

Hampshire Water Transfer & Water Recycling Project Scheme Development Report – 1 of 3 documents

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Hampshire Water Transfer and Water Recycling Project
Scheme Development Report

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Executive Summary

Introduction

1. This Scheme Development Report sets out the selection and development of the Hampshire Water Transfer and Water Recycling Project ('the Project'), from Southern Water's Water Resources Management Plan 2019 (WRMP19), through to the submission of the Development Consent Order (DCO). The report provides an overview of the various stages of the Project which Southern Water Services Limited ('the Applicant') has undertaken to select and develop the Project.
2. There is an established national, regional and local need for additional water resources to ensure resilient water supplies and to protect the environment in the face of climate change, population growth and environmental constraints. The Applicant's WRMP19 forecasts a significant water resource deficit in Hampshire, which emerging WRMP24 highlights has increased further and now forecasts shortfalls in both drought and normal operating conditions. This need is reinforced by government policy, the Environment Agency's National Framework for Water Resources and the Water Resources South East (WRSE) Final Regional Plan, all of which conclude that new strategic supply schemes are required urgently in the south-east.
3. WRMP19 identified a desalination option to resolve this deficit, however further options were considered through the Regulators' Alliance for Progressing Infrastructure Development (RAPID) gated process, leading to the selection of the Project as the preferred strategic solution. The Project has subsequently been confirmed in both the WRSE Final Regional Plan and the Applicant's emerging WRMP24.

Stage 1: Development and Assessment of the Initial Options

4. At Stage 1, the Applicant undertook a high level assessment of strategic water resource options in response to the supply deficit identified in WRMP19 and in accordance with Gate 1 of the RAPID process.
5. Gate 1 considered nine options, comprising variations of desalination, water recycling and water transfer options. Following initial assessment, three options were not progressed due to fundamental constraints, including reliance on environmentally sensitive chalk streams, potential impacts on the River Itchen Special Area of Conservation, and regulatory, operational and public acceptance risks. The remaining six options were considered technically feasible and were progressed further.

Stage 2: Options Appraisal Process

6. At Stage 2, the Applicant evaluated the options from RAPID Gate 1 to identify a preferred option and a backup option to inform the Gate 2 submission to RAPID. This evaluation comprised various stages, which initially comprised site and route selection to identify the infrastructure for each option. Following this a number of

stages considered environmental, planning and value for money criteria to select a preferred option.

Site and Route Selection

7. The Scheme Development Report only reports on the site and route selection relevant to the Project. Site and route selection was undertaken for all options at Stage 2, however these are not reported as they are not relevant to the Project.
8. Sites were identified for the Water Recycling Plant (WRP) and High Lift Pumping Station (HLPS), together with initial pipeline routes connecting the WRP, Havant Thicket Reservoir and Otterbourne Water Supply Works. The site route selection resulted in the selection of a preferred site for the WRP and HLPS and a set of initial pipeline routes suitable for further refinement.
9. A defined search area around Budds Farm Wastewater Treatment Works (WTW) was used to identify potential WRP sites, informed by carbon considerations, and future resilience to coastal change and flooding susceptibility. Sites were progressively filtered through a staged assessment considering environmental, planning and technical criteria. Site WRP_72 was selected as the preferred site.
10. Site selection for the HLPS was informed by the identified initial pipeline routes. Sites were progressively filtered through a staged assessment considering environmental, planning and technical criteria. Locating the HLPS at the same site as the WRP was identified as the preferred solution, reducing the need for additional sites and minimising construction and operational impacts.
11. A number of initial pipeline routes were identified and assessed at a high level to support the options appraisal at Stage 2. Routes presenting the greatest environmental risk were filtered out, with a subset of routes progressed for further development.

Consenting Evaluation

12. A consenting evaluation was undertaken to identify the consenting risk for each option. The evaluation tested each option against relevant national policy and legislative requirements. Each option was assessed for potential impacts during construction and operation and red, amber, and green (RAG) rated across a comprehensive range of consenting topics. The consenting evaluation demonstrated that Option D.2 and Option B.4 (the Project) were the best performing options.

Multi-criteria Decision Analysis

13. A multi-criteria decision analysis was undertaken to assess the relative performance of the remaining options against best value considerations, in line with water resources planning guidance and best practice for economic appraisal. The outcomes were reported through five best value lenses including whole life cost, affordability and net social impact. Overall, the analysis confirmed that Options D.2 and B.4 provided the strongest balance of value, affordability and net social benefit.

Legal and Policy Objectives

14. The options were assessed against a defined set of legal and policy objectives. This assessment tested each option's ability to comply with the Applicant's supply duty, use of and need for drought orders, environmental legislation, Biodiversity Net Gain and Environmental Net Gain, compliance with the Section 20 agreement, the draft National Policy Statement for Water Resources Infrastructure and the Water Framework Directive. The options were RAG rated to reflect the level of risk associated with meeting these objectives. All options performed equally except for the desalination options which performed worse.

Water for Life Hampshire Strategic Objectives

15. The options were then assessed against the Applicant's Water for Life Hampshire strategic objectives which focused on best value for customers, progress towards net zero carbon and adaptability. The assessment outlined that the water transfer option D.2 performed strongest overall.

Interim Business Evaluation

16. Following the above evaluations, the options were ranked relative to one another, considering the outcomes of the above evaluations. This assessment was carried out on options scaled to meet a 1 in 200 year drought, consistent with WRMP19 requirements. The evaluation concluded that the water transfer option D.2 and the water recycling and transfer option B.4 performed best overall. The desalination options ranked the lowest and were not progressed further.

Future Needs Assessment

17. A future needs assessment was undertaken to test whether the remaining options could be adapted to meet longer term water resource requirements. This assessment was undertaken to ensure that the options reflected updated water resources planning requirements set out in national policy, the Applicant's emerging WRMP24 and the WRSE Regional Plan. The assessment tested whether each option could be scaled to deliver a deployable output of between 87 to 95 Ml/d, reflecting an updated estimate of future need and providing resilience against uncertainty. The assessment confirmed that only Option B.4 and Option B.5 could be scaled up to provide this deployable output.

Final Business Evaluation

18. At the final business evaluation stage, the remaining scaled up options were re-assessed. While the relative performance of the options remained broadly unchanged, consideration of long-term adaptability and resilience confirmed Option B.4 as the preferred solution. Option B.4 was ranked highest due to its lower overall consenting risk, greater deliverability and enhanced flexibility. Option B.4 was therefore confirmed as the preferred option and became the Project.

Stage 3: Options Appraisal Process to Summer 2022 Consultation

19. Stage 3 focused on the development of a preferred pipeline corridor and associated above-ground plant zones, while retaining flexibility to respond to environmental, planning and engineering constraints. Stage 2 initial pipeline routes were expanded into pipeline corridors within which the pipeline could be located as further information became available at later stages.
20. Zones were defined for infrastructure such as pumping stations and break pressure tanks, based on engineering requirements, access, land take, operational needs and their relationship to the pipeline corridors.
21. Pipeline corridor sections and Above Ground Plant zones were then evaluated through a multi-disciplinary assessment, considering environmental, planning and engineering criteria. This process resulted in the identification of a preferred pipeline corridor and associated Above Ground Plant zones which were presented at the Summer 2022 Consultation.

Stage 4: Summer 2022 Consultation to Summer 2024 Consultation

22. Stage 4 focused on refining the Project's pipeline route, above-ground plant locations and construction compounds within the preferred corridor, while maintaining flexibility to respond to environmental, engineering and land constraints. Further environmental surveys, investigations, engineering assessments and constructability reviews were conducted to test the feasibility of different route alignments and construction methods. This stage also considered and had regard to feedback from the Summer 2022 Consultation and ongoing engagement with stakeholders.
23. Where constraints were identified, alternative routes or design solutions were considered within the pipeline corridor. Above Ground Plant and construction compounds were identified and refined using consistent environmental, planning and engineering criteria.
24. Stage 4 defined the draft Order Limits and the Project layout, which were presented at the Summer 2024 Consultation.

Stage 5: Summer 2024 Consultation to Spring 2025 Consultation – refinement of the Project

25. At Stage 5, further scheme development was undertaken to refine the Project following the Summer 2024 Consultation, having regard to consultation feedback, ongoing stakeholder engagement and the outputs of continued environmental, engineering and land assessments. Refinements were made to the draft Order Limits, the pipeline route, Above Ground Plant and construction compounds. Where refinements to the design of the Project were made, these were consulted on at the Spring 2025 Consultation.

Stage 6: Spring 2025 Consultation to DCO application – refinement of the Project

26. Stage 6 focused on minor refinements to the design of the Project by considering feedback from the Spring 2025 Consultation, ongoing engagement with stakeholders, and technical investigations.

1 Introduction

1.1 Purpose

- 1.1.1 This document describes the development of the Hampshire Water Transfer and Water Recycling Project (the Project) from inception through to Development Consent Order (DCO) application. It explains how the consideration, selection and development of a strategic water resources solution to address a clear and urgent need for new water resources infrastructure has evolved from Water Resources Management Plan 2019 (WRMP19) through the regulatory and planning processes.
- 1.1.2 Section 1.2 of this report provides a brief summary of the need for the Project and how the Project has evolved from WRMP19 to the submission of this DCO application. Section 1.3 provides an overview of the various stages of the scheme development process that Southern Water Services Ltd (the Applicant) has undertaken to select and develop the Project. Sections 2 to 7 provide a detailed account of the various stages of the scheme development process.

1.2 Summary of the need and evolution of the Project

- 1.2.1 The need for the Project is set out in detail in the Case for the Project (Document reference 5.6, DCO Volume 5). A brief summary is set out below to provide context to the development of the Project as part of the solution to address this need:
- There is a critical and urgent national need to plan and develop additional water resources infrastructure to maintain supplies to customers and protect the environment.
 - Both the Government (in its Environmental Improvement Plan 2023) and the Environment Agency (in its National Framework for Water Resources 2025) make clear that the water industry must plan for more resilient water supplies by developing additional water supply capacity and must maintain this in the face of pressures from climate change, population growth and the need to improve environmental protection. This is reflected in current government policy in the National Policy Statement for Water Resources Infrastructure (NPSWRI) and through the recent review of the water sector by the Independent Water Commission (IWC) (July 2025) commissioned by the UK Government.
 - The national need is reflected at the regional and local levels through Water Resources South East (WRSE) regional planning and the Applicant's WRMP processes respectively.
 - At the regional level, WRSE's Final Regional Plan [1] states that *"the South East of England will run out of water unless demand is reduced and additional resource schemes are developed"* (paragraph 9.2) and that this shortfall could happen as early as 2030 in an extreme drought or by 2050 under average climatic conditions.

- The Applicant's published WRMP19 [2] was prepared to meet supplies in a 1-in-200 year drought which forecast an overall water resource deficit in its Western Area of supply of around 192 megalitres per day (Ml/d) by 2029–30, which includes a large proportion of Hampshire. The deficit identified in WRMP19 was due to a combination of population growth, the effects of climate change, and sustainability reductions in the amount of water available for use from Hampshire's chalk stream rivers.
- This deficit is now predicted to have increased further as reported in the Applicant's emerging WRMP24 which is now required to plan for an extreme 1-in-500 year drought event. Crucially, it also highlights a water supply deficit in normal (non-drought) conditions, threatening essential daily supplies to customers.

- 1.2.2 In response to the scale of deficit identified in WRMP19, it established a clear and urgent need for a broad range of interventions including leakage reduction and demand management alongside new supply measures.
- 1.2.3 WRMP19 considered a range of strategic water resources infrastructure solutions to provide new sources of supply, of which a 75Ml/d desalination plant at Fawley was the largest element. In addition, water re-use schemes were also reported in WRMP19 as alternative strategic options to desalination as part of an adaptive planning approach to water resources management.
- 1.2.4 As part of the Regulators' Alliance for Progressing Infrastructure Development (RAPID) regulatory process established in 2019 to oversee and accelerate the development and delivery of new strategic water resource schemes, the Applicant was required to investigate alternative options further whilst progressing its WRMP19 preferred desalination option.
- 1.2.5 This process led to the selection of the Project as the preferred option for a new strategic water resource solution to meet the need identified in WRMP19 and developed further through the RAPID regulatory process. The Project has subsequently been selected as the preferred option in both the WRSE Final Regional Plan and in the Applicant's emerging WRMP24 in response to the ongoing need for new water resources infrastructure.
- 1.2.6 The Project is now being progressed through the DCO process in parallel to the ongoing regulatory oversight through the RAPID gated process.

1.3 Overview of the scheme development process

- 1.3.1 The scheme development process considers the development of the Project from the strategic options identified in WRMP19 through to the Project that is subject to this DCO application. The key stages of this process can be summarised as follows:
- **Stage 1: Development and Assessment of Initial Options** – Gate 1 of the RAPID gated process required the Applicant to further investigate the desalination and water re-use (also known as water recycling) schemes identified in the Applicant's WRMP19. These were considered alongside a number of other options that were not identified in the Applicant's WRMP19. A high-level review of technical, environmental, commercial and other

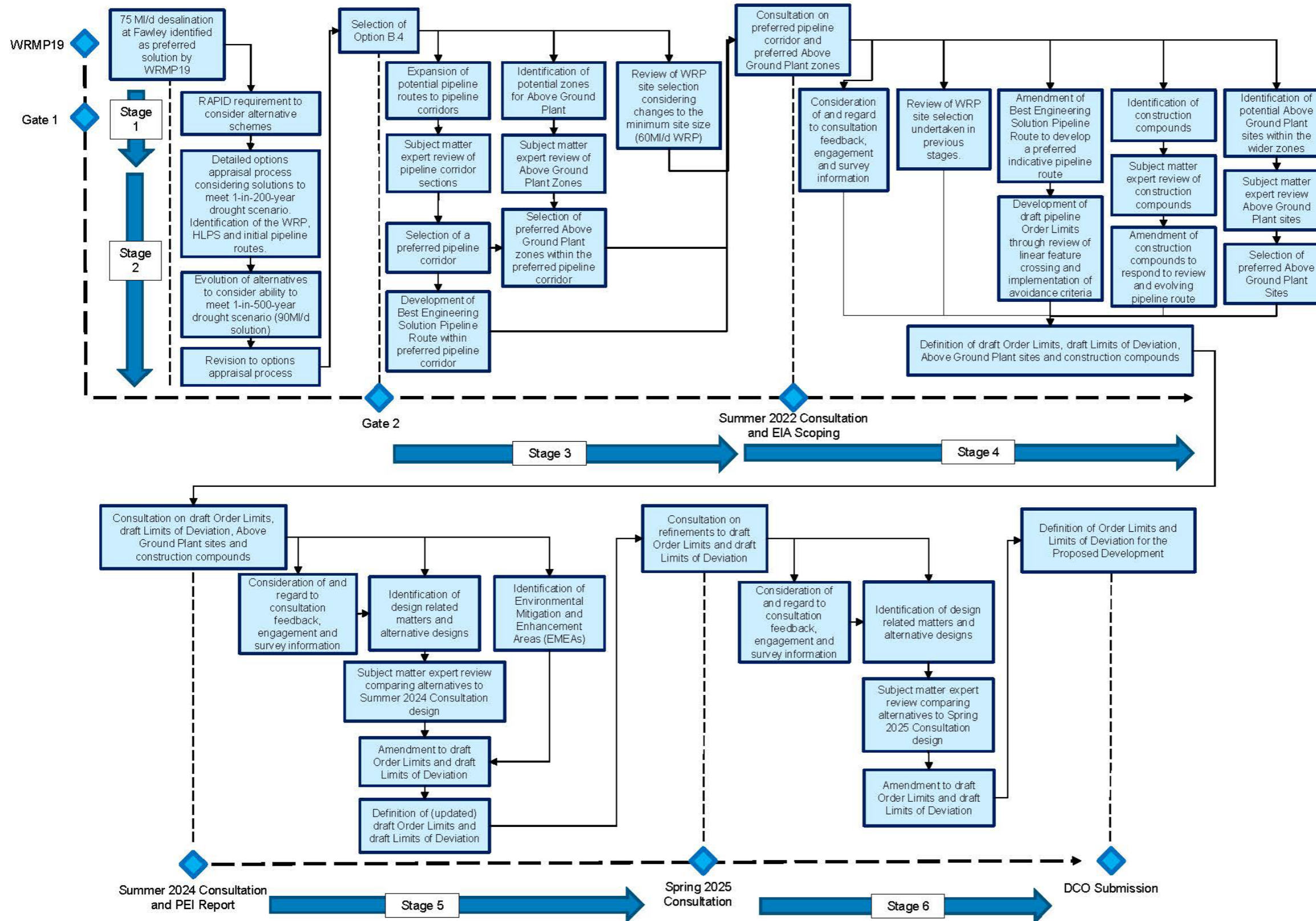
considerations was undertaken - the options that were deemed not suitable were not progressed and those that were considered feasible were progressed to the next stage at Gate 2. This stage is set out in Section 2 of this report.

- **Stage 2: Options Appraisal Process** – Prior to its Gate 2 submission to RAPID, the Applicant undertook an options appraisal process that considered the remaining options that were progressed from Gate 1. A water transfer and water recycling option, previously referred to as Option B.4, and now known as the Hampshire Water Transfer and Water Recycling Project, was selected as the preferred option (the Project). This stage is set out in Section 3 of this report.
- **Stage 3: Options Appraisal Process to Summer 2022 Consultation** – Above Ground Plant (AGP) sites and pipeline corridors for the Project were further developed at Stage 3. A preferred pipeline corridor was selected, along with a proposed site for the Water Recycling Plant (WRP) and High Lift Pumping Station (HLPS). Potential zones for the AGP were identified. The outcomes of this process were presented at the Summer 2022 Consultation. This stage is set out in Section 4 of this report.
- **Stage 4: Summer 2022 Consultation to Summer 2024 Consultation** – Having regard to the responses received at the Summer 2022 Consultation, as well as further engagement with relevant bodies, further development of the Project was undertaken to inform the development of draft Order Limits¹ for the Project, and proposed sites for the AGP and construction compounds. Environment, land and engineering surveys and investigations continued to inform the development of the Project at this stage. This stage also included reviewing earlier site selection work that identified the WRP site. This stage is set out in Section 5 of this report.
- **Stage 5: Summer 2024 Consultation to Spring 2025 Consultation** – Following the Summer 2024 Consultation, the Project was refined further, having regard to consultation feedback, engineering work and further environmental assessment work. Consultation feedback and outputs of further assessments and investigations were considered to identify whether any new information would affect decision making from previous stages. This stage is set out in Section 6 of this report.
- **Stage 6: Spring 2025 Consultation to DCO application** – Following the Spring 2025 Consultation, which included consultation on design refinements made at Stage 5, the Project was refined further ahead of the DCO application, having regard to consultation feedback, engineering work and further environmental assessment work. This stage is set out in Section 7 of this report.

