peak. It should be noted that the bridge link was also not included in this assessment, and is therefore not expected to capture the impact on the Port Solent and Horsea Island developments.

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Southampton Road (A27) / Port Way signalised junction

4.2.8 The A27 Southampton Road / Port Way is a signalised junction and facilitates east / west movements between Port Solent and the M27 Junction 12. Port Way provides access to the Port Solent area via two lanes in both directions, with a flare at the northbound left turn approach. The A27 is a dual carriageway with flares on both the eastbound and westbound turns accessing Port Way.

4.2.9 The Infrastructure Delivery Plan (2011) has stated that without further improvements, development at Port Solent and Horsea Island will put additional stress on the existing Port Way / A27 Junction.

4.2.10 As stated in the Bridge Feasibility Study Report (2009), the Horsea Island and Port Solent development would be reliant on the Port Way access road without the Tipner bridge link. The report highlights that without the bridge link, the junction would need to support traffic associated with 2,000 additional residential units.

4.2.11 This has been assessed in the 2009 report with a 2031 design scenario, using the SATURN strategic model, and provides a journey time comparison by both bus and car. It is estimated that without the bridge, car trips from Port Solent to Portsmouth City Centre using the Port Way access would experience up to an additional 10 minutes due to delays at the key junctions, particularly Port Way and Johnson & Johnson Roundabout. More specifically, it is estimated that without the bridge, average delay at the Port Way approach will be over 4 minutes in the 2031 AM peak scenario, whereas with the bridge, average delay is expected to be negligible.

4.2.12 Unfortunately, this assessment does not include a partial build scenario, e.g. up to 500 dwellings at Port Solent only. Further scenario testing may therefore be necessary in future stages of this study to assess the required mitigations in a partial build scenario.

4.2.13 Neither the Western Corridor Study (2010) or the Assessing the impact of the Harbour Authorities LDF Proposals on the Strategic Highway Network (2009) reports identify this junction as a congestion hotspot, although the Western Corridor Study does propose mitigation as discussed in Section 5.

Twyford Avenue / A3 Northern Parade

4.2.14 The Twyford Avenue / A3 Northern Parade junction is a three arm roundabout to the east of the Tipner interchange. The junction is expected to be the sole access point for the Tipner East development and is therefore anticipated to experience congestion. This is reinforced by the Infrastructure Delivery Plan (2011).

4.2.15 It is noted that the Western Corridor Study (2010) does not explicitly identify this junctions as a congestion hotspot, although does propose mitigation as discussed in Section 5.
4.3 Lakeside Business Park

4.3.1 The Lakeside Business Park is a key strategic site to achieve the employment targets for the new Local Plan. The junctions identified in the Transport Assessment for this application, and other sources, are illustrated in Figure 9.

Figure 9. Lakeside Business Park Congestion Hotspots (Source: OpenStreetMap)

Marriot junction – M27 / A27 / A3 Southampton Road signalised junction

4.3.2 The Marriott junction, formerly known as Johnson & Johnson junction, underwent several operational changes when upgraded to a signalised junction in 2004. The junction is a crossroads, with the A3 Southampton Road to the north and M27 junction 12 to the south and the A27 providing east / west movements. The junction contains segregated flares for left turns on all approaches at the junction.

4.3.3 The Portsmouth Local Transport Plan 3 (2011) identifies this junction as a key congestion hotspot, which is verified by the TfSH Evidence Base (2012), and notes that the biggest increase in total delay in the assessment is at Junction 12 of the M27, due to further traffic generated by development at Port Solent and Horsea Island.

4.3.4 The Western Corridor Study (2010) and Assessing the impact of the Harbour Authorities LDF Proposals on the Strategic Highway Network (2009) report both indicate the junction will have congestion issues, with the PBA report specifying that the junction is approaching capacity in 2006, at or above capacity in 2016, and above capacity in 2026.

4.3.5 As part of the Transport Assessment Addendum (2008) conducted by Capita Symonds, the junction was analysed using TRANSYT. Four scenarios were analysed; Existing year (2008), Future year (2023), Future year (2023) + development, and Future year (2023) + development + mitigation measures. The assessment indicated that the junction is currently operating close to, or at, full capacity on all arms in both the AM and PM peak. Mitigation measures proposed for this junction are discussed in Section 5.
4.3.6 Portsbridge roundabout connects the A27, A397, A3 and M27. The A27 approach is a three lane approach providing east / west access to Fareham. The A397 is a three lane approach to the north of the junction connecting to the A3. The A3 is a three lane approach to the south of the junction and extends to the south into Portsmouth City Centre. The M27 has an eastbound on-slip and westbound off-slip accessing the junction, the M27 merges with the A27 to the east of the junction.

4.3.7 Portsmouth LTP3 highlights that the Portsbridge roundabout is also a key congestion hotspot, and is also identified in the TfSH Evidence Base. The Western Corridor Study (2010) and Assessing the impact of the Harbour Authorities LDF Proposals on the Strategic Highway Network (2009) reports also forecasts capacity issues at the roundabout, with the PBA report indicating that the junction (referred to as “Hilsea Roundabout”) is approaching capacity in the 2006 AM peak, and is at capacity in 2016 and 2026 AM peaks.

4.3.8 Junction capacity modelling was undertaken as part of the supplementary Transport Assessment Addendum using ARCADY 6 software. The analysis completed by Capita Symonds indicates that the junction is currently over capacity during both peak periods, with large queueing on the A3 London Road and A27/M27 Slip Road approaches during the AM peak and on the A27 Western Road and A27/M27 Slip Road during the PM peak. It is worth noting that the roundabout also has a poor accident record.

4.3.9 North Harbour roundabout is a six arm junction that connects the A27 with Lakeside Business Park. Northarbour Road connects to the northwest of the junction and access to Lakeside at the southwest of the junction. All approaches to the roundabout are two lanes except for Northarbour Road which is a single lane with short flare.

4.3.10 Modelling for the junction was undertaken in the Lakeside Development North Harbour, Portsmouth TA (2008) using ARCADY, and forecasted that all arms of the North Harbour Roundabout will operate at or above capacity in the five development phases set out, although under capacity in the existing situation. Mitigation measures at the junction are expected to be required following Phase B, as discussed in Section 5.
4.4 Portsmouth City Centre

4.4.1 The Portsmouth City Centre has also been identified as a potential development site. The junctions identified in the City Centre Transport Assessment, and other sources, are illustrated in Figure 10.

![Figure 10. Portsmouth City Centre Congestion Hotspots (Source: OpenStreetMap)](Image)

4.4.2 The *Transport Delivery Plan* (2013) identified the general city centre network as potentially suffering from capacity issues with a view to negatively impacting the Portsmouth International Port.

4.4.3 The *Portsmouth City Centre Road Scheme Transport Technical Note* (2018) is the most recent assessment of junctions in the vicinity of the City Centre strategic site, and was completed using the SRTM strategic model. Review of the note has indicated that no allocations were assigned to the City Centre in the assessment.

4.4.4 The note identifies capacity issues in the 2018 Do Minimum scenario at:
- Church Street Roundabout (Hope Street / Commercial Road / Church Street / Mile End Road)
- Hope Street Roundabout (Hope Street / Marketway)
- Marketway Roundabout (Marketway / Commercial Road / Cornmill Street)
- A3 / Unicorn Road / Alfred Road.

4.4.5 The *Portsmouth Local Transport Plan 3* (2011) also highlights a series of junctions as key congestion hotspots, as outlined below:
- Church Street Roundabout (Hope Street / Mile End Road)
- Lake Road / Cornmill Street
- Lake Road / Holbrook Road
- A3 / Unicorn Road / Alfred Road
- A3 / Queen Street / Bishop Crispian Way.
4.4.6 The *Western Corridor Study* (2010) identifies the majority of the above junctions approaching capacity in the 2031 AM peak ‘Do Minimum’ scenario, with a volume over capacity ratio of 85-100%.

4.5 St James’ Hospital and Langstone Campus

4.5.1 The new Local Plan has identified the St James’ Hospital and Langstone Campus as a key development site. Several junctions have been identified as experiencing congestion issues in proximity to the site, as illustrated in Figure 11.

![Figure 11. St James’ Hospital and Langstone Campus Congestion Hotspots (Source: OpenStreetMap)](image)

4.5.2 The *Portsmouth Local Transport Plan 3* (2011) identifies the Milton Road / Velder Ave signalised junction as a key congestion hotspot, although this junction was not highlighted in any other literature.

4.5.3 Similarly, the Milton Road / St Marys Road / Baffins Road roundabout is classified as a capacity issue as part of the *Western Corridor Study* (2010). The study forecast that the junction would exceed capacity in the 2031 AM peak ‘Do Minimum’ scenario, with a volume over capacity ratio over 100%.

4.5.4 While not explicitly stated in the literature, the Council has also indicated that the Milton Road / Locksway Road roundabout, Milton Road / Goldsmith Avenue signalised junction and the Goldsmith Avenue / Priory Crescent signalised junction also experience capacity issues.

4.5.5 In addition to the congestion concerns at these junctions, sections of Eastern Road and Milton Road have also been identified as an Air Quality Management Areas (AQMA), as illustrated in Figure 12.
Further development at the St James’ Hospital and Langstone Campus is expected to increase the volume of traffic on the surrounding road network, and will have a proportionate impact on the AQMA area. It is noted that Milton Road has previously been assessed in the Optimisation of Road Traffic Management Control Systems (2015) study for the purpose of local air quality improvements.

### 4.6 Portsmouth International Port

4.6.1 Several junctions in the proximity of the Portsmouth International Port have also been identified in the literature as experiencing congestion issues, as illustrated in Figure 13.
4.6.2 Rudmore Roundabout is situated in the Western Corridor of Portsmouth in the Landport area and provides key connectivity between the M275 and the port. Wharf Road provides access to the Portsmouth International Port to the west of the junction. The M275 provides north / south movements from the junction, with associated slips at the junction. The A3 connects to the northeast of the junction and the A2047 to the east of the junction.

4.6.3 The Portsmouth LTP3 highlights that the Rudmore roundabout is a key congestion hotspot, which is consistent with the Tipner Bridge Feasibility Study (2009). The Portsmouth City Centre Road Scheme Transport Technical Note (2018) also forecasts that this junction will suffer from a forecast RFC of >80% in 2026 within the AM peak period.

4.6.4 The Stubbington Road / London Road junction is a five arm roundabout to the north-east of the Portsmouth International Port, while the London Road / Kingston Crescent junction is an unsignalised three arm junction to the east. The Stubbington Road / London Road Feasibility Study (2018) identified within the base modelling that both the Stubbington Avenue / London Road ad Kingston Crescent / London Road junctions are currently operating above 90% degree of saturation (DoS). Both junctions are also noted in the Portsmouth LTP3 as key congestion hotspots.

4.7 Southsea Seafront

4.7.1 Congestion hotspots in proximity to the Southsea Seafront are illustrated in Figure 14.
4.7.2 Marmion Road / Kent Road and Osborne Road / Portland Road are both T-junctions with single lane approaches from all arms. Marmion Road has on-street parking and traffic calming measures, whilst also being lined by a number of retail units. Osborne Road is lined by retail units and has on-street parking and Portland Road is a narrow single lane approach with on-street parking.

4.7.3 Both junctions have been identified in the Southsea Town Centre Area Action Plan (2007) as a busy / dangerous hotspot, although this is not noted in any other reviewed literature.

4.7.4 The Winston Churchill Avenue / Isambard Brunel Road roundabout is a three arm junction with dual lane approaches from all arms. While not identified as a congestion hotspot, the junction has been noted in the Somerstown and Southsea Area Action Plan (2012) for the removal of the roundabout and creation of a new road junction. The Policy (SNS4) proposes that movement between Winston Churchill Avenue and Grosvenor Street via this junction will be for pedestrians and cyclists only.