1.3.2 Graphic 1-1 provides an overview of the scheme development process up to DCO application (Stages 1 to 6).

1.3.3 It should be noted that all distances, directions, areas and lengths referred to in this report are approximate.

¹ The 'draft Order Limits' represent the area required to implement the Project. Draft Order Limits were established at Stage 4 and updated in Stage 5 and Stage 6. The term 'Order Limits' refers to the actual area that is the subject of this DCO application, as shown on the Works Plans (Document reference 2.3, DCO Volume 2).



Graphic 1-1: Summary of the scheme development process up to DCO application (Stages 1-6)

2 Stage 1: Development and Assessment of Initial Options

- 2.1.1 In taking forward the WRMP19 preferred solution of desalination at Fawley, both WRMP19 and the RAPID gated process required further consideration of other alternative options including water recycling and water transfers. Table 2-1 details the strategic water resources infrastructure options that were identified and reported as part of the Applicant’s Gate 1 submission to RAPID in September 2020. This included the WRMP19 preferred solution of a 75MI/d desalination scheme (referred to as the ‘Base Case’), alongside eight alternative options. One of those alternatives included a water recycling option that could optimise the storage capability of the planned new Havant Thicket Reservoir to provide a comparable deployable output to the base case desalination proposal. This would be in addition to the water transfer already planned from Portsmouth Water to the Applicant that would be enabled by the construction of the new reservoir.
- 2.1.2 In its Gate 1 submission, the Applicant also reported on a joint proposal with Wessex Water and Bristol Water for a regional water transfer solution called ‘West Country North Sources and Transfer’. This solution was not considered a viable alternative to the Base Case as it could not deliver water supplies to address the Applicant’s forecast deficit by 2027 which was the required delivery date at the time of Gate 1. Also, when compared to the desalination, water recycling and water transfer options set out in Table 2-1, its capacity was too low for it to be a realistic alternative to the Base Case (estimated at 65MI/d). The costs and carbon footprint were considered to be very high for the modest volume of water resources it would provide relative to other options. It was therefore not included in the alternative options that were under consideration at Gate 1 and is accordingly not shown in Table 2-1.

Table 2-1: Options under consideration at Gate 1

Configuration Type	Option	Option Description
Desalination	A.1 (Base Case)	75MI/d of drinking water produced by desalination plant in the Fawley area supplying the Hampshire Southampton West Water Resource Zone, with the interface between the new and existing distribution system located at Testwood Water Supply Works.
	A.2	61MI/d of drinking water produced by desalination plant in the Fawley area supplying the Hampshire Southampton West Water Resource Zone, with the interface between the new and existing distribution system located at Testwood Water Supply Works.
	D.1	40MI/d desalinated water for dedicated industrial use at an existing large coastal industrial facility. The existing 30 MI/d supplied by South West Water to this facility was then intended to be released and redirected to Southern Water at Testwood Water Supply Works and re-purposed for drinking water

Configuration Type	Option	Option Description
		<p>supply. The remaining existing 10MI/d supplied by Southern Water to this facility was then intended to be released and redirected to Testwood Water Supply Works and re-purposed for drinking water supply.</p> <p>The option is supplemented by an additional 40 MI/d WRP utilising treated wastewater from Budds Farm Wastewater Treatment Works.</p> <p>This option provides a cumulative 81 MI/d when both the desalination and water recycling components are operating at full capacity.</p>
Water Recycling	B.1	Budds Farm Wastewater Treatment Works transfer to new 61MI/d WRP. Bulk transfer to discharge to Lower Itchen and a new 61MI/d abstraction from the Lower Itchen. Water is then transferred for treatment at Otterbourne Water Supply Works.
	B.2	Budds Farm Wastewater Treatment Works transfer to new 61MI/d WRP. Bulk transfer to a new constructed and lined environmental buffer. Abstraction and transfer for treatment at Otterbourne Water Supply Works.
	B.3	Budds Farm Wastewater Treatment Works transfer to new 61MI/d WRP. Direct transfer direct to Otterbourne Water Supply Works for treatment.
	B.4	Budds Farm Wastewater Treatment Works transfer to new 61MI/d WRP. Transfer to Havant Thicket Reservoir which acts as an environmental buffer, then 75MI/d direct raw water transfer to Otterbourne Water Supply Works for treatment.
	B.5	Peel Common Wastewater Treatment Works and Budds Farm Wastewater Treatment Works transfer to a new 75MI/d WRP. Bulk transfer to a lake that provides an environmental buffer prior to treatment at Otterbourne Water Supply Works.
Water Transfer	D.2	61MI/d raw water transfer from the Havant Thicket Reservoir to Otterbourne Water Supply Works for treatment.

2.1.3 All but three of the options in Table 2-1 were progressed beyond Gate 1 to further understand and assess their feasibility. The three options not progressed were as follows:

2.1.4 Option D.1 was not progressed as it relies on a South West Water abstraction from the River Avon, which is a chalk stream that already has significant pressures on its abstractions. This meant that there would be considerable uncertainty as to whether the Applicant could rely on the 30MI/d supply from South West Water. Additionally, the cost of supply for the desalination element of this option was potentially unviable as it would require a considerable increase in the cost of supplying the industrial facility compared to its existing commercial arrangements.

These risks made it too unreliable to be a genuine and reasonable alternative to the desalination Base Case in the context of the urgent need to meet the supply deficit.

- 2.1.5 Option B.1, which was the strategic alternative to the preferred desalination option identified in WRMP19, was not progressed further following Ofwat’s decision not to fund further investigations into this option as part of its Gate 1 final decision. This was due to environmental concerns about the potential impact of the recycled water release on the integrity of the River Itchen Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) and the option’s ability to meet the water supply deficit.
- 2.1.6 Option B.3 was a direct water recycling solution that involved transfer of recycled water direct to Otterbourne Water Supply Works (WSW) without the use of an environmental buffer to mix the recycled water with water already in the environment. Direct water recycling is not a technology that is currently used in England and Wales. As a result, it is anticipated that there would be significant regulatory lead-in times to demonstrate the suitability of direct water recycling relating to building regulatory acceptance, public support and operational experience. Therefore Option B.3 was not considered to be a reasonable alternative to the desalination Base Case, particularly in the context of the urgent need to meet the supply deficit.
- 2.1.7 Table 2-2 sets out which options were taken forward to the options appraisal process at Stage 2, as part of the Applicant’s Gate 2 studies, and those that were not progressed (highlighted in red).

Table 2-2: Options taken forward / not progressed to Gate 2

Configuration Type	Option No.
Desalination	A.1
	A.2
	D.1 – Not progressed
Water Recycling	B.1 – Not progressed
	B.2
	B.3 – Not progressed
	B.4
	B.5
Water Transfer	D.2

3 Stage 2: Options Appraisal Process

3.1 Overview

3.1.1 The options appraisal process evaluated the options from RAPID Gate 1 to identify a preferred option and a backup option in order to inform the Gate 2 submission to RAPID. The process needed to be robust so that an appropriate option was selected, having regard to relevant planning policy tests. The process was developed in consultation with key stakeholders and was undertaken by qualified individuals. The process comprised the following steps:

- Site and route selection
- Consenting evaluation
- Multi-criteria decision analysis
- Assessment against legal and policy objectives
- Assessment against Water for Life Hampshire² strategic objectives
- Interim business evaluation
- Future needs assessment
- Final business evaluation

3.1.2 The options appraisal process is set out in detail as part of the Applicant's Gate 2 submission to RAPID in 2021 (RAPID Gate 2 Submission Supporting Technical Report – Annex 5: Options Appraisal Process) and is summarised in this section of the report.

3.2 Site and route selection

3.2.1 Prior to evaluation and comparison of the options that were taken forward from Gate 1, infrastructure sites and pipeline routes for each option needed to be identified. This is because a number of the criteria considered in the options appraisal process would be dependent on the geographic location of the construction and operation of the associated infrastructure and pipelines.

3.2.2 Section 3.9 provides an overview of the outcomes of the options appraisal process and explains how Option B.4 (the Project) was identified as the preferred option. As a result, this site and route selection section only reports on the sites and routes that were considered for Option B.4. Site and route selection was undertaken for all options within the options appraisal process, however, this is not reported in this document as it is not relevant to the specific optioneering and scheme development undertaken for the Project.

3.2.3 At the site and route selection stage, individual infrastructure components were identified to build a project configuration that would be progressed to the following stages of the options appraisal process. Infrastructure sites and pipeline routes for the desalination, water recycling and water transfer options were developed. The

² Water for Life Hampshire is the Applicant's programme to create new sources of water for Hampshire, help protect the environment and safeguard future water supplies.

2022 Scheme Development Summary presented at the Summer 2022 Consultation details the site and route selection for all options that were considered in the options appraisal process.

- 3.2.4 The initial site selection for the WRP and HLPS for the Project was undertaken at this stage. Initial pipeline routes were also identified at this stage, and these later formed the basis of the pipeline corridors that were identified for the Project and assessed at Stage 3. This document therefore sets out the high level site selection process for the WRP and the initial pipeline routes for the water transfer and water recycling options as these informed the options that were used for the Project.
- 3.2.5 The site and route selection stage applied different levels of environmental, planning and technical criteria to identify, shortlist and then select preferred sites and routes. The levels of criteria were as follows:
- **Level 1** – definition of a search area within which the component would be identified.
 - **Level 2** – criteria were applied to identify a long list within the search area.
 - **Level 3** – the long list was sifted by applying key planning criteria to identify a short list.
 - **Level 4** – further environmental, planning and technical criteria were applied to refine the short list.
 - **Level 5** – a consenting evaluation of the remaining sites and routes was undertaken to identify a preferred site and route.

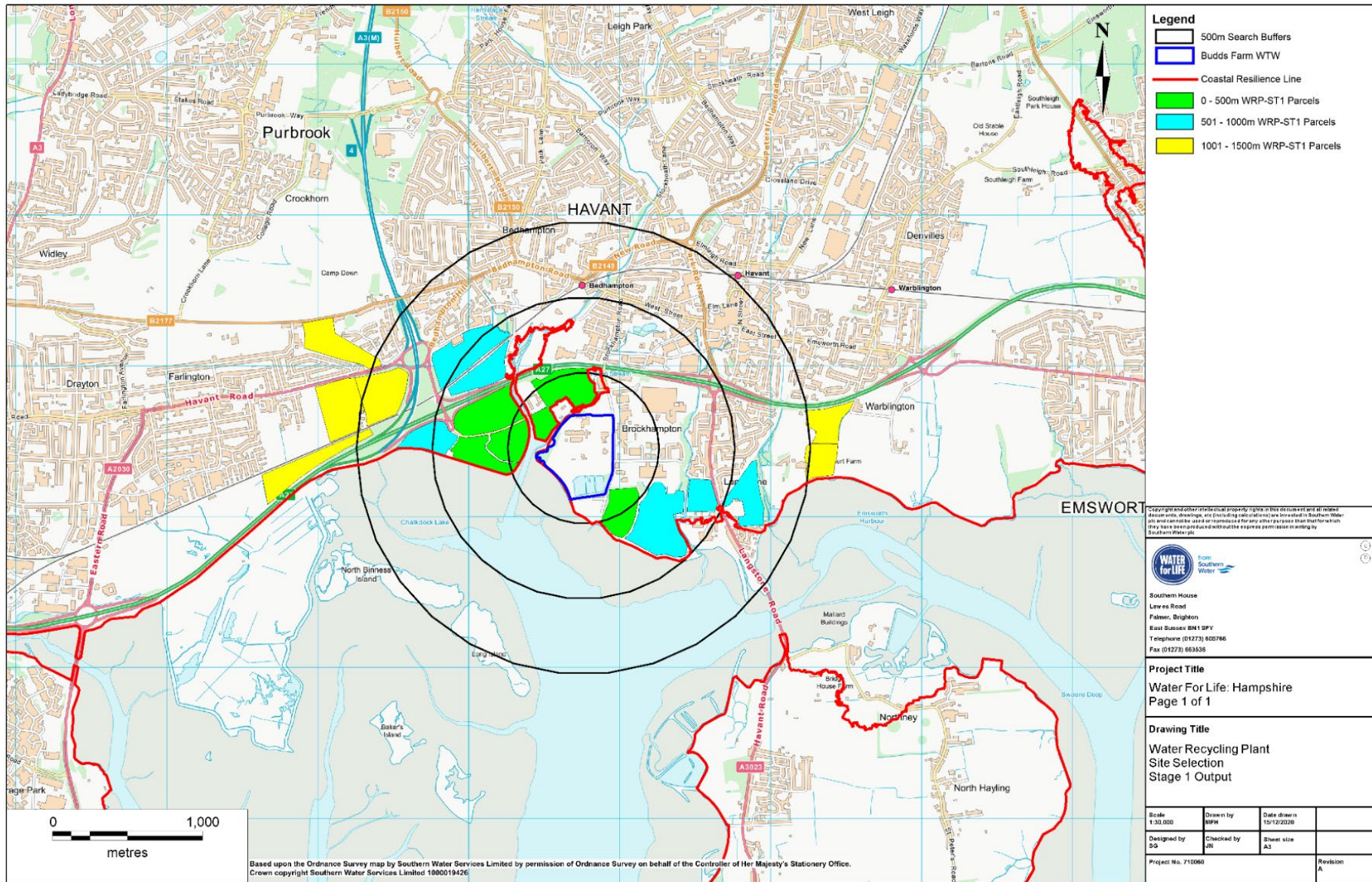
Water Recycling Plant Site Selection

- 3.2.6 To select the site of the WRP, level 1 comprised identifying a terrestrial search area which was determined by two factors:
- 3.2.7 A search radius of 1.5km around Budds Farm Wastewater Treatment Works (WTW). This distance was established by increasing the search area from Budds Farm WTW in 500m increments to identify the closest potentially feasible sites. Proximity to Budds Farm WTW is a key requirement in order to reduce the distance for the transfer of treated wastewater to the WRP as this would minimise carbon emissions associated with constructing the pipelines and pumping water between Budds Farm WTW and the WRP, and reduce potential land interests.
- 3.2.8 Areas of coastline susceptible to sea flooding and coastal erosion were excluded as locating the WRP in these locations would not be resilient or suitable against a number of policy tests and considerations. This was informed by an assessment of coastal geomorphology and management policies, to identify projected future rates of coastal change and flooding susceptibility.
- 3.2.9 Within this terrestrial search area, sites were then identified using the level 2 site identification criteria set out in Table 3-1.

Table 3-1: Level 2 site identification criteria for terrestrial Water Recycling Plant sites

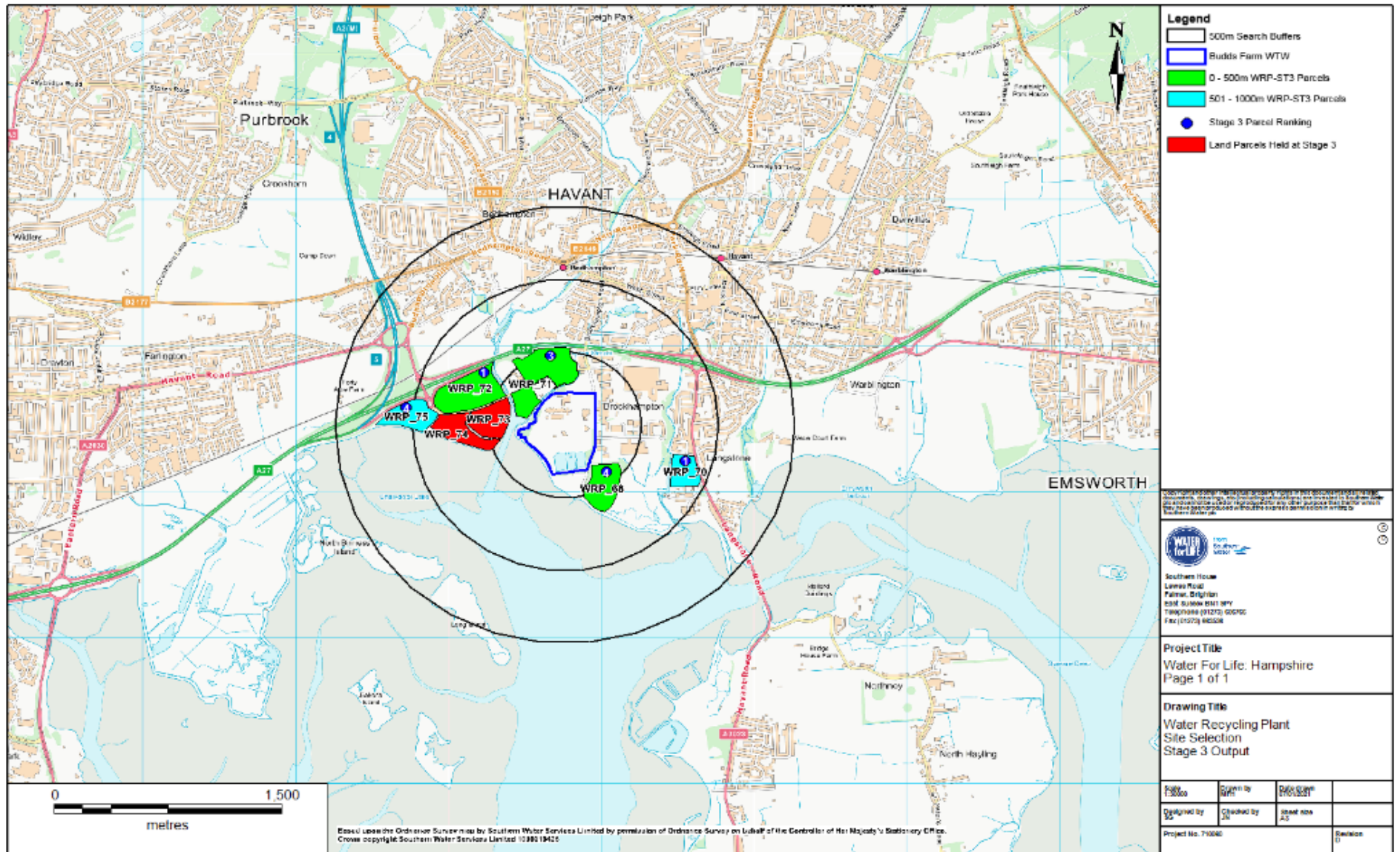
Element	Details
Land use	Avoidance of the following areas: <ul style="list-style-type: none"> • Densely populated residential areas, private residences, care homes, hospitals, schools, universities, places of worship, burial grounds, holiday parks, hotels, retail parks and leisure parks. • Key transport infrastructure. • Key utilities.
Land conditions	Avoidance of the following areas due to significant construction and engineering challenges: <ul style="list-style-type: none"> • Marsh • Mudflat • Cliff face • Open water
Site size	61MI/d WRP - Minimum of 40,470 m ² (4ha) + 4,047 m ² (0.4ha) for construction

3.2.10 A long list of seventeen sites for the WRP that met the criteria set out in Table 3-1 within the 1.5km search radius was identified, these sites are shown in Graphic 3-1.