4.7.5 It is worth noting that Winston Churchill Avenue has been significantly reduced in size, providing a cycle route linking the Regeneration Area with Isambard Kingdom Brunel Road. Improvements to the Winston Churchill Avenue roundabout junction were completed in June 2011, and funded by PUSH. The roundabout has been significantly reduced in size with a new section of cycle route now linking the Regeneration Area with Isambard Brunel Road to the north. Land created by the reduction in the footprint of the roundabout will be incorporated into a new ‘gateway’ leading to Grosvenor Street.

4.7.6 While these junctions were not identified in the evidence review, the Council has indicated that the Hampshire Terrace / St Michael’s Road signalised junction and the Kings Road Roundabout both also experience capacity issues.

4.8 Summary

4.8.1 A variety of congestion hotspots have been identified in the literature evaluated as part of the evidence review, most notably in previously completed Transport Assessments. It is clear from the review that a variety of assessment methodologies and assumptions have been adopted that may conflict with the analysis that is to be undertaken in Part 2 and Part 3 of this study. While the methodologies and assumptions may differ, the hotspots identified provide an indication of the types of issues that exist in the vicinity of the development sites, and how these congestion issues may be worsened with the proposed allocations.

4.8.2 For the literature that identifies mitigations for the congestion hotspots, it is also useful to discuss the previously proposed mitigation measures to provide context for Part 3 of the study, which is summarised in the following section.
5. PROPOSED MITIGATIONS

5.1 Overview

5.1.1 This chapter outlines the previously proposed mitigation options to alleviate capacity issues, as identified in the previous literature. Several of the mitigations have been tested using a variety of modelling tools, the findings of which will also be discussed in this chapter.

5.2 Tipner, Port Solent and Horsea Island

5.2.1 The evidence review has identified several mitigations to accommodate development at the Tipner, Port Solent and Horsea Island strategic sites.

5.2.2 As discussed previously, the Western Corridor Study (2010) analyses four separate packages to alleviate congestion, each of which include schemes in proximity to Tipner, Port Solent and Horsea Island. It is worth noting that Package 1 of the study included development of Tipner only and did not included the Tipner bridge link, whereas Package 2a, 2b and 3 all included the bridge link and allocations at Port Solent and Horsea Island. The proposed schemes and inclusion in relevant packages is summarised in Table 3.

Table 3. Proposed Schemes from Western Corridor Study in proximity to Tipner, Port Solent and Horsea Island

<table>
<thead>
<tr>
<th>MITIGATION</th>
<th>PACKAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widen Twyford Avenue (22)</td>
<td>✓</td>
</tr>
<tr>
<td>Improvements to Port Way / A27 junction – extra left hand turn and improve signal timings (30)</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Tipner Loop (39)</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Twyford Avenue / A3 Northern Parade Improvement (40)</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>New grade-separated intersection on M275 access to Tipner (24)</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Bridge link Tipner to Horsea (35)</td>
<td>✓ ✓ ✓</td>
</tr>
</tbody>
</table>

5.2.3 Due to the nature of the study, the effectiveness of each mitigation were not assessed in isolation, although Package 3 is ranked as the best performing package in relation to the objectives. The above mitigations are all incorporated into the Tipner, Port Solent and Horsea Island Concept Statement (2010).

5.2.4 As previously mentioned, the M275 / Tipner Lane interchange has been designed and constructed in anticipation of the proposed development at Tipner, and the literature therefore does not propose any additional mitigations. However, the design of the interchange outlined in the planning application and associated Transport Assessment does not appear to include the inclusion of the Tipner bridge link, which indicates that development at Horsea Island and Port Solent were not included in the design. With these additional developments, further mitigation may be required at the interchange, although it may be necessary to undertake scenario testing to determine the likely impact both with and without the bridge link.
5.2.5 Regarding the partial build scenario, the *Concept Statement* states that the Twyford Avenue would be able to accommodate up to 480 dwellings at Tipner and that the Port Way / A27 Southampton Road can facilitate 800 new dwellings at Port Solent and Horsea Island. However, the reference to this assessment is the *Western Corridor Study* (2010), which does not explicitly reference this analysis in the final report. It is also important to note that this assessment was predominately conducted using a SATURN strategic model, which may not have fully captured the specific delay or queuing issues along Twyford Avenue.

5.2.6 The strategic modelling and mitigation testing that is to be conducted in Part 2 and Part 3 of this study is expected to further clarify the current capacity of the interchange, and whether it will be sufficient for the higher development quantum being considered at Tipner West. It is anticipated that scenario testing will also be undertaken to determine the likely impact on capacity both with and without the bridge link.

5.3 **Lakeside Business Park**

5.3.1 Several mitigation measures have also been proposed to facilitate the allocations at the Lakeside Business Park site, although no more relevant than those proposed in the *Lakeside Development North Harbour, Portsmouth TA* (2008) and the associated addendum. As stated previously, this document formed part of the planning application that has been granted conditional outline permission, including the phasing of proposed upgrades.

5.3.2 The original Transport Assessment for the Lakeside development proposed mitigations to the North Harbour roundabout, as well as provision of a new major road link (referred to as Lakeshore Drive) along the northern side of the lake and two additional accesses off the A27; a left-in / left-out access to the southeast of the existing access and another to the northwest of the existing access. These mitigations are illustrated in the Master Plan shown in Figure 15.

![Figure 15. Lakeside Development Master Plan (Source: Figure 4, Transport Assessment)](image)

5.3.3 In addition to these mitigations, upgrades were also proposed for the Portsbridge roundabout (signalisation) and the Marriott junction (minor mitigations) through the *Transport Assessment Addendum*. 
5.3.4 The Mitigation Strategy outlined in the original Transport Assessment and subsequent Addendum proposes that following the completion of Phase B of the development, the roundabout should be signalised, along with an additional flare onto the Lakeside Business Park access egress arm. The third access road must also be installed prior to Phase D. While the planning application for this development has been granted conditional outline permission in October 2010, the phasing of the development has not required any mitigation measures to-date, as per the previous Transport Assessment.