Graphic 3-1: Identified Water Recycling Plant sites

- 3.2.11 At level 3, the 17 sites were assessed against a set of planning and environmental considerations to identify a short list of sites. Level 3 considered the following planning designations:
- SAC / Ramsar / Special Protection Area (SPA) (including potential and candidate sites);
 - SSSI / National Nature Reserve;
 - Scheduled Monuments;
 - National Parks / Areas of Outstanding Natural Beauty / Green Belt;
 - Ancient Woodland;
 - Grade 1 and 2* Registered Parks and Gardens and Listed Buildings and Battlefield Sites;
 - Residential (noise/vibration and air quality impact);
 - Hospitals, Care Homes, Schools; and
 - Amenity Spaces e.g., allotments, public parks, playgrounds, playing fields.
- 3.2.12 The sites were considered in terms of their proximity to these designations, resulting in a short list of 7 sites which progressed to level 4. Some sites did not progress because of their proximity to ecological sites in Langstone Harbour, and other sites were near residential areas.
- 3.2.13 At level 4, the 7 short listed sites were then assessed against additional environmental, planning and engineering considerations, such as flood risk, ground conditions, ground contamination, historic environment and transport accessibility. Approved or accepted Development Consent Order applications made within 5 years, or developments screened or determined to be Environmental Impact Assessment (EIA) developments or subject to Transport and Works Orders within 3 years, were also taken into account. The level 4 criteria which was used to assess the short list of sites is set out in Appendix A. The 7 shortlisted sites are shown on Graphic 3-2, which also shows the 5 best performing sites following the application of the level 4 criteria (coloured blue and green). These 5 sites progressed for a further consenting evaluation at level 5.



Graphic 3-2: Water Recycling Plant sites short list

3.2.14 At level 5 a consenting evaluation was undertaken considering environmental and planning criteria set out in Table 3-2.

Table 3-2: Level 5 consenting evaluation criteria for the review of Water Recycling Plant sites

Criteria	Sub-criteria
Biodiversity and Nature Conservation Terrestrial – Habitats Regulations Assessment (HRA)	<ul style="list-style-type: none"> • SACs, SPAs, Ramsar and all potential, possible and candidate sites. • Functionally linked habitat.
Biodiversity and Nature Conservation Terrestrial	<ul style="list-style-type: none"> • Nationally designated sites. • Priority habitats. • Ancient woodland and veteran trees.
Biodiversity and Nature Conservation – HRA (Marine)	<ul style="list-style-type: none"> • SACs, SPAs, Ramsar and all potential, possible and candidate sites. • Functionally linked habitat.
Biodiversity and Nature Conservation – Marine	<ul style="list-style-type: none"> • Nationally designated sites. • Impact on Priority Habitats.
Historic Environment – Terrestrial	<ul style="list-style-type: none"> • Nationally and regionally important assets. • Unknown archaeology (impact on areas of archaeological potential)
Historic Environment – Marine	<ul style="list-style-type: none"> • Nationally and regionally important assets. • Unknown archaeology (impact on areas of archaeological potential).
Landscape / Seascape and Townscape and Visual Amenity	<ul style="list-style-type: none"> • Nationally and regionally important sites. • Visual amenity.
Water Quality and Resources	<ul style="list-style-type: none"> • Impact on marine water quality. • Impact on terrestrial water quality. • Impact on watercourse geomorphology and hydrology. • Impact on groundwater resources.
Flood Risk	<ul style="list-style-type: none"> • Impact on flood risk. • Impact on flood defences.
Interface with Future Development and Planning	<ul style="list-style-type: none"> • Risks associated with existing/future. • Nationally Significant Infrastructure Project (NSIP).

Criteria	Sub-criteria
	<ul style="list-style-type: none"> Risks associated with 'other' development. Risks associated with compromising future marine development. Development Plan risk.
Land Use	<ul style="list-style-type: none"> Impact on special categories of land. Land Take Impact.
Green Belt	<ul style="list-style-type: none"> Impact on Green Belt.

3.2.15 The outcomes of the level 5 consenting evaluation are shown in Table 3-3.

Table 3-3: Level 5 Water Recycling Plant site evaluation outcomes

Site	Description	Considerations and Outcomes
WRP_68	The site is on Southmoor Nature Reserve, east of Southmoor Lane and north of Langstone Harbour.	<p>The site is adjacent to a Site of Importance for Nature Conservation (SINC) and is identified as a Secondary Support Area in the Solent Waders and Brent Goose Strategy [3].</p> <p>The site is within approximately 20 m from the Solent Maritime SAC, the Chichester and Langstone Harbours Special Protection Area (SPA) and Ramsar, and the Langstone Harbour SSSI.</p> <p>The site is approximately 550 m from the Chichester Harbour National Landscape.</p> <p>The site is partially located in Grade 1 land in the Agricultural Land Classification (ALC).</p> <p>The site is partially located in flood zones 2 and 3.</p>
WRP_70	The site is located west of Langstone Road and south of The Mallards.	<p>The site is identified as a Secondary Support Area in the Solent Waders and Brent Goose Strategy and is approximately 30 m from the Chichester Harbour National Landscape.</p> <p>The site is approximately 90 m from the Langstone Harbour SSSI and approximately 240 m from the Solent Maritime SAC and the Chichester and Langstone Harbours SPA and Ramsar.</p> <p>The site is partially located in ALC Grade 1 land.</p>
WRP_71	The site is located south of the A27, north of Harts Farm Way and west of Brockhampton Road.	<p>The site currently consists of a number of existing warehousing and office uses that are in occupation, but it does not have any major environmental and planning constraints and it is considered that this site could be suitable for the WRP.</p> <p>The site is approximately 400 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar and the Langstone Harbour SSSI.</p> <p>The site is approximately 1.1km from the Chichester Harbour National Landscape.</p>

Site	Description	Considerations and Outcomes
		The site is located in ALC Grade 1 land.
WRP_72	The site is located south of the A27 and north of Harts Farm Way.	<p>The west of the site is identified as a low use site in the Solent and Waders Brent Goose Strategy, which may require mitigation measures to be put in place. The site is allocated for employment development in the Havant Borough Council (HBC) Allocations Plan (2014) [4]. The site was also granted outline planning permission for employment uses in line with the allocation in June of 2022 (planning application ref: APP/21/00189 [5]), this permission has expired and was not implemented</p> <p>The site is not designated as contaminated land however it is a former landfill. Following mitigation, it is considered that the site could be suitable for the WRP.</p> <p>The site is approximately 170 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar and the Langstone Harbour SSSI.</p> <p>The site is partially located in ALC Grade 1 land. The site is approximately 1.4km from the Chichester Harbour National Landscape.</p>
WRP_75	The site is located west of Harts Farm Way and the south of the A27.	<p>The site is identified as a Core Area in the Solent Waders and Brent Goose Strategy.</p> <p>The site is within approximately 20 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI.</p> <p>The site is approximately 1.8km from the Chichester Harbour National Landscape.</p> <p>The site is located in ALC Grade 1 land.</p> <p>The site is partially located in flood zones 2 and 3.</p>

3.2.16 The level 5 assessment resulted in the identification of WRP_71 and WRP_72 as the most suitable options for the WRP. WRP_71 is a developed site and comprises active warehousing and office uses and was considered to be more difficult to deliver and develop than WRP_72 as it would require displacement of existing businesses and redevelopment of the site. WRP_72 was therefore identified as the preferred site, with WRP_71 as an alternative, should WRP_72 not be deliverable.

3.2.17 Regarding the presence of historic landfill at WRP_72, the evaluation considered that the potential risks were capable of being mitigated to an acceptable level and that the impacts would be fully considered in the Environmental Statement (ES). There is no restriction in the legislative and policy framework on the use of former landfill sites and the NPSWRI [6] and National Planning Policy Framework [7] starting principle is to make use of previously developed 'brownfield' land. It was also considered that any ecological effects of development at WRP_72 could be mitigated to an acceptable level.

3.2.18 The principle of built development at WRP_72 is demonstrated through the allocation of the site for employment development in the HBC Allocations Plan (2014) [4]. It should be noted that WRP_72 is not allocated for employment development in the HBC draft Building a Better Future Plan (HBC's Regulation 18 draft local plan) [8], which was published in 2025, four years after the options appraisal process was undertaken.

3.2.19 WRP_72 was therefore progressed as the proposed site for the WRP.

High Lift Pumping Station

3.2.20 Option B.4 (which was selected as the preferred option at the end of Stage 2) required HLPS to transfer source water from Havant Thicket Reservoir onwards to Otterbourne WSW.

3.2.21 The level 1 search area for the HLPS was informed by the identified initial pipeline routes. The site selection for these initial pipeline routes is set out later in the section. The following level 1 criteria were used to identify a search area for potential sites:

- Within 500m of the initial pipeline routes;
- Within 4km of the footprint of the Havant Thicket Reservoir, but not within the footprint to ensure that water from Havant Thicket Reservoir would have sufficient hydraulic energy to reach the HLPS;
- Ground level of equal or less than 30 metres above sea level to enable sufficient hydraulic connectivity with Havant Thicket Reservoir; and
- Not within areas of coastline susceptible to sea flooding and coastal erosion as major infrastructure development would not be resilient or suitable in these areas.

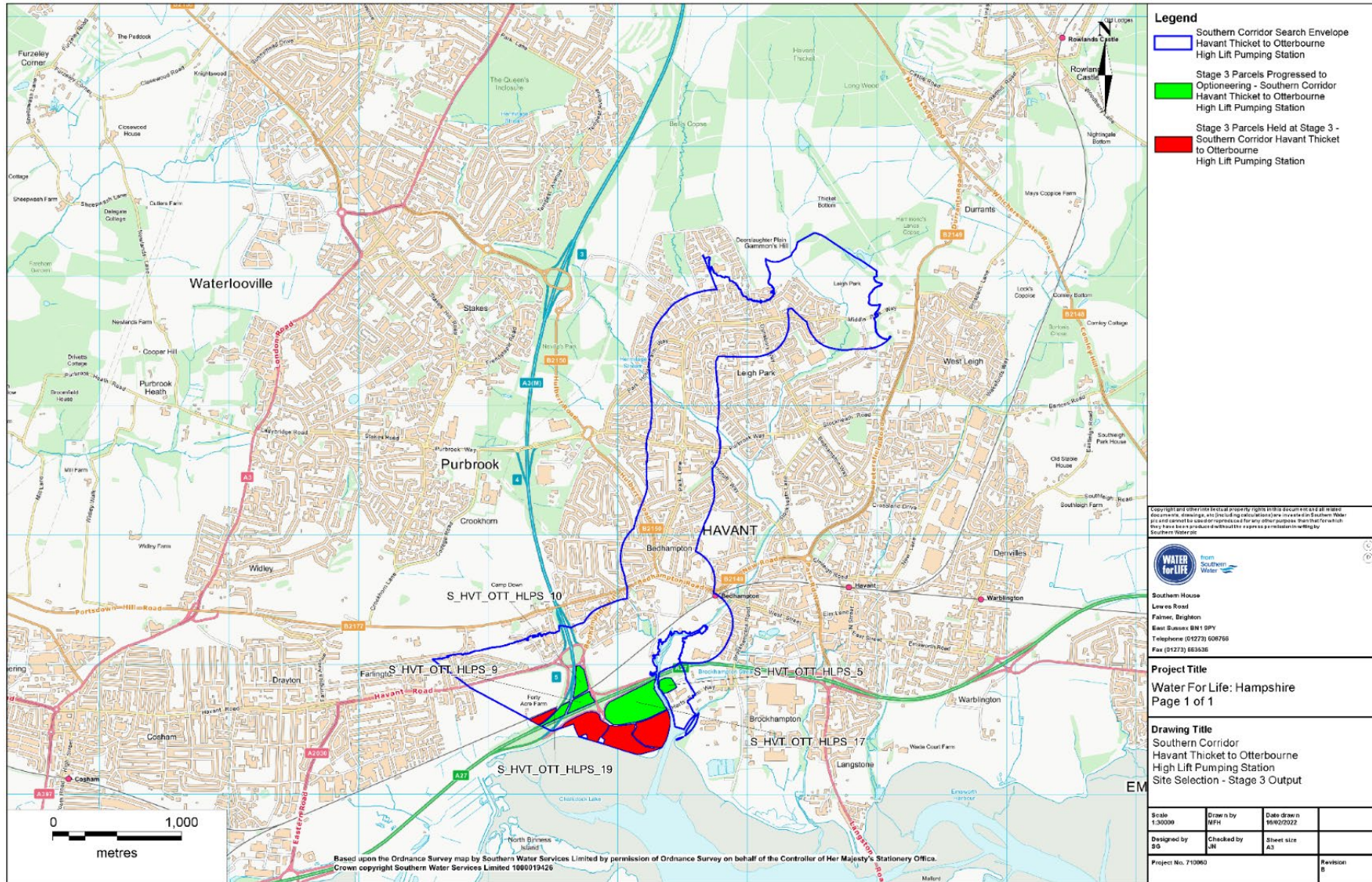
3.2.22 Within this terrestrial search area, sites were then identified using the level 2 site identification criteria set out in Table 3-4.

Table 3-4: Level 2 site identification criteria for terrestrial high lift pumping station sites

Element	Details
Land use	Avoidance of the following areas: <ul style="list-style-type: none"> • Densely populated residential areas, private residences, care homes, hospitals, schools, universities, places of worship, burial grounds, holiday parks, hotels, retail parks and leisure parks. • Key transport infrastructure. • Key utilities.
Land conditions	Avoidance of the following areas due to significant construction and engineering challenges: <ul style="list-style-type: none"> • Marsh • Mudflat • Cliff face • Open water

Element	Details
Site size	Minimum of 4,620 m ² (0.4 hectares (ha))

3.2.23 Nine sites that met the initial level 2 site identification criteria were identified. These sites were then assessed against a number of environmental, planning and engineering considerations at level 3 using the criteria in Section 3.2.12 and at level 4 using the criteria in Appendix A. The best performing five sites against the criteria in level 3 and level 4 were progressed to level 5 which comprised a consenting evaluation against the criteria set out in Table 3-2. The sites that progressed to level 5 are shown in green in Graphic 3-3.



Graphic 3-3: Identified high lift pumping station sites

3.2.24 The outcomes of the level 5 consenting evaluation are set out in Table 3-5.

Table 3-5: Level 5 high lift pumping station evaluation outcomes

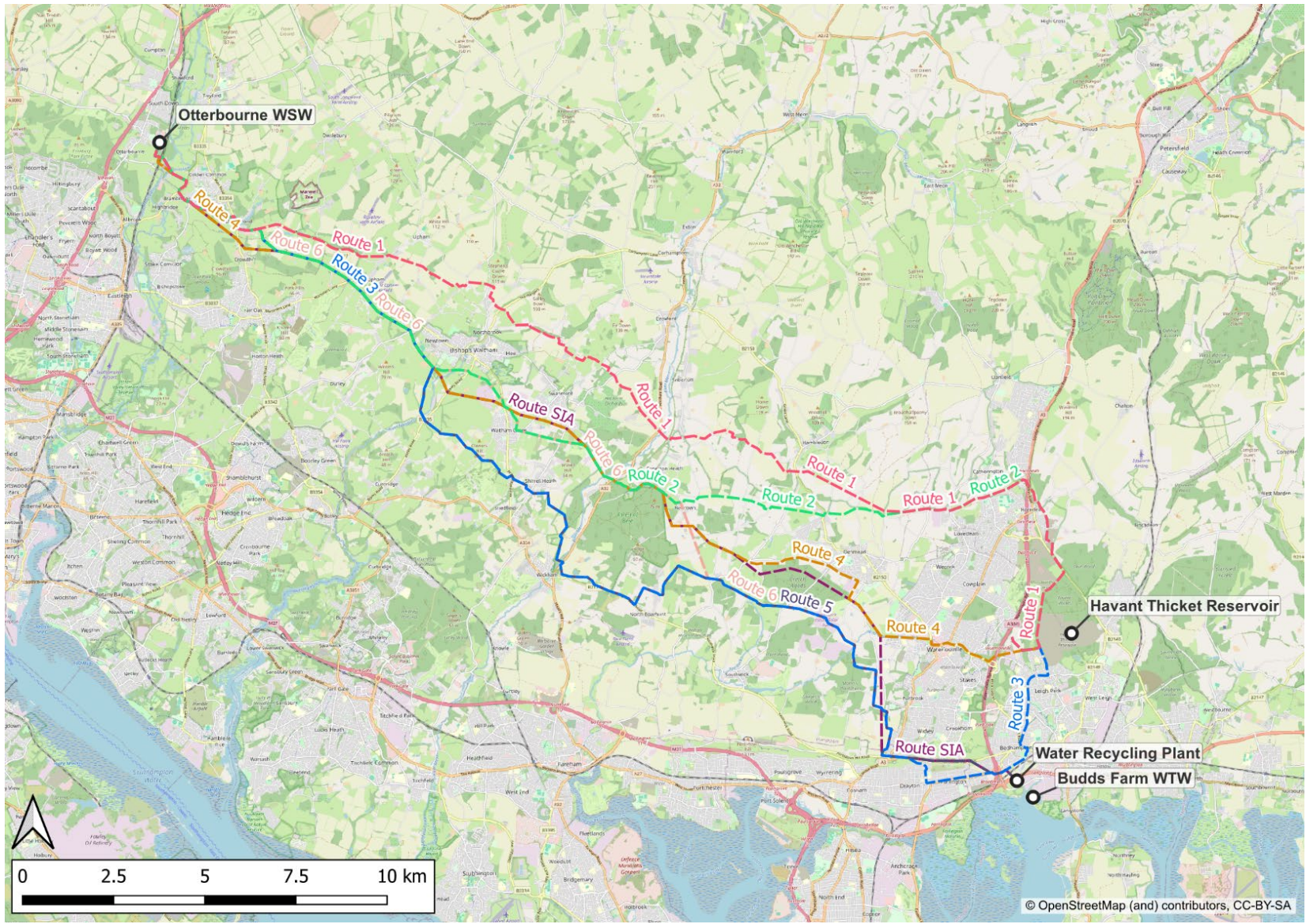
Site	Description	Considerations and Outcomes
S_HLPS_5	The site is located east of the Hermitage Stream and north of Harts Farm Way	The site currently consists of existing built employment space but does not have any major environmental and planning constraints and therefore could be suitable for the HLPS. The site is located in ALC Grade 1 land.
S_HLPS_9	The site is located within woodland north of the A27 and south of the West Coastway railway line.	Site is located on land between a railway line, A3(M) and a major roundabout and would therefore be difficult to access. Development of the HLPS would also result in the loss of woodland. The site is located in ALC Grade 1 land.
S_HLPS_10	The site is located within woodland south of a roundabout at the junction between the A3(M) and the A27 and is north of the West Coastway railway line.	Site is located on land between a railway line, A3(M) and a major roundabout and would therefore be difficult to access. Development of the HLPS would also result in the loss of woodland. The site is located in ALC Grade 1 land.
S_HLPS_17	The site is located south of the A27 and north of Harts Farm Way. This is the same site as WRP_72.	The west of the site is identified as a low use site in the Solent and Waders Brent Goose Strategy, which may require mitigation measures to be put in place. The site is allocated for employment development in the HBC Allocations Plan (2014) [4]. The site is not designated as contaminated land however it is a former landfill. Following mitigation, it is considered that the site could be suitable for the HLPS. The site is partially located in ALC Grade 1 land.
S_HLPS_19	The site is located within woodland north of the A27 and south of the West Coastway railway line.	Site is located on land between a railway line, A3(M) and a major roundabout and would therefore be difficult to access. Development of the HLPS would also result in the loss of woodland. The site is located in ALC Grade 1 land.