5.3.5 The analysis completed by Capita Symonds to develop these mitigation measures appears robust, with appropriate modelling software used (e.g. ARCADY and TRANSYT) and reasonable assumptions regarding trip generation. However, it is expected that these mitigation measures may not be as effective in alleviating congestion around the development due to additional background traffic growth from 2008 to 2018.

5.3.6 It is worth noting that the Western Corridor Study (2010) included all of the above mitigations in each of the four packages assessed, as well as the signalisation of the North Harbour roundabout and widening/access restrictions along the A27 between the Port Way / A27 junction and the Marriott junction.

5.3.7 Several of the above mitigations are included in the Infrastructure Delivery Plan (2011) and other planning documents.

5.4 Portsmouth City Centre

5.4.1 The literature review has identified several mitigations in proximity to the Portsmouth City Centre development site, most notably in the Portsmouth City Centre Road Scheme planning application (17/02066/CS3). This application has been submitted in an effort to unlock development opportunities within the City Centre, and would upgrade and realign the existing road network around the A3 southwards from the junction with Princess Royal Way to the junction with Unicorn Road in Portsmouth City Centre.

5.4.2 The Portsmouth City Centre Road Scheme Technical Note (2018) outlines the proposed closure of existing network links, the addition of a one-way access on Wingfield Street and a U-turn via eastbound access on Hope Street. The proposal includes the realignment of the A3 route around Victory Retail Park to become a dual carriageway.

5.4.3 While the Technical Note concludes that the scheme will mitigate the congestion issues summarised in Section 4.4, it appears that no microsimulation modelling has been undertaken to determine the suitability of these upgrades. The assessment also does not seem to include allocations at the Portsmouth City Centre development site, or include growth to a future design scenario.

5.4.4 As for the previous development sites, the Western Corridor Study (2010) also includes mitigations in proximity to the City Centre, the most notable of which is the Northern Quarter Road layout (Scheme 51). This scheme is included in all of the proposed packages of the study and is similar in principle to the mitigations in the Portsmouth City Centre Road Scheme. While the plots in the Western Corridor Study appear to indicate that the scheme will alleviate the majority of the congestion issues in the proximity to the Portsmouth City Centre, it is worth again noting that this is a strategic modelling exercise and that no additional allocations have been assigned to the development site.

5.4.5 In addition to the above strategic modelling assessments, more localised modelling has been completed through the Optimisation of Road Traffic Management Control Systems (2015) using VISSIM microsimulation modelling. This assessment does not appear to have considered
further development at the City Centre site, although will be helpful should these junctions be identified for mitigation development in Part 3 of this study.

5.5 St James’ Hospital and Langstone Campus

5.5.1 In contrast to the above developments, there have been limited mitigations previously proposed in the vicinity of St James’ Hospital and Langstone Campus. This is to be expected, as it has only recently been identified for further development in a 2014 amendment to the Portsmouth Plan.

5.5.2 The Transport Assessment completed for the St James’ Hospital – Plot 1 development, for 107 residential dwellings, concluded that there is no expected change in traffic flows in comparison to the former hospital buildings, and that mitigations to the surrounding road network are not required. It should be noted that this application has not been formally approved by the Council.

5.5.3 While the 107 dwellings proposed in Plot 1 of the development may not materially impact the identified congested hotspots, there could be traffic implications with the remaining development of the site identified in the Site Allocations: Lockway Road, Milton (2014) report and July 2015 update.

5.5.4 It should be noted that the Milton Road / Velder Avenue junction was tested for installation of Microprocessor Optimised Vehicle Actuation (MOVA) in the Optimisation of Road Traffic Management Control Systems (2015), and now operates with MOVA control as a result of the Tesco development at Fratton Way.

5.6 Portsmouth International Port

5.6.1 Mitigation options have previously been identified for both the Rudmore roundabout and the Stubbington Avenue / London Road junction.

5.6.2 The Portsmouth Western Corridor Study (2010) included a mitigation option at the Rudmore roundabout that fully signalises the junction (all arms) to allow bus priority. The upgrade would also widen Wharf Road, the M275 southbound slip road and Stamshaw Road approaches. This scheme is included in Package 2a, 2b and 3 as part of the study.

5.6.3 The Optimisation of Road Traffic Management Control Systems (2015) also included mitigation options for the roundabout, similarly testing signalisation and a lane drop scenario at the merge of traffic from Rudmore roundabout southbound on slip with the M275.

5.6.4 The Stubbington Avenue / London Road Feasibility Study (2018) was also reviewed to identify the mitigation options developed. The study tested four options of signalisation at the junction and it was concluded that Option 2b, which includes the London Road North and South operating together, was the preferred option, although it would still be operating above practical capacity.

5.6.5 It is worth noting that none of the above mitigation options have mentioned the impact of potential expansion of the Port, or the impacts of Brexit on the highway network. Following an enquiry from the Council, the Portsmouth International Port have indicated that they expect an increase in processing time for each freight vehicle of around 2 minutes after Brexit. Portsmouth International Port currently processes around 400 vehicles per day that are travelling to the continent, with an additional 100 freight vehicles accessing MMD Shipping Services Ltd, which is based at the Port, and not travelling abroad. It is anticipated that
approximately 500 vehicles per day will be impacted by Brexit-related delays, with queuing back to the Rudmore roundabout.

5.7 Southsea Seafront

5.7.1 The Southsea Seafront development also has limited mitigation options identified for junctions in its proximity.

5.7.2 As noted in Section 4, the Winston Churchill Avenue / Isambard Brunel Road junction has been identified in the Somerstown and Southsea Area Action Plan (2012) for the removal of the roundabout and creation of a new road junction. However, the purpose of this upgrade appears to be more functional than increasing capacity, and there is no evidence indicating whether it will reduce congestion in the area.

5.7.3 It should also be noted that several sea defence schemes have been developed as part of the Southsea Coastal Scheme These include options for both the Clarence Esplanade in the Southsea Common and the Eastney Esplanade adjacent to Canoe Lake Park, with proposals developed for both pedestrianisation or modification to unidirectional with parking. These schemes would be expected to reduce capacity in the area and may contribute to further congestion.