3.2.25 On the basis of the site selection assessment, site S_HLPS_17 emerged as the preferred site for the HLPS for Option B.4 and D.2. Site S_HLPS_17 is the same site as that selected for the WRP. Locating the HLPS at the same site as the WRP would reduce the need for multiple sites and therefore reduce overall construction and operation phase impacts.

3.2.26 Sites S_HLPS_10, S_HLPS_9, S_HLPS_19 are located on land with dense woodland which could lead to a loss of trees and subsequent landscape and visual amenity impacts. The location of these sites between the railway line and the A3(M) also presented access challenges that were not present for other options. These sites were therefore considered to have the potential for significant adverse environmental impacts and so were not progressed. Site S_HLPS_5 is also constrained by the size of the site and as it requires displacement of existing businesses and redevelopment of the site.

Initial Pipeline Routes developed for RAPID Gate 1

3.2.27 For the water recycling and water transfer options, a number of initial pipeline routes were developed between the infrastructure components that made up the options. Initial pipeline routes were developed to support the Applicant's Gate 1 submission for all option configurations and allow for consideration of the potential impacts of the pipeline elements of each infrastructure option. The pipeline routes were identified considering technical, environmental and constructability considerations, and it was assumed they would continue to be developed at later stages of the scheme development process by further considering technical, environmental and planning factors. Graphic 3-4 shows the initial pipeline routes that were considered to connect Havant Thicket Reservoir and the WRP site to Otterbourne WSW.



Graphic 3-4: Initial pipeline routes between Havant Thicket Reservoir and Otterbourne WSW

3.2.28 Given the initial pipeline routes had been developed at Gate 1, route selection at Stage 2 only comprised a level 5 consenting evaluation against environmental, planning and engineering considerations, which are set out in Table 3-2. Table 3-6 sets out the outcomes of the level 5 consenting evaluation assessment.

Table 3-6: Level 5 initial pipeline route evaluation outcomes

Initial pipeline route	Considerations and outcomes
Route 1	Appropriate routing and mitigation of watercourse crossings would be required to avoid potential impacts on the integrity of the River Itchen SAC and Solent and Southampton Water SPA. Potential effects on ancient woodland would also need to be further assessed and appropriate mitigation implemented to avoid potentially unacceptable effects. Route 1 would have a significant impact on the South Downs National Park.
Route 2	Appropriate routing and mitigation of watercourse crossings would be required to avoid potential impacts on the integrity of the River Itchen SAC and Solent and Southampton Water SPA. Potential effects on ancient woodland would also need to be considered further and appropriate mitigation implemented to avoid likely unacceptable effects. This route would have impacts on the South Downs National Park due to sections of the route falling within the national park.
Route 3	Appropriate routing and mitigation of watercourse crossings would be required to avoid potential impacts on the integrity of the River Itchen SAC and Solent and Southampton Water SPA. Potential effects on ancient woodland would also need to be considered further and appropriate mitigation implemented to avoid potentially unacceptable effects. This route would have a limited impact on the South Downs National Park.
Route 4	Appropriate routing and mitigation of watercourse crossings would be required to avoid potential impacts on the integrity of the River Itchen SAC and Solent and Southampton Water SPA. Effects on ancient woodland would also need to be considered further and appropriate mitigation implemented to avoid potentially unacceptable effects. This route would have impacts on the South Downs National Park due to sections of the route falling within the national park.
Route 5	Appropriate routing and mitigation for the crossing of the River Itchen SAC would be required. The route is in close proximity to ancient woodland where there is potential for adverse effects that would require appropriate mitigation, including micro-siting the route at later stages.
Route 6	Appropriate routing and mitigation for the crossing of the River Itchen SAC would be required. The route is in close proximity to ancient woodland where there is potential for adverse effects that would require appropriate mitigation, including micro-siting the route at later stages. Appropriate routing would be required to reduce potential impacts on nationally designated cultural heritage features.

Initial pipeline route	Considerations and outcomes
Route SIA ³	Appropriate routing and mitigation for the crossing of the River Itchen SAC would be required. The route is in close proximity to ancient woodland where there is potential for adverse effects that would require appropriate mitigation, including micro-siting the route at later stages.

- 3.2.29 All initial pipeline routes partially intersected the South Downs National Park. However, route 1 would have a greater impact than the other initial pipeline routes. Therefore, route 1 was not considered a preferred option in view of the availability of other alternatives.
- 3.2.30 The remaining initial pipeline routes considered had the potential to impact on the designated sites associated with the crossings of watercourses. As such, all routes would have required appropriate design of the crossings to avoid impacts to the integrity of these designated sites where possible. All options had the potential to affect areas of ancient woodland, with routes 1 and 2 potentially having a greater impact on ancient woodland in proximity to the northern edge of Staunton Country Park, which is where Havant Thicket Reservoir is located (at this stage the Project was considering delivering a pipeline between the WRP site and Havant Thicket Reservoir).
- 3.2.31 Following the evaluation, it was recommended that routes 3, 4, 5 and 6 were progressed. West of Havant and Waterlooville, route 3 takes a similar route to route 5, and route 4 takes a similar route to route 6. Route SIA was not progressed, however this pipeline shares almost the same route as route 4.
- 3.2.32 Option B.4 also comprised two routes to transfer recycled water from the WRP to Havant Thicket Reservoir, which were also reviewed. These are shown in Graphic 3-5. The risks associated with these routes were similar. Both routes potentially impacted ancient woodland, although this would be possible to mitigate through the type of construction technique. Both routes also had an interface with Staunton Country Park which is a grade II* Registered Park and Garden. There were no significant differentiators that meant only one route should be progressed at this stage over the other. Therefore, it was recommended that both routes were progressed.

³ SIA is the Stantec Insight Analytics GIS tool which was used following Gate 1 to identify further initial pipeline routes.



Graphic 3-5: Initial pipeline routes between the Water Recycling Plant and Havant Thicket Reservoir

Option Configurations

- 3.2.33 Following the site and route selection, the sites and routes were combined to build a configuration for each option. For example, Option B.4 (which became the Project) comprised of the following components:
- Site WRP_72 for the WRP.
 - S_HLPS_17 for the HLPS.
 - Initial pipeline routes 3, 4, 5 and 6 from Havant Thicket Reservoir and the WRP site to Otterbourne WSW.
 - Both initial pipeline routes between the WRP site and Havant Thicket Reservoir.
- 3.2.34 Various evaluations and assessments were then undertaken to consider the suitability of all of the options against a range of factors. This comprised a consenting evaluation, a multi-criteria decision analysis which reviewed the options against best value criteria, and a review against legal, policy and Water for Life Hampshire⁴strategic objectives.

⁴ Water for Life Hampshire is the Applicant's programme to create new sources of water for Hampshire, help protect the environment and safeguard future water supplies.

3.3 Consenting evaluation

3.3.1 A consenting evaluation was undertaken for the selected configurations to identify the consenting risk for each option. The criteria used in the consenting evaluation were informed by:

- Policy tests set out in the draft NPSWRI (November 2018)
- National Planning Policy Framework (2021) (NPPF)
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
- The Conservation of Habitats and Species Regulations 2017 (as amended) (Habitat Regulations)
- Marine Policy Statement (2011)
- Marine Plans (South Inshore and South Offshore) (2018)

3.3.2 The consenting evaluation criteria and sub-criteria are detailed in Table 3-7.

Table 3-7: Consenting evaluation criteria

Criterion	Sub-criteria
Air Quality and Emissions	<ul style="list-style-type: none"> • Dust • Vehicular emissions • Odour
Biodiversity and Nature Conservation Terrestrial (International)	<ul style="list-style-type: none"> • SACs, SPAs, SSSIs, Ramsar sites and all potential, possible and candidate sites • Functionally linked habitat
Biodiversity and Nature Conservation Terrestrial (National)	<ul style="list-style-type: none"> • Nationally designated sites • Priority habitats • Ancient woodland and veteran trees
Biodiversity and Nature Conservation Marine – Habitats Regulation Assessment	<ul style="list-style-type: none"> • SACs, SPAs, Ramsar and all potential, possible and candidate sites • Functionally linked habitat
Biodiversity and Nature Conservation Marine	<ul style="list-style-type: none"> • Nationally designated sites • Impact on priority habitats
Carbon	<ul style="list-style-type: none"> • Embodied carbon • Carbon emissions
Coastal Change / processes	<ul style="list-style-type: none"> • Impact on coastal processes (coastal erosion / deposition)
Geology and Soils	<ul style="list-style-type: none"> • Designated sites • Soil resource • Risk of mobilisation of contaminants

Criterion	Sub-criteria
Historic Environment – Terrestrial	<ul style="list-style-type: none"> • Heritage assets • Unknown archaeology (impact on areas of archaeological potential)
Historic Environment – Marine	<ul style="list-style-type: none"> • Heritage assets • Unknown archaeology (impact on areas of archaeological potential)
Landscape / Seascape and Townscape and Visual Amenity	<ul style="list-style-type: none"> • Nationally and regionally important sites • Visual amenity
Major accidents and disasters	<ul style="list-style-type: none"> • Risks associated with existing facilities • Risks associated with the operation of the plant itself
Resource and waste management	<ul style="list-style-type: none"> • Waste generation • Waste facilities / infrastructure • Impact on Mineral Safeguarding Areas • Proximity to licensed dredging, disposal and extraction areas
Socio-economic impact	<ul style="list-style-type: none"> • Impacts on Public Rights of Way (PRoW) and recreational facilities • Impact on community facilities • Impact on marine recreation • Impact on commercial fisheries • Impact on licensing areas
Traffic and Transport	<ul style="list-style-type: none"> • Impact on shipping and navigation • Impact on marine vessel users • Impact on road and rail network • Impact on road users
Water Quality and Resources	<ul style="list-style-type: none"> • Impact on marine water quality • Impact on terrestrial water quality • Impact on watercourse geomorphology and hydrology • Impact on groundwater resources
Flood Risk	<ul style="list-style-type: none"> • Impact on flood risk • Impact on flood defences
Interface with Future Development and Planning	<ul style="list-style-type: none"> • Risks associated with existing/future Nationally Significant Infrastructure Projects • Risks associated with 'other' development • Risks associated with compromising future marine development

Criterion	Sub-criteria
Land Use (Special Category Land)	<ul style="list-style-type: none"> Impact on Special Categories of Land
Green Belt	<ul style="list-style-type: none"> Impact on Green Belt
Technology and compliance with regulatory approvals	<ul style="list-style-type: none"> Technological viability Ability to secure necessary regulatory permits and licences
Constructability	<ul style="list-style-type: none"> Construction risks Construction timescales Interfaces with utilities Topography challenges
Resilience	<ul style="list-style-type: none"> Likely resilience of the solution Self-sufficiency of the solution

3.3.3 The consenting evaluation identified potential conflicts against the criteria during both construction and operation. It also identified the potential design and mitigation requirements that would need to be considered. Each option was red, amber, and green (RAG) rated against each topic to determine deliverability in planning, environmental and engineering terms.

3.3.4 The outcomes and ranking of the consenting evaluation process is summarised in Table 3-8.

Table 3-8: Consenting evaluation outcomes

Consenting Evaluation Ranking	Option	Consenting Evaluation Outcomes
1	D.2 – water transfer	<ul style="list-style-type: none"> Has fewest environmental impacts. Potential to impact the River Itchen SAC at the crossing points with the pipeline route. It is considered likely that significant adverse effects to the integrity of the SAC can be avoided through a design and engineering solution. The pipeline routes would run partly through the South Downs National Park and there is a need for further engagement with the South Downs National Park Authority and further route development to reduce impact. There is potential for effects on ancient woodland that need to be further considered and avoided where practicable. Further work is needed to define the location and siting of the break pressure tank and intermediate pumping station.

Consenting Evaluation Ranking	Option	Consenting Evaluation Outcomes
2	B.4 – water recycling	<ul style="list-style-type: none"> • This has fewer environmental impacts than A.1 / A.2 and would not lead to the same marine impacts, or significant adverse effects to the integrity of the Solent and Dorset Coast SPA. It has fewer environmental impacts than Options B.2 / B.5. • Potential to impact the River Itchen SAC at the crossing points with the pipeline route. It is considered likely that significant adverse effects to the integrity of the SAC can be avoided through a design and engineering solution. • The pipeline routes would run partly through the South Downs National Park and there is a need for further engagement with the South Downs National Park Authority and further route development to reduce impact. • There is potential for effects on ancient woodland that need to be further considered and avoided where practicable. • Further work is needed to define the location and siting of the break pressure tank and intermediate pumping station. • Initial modelling indicated that no risk or pathway to Langstone Harbour designations would be expected.
3	B.2 – water recycling	<ul style="list-style-type: none"> • This has fewer environmental impacts than A.1 / A.2 and would not lead to the same marine impacts, or significant adverse effects to the integrity of the SPA. • Potential to impact the River Itchen SAC at the crossing points with the pipeline route. It is considered likely that significant adverse effects to the integrity of the SAC can be avoided through a design and engineering solution. • The pipeline routes would run partly through the South Downs National Park and there is a need for further engagement with the South Downs National Park Authority and further route development to reduce impact. • There is potential for effects on ancient woodland that need to be further considered and avoided where practicable. • The Otterbourne environmental buffer lake has the potential to affect the integrity of the River Itchen SAC during construction and during operation as a result of the emergency discharge, which would release into watercourses that could be hydraulically connected to the SAC. As the level of design development is at an

Consenting Evaluation Ranking	Option	Consenting Evaluation Outcomes
		<p>early stage, on a precautionary basis an adverse effect on integrity cannot be ruled out. However, it is likely that mitigation measures, supported by further design / modelling evidence will allow significant adverse effects to be avoided.</p> <ul style="list-style-type: none"> • The Otterbourne environmental buffer lake requires additional development and land take which could result in additional environmental impacts compared to options that do not require a new environmental buffer lake. • Further work is needed to define the location and siting of the break pressure tank and intermediate pumping station. • Initial modelling indicated that no risk or pathway to Langstone Harbour designations would be expected.
3	B.5 – water recycling	<ul style="list-style-type: none"> • The infrastructure required for Option B.5 would be the same as for Option B.2 with the additional connecting pipeline between Peel Common and the WRP. • Whilst the construction of the additional length of pipeline would increase the number of potentially affected receptors for certain planning topics, the level of planning risk for each of the topics would be the same as reported for Option B.2. • Further work is needed to define the location and siting of the break pressure tank and intermediate pumping station. • There are potential benefits on the water environment associated with B.5 as some flows would be diverted from the Peel Common WTW Long Sea Outfall (LSO) which is a less well mixed environment than the Eastney LSO.
5	A.1 - desalination	<ul style="list-style-type: none"> • A.1 would lead to a range of significant environmental impacts, including the potential to harm the integrity of a SPA, and is not considered preferable, as there are other options that would lead to fewer impacts. • The location of the terrestrial site for desalination within the New Forest National Park and the likely significant landscape and visual impacts would be in conflict with the NPSWRI. • There is potential for direct and indirect effects on ancient woodland and the New Forest SSSI that need to be further considered and avoided.

Consenting Evaluation Ranking	Option	Consenting Evaluation Outcomes
		<ul style="list-style-type: none"> • Significant constructability and traffic and transport risks related to construction in the Hythe Bypass. • Potential for direct impacts on nationally designated heritage assets. • Production of solid waste as a result of the desalination process that would presently need to be landfilled and therefore make achieving waste hierarchy requirements and non-compliance with zero to waste landfill policies difficult.
5	A.2 - desalination	<ul style="list-style-type: none"> • Refer to the summary for A.1.

3.3.5 The main conclusions of the Consenting Evaluation were as follows:

- Options A.1 and A.2 were expected to give rise to significant effects on the integrity of multiple SPA, which are European Designated Sites. The Habitat Regulations means that such an option would not be acceptable where there was a suitable alternative. These options were therefore not considered to be consentable.
- Options B.2 and B.5 were considered to have fewer environmental impacts than Options A.1 and A.2, but risks remained in relation to the environmental buffer lake that needed to be worked through. Pipeline routes for Options B.2 and B.5 would cross the River Itchen SAC. Any potential effects to the River Itchen would require mitigation to avoid adverse impacts on the integrity of the river.
- Option B.4, which would not require development of a new environmental buffer lake, would have fewer environmental impacts than Options B.2 / B.5. Pipeline routes for Option B.4 would cross the River Itchen SAC. Any potential effects to the River Itchen would require mitigation to avoid adverse impacts on the integrity of the river.
- Option D.2 was considered the best performing option within the Consenting Evaluation. Pipelines for these option routes would cross the River Itchen SAC. Any potential effects to the River Itchen would require mitigation to avoid adverse impacts on the integrity of the river. Further analysis is needed about the ability of D.2 to meet the long-term supply duty during drought conditions and to provide a sufficient level of long-term resilience.
- It was identified that further work would be needed in respect of Options D.2 / B.4 in relation to:
 - Crossing the River Itchen SAC;
 - Seeking to minimise and avoid impacts on the South Downs National Park;
 - Avoiding and minimising effects on ancient woodland;

- Avoiding and reducing impacts on heritage assets; and
- Further refinement of the design of the intermediate pumping stations and break pressure tanks.

3.4 Multi-criteria decision analysis

- 3.4.1 This section provides a summary of the Multi-Criteria Decision Analysis (MCDA).
- 3.4.2 Economic appraisal helps decision-makers to consider how well an investment or intervention performs when considering its impacts on 'economic wellbeing' or 'public value' from the perspective of customers, the wider UK population (individuals, households, businesses) and the environment (collectively referred to as 'economic benefits'), relative to the costs of delivering that investment or intervention. These impacts can be measured in either monetary or non-monetary terms, in line with best practice guidance from the Applicant's regulators and from the UK Government.
- 3.4.3 The Water Resources Planning Guideline⁵ defines a best value plan as one that:
- Considers factors alongside economic cost and seeks to achieve an outcome that increases the overall benefit to customers, the wider environment and overall society;
 - Is efficient and affordable to deliver, legally compliant and accounts for the range of legislation that applies to it; and
 - Where the outcome of increased benefits will be typically measured relative to the 'least cost' programme that delivers the minimum requirements to meet supply duties.
- 3.4.4 The MCDA was used to inform the assessment of the relative performance of the options against best value as part of the overall options appraisal process. The aim of the MCDA was to provide an overall ranking of options.
- 3.4.5 The methodology used for the MCDA comprised of three key strands of activity:
- Consideration of best practice guidance on the economic appraisal of resilience plans and infrastructure investments against best value, and specifically the appraisal of different types of customer, environmental, social and cost impacts associated with major infrastructure projects;
 - Development of a comprehensive best value appraisal framework which, using 23 best value criteria, enabled a consistent assessment of the relative performance of the options in terms of their net social impact, their cost to deliver, and the balance between these two factors; and
 - Extensive scenario analysis to consider the sensitivity of the results to different views on the relative importance (weighting) of the different criteria within the Applicant's best value appraisal framework, based on HM Treasury Green Book guidance on switching values, considering the different factors within net social impact and cost, and again the balance between the two.