5.8 Summary

5.8.1 The evidence review has shown that a wide range of mitigation measures have been proposed in the vicinity of each development site. However, the evidence supporting each mitigation varies, with many proposals relying on strategic modelling outputs that may not be appropriate. In addition, many of these assessments do not consider allocations at the proposed development sites, or include allocations that differ from those currently proposed by the Council.

5.8.2 In order to provide a robust evidence base for the new Local Plan, it is proposed to reassess the future congestion hotspots will be reassessed using the SRTM strategic model (Part 2), followed by initial Transport Assessments and development of mitigation measures to support the expected growth (Part 3). This approach will provide a uniform methodology for assessment, with the project team undertaking the initial localised assessments using the appropriate modelling software (combination of LinSig, TRANSYT, and Arcady/Picady) depending on the types of junctions identified as capacity hotspots. The future design year will also be consistent, along with the assumptions underpinning the analysis.

5.8.3 This approach is expected to clearly demonstrate the impact of development in the new Local Plan, as well as clarify whether the previously proposed mitigation measures will be sufficient to accommodate the development sites and background traffic growth. If the mitigation measures previously proposed are insufficient, the project team will work with Council to produce alternative mitigation measures that will support the expected growth.

6. REVIEW OF TIPNER BRIDGE FEASIBILITY STUDY

6.1 Introduction

6.1.1 The Tipner Bridge Feasibility Study (2010) has been identified by the Council as a key document as part of the Evidence Review due to its role in the viability of the Tipner, Horsea Island and Port Solent development sites. The feasibility study was completed in June 2010
and reflects a partnership approach between Peter Brett Associates (PBA), Atkins and Savills on behalf of Portsmouth City Council.

6.1.2 SYSTRA has conducted a more detailed critique of the report to ensure it is a valid basis for ongoing work. This review is focussed on the technical aspects of the potential scheme, and includes an assessment of the bridge purpose, engineering considerations, cost implications and the proposed access arrangement.

6.2 Bridge Purpose

6.2.1 The PBA report outlines several reasons to justify the scheme, most notably to enable full development of the Port Solent and Horsea Island sites. As detailed in Section 3.2, there are a range of allocations at these sites in the previous planning documents, with the majority noting that housing allocation is dependent on provision of transport infrastructure. This is primarily due to the current access arrangement to Port Solent, which relies heavily on the A27 / Port Way signalised junction. While mitigation options have previously been proposed at this junction, as discussed in Section 5, they are not expected to accommodate the full development scenarios at Port Solent and Horsea Island.

6.2.2 The bridge is therefore expected to divert development traffic away from the A27 / Port Way junction to the newly constructed M275 / Tipner Lane interchange. These trips are mostly expected for residents accessing the Portsmouth City Centre for employment, retail, education or recreation. It should be noted that with employment development also proposed at the Port Solent and Horsea Island sites, it is anticipated that a proportion of employees will still access the site through the A27 / Port Way junction when travelling from the wider South Hampshire region, as discussed further in Section 6.5.

6.2.3 The feasibility study suggests that the new bridge would be one lane in each direction and could carry all forms of traffic, including bus access. Bus services are expected to serve the development sites directly from the A27 to the M275 at the Tipner Park & Ride site. As shown in the high level drawings, each option includes a shared pedestrian and cycle provision on one side of the carriageway.

6.2.4 As per the PBA report, approximately 2,500 person trips are forecasted to be generated from the combined developments in 2031. Of these trips, the study estimates that 34% will use public transport with the bridge in place, in comparison to 25% without the bridge. While it is appreciated that this mode share does not seem to account for active transport, shared trips or trip internalisation, the percentage of trips by bus appears high and may warrant further investigation. The mode share may also impact the travel time savings considered as part of the Initial Benefit-Cost Assessment, and should be carefully considered in future Business Case assessment.

6.2.5 With the assumed mode share, the study indicates that over 1,500 person trips will be undertaken by car in the AM peak in 2031, a proportion of which will be using the bridge. There does not seem to be any further analysis on the peak hourly flow that will be using the bridge, as a single lane bridge is assumed to be sufficient with the proposed size of the developments and the vehicular loading is not a key consideration in the feasibility stage. However, the magnitude of development traffic using the bridge is expected to significantly impact the access arrangements on either side of the bridge, which is discussed in Section 6.5.

6.3 Engineering Considerations

6.3.1 PBA have conducted a high level civil engineering design and feasibility of the bridge. This work considered different alignment options and the associated engineering issues that are
anticipated. The four options that have been considered are illustrated in Figure 16 and can be summarised as follows:

- **Option A**: Runs adjacent to existing M275 bridge, approx. 104m long
- **Option B**: Spans from the edge of Tipner Point, approx. 250m long
- **Option C**: Skewed alignment from southern end of M275 bridge, approx. 440m long
- **Option D**: Longer crossing to the west of Option B, approx. 540m long

The PBA assessment has incorporated several engineering considerations, including type of bridge, structural features, constructability, environmental impacts, and other site constraints. These have been assessed in isolation to ensure the feasibility study is a valid basis for future work.

The type of bridge is an important starting point, as it affects a wide range of engineering considerations. The study outlines that a concrete bridge is most appropriate (over a steel bridge) due to the high salinity environment typical of a coastal port. This is considered an appropriate assessment, and we concur that a concrete bridge is the most suitable type of bridge. In addition to this, the PBA report has excluded lifting bridges and long span options due to high initial costs, as well as significant maintenance cost burdens for a lifting bridge option. This is considered appropriate at the feasibility stage of assessment.

In the development of the *Feasibility Study*, the Council had previously prescribed that each option has a 7.3m wide carriageway with a shared 3.0m wide footpath/cycleway along one
side of the highway. These widths are compliant with minimum requirements in the Design Manual for Roads and Bridges: Volume 6. The Council has recently indicated that a segregated cycle route would be preferred, which could increase the width of the bridge by up to 4.0m as the preferred minimum for a segregated shared use path with no side constraints is 7.0m. This will need to be considered in future design stages, as increasing the bridge width will have a proportional increase in cost, as well as possibly affecting the alignment and land take on the approaches.