⁵ Environment Agency, Natural England and Ofwat, Water Resources Planning Guideline, July 2021, Section 9.1

3.4.6 Following the development of the 23 best value criteria, and the application of the importance weighting to these, the sub criteria were summarised into five best value 'lenses'. These five lenses are:

- Best Value Ranking 1: Whole life cost;
- Best Value Ranking 2: Average affordability;
- Best Value Ranking 3: Net social impact;
- Best Value Ranking 4: Net social impact relative to whole life cost; and
- Best Value Ranking 5: Net social impact relative to affordability.

3.4.7 The outcomes of the MCDA provided a ranking of the options against these five best value lenses.

3.4.8 A breakdown of how the options performed against each best value lens is shown in Table 3-9.

Table 3-9: MCDA ranking

Option	Best Value Ranking				
	1: Whole Life Cost	2: Average Affordability	3: Net Social Impact	4: Net Social Impact Relative to Whole Life Cost	5: Net Social Impact Relative to Affordability
A.1	5	5	5	5	5
A.2	5	5	6	6	6
B.2	3	3	4	4	4
B.4	2	2	3	2	2
B.5	4	4	2	3	3
D.2	1	1	1	1	1

3.4.9 The ranking of the options following the MCDA is shown in Table 3-10.

Table 3-10: MCDA outcome

Option	Multi-Criteria Decision Analysis Ranking
D.2	1
B.4	2
B.2	3
B.5	3
A.1	5
A.2	5

3.5 Legal and policy objectives

3.5.1 The options were assessed against a number of legal and policy objectives that the Applicant had defined at an early stage for its strategic water resource solution, which considered the following.

- The Applicant's supply duty.
- Use of and need for drought orders.
- Compliance with existing and future environmental legislation.
- Ability to implement Biodiversity Net Gain and Environmental Net Gain.
- Compliance with the Section 20 agreement.
- Compliance with the NPSWRI.
- Compliance with the Water Framework Directive (WFD).

3.5.2 Each option was assigned a RAG rating defined as follows:

- **RED**: Based on the available information the option does not meet and would not be expected to meet the relevant objectives;
- **AMBER**: based on the available information there is a risk that the option may not meet, or may not fully meet, the relevant objectives or that significant known or expected barriers would need to be overcome in order for it to meet or fully meet the relevant objectives; and
- **GREEN**: based on the available information the option is considered to mainly or fully meet the objectives.

3.5.3 The ranking of the options from the legal and policy objectives review are shown in Table 3-11.

Table 3-11: Ranking against legal and policy objectives

Option	Legal and Policy Obligations Ranking
A.1	Red
A.2	Red
B.2	Amber
B.4	Amber
B.5	Amber
D.2	Amber

3.6 Water for Life Hampshire strategic objectives

3.6.1 To assess the options against the Water for Life Hampshire strategic objectives, again developed at an early stage as key project requirements, a matrix was prepared to capture the strategic objectives of the project. The matrix is shown in Table 3-12.

Table 3-12: Water for Life Hampshire Strategic Objectives

Strategic Objective	Definition	Purpose
Best Value	Southern Water will deliver solutions which provide the best value to its customers whilst discharging Southern Water's 'all best endeavours' legal obligation in the Section 20 agreement and all other legal and policy requirements and obligations.	To ensure a fundable plan (acceptable to Ofwat)
Net Zero Carbon	Southern Water will deliver solutions which ensure that it can continue to make progress towards meeting, and to support and contribute to, Water UK's commitment to become net zero carbon by 2030.	To meet industry-wide commitments
Adaptability	Southern Water will ensure that all projects within the Programme are sustainable by being flexible and adaptable, including in terms of their: <ul style="list-style-type: none"> • Capacity and scalability; • Ability to contribute to strategic reinforcement of the regional and national network; • Ability to rely on appropriate transitional measures to manage risks around delivery timescales; and • Ability to allow for technological innovation. 	To ensure suitability to meeting long-term water supply requirements and therefore sustainability of supply

3.6.2 The options were assessed against the Water for Life Hampshire strategic objectives matrix using a RAG set out above in Section 3.5.2.

3.6.3 The ranking of the options from the Water for Life Hampshire strategic objectives review are shown in Table 3-13.

Table 3-13: Rating against the Water for Life Hampshire Strategic Objectives

Option	Water for Life Hampshire Strategic Objectives Ranking		
	Best Value	Net Zero Carbon	Adaptability
A.1	Red	Amber	Amber
A.2	Red	Amber	Amber
B.2	Amber	Amber	Amber
B.4	Amber	Amber	Green
B.5	Amber	Amber	Amber
D.2	Green	Amber	Green

3.7 Interim business evaluation

3.7.1 Following the evaluation and assessment of options, at the interim business evaluation stage, the options were then ranked in relation to each other on their performance in these evaluations. The interim business evaluation was undertaken on options that had been scaled to meet a 1-in-200-year drought event, which at the time of Stage 2 was the drought scenario that was required to be planned for as part of WRMP19. Table 3-14 sets out the ranking of options at the interim business evaluation.

Table 3-14: Ranking of options at the interim business evaluation

Option	Configuration Type	Overall Ranking
D.2	Water transfer	1
B.4	Water recycling	2
B.2	Water recycling	3
B.5	Water recycling	4
A.1	Desalination	=5
A.2	Desalination	=5

3.7.2 Options D.2 and B.4 were ranked first and second respectively, with Option D.2 considered the most favourable option as it had a lower capital cost and had fewer environmental constraints compared to the other options. Options D.2 and B.4 were also considered the most adaptable because of the flexibility and ability to evolve as a result of being integrated with Havant Thicket Reservoir.

3.7.3 Options B.2 and B.5 were ranked third and fourth respectively, with neither option performing as well against the ‘adaptability’ objectives in the Water for Life Hampshire strategic objectives as Options D.2 and B.4.

3.7.4 Option A.1 and A.2 had a greater likelihood of leading to a range of significant environmental impacts, including the potential to harm the integrity of a SPA, which is a European designated site and afforded the highest level of protection under legislation and the NPSWRI [6]. Therefore, they were not considered preferable, as there were other options that would lead to fewer impacts. These options were ranked the joint fifth and least favoured options and were therefore not progressed further. This was confirmed in the Applicant’s RAPID Interim Update in September 2021 prior to its Gate 2 submission in December 2021. RAPID confirmed agreement to the Applicant’s proposal to not progress further investigation and development of a desalination solution.

3.8 Future needs assessment

3.8.1 Following the interim business evaluation, and to ensure that any preferred option could continue to meet the adaptability strategic objective, a future needs assessment was undertaken which established whether the options could be evolved to meet future water resource needs, including the need to plan for a larger supply deficit in a 1-in-500 year drought event. The regulatory requirement for water companies to plan for supplying water in an extreme drought event (1-in-500

year) in WRMPs is set out in section 4.7 of the Water Resources Planning Guideline [9], and recognised in the Environment Agency's National Framework for Water Resources policy paper [10]. As set out in the NPSWRI, if a water company identifies a future deficit, it will need to assess the options to eliminate this deficit and justify its preferred options within its WRMP. The Applicant's emerging WRMP24 (which will, once published, replace WRMP19) and the WRSE [1] select the Project as part of a package of solutions to meet future need, including the need to deliver water resources during an extreme drought event. The future needs assessment undertaken as part of Stage 2 tested whether the required capacity of the options could be expanded to meet a deployable output requirement of between 87 to 95MI/d. At the time of the future needs assessment, 87MI/d was identified as the output the solution would need to meet, and specifying an upper limit of up to 95MI/d would provide a factor of safety and tolerance for any future unknowns, in order to comply with Water Resources Planning Guidelines. The requirement was later refined to a peak drought output of approximately 90MI/d and this is the requirement recognised in the Applicant's emerging WRMP24.

- 3.8.2 Options B.2 and D.2 were not capable of meeting the updated deployable output of 87 MI/d and could not be adapted to do so. Therefore, neither option was considered further. Options B.4 and B.5 could be adapted to provide a transfer of 87MI/d which would meet the updated deployable output requirement being considered at the time. As such, both options were considered viable solutions from a water resources planning perspective. Option B.4 was regarded as preferable to Option B.5 in adaptability terms, as the integration with Havant Thicket Reservoir offered greater resilience.

3.9 Final business evaluation

- 3.9.1 At the final business evaluation stage, the options were re-assessed and no changes to the outcomes of the interim business evaluation were identified. However, by also considering future needs, Option B.4 was ranked first on account of the following:

- Option B.4 was considered to carry a marginally lower consenting risk compared to Option B.5 as a new environmental buffer was not required. Option B.4 would better utilise the planned Havant Thicket Reservoir as an environmental buffer, reducing the need for an additional reservoir structure being developed, and the associated land, environmental and other development impacts, and therefore reducing overall construction and operation phase impacts.
- Option B.4 would likely have a shorter construction and commissioning duration than Option B.5, which reduces the length of time that temporary measures are needed, such as using Drought Orders and Drought Permits to maintain water supply obligations.
- Option B.4 was considered to have the ability to meet the identified future need of planning for a 1-in-500 year extreme drought. This option also offered potential supply resilience beyond the Applicant's Hampshire supply zones because of the flexibility afforded by the integration of Havant Thicket Reservoir

and the water recycling technology as an integrated solution. And unlike Option B.5, Option B.4 is not wholly reliant on a single water resource technology which could become a single point of failure.

- 3.9.2 Option B.5 was ranked second on account of its higher cost relative to Option B.4, its lower flexibility in scalability terms and its lesser ability to act as a regional resilient solution with potential benefits beyond the Applicant's Hampshire supply zone.
- 3.9.3 At the Gate 2 submission in December 2021, Option B.4 was confirmed to the Applicant's regulators (RAPID) as the selected option, and became the Project which is being progressed through the consenting process, and Option B.5 was selected as the backup option. The Applicant's WRMP19 annual review 2020-2021 confirmed the selection of the Project as the preferred option.
- 3.9.4 Following the Gate 2 submission, the Applicant undertook a technical appraisal to interpret technical challenges associated with Option B.5. The principal difference between Option B.5 and Option B.4 is that Option B.5 would involve building a new environmental buffer lake near Otterbourne WSW, whereas Option B.4 would utilise Havant Thicket Reservoir as an environmental buffer. Havant Thicket Reservoir is fully funded and contract awarded (being delivered by Portsmouth Water as noted at 4.1.18), therefore the delivery risk to Option B.4 was considered to be lower. Further, Option B.5 has less flexibility to meet both Portsmouth Water's and the Applicant's future needs, as noted at 4.3.43.
- 3.9.5 The scale of the environmental buffer lake required for Option B.5 was initially planned to store approximately 90MI/d of recycled water (a volume equivalent to 24 hours of maximum WRP flows). However, following discussion with the Drinking Water Inspectorate, it was identified that the environmental buffer lake would be required to store at least 630MI/d (a volume equivalent to seven days of maximum WRP flows). This larger environmental buffer lake would require approximately 15ha of land.
- 3.9.6 At this stage, no location for the larger environmental buffer lake (either as one new site or two smaller sites) had been identified. It was therefore considered that the consenting risks associated with Option B.5 were increased compared to Option B.4. Option B.5 was also determined to have an increased whole life cost, delivery schedule, energy usage and carbon footprint compared to Option B.4. As such, further work on Option B.5 was suspended due to the aforementioned issues which surround deliverability, flexibility, land take, consenting, timescales and carbon.

3.10 Review of the options appraisal process

- 3.10.1 The Applicant undertook a review in 2025/2026 of the options appraisal process that was undertaken at Stage 2 to check and confirm that the outcomes remained valid, given the time that had passed since Stage 2 was initially undertaken. This reviewed whether there had been any material changes to the criteria and outcomes that were considered throughout the options appraisal process, and re-evaluated Option B.4 and Option B.5. The review confirmed that Option B.4 remained the preferred option. Appendix B comprises a report setting out this review of the options appraisal process.

4 Stage 3: Options Appraisal Process to Summer 2022 Consultation

4.1 Development of a preferred pipeline corridor and above ground plant zones

4.1.1 This section outlines how Option B.4 has been developed following the options appraisal process and Gate 2 submission in order to identify a preferred corridor and zones for the AGP. The stages of the development of the corridor and AGP were as follows:

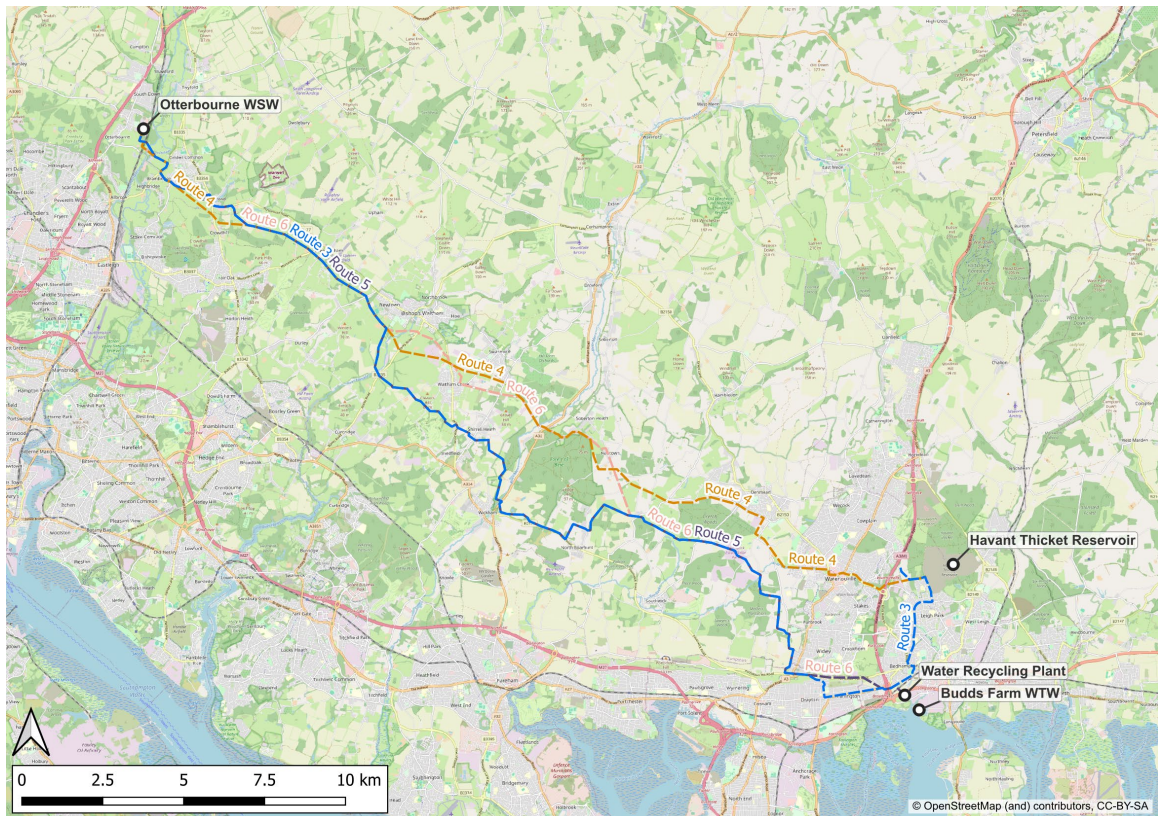
- Defining and dividing corridors from the pipelines that progressed from Stage 2 for Options B.4 and B.5. This stage included a back-check of any additional potential pipelines post Stage 2;
- Identification of AGP zones that are required to accompany the pipelines;
- Evaluation of the corridor sections and AGP against criteria developed with the Applicant's technical teams; and
- Identification of a preferred corridor route.

4.2 Defining pipeline corridor sections and above ground plant zones

Pipeline Routes

4.2.1 This section provides an overview of how the initial pipeline routes between the WRP site and Otterbourne WSW and WRP site to Havant Thicket Reservoir progressed from Stage 2 were expanded into pipeline corridor sections. The pipeline corridor sections were then evaluated to identify a preferred pipeline corridor. A pipeline corridor is a wider area of land where a pipeline could be sited. This approach allowed for refinements to be made to pipeline routes in order to respond to more local constraints.

4.2.2 The starting point was taking the initial pipeline routes that were progressed from Stage 2. Graphic 4-1 provides a plan of these initial pipeline routes.

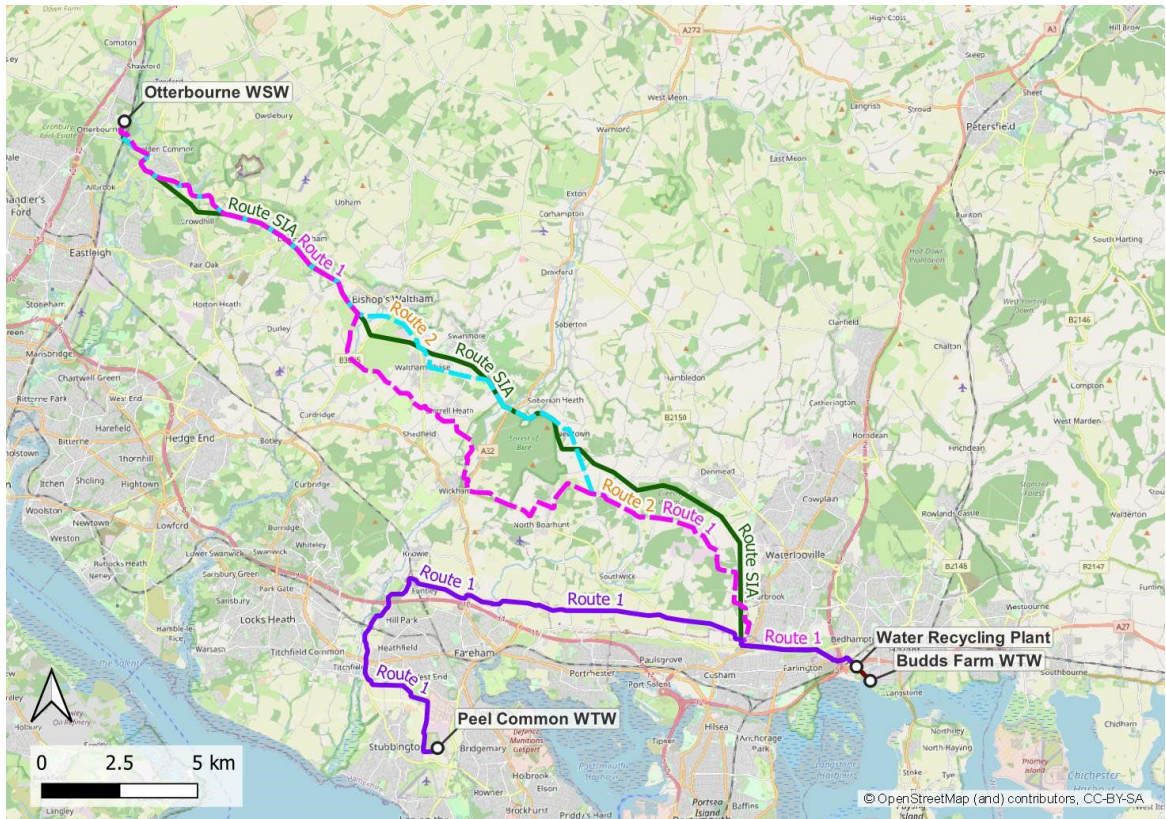


Graphic 4-1: Indicative pipeline routes progressed from Stage 2

Back-check of Pipeline Routes

- 4.2.3 Following Stage 2, a back-check of these pipeline routes took place in order to:
- Improve the hydraulic performance of the pipeline route. Additional topographical data (Environment Agency Light Detection and Ranging) was considered;
 - Identify any additional potential alternative pipeline routes that would avoid or reduce interference with high-risk or constrained areas, including the South Downs National Park;
 - Account for changes to land use since the routes were drawn pre-Gate 2, as a result of new development shown by updated aerial imagery;
 - Consider with greater significance the potential for routes that diverge from the direct route options developed pre-Gate 2; and
 - Include corridors that lead to and contain tunnelling shafts or portals, which are considered necessary where there are significant constraints for planning and construction, such as dense urban areas.
- 4.2.4 Following this back-check, an additional pipeline route was identified which was assessed using the same process as the other initial pipelines routes at Stage 2, as detailed in Section 3.2, using the criteria in Table 3-2, to ensure the inclusion of this additional pipeline route would not increase the level of impact identified for Option B.4 as part of the options appraisal process. This route followed a similar route to the northern section of the pipeline between the Peel Common WTW and the WRP which formed part of Option B.5, but was included as its location offered

further options for the development of the pipeline for Option B.4. This additional pipeline is labelled as Route 1 and shown in purple in Graphic 4-2.

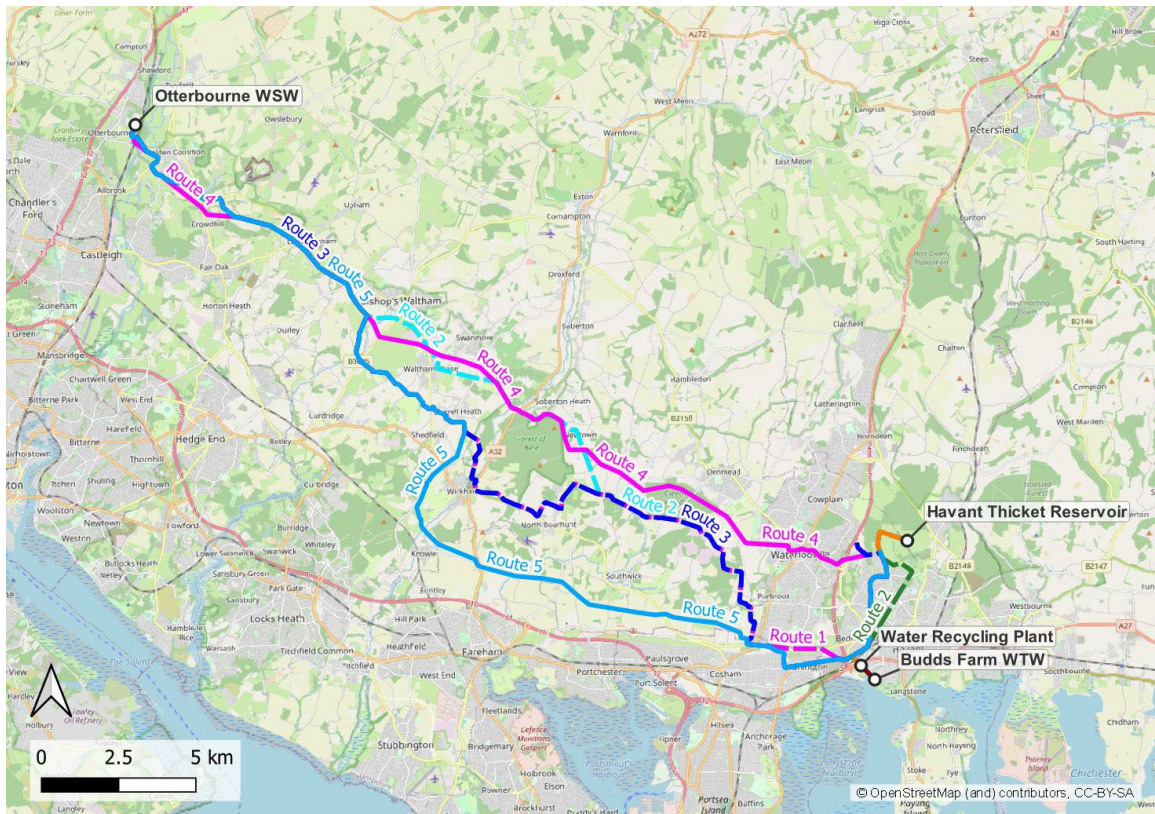


Graphic 4-2: Additional pipeline route identified through the back check

4.2.5 The evaluation concluded that the inclusion of this pipeline route would not result in an increase to the overall environmental impacts of Option B.4.

Combination of Initial Pipeline Routes

4.2.6 To ensure all potential options were considered, the northern section of this additional pipeline route was included in the initial pipeline routes that were taken forward from Stage 2. Graphic 4-3 shows the pipeline routes that were taken forward for development into pipeline corridors.



Graphic 4-3: Pipeline routes taken forward for development into pipeline corridors

Pipeline Corridor Identification

- 4.2.7 The combined initial pipeline routes were developed into corridors to identify potential zones where a pipeline could reasonably be laid. Corridors are wider areas of land where a pipeline could be located. The corridors were sized to allow for the pipeline route to be defined to reflect a number of localised constraints following further data collection. The corridors were then divided into corridor sections so that each section could be assessed.
- 4.2.8 Alternative corridors that do not necessarily follow the pipeline routes shown in Graphic 4-3 were identified at later stages throughout the evaluation of corridor sections. These were identified to aid engineering and constructability considerations and provide alternative routes where there were significant environmental or planning constraints. These routes were subject to back checking so the process was robust in accordance with previous stages.

Above Ground Plant

- 4.2.9 Once the pipeline corridors were defined, the initial requirements for AGP were identified through hydraulic modelling and calculations for the pipeline corridors. The following AGP were identified as necessary for the operation of the pipelines:
- HLPS (the site selection was undertaken at Stage 2 as set out in Section 3.2)

- Intermediate pumping stations (IPSS): required as a result of significant distance and/or a large amount of static head to overcome during the transfer, and
- Break pressure tanks (BPTs): required within the pipeline route to mitigate potential surge issues and reduce overall pumping costs and energy requirements.

4.2.10 The exact locations of the IPSSs and BPTs within the wider zones would be identified at subsequent stages once the pipeline route had been refined. Potential zones for siting the AGP at this initial stage had been produced through an iterative process employing the following parameters:

- Hydraulics data
- Emergency discharge availability/impact
- Dimensions – land take/maximum area for the infrastructure
- Proximity requirements, especially in relation to the pipeline
- Access arrangements
- Energy requirements
- Other associated development required, and
- Operational details.

4.3 Pipeline corridor selection and above ground plant refinement evaluation

4.3.1 Following the identification of pipeline corridor sections and AGP, a process to refine the options took place to identify the preferred pipeline corridor. Engineering and constructability site visits were undertaken to progress the understanding of constraints beyond the initial desk-based assessments. This resulted in additional route options being identified in locations where constraints were identified as more information was gathered through the evaluation process.

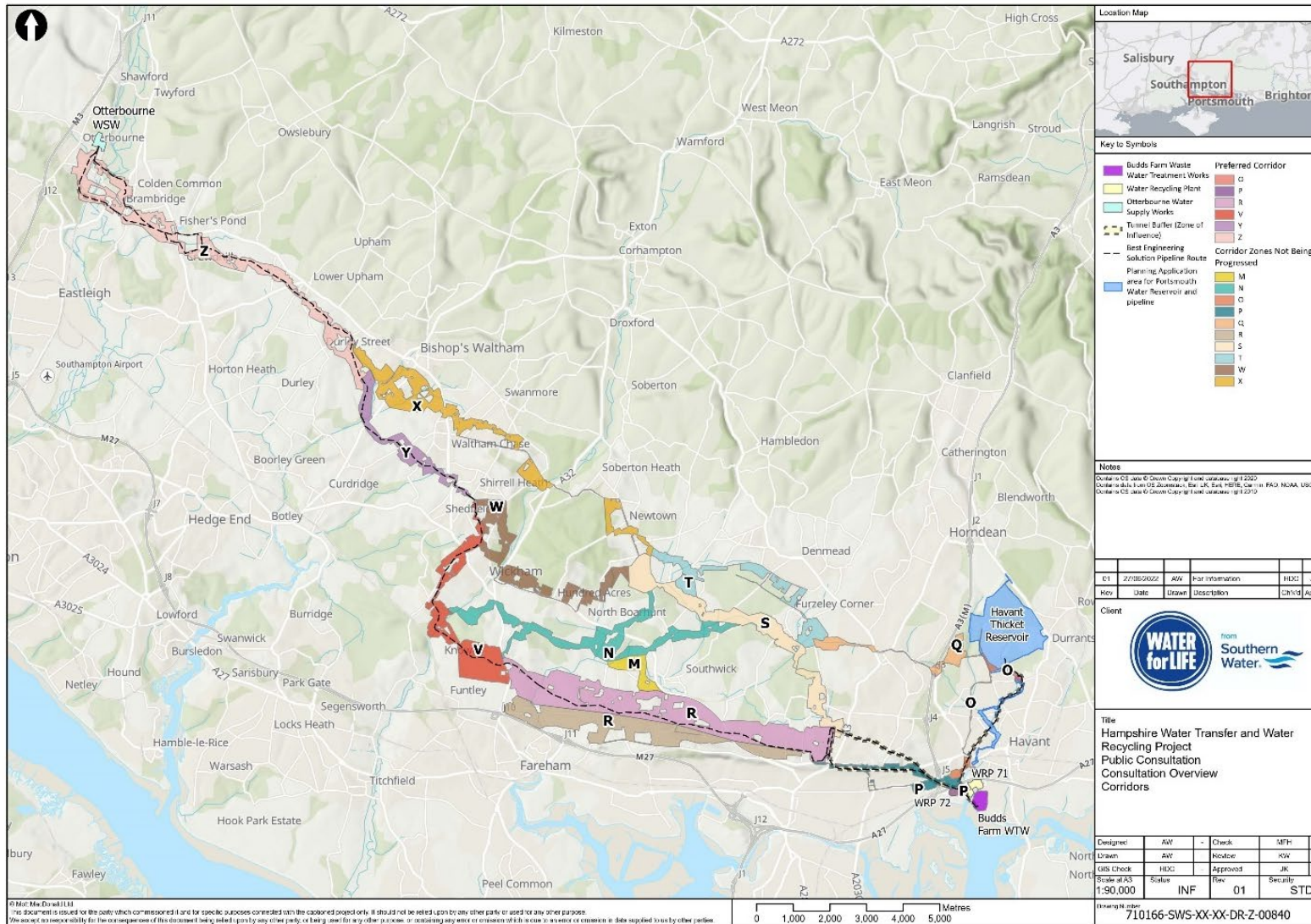
4.3.2 The pipeline corridor sections and AGP zones were then evaluated against criteria developed by subject matter experts in consultation with stakeholders. The evaluation comprised of assessments from the following subject matter experts to identify any constraints that may pose risks in terms of deliverability and conflicts with relevant planning and environmental legislation, regulations and policy:

- Agricultural land classification
- Constructability
- Biodiversity and nature conservation
- Flood risk
- Geology and soils
- Historic environment
- Hydraulics and engineering
- Interface with other planned developments

- Interface with Special Categories of Land, open space and other sensitive land uses
- Landscape and visual amenity
- Socio-economics, and
- Water quality and resources.

4.3.3 Graphic 4-4 shows the pipeline corridor sections that were taken forward to the pipeline corridor section and AGP evaluation.

Hampshire Water Transfer and Water Recycling Project Scheme Development Report

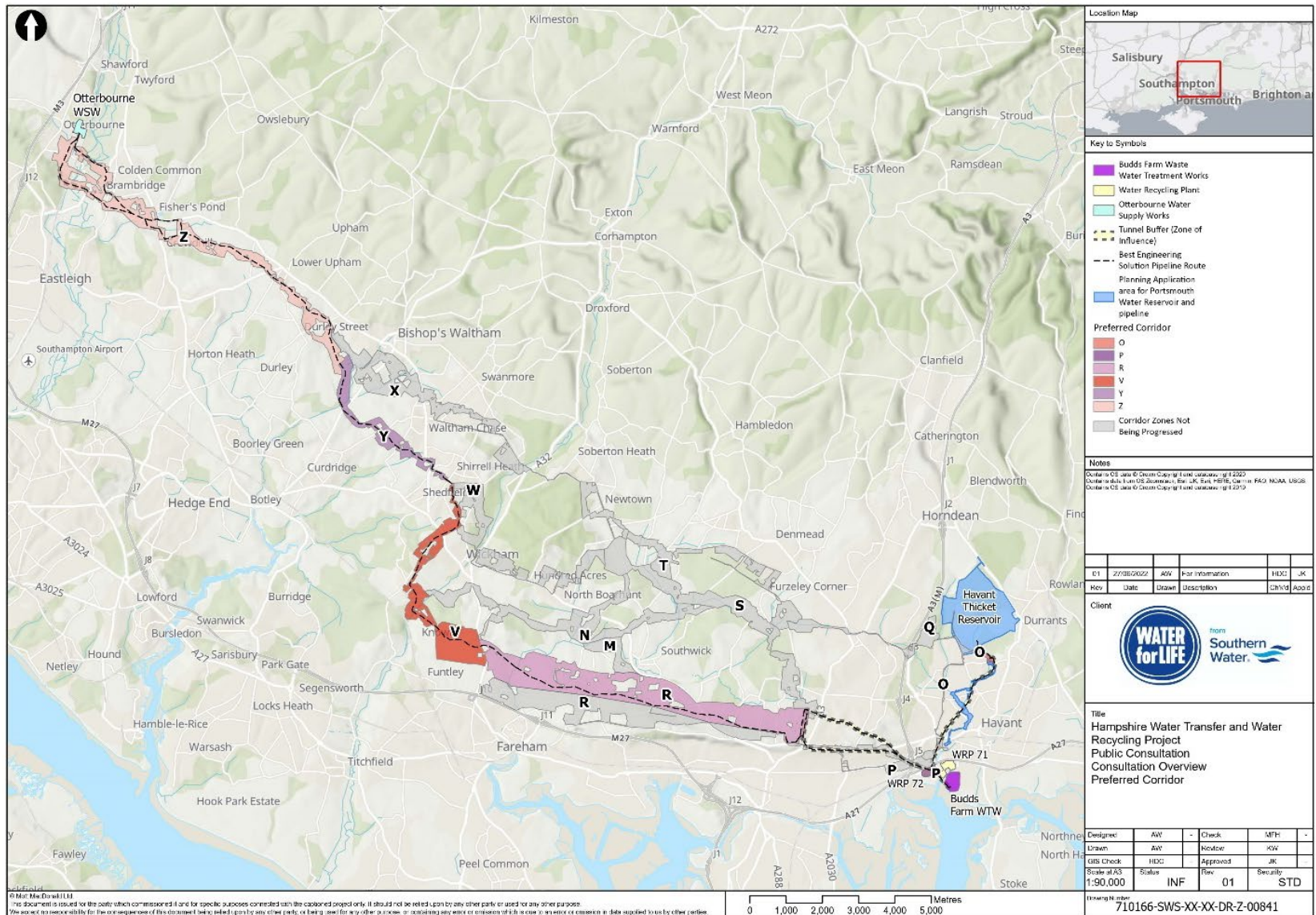


Graphic 4-4: Pipeline corridor sections identified and assessed prior to the Summer 2022 Consultation

- 4.3.4 Appendix C sets out the outcomes of the review of the pipeline corridor sections and AGP zones.
- 4.3.5 Some pipeline corridor sections were not progressed as they intersected with the South Downs National Park, a national landscape designation that is afforded the highest level of protection in the NPSWRI. The selection of a preferred pipeline corridor sought to reduce intersections with and proximity to sensitive environmental designations including ancient woodland, priority habitats, designated ecological sites and flood risk zones, as far as reasonably practicable.
- 4.3.6 The potential for introducing additional AGP as a result of selecting pipeline corridor sections that would have greater topographical variation was also considered in the evaluation of pipeline corridor sections, as it was considered that the effects of the AGP during the construction and operation phases would be greater than those effects for the pipeline. This is because the AGP would have a permanent presence and associated impact, in comparison to the pipeline which would be buried underground and would have reduced impacts during the operational period of the Project. Impacts associated with the permanent presence of AGP may include landscape and visual impacts to certain receptors. Therefore, pipeline corridor sections that would introduce greater topographical variation were not progressed as a result of requiring more AGP sites (and therefore more impacts) to support the flow of water in the pipeline, compared to those pipeline corridor sections that had less topographical variation.
- 4.3.7 The identified AGP zones were assessed using the same evaluation criteria that were used for the pipeline corridor sections. As some pipeline corridors were not progressed, the AGP zones identified for such sections were not considered any further. Additionally, some other AGP zones were not progressed because of their proximity to the South Downs National Park and Scheduled Monuments.
- 4.3.8 The evaluation process resulted in the selection of the preferred pipeline corridor and AGP zones. These were then developed further as part of Stage 4. A Best Engineering Solution Pipeline Route (BESPR) was also shown within the preferred pipeline corridor. The BESPR represented a pipeline route that was hydraulically optimal considering the topography of the preferred pipeline corridor.
- 4.3.9 The preferred pipeline corridor as presented at the Summer 2022 Consultation is shown in Graphic 4-5.