6.3.5 A design speed of 50 kph (30 mph) was also agreed with the Council for both the new bridge crossing and adjacent road network. It is noted that the report does not provide commentary on the required road geometry (e.g. horizontal curvature) to accommodate vehicles at this design speed, although this is understandable at the design feasibility stage. Future design stages are expected to include assessment of the horizontal geometry, grade, sight distance, crossfall, aquaplaning and superelevation.

6.3.6 For clearance purposes, all of the high level options have adopted a structural height in line with the existing M275 bridge. With these clearance requirements, PBA has proposed 8, 16 and 20 piers for Option B, C and D, respectively. No new piers are expected to be required for Option A, as the alignment would utilise and modify the existing embankment and extend the existing M275 bridge piers. The number of piers is expected to have a proportional environment impact, as well as cost implications.

6.3.7 Clearance to the proposed bridge deck in the options has been examined at both the 1 in 1000 year flood event and also at the higher soffit level of the new M275 bridge. The cost implications of these alternative clearances are minimal and the biggest impact will be the visual appearance of Option A on the motorists using the existing M275, particularly as the proposed bridge will have a lower speed limit. Consequently, edge treatment may be required and possibly a higher containment parapet incorporated into the M275 bridge to cater for both the increased risk of incursion and to provide a suitable screen.

6.3.8 The above design requirements have led to PBA proposing a 50m main span for Option A, to match the existing bridge, and a 40m main span for Option B, C and D, as this is the longest span available using precast prestressed beams. Option C and D will be viaducts rather than discreet bridge crossings due to the increased length of bridge deck required for both options.

6.3.9 With the structural features detailed in the feasibility study, it is also important to consider the constructability of each option, and how this may affect their viability. As detailed in the report, Option A is expected to impact on the adjacent motorway operation during construction, and would need to match the existing M275 bridge. Due to the proposed separation between each bridge (2m), PBA recommends a balanced cantilever in-situ construction as the most appropriate form of construction, which they considered outside the range of common UK construction techniques for concrete bridges. This is still likely to be a valid assumption given the site environment although, as mentioned in the report, it is recommended that discussions with a major contractor with recent experience of a major water bridge crossing are undertaken in taking the scheme forward. Options B, C and D are still expected to be constructed using common UK construction techniques for concrete bridges.

6.3.10 Another engineering consideration is the evolution of land uses at Horsea Island from residential to maritime industries since the feasibility study was undertaken. As modern bridges are designed to accommodate Special Vehicles, it is expected that this change in land use will be accommodated as part of the normal design process. Special Vehicles represent abnormal loads and would therefore consider vehicles potentially transporting marine craft and parts to possible maritime industries on Horsea Island. If a particular type of vehicle is
proposed that is beyond the scope of the Special Types General Order (STGO), then this can also be accommodated at the design stage. The implications on the structure and subsequent cost are unlikely to be significant.

6.3.11 The structural features of the chosen bridge option are expected to have varying environmental impacts. As with all environmental issues, it can be difficult to fully appreciate the impact without a detailed Environmental Assessment. It is agreed that the number of piers for Option B, C and D are expected to have a proportionate environmental impact on the surrounding ecosystem and harbour bed, although this may also be impacted by the alignment of the bridge options, the embankments required on either approach and the depth of the piers in the harbour. These factors are expected to be considered in future assessment work, along with changes to the flow regime, erosion and deposition, however the uncertainty surrounding the environmental impact indicates that the costing should be the primary consideration in the optioneering process.

6.3.12 In addition to a detailed Environmental Impact Assessment, the following is also expected to be undertaken as part of the future design stages:

- Habitats Regulation Assessment (project level)
- Geotechnical assessment, particularly for the modified embankment in Option A
- Ground condition and contamination assessment
- Structural design modelling
- Hydraulic modelling.

6.3.13 Taking into account the above engineering considerations, and assuming that the relative costs of the items excluded from the cost estimate (highlighted in Section 6.4.4) are similar, it is considered appropriate that Option A and B remain viable options and that Option C and D can be discounted.

6.4 Cost Implications

6.4.1 As part of PBA’s feasibility study, they also provided advice on the broad level of construction costs for the various alignment options. These costs have been summarised in Table 4.

Table 4. Cost Estimate for Bridge Alignment Options (Source: Bridge Feasibility Study, 2010)

<table>
<thead>
<tr>
<th>OPTION</th>
<th>BRIDGE CONSTRUCTION</th>
<th>OTHER COSTS TOTAL¹</th>
<th>PORT SOLENT TO HORSEA ISLAND CONNECTION</th>
<th>TOTAL²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A</td>
<td>£19.2 million</td>
<td>£2.28 million</td>
<td>£4.5 million</td>
<td>£26.0 million</td>
</tr>
<tr>
<td>Option B</td>
<td>£21.4 million</td>
<td>£2.66 million</td>
<td>£4.5 million</td>
<td>£28.6 million</td>
</tr>
<tr>
<td>Option C</td>
<td>£29.3 million</td>
<td>£3.89 million</td>
<td>£4.5 million</td>
<td>£37.7 million</td>
</tr>
<tr>
<td>Option D</td>
<td>£36.0 million</td>
<td>£4.78 million</td>
<td>£4.5 million</td>
<td>£45.3 million</td>
</tr>
</tbody>
</table>

Note:

- ¹Total cost is not provided explicitly in the PBA report
- ²Total cost is not provided explicitly in the PBA report

It is important to note that these costs are in 2009/10 prices, with a detailed list of the features included in the costing provided in Appendix A of the Bridge Feasibility Study report. These include site clearance, road restraint systems, earthworks, pavements, piling, structural concrete, stonework, engineering contribution costs and reasonable maintenance costs.
6.4.3 The above costings also include an optimism bias equating to an 80% percentile uplift for fixed links, which has been added to the costs to reflect the uncertainty that exists at this stage of scheme design. This rate equates to an uplift to the basic cost of 55%, which was taken from *The British Department for Transport Procedures for Dealing with Optimism Bias in Transport Planning Guidance Document* (2004). While this has since been superseded by the Green Book guidance from HM Treasury, it falls within the upper bounds for standard civil engineering (44%) and non-standard civil engineering project types (66%) of the *Supplementary Green Book Guidance – Optimism Bias* (2013), and is therefore considered appropriate.