Hampshire Water Transfer and Water Recycling Project

Scheme Development Report



Graphic 4-5: Preferred pipeline corridor presented at the Summer 2022 Consultation

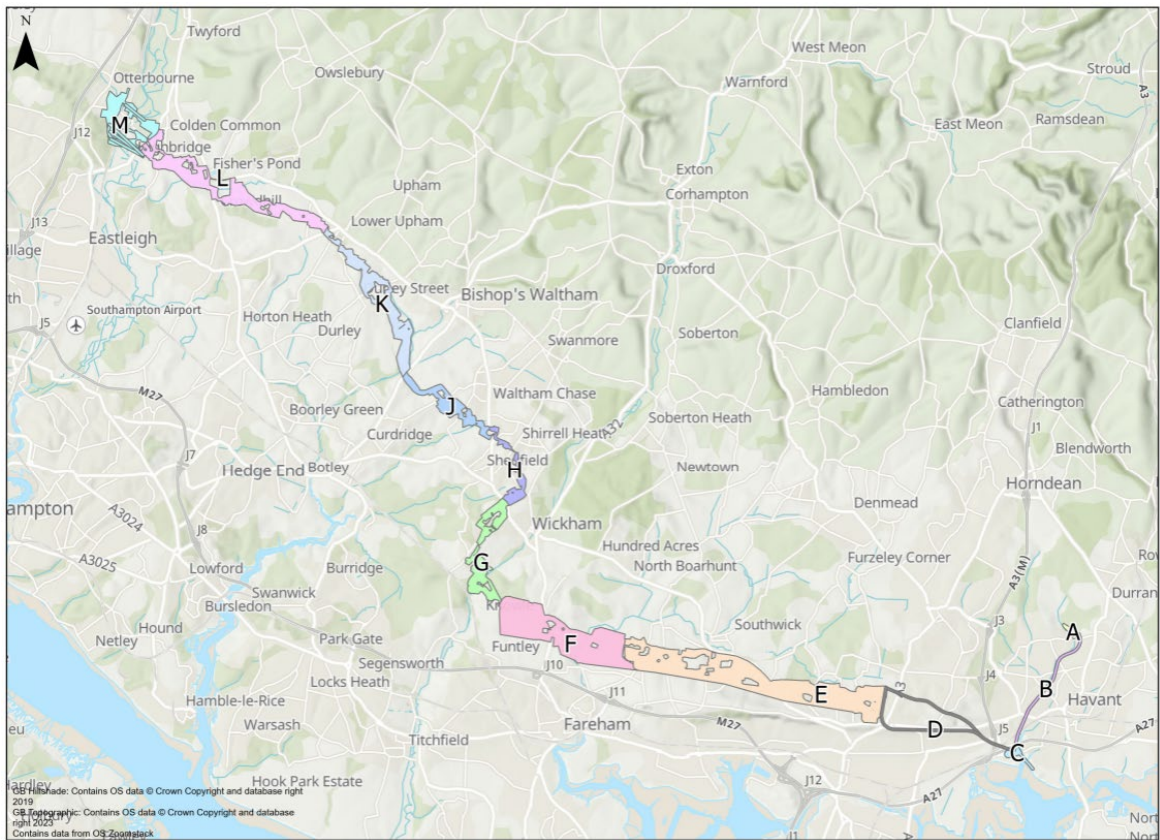
4.4 Pipeline section naming updates

- 4.4.1 Following the identification of the preferred pipeline corridor at Stage 3, new section boundaries were defined to better align with Local Authority district boundaries, and physical features such as significant roads. The naming of the pipeline sections making up the preferred pipeline corridor were updated to avoid any confusion with pipeline corridor sections not proposed to be progressed at that time. The updated naming also enabled the sections to be ordered sequentially.
- 4.4.2 The preferred pipeline corridor as presented at the Summer 2022 Consultation consisted of the following pipeline corridor sections as shown in Graphic 4-5:
- Section O
 - Section P
 - Section R
 - Section V
 - Section Y
 - Section Z
- 4.4.3 The updated naming of the pipeline corridor sections is set out in Table 4-1 and Graphic 4-6.

Table 4-1: Pipeline section naming updates

Previous Section Naming	Updated Section Naming	Local Planning Authority Area
Section O	Section A	Havant Borough Council
	Section B	Havant Borough Council
Section P	Section C	Havant Borough Council
	Section D	Havant Borough Council Portsmouth City Council Winchester City Council
Section R	Section E	Portsmouth City Council Winchester City Council
	Section F	Fareham Borough Council
Section V	Section F	Fareham Borough Council
	Section G	Winchester City Council
	Section H	Winchester City Council
Section Y	Section H	Winchester City Council
	Section J	Winchester City Council
	Section K	Winchester City Council
Section Z	Section K	Winchester City Council
	Section L	Eastleigh Borough Council Winchester City Council
	Section M	South Downs National Park Authority

Previous Section Naming	Updated Section Naming	Local Planning Authority Area
		Winchester City Council



Graphic 4-6: Updated pipeline section naming

5 Stage 4: Summer 2022 Consultation to Summer 2024 Consultation

5.1 Design development approach and methodology

Identification of proposed pipeline route

- 5.1.1 At the Summer 2022 Consultation, feedback was sought on the preferred pipeline corridor including on several areas of optionality. Within the preferred pipeline corridor, a BESPR was also presented which indicated a hydraulically optimal location for the pipeline, considering the topography of the preferred pipeline corridor.
- 5.1.2 The starting point in developing a pipeline route at Stage 4 was the BESPR. Locations where amendments or consideration of different construction methods may be required were identified, such that the optimum routing of the pipeline could be achieved, including taking account of known local factors and constraints. This was informed by feedback received from the Summer 2022 Consultation, ongoing engagement with stakeholders and statutory bodies, ongoing environmental surveys and assessments, and engineering and land investigations. Areas of optionality in the BESPR were also refined at Stage 4.
- 5.1.3 At locations where routing refinements or amendments, or consideration of different construction methods for the BESPR were identified, evaluations were undertaken by a multi-disciplinary team made up of environmental specialists, engineers and planners, to determine whether changes to the BESPR were required to refine the route to avoid constraints and sensitivities. Examples of this include:
- Identification of protected species or valuable habitats in close proximity to the BESPR
 - Identification of veteran or ancient trees in close proximity to the BESPR
 - Avoiding and reducing interface with areas at high risk of flooding
 - Identification of existing businesses on land intersected by the BESPR, and
 - Identification of areas at high risk of flooding along the BESPR.
- 5.1.4 This was informed primarily by identifying whether the construction and operation of the BESPR had any conflicts with the NPSWRI, however it also considered a range of other environmental legislation, policy and guidance available at the time including:
- NPPF (2023) (it is noted that the NPPF was updated following 2023, and subsequent stages described in this document considered whether these updates had a material impact on the design of the Project which required consideration).
 - The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

- The Conservation of Habitats and Species Regulations 2017 (as amended) (Habitat Regulations).

5.1.5 If constraints on the BESPR were identified, potential alternative pipeline routes were developed within the preferred pipeline corridor, or alternative construction methodologies were proposed to reduce conflicts with the identified constraints. When developing potential alternative pipeline routes or construction methodologies, engineering factors were considered to ensure that the alternatives were practical and deliverable. These engineering factors comprised of:

- The hydraulic feasibility of the option. Routing that introduced large topographical changes, and therefore large impacts on the overall hydraulic profile of the Pipeline between the WRP site and Otterbourne WSW, were not considered as they would likely require additional AGP.
- The constructability of the option in relation to the availability of access and the availability of space within the surrounding area to undertake construction tasks.
- Whether there were interfaces with existing utilities that would pose significant constructability challenges.

5.1.6 Where feasible alternative routing options to the BESPR were identified in line with the above, an environmental and planning evaluation was undertaken to determine which option was preferred against the criteria that are informed by the NPSWRI and environmental legislation, policy and guidance. The evaluation considered the criteria and sub-criteria set out in Table 5-1.

Table 5-1: Evaluation criteria and sub-criteria for considering pipeline and site options

Evaluation Topic	Sub-criteria
Air Quality	Impact of dust emissions
	Impact of non-road mobile machinery
	Impact of vehicular emissions
	Impact of odour emissions
Biodiversity and Nature Conservation	Impact on internationally designated sites
	Impact on priority habitats
	Impact on nationally designated sites
	Protected species
	Regional and local designated sites
Carbon and Climate Change	Embodied carbon
	Other emissions (road transport, plant and equipment)
	Operational carbon emissions
	Climate adaptation and resilience
Geology and Soils	Impact on designated sites
	Risk of mobilisation of contaminants as a result of proximity to landfills, other contaminating industry etc.

Evaluation Topic	Sub-criteria
Historic Environment	Impact on nationally important historic environment assets including Scheduled Monuments, grade I and II* listed buildings, grade I and II* registered park and gardens.
	Impact on regionally important historic environment assets
	Impact on areas of high archaeological potential and complexity
	Impact on buildings and other non-designated heritage assets of local interest
	Historic landscapes
	Historic Environment Record (HER) data
Interface with Other Development	Interface with existing development (not brownfield land)
	Interface with consented NSIPs NSIPs in the pre-application process
	Interface with development consented under the Town and Country Planning Act (TCPA) (other development) Interface with TCPA development applications.
	Interface with Minerals and Waste sites
	Interface with strategic land allocations (Strategic Housing Land Availability Assessment / Strategic Housing and Economic Land Availability Assessment etc)
	Interface with Minerals and Waste allocations
	Interface with neighbourhood plan policy specific areas – housing/employment sites
Landscape and Visual Amenity	Impacts on nationally designated areas, National Landscapes, National Parks and Areas of Outstanding Natural Beauty (AONB)
	Impact on regional/county/local landscape designations
	Impacts on landscape/townscape character
	Impact on visual amenity
Noise and Vibration	Direct airborne noise
	Direct ground-borne noise impacts from tunnelling
	Direct vibration impacts
	Indirect noise impacts due to traffic
Resource and Waste Management	Waste generation (landfill)
	Impact on Mineral Safeguarding Areas and sterilisation of mineral resources
	Impact on Minerals and Waste Safeguarded Sites
Socio-economic Impact	Residential and commercial property
	Recreation, open space and tourism
	Community facilities
	Population and health
	Impact on Crown Land

Evaluation Topic	Sub-criteria
Special Category Land	Impact on Statutory Undertaker Land
	Impact on Open Space
	Impact on National Trust Land
	Impact on common land
Traffic and Transport	Impact on shipping and navigation
	Impact on marine vessel users
	Impact on road users (including bus)
	Impact on rail users
	Impact on airfields and airports
	Impact on pedestrians
	Impact on cyclists
	Impact on equestrians
Water quality and resources and flood risk	Impact on sediment and water quality in terrestrial waters
	Impact on watercourse geomorphology and hydrology
	Impact on groundwater bodies
	Impacts on water-dependent protected areas
	Impact on flood risk comprising fluvial flood risk, surface water flood risk (including surface water flow paths), groundwater flood risk and reservoir flood risk.

5.1.7 The outcomes from the evaluations identified which option would likely have the least potential environmental impacts alongside any engineering and constructability constraints.

5.1.8 Once amendments or refinements to routing, or changes to construction methods had been undertaken to the BESPR, a pipeline route was identified. Micro-siting was then undertaken to further define the preferred location for the pipeline route and determine the draft Order Limits (the area required to implement the Project as presented at the Summer 2024 Consultation). Construction compounds were also identified and developed at this stage.

5.1.9 To undertake micro-siting, all linear features intersected by the pipeline route were reviewed to determine the environmental sensitivity of the linear feature. This considered the potential impacts that could occur as a result of a 40m open-cut trench construction working width intersecting the linear feature. A 40m working width is considered to be the typical maximum working width that would be required to construct the water transfer pipelines; further information on the working width can be found in ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6). The review aimed to identify whether amendments could be undertaken to further avoid or reduce potential environmental impacts. The following linear features intersected by the preferred pipeline route were reviewed:

- Vegetation including hedgerows, trees and dense scrub
- Watercourses

- Roads
- Private access routes, and
- PRow.

5.1.10 Following the review and assignment of environmental sensitivity to the linear features, the following actions were considered to determine if environmental impacts could be further reduced:

- Whether an alternative route or minor amendment would reduce the potential for environmental impacts.
- Whether a reduced working width of 20 m (the minimum reduced working width that can be implemented for short distances only) when intersecting the linear feature would reduce the potential for environmental impacts.
- Whether use of trenchless construction under the linear feature would reduce the potential for environmental impacts.

5.1.11 The choice of action was informed by the environmental sensitivity of the linear feature. For example, for linear features with greater environmental sensitivity, it was identified that a trenchless crossing would be needed to avoid or reduce the potential environmental impact.

5.1.12 The micro-siting stage also included implementing buffers from key features in the proximity of the pipeline route and draft Order Limits that were being determined. This included implementing 15 m buffers from ancient woodland, and 30 m from particular protected species. Buffers were implemented where technically feasible considering other constraints and whether there would be sufficient space to construct the water transfer pipelines following implementation of the buffers.

5.1.13 In some locations flexibility was retained within the draft Order Limits. This was either to allow for refinement following further investigations, engagement and consultation feedback following the Summer 2024 Consultation, or to allow for the final pipeline route to be selected at the detailed design stage following DCO approval and the completion of surveys prior to construction. ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6) sets out where flexibility has been retained in the Order Limits and these areas of flexibility are assessed in the ES.

5.1.14 Section 5.2 to Section 5.11.2 set out the outcomes of the process that was undertaken to identify the pipeline route within each pipeline section. Within these subsections, any amendments and refinements made to the BESPR are outlined, as well as a summary of any micro-siting that was undertaken, including how the draft Order Limits and locations of construction compounds were identified.

Above Ground Plant

5.1.15 At the Summer 2022 Consultation, potential zones for AGP were presented. This included an overview of the process to develop and evaluate these AGP zones. Following the Summer 2022 Consultation, AGP sites within these wider zones were identified, having regard to feedback from the Summer 2022 Consultation, ongoing engagement with relevant stakeholders and statutory bodies, environmental surveys and assessments, and engineering investigations.

- 5.1.16 Throughout the development of the pipeline route, for which the approach is set out from Section 5.1.1, the hydraulic profile of the developing pipeline route was reviewed. This was undertaken at regular intervals to identify whether any developments of the pipeline route would necessitate any changes to the AGP that would be required to support the transfer of water within the pipelines. Therefore, this process included incorporating any additional AGP zones where required to ensure that water could be transferred from Havant Thicket Reservoir to Otterbourne WSW. Where additional AGP zones were identified, the identification and evaluation of these to determine their suitability was undertaken in line with the process set out at Stage 3 in Section 4.
- 5.1.17 To refine AGP siting within the wider zones, optimal sites from an engineering perspective were first identified. These sites were identified by applying the following criteria:
- Locating the site in close proximity to the existing road network to reduce access road lengths.
 - Locating the site on even topography for ease of construction and to minimise any required earthworks.
 - Avoiding flood zones 2 and 3 where practicable.
 - Avoiding any existing major utilities including gas mains and electrical lines.
 - Locating the sites to utilise any existing vegetation as screening from visual receptors where practicable.
- 5.1.18 Following the identification of the initial optimal sites, an evaluation was undertaken to identify constraints. The evaluation used the same methodology and sub-criteria as the evaluation of alternative pipeline routes set out in Section 5.1.1 (Table 5-1) and also considered the impact on best and most versatile agricultural land. Development of the AGP could result in the permanent loss of agricultural land dependent on their final location; impacts on best and most versatile agricultural land was not considered for the development of pipelines as it was assumed that agricultural land could be reinstated following the completion of construction works. Where major constraints were identified, consideration was given to whether an alternative AGP site within the wider zone could avoid or reduce those major constraints, without giving rise to any further major constraints. Major constraints were considered to arise where construction and operation of the AGP have the potential for environmental impacts that could not be mitigated through the design or treatment of the AGP, or standard mitigation measures. If it was not possible to identify an alternative site within the zone to avoid major constraints, consideration was given to whether an alternative site in the proximity of the zone could avoid or reduce those major constraints without introducing any further major constraints. These steps were undertaken considering the impacts on the hydraulics of the pipeline route, and the siting criteria set out above. When selecting an alternative site that could not avoid major constraints, consideration was then given to mitigation or design measures that could be implemented to avoid or reduce the major constraints.

Construction Compounds

- 5.1.19 The following construction compounds are required across the Project; further information on construction compounds can be found in ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6):
- Sectional site compounds: Located at intervals along the Pipeline between the WRP site and Otterbourne WSW.
 - Trenchless construction compounds: Required where trenchless construction is proposed.
 - Tunnelling construction compounds: Required to accommodate tunnel launch, intermediate or reception shafts.
 - AGP and WRP construction compounds: Land required to facilitate construction of the AGP and WRP.
 - Water storage lagoon construction compounds: To facilitate commissioning of the water transfer pipelines.
- 5.1.20 These construction compounds were developed alongside the development of the pipeline routes as the location of the construction compounds is informed by the pipeline route. However, the pipeline route has also been influenced by the site selection of the construction compounds. This is because in some locations, potential environmental effects associated with activities undertaken at construction compounds may be greater than the potential environmental effects associated with activities undertaken to construct the pipeline route.
- 5.1.21 Construction compounds were initially identified by considering the optimal location from an engineering perspective. This was done by considering the following factors:
- Locating the site in close proximity to the existing road network to reduce access road lengths.
 - Locating the site on even topography for ease of construction and to minimise any required earthworks.
 - Avoiding flood zones 2 and 3 where practicable.
 - Avoiding any existing utilities.
 - Locating the sites to utilise any existing vegetation as screening from visual receptors.
- 5.1.22 Following the identification of optimal construction compounds, the construction compounds were evaluated. The evaluation used the same methodology and sub-criteria as the evaluation of alternative pipeline routes set out in Section 5.1.1 (Table 5-1). Where major constraints were identified, consideration was given to whether the locations of construction compounds could be amended to avoid or reduce the identified constraints.