6.4.4 The items excluded from the costing are outlined in Appendix B of the *Bridge Feasibility Study* report, and include costs associated with land purchase, approvals, utility diversions, surveys, remediation of pollution / contaminated land, remediation of former landfill sites and environmental mitigation. It is considered reasonable that these costs would be excluded from a cost estimate in the feasibility stage, although would be included as the design progresses.

6.4.5 It should be noted that the cost of some of these excluded items can be significant in terms of overall scheme costs, in particular; land purchase, contaminated land remediation and utilities diversions.

6.4.6 Considering that the initial cost estimate was completed in 2009/10 after the global financial crisis, it is expected that the costs would be approximately 20% higher than previously estimated. This is consistent with the CPIH, the consumer price index produced by the Office for National Statistics but adjusted to reflect changes in average residential rents, which has an index value of 89 for February 2010, and 105.9 for July 2018 (with a 2015 baseline). This is equivalent to an increase of 19.0%.

6.5 Access Considerations

6.5.1 There are several access arrangements that have been proposed as part of the feasibility study that require additional investigation. These arrangements have been considered in relation to the specific accesses to the development sites, the impact on the Tipner interchange and how the arrangements will affect the A27 / Port Way signalised junction.

6.5.2 The feasibility study includes high-level plan drawings for each bridge option that illustrate access arrangements to the Tipner development. For Option A and C, the drawings indicate a junction at the southern end of the bridge which connects to the Tipner East site through an existing track under the M275. Due to the alignment of Option B and D, additional space is available and the access is provided using a roundabout arrangement instead.

6.5.3 It is assumed that the arrangements in Option A and C have been developed by PBA so that the junction on the southern end matches the existing elevation, as any significant change would require additional cost to maintain the use of the existing track under the M275. There may also be an issue with the type of junction that this access will take, which is likely to be impacted by the volume of traffic using the junction and the safety considerations.

6.5.4 From a highway engineering perspective, it is expected that a signalised junction would be required for Option A and C due to sight distance issues, although this does not account for development traffic accessing the junction from Tipner East and Tipner West, or the volume of traffic crossing the bridge in the peak periods. Localised junction modelling is therefore recommended to assess the suitability of this arrangement, as it would be undesirable to have significant queuing back onto the bridge in peak periods. It is worth noting that the feasibility study does not explicitly state the volume of traffic crossing the bridge, however the *Western Corridor Study* (2010) appears to indicate over 700 pcu in the 2031 AM peak.
6.5.5 The proposed roundabouts on the southern end in Option B and D are expected to function better than the arrangement in Option A and C, although it is noted that these arrangements will likely reduce the development land available in Tipner West. It is recommended that localised junction modelling is also conducted for the roundabout arrangements to ensure they are viable options.

6.5.6 The access arrangements to the north of the proposed bridge vary, which is assumedly a function of uncertainty regarding the layout of the Horsea Island site. Option A and C provide a roundabout in proximity to the M275, which is anticipated to provide access to Horsea Island to the north. Option B and D, however, do not illustrate a junction on the northern side, with access expected to be provided further to the north, possibly by the Port Solent site. The layout for the Port Solent and Horsea Island development sites are expected to be progressed further as part of the Local Plan, which will enable additional investigation of the required accesses to the north of the bridge.

6.5.7 It is anticipated that the Tipner interchange will be equally impacted by each of the proposed design options. The opening of the bridge will connect Tipner and Horsea Island, enabling residents on Horsea Island to easily access the Portsmouth City Centre, as well as trips to employment development at the Port Solent and Horsea Island sites. For trips originating in or destined for the City Centre, a large proportion are expected to use the M275 via the Tipner interchange. Section 5.2 has detailed how the Tipner interchange was designed and constructed in anticipation of the proposed development at Tipner only, and does not appear to include the inclusion of the Tipner bridge link. With the additional developments at Horsea Island and Port Solent, further mitigation may therefore be required at the interchange, although it may be necessary to undertake scenario testing to determine the likely impact both with and without the bridge link.

6.5.8 Similarly, the A27 / Port Way signalised junction is expected to be impacted equally by each of the proposed design options. The Bridge Feasibility Study highlights that without the Tipner bridge link, the Horsea Island and Port Solent development would be reliant on the Port Way access road, and this junction would need to support traffic associated with “2,000 additional residential units”. This junction is expected to be a focus of the mitigation testing that is to be conducted in Part 3 of this study, and may require scenario testing to assess a partial build scenario at the Port Solent development site only.

6.5.9 It is noted that a public transport only link between Horsea Island and Port Solent was also included as part of the feasibility study. This link is illustrated in Drawing 24012 SK004 and was expected to provide bus priority, pedestrian / cycling link and emergency access at the time of the study. However, if this link is open to all forms of traffic, additional development traffic is expected to use both the A27 / Port Way signalised junction and Tipner interchange, as well as the development accesses, and may impact the mitigation options developed. The purpose of this link, and whether both scenarios will be assessed, will need to be confirmed as part of the strategic modelling that is to be conducted in Part 2 of this study.

6.6 Summary

6.6.1 SYSTRA has conducted a detailed critique of the Bridge Feasibility Study to assess whether it is a valid basis for ongoing work. The review included an analysis of the bridge purpose, engineering considerations, cost implications and the proposed access arrangements.

Bridge Purpose

6.6.2 The original feasibility study concluded that a bridge link is necessary to enable full development of the Port Solent and Horsea Island sites, providing suitable access and
reducing congestion at key junctions. Without the bridge link, access to the Horsea Island and Port Solent development strategic sites would be reliant on the Port Way access road, with the main access point for the Tipner site via the newly constructed M275 / Tipner Lane interchange. The bridge is therefore needed to divert development traffic away from the A27 / Port Way junction to the M275 / Tipner Lane interchange.

Engineering Considerations

6.6.3 The PBA assessment has incorporated several engineering considerations, including type of bridge, structural features, constructability, environmental impacts, and other site constraints. These have been assessed in isolation to ensure the feasibility study is a valid basis for future work.

6.6.4 While the land uses at Horsea Island have evolved from residential to maritime industries since the feasibility study was undertaken, it should be noted that modern bridges are designed to accommodate Special Vehicles, which represent abnormal loads and therefore vehicles potentially transporting marine craft and parts should be accommodated as part of the normal design process.

6.6.5 Four alignment options have been considered in the PBA assessment and two of the options (C and D) have been discounted due the increased relative costs and environmental / hydraulic impacts. Provided the relative cost of the items excluded from the cost estimate (highlighted in Section 6.4.4) are similar, it is considered appropriate that Option A and B remain viable options and that Options C and D can be discounted.

6.6.6 It is strongly recommended that discussions with a major contractor with recent experience of a similar type of bridge crossing are undertaken in taking the scheme forward.

Cost Implications

6.6.7 The PBA feasibility study provides advice on the broad level of construction costs for the various alignment options, as previously summarised in Table 4 of this report.

6.6.8 Considering that the initial cost estimate was completed in 2009/10 after the global financial crisis, it is expected that these costs would be approximately 20% higher to reflect current prices (July 2018). This is consistent with the CPIH, the consumer price index produced by the Office for National Statistics. The adjusted cost are shown in Table 5 below.

<table>
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<tr>
<th>OPTION</th>
<th>BRIDGE CONSTRUCTION</th>
<th>OTHER COSTS TOTAL</th>
<th>PORT SOLENT TO HORSEA ISLAND CONNECTION</th>
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<tr>
<td>A</td>
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<td>£2.74 million</td>
<td>£5.4 million</td>
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<td>£3.19 million</td>
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<tr>
<td>D</td>
<td>£43.2 million</td>
<td>£5.74 million</td>
<td>£5.4 million</td>
<td>£54.3 million</td>
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6.6.9 It should be noted that these costs exclude the items outlined in Appendix B of the PBA report, such as; costs associated with land purchase, approvals, utility diversions, surveys, remediation of pollution / contaminated land, remediation of former landfill sites and environmental mitigation. The cost of some of these excluded items can be significant in
terms of overall scheme costs, in particular; land purchase, contaminated land remediation and utilities diversions. These costs will be determined as the scheme progresses and a more definitive scope is developed.

6.6.10 Overall, the PBA report is considered suitable to progress for further design stages with Option A and Option B the preferred options.
7. CONCLUSION

7.1 Summary

7.1.1 The first stage of this study required a detailed evidence review of available literature to appreciate the evolution of the development sites, previously identified congestion hotspots and previously proposed mitigation measures. The findings of this review will provide important context to inform the strategic modelling and localised modelling that will be undertaken in Part 2 and Part 3 of the assessment.

7.1.2 Portsmouth City Council provided a range of documents to be considered in the evidence review, including overarching planning documents, specific planning documents for the development sites, relevant Transport Assessments, Council Strategies, and other relevant reports. It was clear from these documents that there are many housing, employment and retail growth scenarios that have been considered for Portsmouth over the years.

7.1.3 The literature has provided an overview for each strategic sites identified by the Council, and it was particularly important to note the evolution of the allocations to provide context to the Transport Assessments previously undertaken.

7.1.4 A series of congestion hotspots have been identified in the literature evaluated as part of the evidence review, most notably in previously completed Transport Assessments. It is clear from the review that a variety of assessment methodologies and assumptions have been adopted that may conflict with the analysis undertaken in Part 2 and Part 3 of this study. While the methodologies and assumptions may differ, the hotspots identified provide an indication of the types of issues that exist in the vicinity of the strategic sites, and how these congestion issues may be worsened with the proposed allocations. It should be stressed however that future work on this Transport Assessment will not be limited to these identified hotspots.

7.1.5 This review has shown that a wide range of mitigation measures have previously been proposed in the vicinity of each development site. However, the evidence supporting each mitigation varies, with many proposals relying on strategic modelling outputs that provide a useful starting point, though would benefit from more localised junction modelling. In addition, many of these assessments do not consider allocations at the proposed development sites, or include allocations that differ from those currently proposed by the Council. Where appropriate, these mitigation options will provide the starting point for the Transport Assessment to be conducted in Part 3 of this study.

7.1.6 Due to the importance of the Tipner Bridge Feasibility Study (2010) in the viability of the Tipner, Horsea Island and Port Solent development sites, a more detailed critique of the report has been conducted. This review focussed on the technical aspects of the potential scheme, and concluded that the PBA report is suitable to progress for further design stages with Option A and Option B as the preferred options.

7.2 Next Steps

7.2.1 This document summarises the evidence review conducted in Part 1, and will inform the next stages of the project. It will also provide a basis for the regulation 18 Local Plan Consultation that the Council is planning to undertake in the coming months.

7.2.2 In order to provide a robust evidence base for the new Local Plan, it is proposed to reassess the future congestion hotspots using the Solent Sub-Regional Transport Model (Part 2), followed by initial Transport Assessments and development of mitigation measures to
support the expected growth (Part 3). This approach is expected to clearly demonstrate the impact of development in the new Local Plan, as well as clarify whether the previously proposed mitigation measures will be sufficient to accommodate the development sites and background traffic growth. If the mitigation measures previously proposed are insufficient, the project team will work with Council to produce alternative mitigation measures that will support the expected growth.

7.2.3 The next step of the study (Part 2) will entail analysis of the impact of development in the new Local Plan, through modelling of the Baseline and Do Minimum scenarios in the Solent Sub-Regional Transport Model (SRTM).
## APPROVAL

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