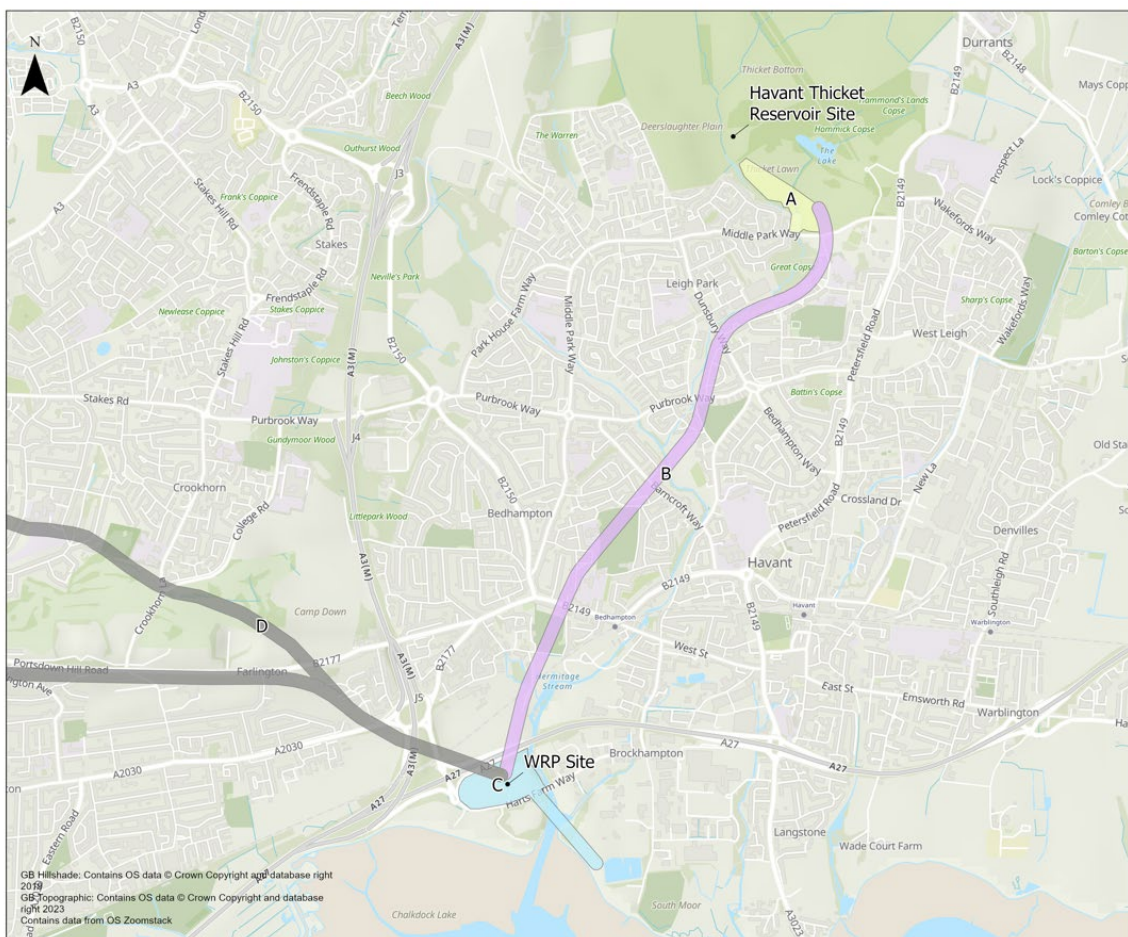
5.2 Section A and Section B

5.2.1 At the Summer 2022 Consultation, Section A and Section B comprised the pipeline route sections containing the pipelines between the WRP and Havant Thicket Reservoir. Two pipelines would be required, one pipeline would transfer recycled water from the WRP to Havant Thicket Reservoir, and the other pipeline would transfer source water from Havant Thicket Reservoir back to the HLPS which would be located at the site of the WRP, for onwards transfer to Otterbourne WSW.

Summer 2022 Consultation

5.2.2 A tunnelled option between the WRP and south of Havant Thicket Reservoir was presented and consulted on at the Summer 2022 Consultation. A tunnelled option was chosen as this would reduce construction works at surface level in Havant which is a densely populated area. Open-cut construction was proposed to connect the tunnel reception shaft to Havant Thicket Reservoir.

5.2.3 Graphic 5-1 shows Section A and Section B of the Project as presented at the Summer 2022 Consultation.



Graphic 5-1: Section A and B as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

Preferred and backup options between the Water Recycling Plant and Bedhampton Springs

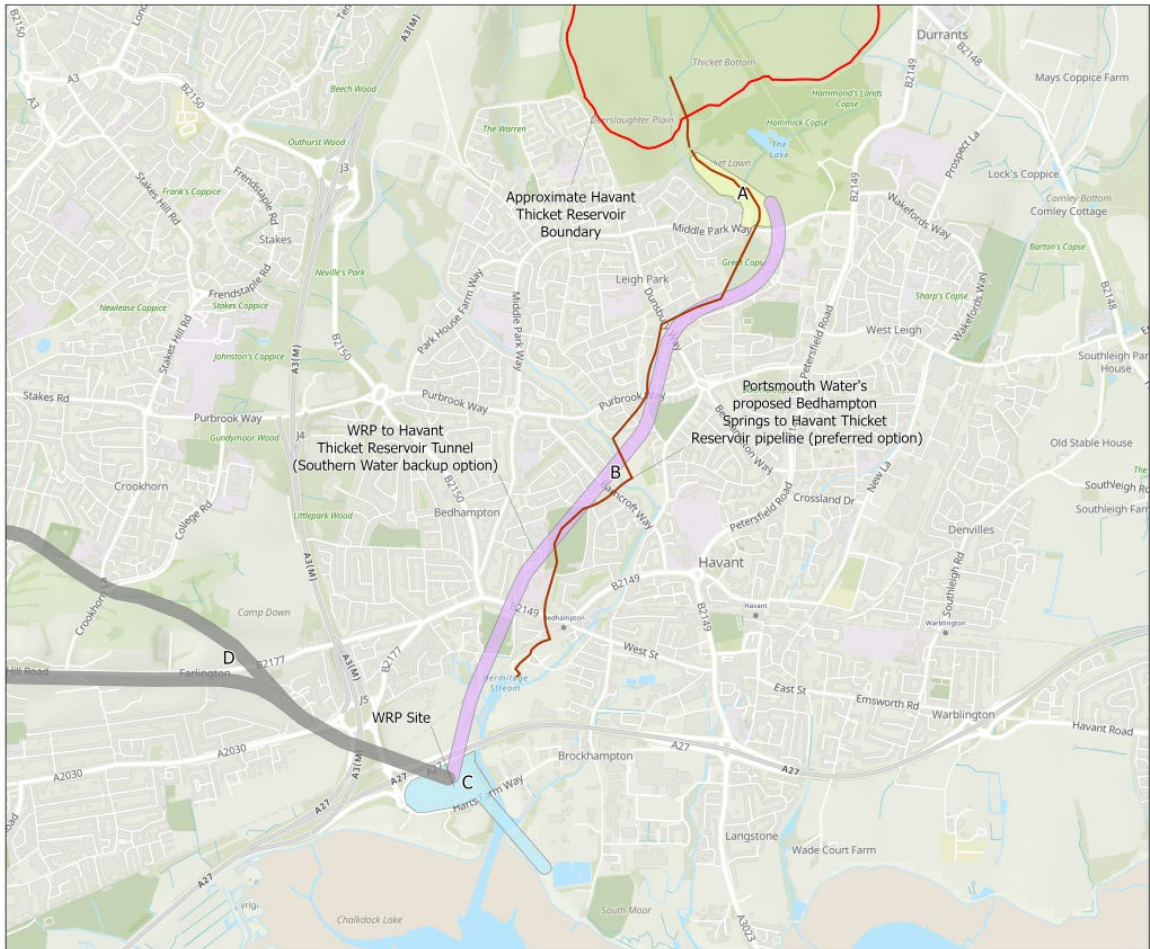
- 5.2.4 Following the Summer 2022 Consultation, the Applicant explored opportunities in collaboration with Portsmouth Water to realise efficiencies from integrating the Project with Portsmouth Water's Havant Thicket Reservoir scheme. At this point in the Project's development, Portsmouth Water was providing twin pipelines to transfer spring water from Bedhampton Springs to Havant Thicket Reservoir and to bring source water from the reservoir back to Bedhampton Springs (effectively inlet and outlet pipes to and from the reservoir). Portsmouth Water had originally received consent for a single bidirectional pipeline between Bedhampton Springs and the reservoir in 2021. However, at Stage 4 Portsmouth Water updated their proposals to alternatively deliver twin pipelines to provide additional resilience and to futureproof for potential integration with the Project, if consented. Bedhampton Springs is an existing groundwater abstraction site operated by Portsmouth Water and Havant Thicket Reservoir is a new reservoir north of Havant which Portsmouth Water received planning permission for in October 2021 (Havant Borough Council planning application reference: APP/20/00990 [11] and East Hampshire District Council planning application reference: 51680/001 [12]).
- 5.2.5 As a result of the revisions to Portsmouth Water's pipeline proposals, the Applicant explored opportunities to utilise these pipelines, subject to consent being granted under a separate planning application. In this scenario, the Applicant would seek to utilise these pipelines to enable the transfer of recycled water from the WRP to Havant Thicket Reservoir and source water from Havant Thicket Reservoir back to the HLPS at the WRP site. In this case, the Applicant would need to construct pipelines between the WRP and Bedhampton Springs to connect into the Portsmouth Water inlet and outlet pipelines between Bedhampton Springs and Havant Thicket Reservoir.
- 5.2.6 The combined approach involving the use of Portsmouth Water's pipelines was established as the Applicant's clear preference (the 'preferred option') as it would remove the need for the Applicant to construct a separate tunnel under Havant to transfer water to and from the Havant Thicket Reservoir (which is shown in Graphic 5-1 and was selected as part of the preferred pipeline corridor at Stage 3). Utilising pipelines being proposed by Portsmouth Water would demonstrate effective partnership working between neighbouring water companies in the interests of a delivering a better value solution. Constructing one set of pipelines would reduce overall disruption on local communities and the environment and would reduce resource use and costs. Therefore, the Applicant's tunnelled option of building its own pipeline between the WRP and Havant Thicket Reservoir presented at the Summer 2022 Consultation was regarded as the 'backup option'.
- 5.2.7 The backup option would be relied upon to transfer water between the WRP and Havant Thicket Reservoir should Portsmouth Water not receive consent for its twin pipelines. At Stage 4, both options were included within the Project to ensure future flexibility, noting that only one option would be constructed and delivered.
- 5.2.8 In September 2025, (following design development Stage 4 and Stage 5, and both the Summer 2024 Consultation and Spring 2025 Consultation), Havant Borough

Council approved Portsmouth Water's planning application (APP/24/00405 [13]) for two new pipelines between Bedhampton Springs and Havant Thicket Reservoir. These pipelines are needed by Portsmouth Water to enable the filling and abstraction of spring water from the Havant Thicket Reservoir. With the approval of Portsmouth Water's pipelines, there was no longer a need to progress or develop the backup option any further.

- 5.2.9 As such, the backup option between the WRP site and Havant Thicket Reservoir was removed from the Project and the preferred option between the WRP site and Bedhampton Springs (now termed as the Pipelines between the WRP site and Bedhampton Springs) was progressed.
- 5.2.10 Before the approval of Portsmouth Water's pipeline application, scheme development for the backup option continued in the interim between Stage 4 and Stage 6; reporting on this scheme development is contained within Appendix D.

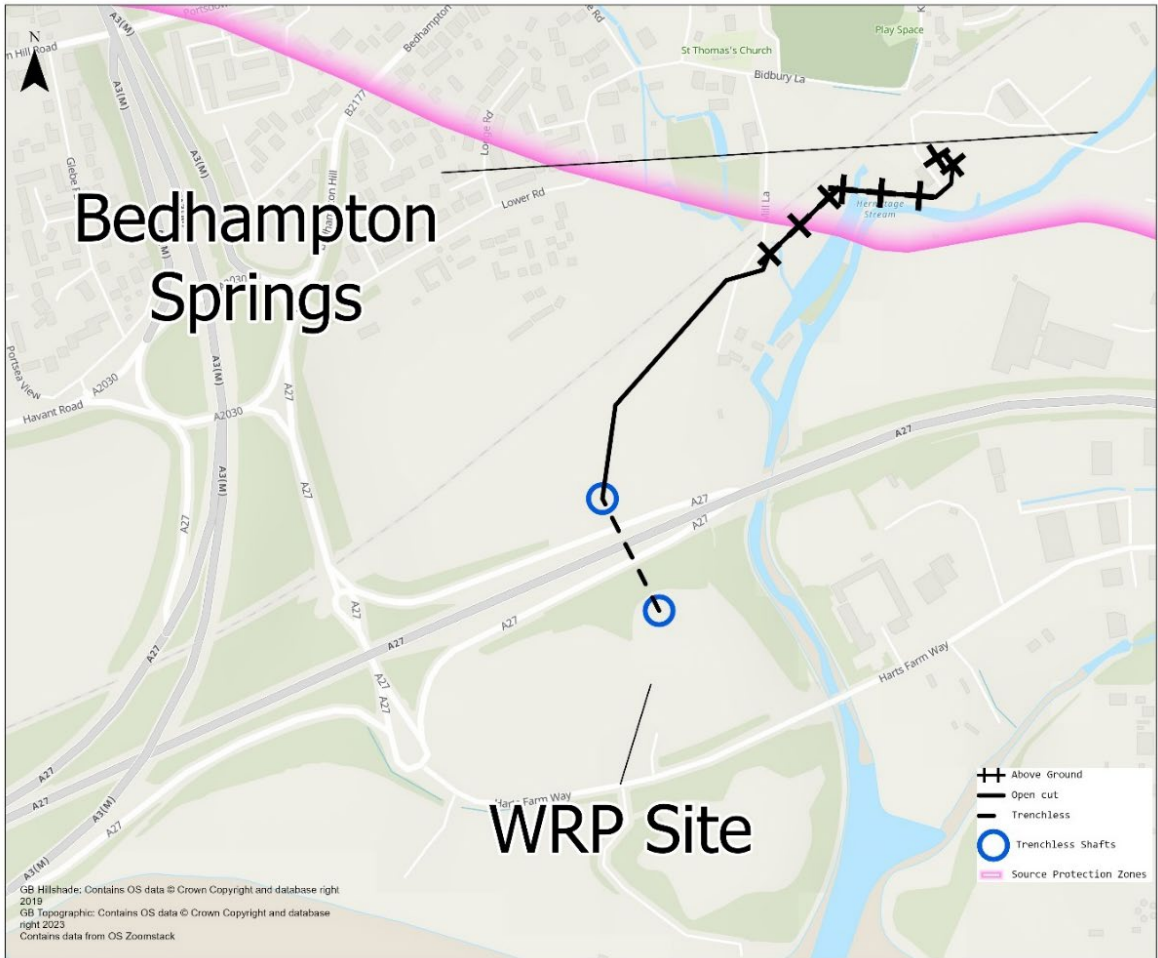
The Pipelines between the WRP site and Bedhampton Springs

- 5.2.11 As part of developing the Pipelines between the WRP site and Bedhampton Springs, where Portsmouth Water's proposed pipelines would be utilised to enable the transfers between Bedhampton Springs and Havant Thicket Reservoir, routes for the pipelines required between the WRP and Bedhampton Springs were identified and assessed. Graphic 5-2 shows the location of the WRP, Bedhampton Springs, Havant Thicket Reservoir and the alignment of Portsmouth Water's proposed pipelines.

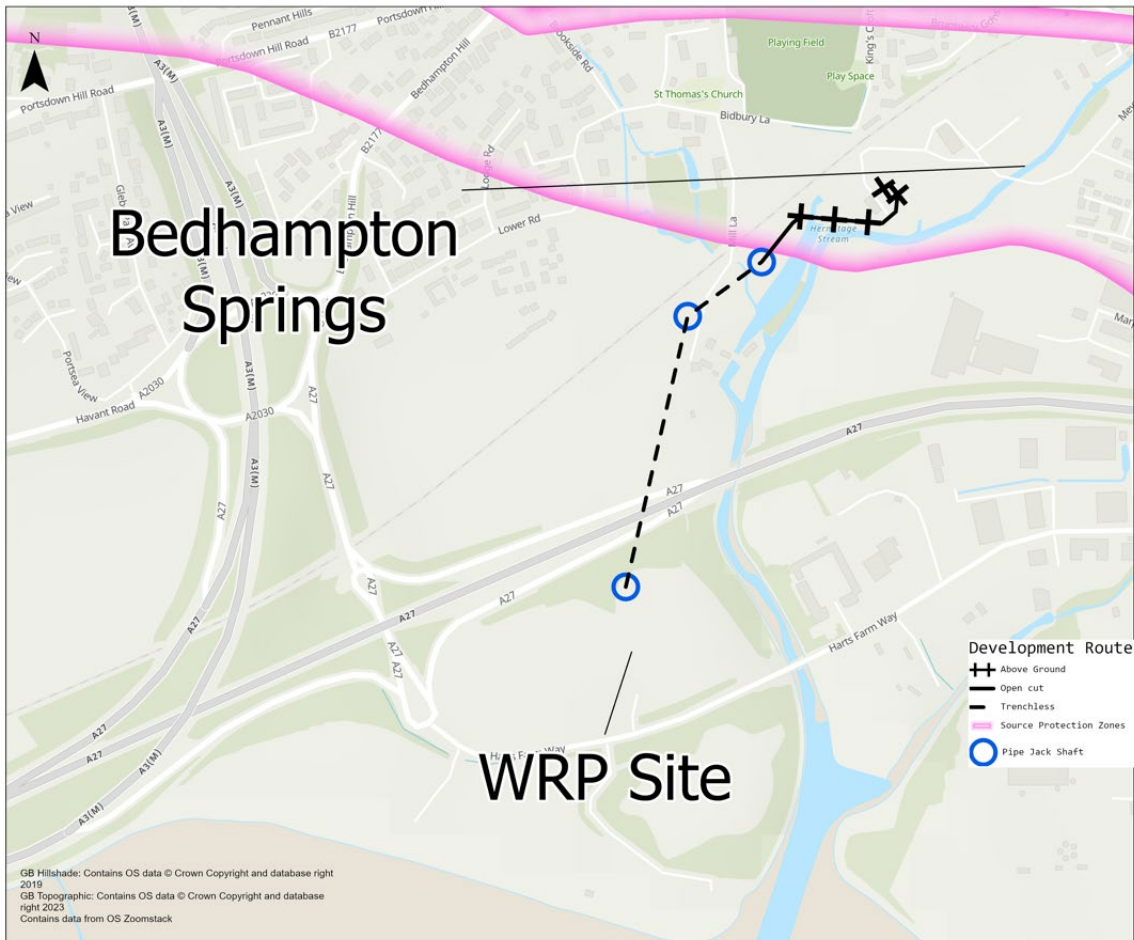


Graphic 5-2: Portsmouth Water pipelines alongside Section A and B

5.2.12 Two route options were identified for the pipelines between the WRP and Bedhampton Springs. Option 1 is shown in Graphic 5-3 and Option 2 is shown in Graphic 5-4. Further options were considered but they did not align with the engineering considerations that were applied to identify alternative pipeline route options as set out in Section 5.1.1.



Graphic 5-3: Water Recycling Plant to Bedhampton Springs Option 1



Graphic 5-4: Water Recycling Plant to Bedhampton Springs Option 2

- 5.2.13 Option 1 comprised trenchless construction north from the WRP site under the A27, to agricultural land north of the A27. Open-cut construction would then be used through the agricultural land, across Mill Lane. The pipeline would be constructed within Portsmouth Water’s Bedhampton Springs site (northeast of Mill Lane) using construction techniques that are sensitive to the Source Protection Zone (SPZ) which protects groundwater abstraction at Bedhampton Springs.
- 5.2.14 Option 2 comprised trenchless construction north from the WRP site under the A27, to agricultural land west of Mill Lane. Trenchless construction would then be used under Mill Lane to a location northeast of Mill Lane. From here, the pipeline would be constructed above ground within Portsmouth Water’s Bedhampton Springs site as above.
- 5.2.15 Table 5-2 sets out the outcomes of the review of Option 1 and Option 2.

Table 5-2: Pipelines between the Water Recycling Plant and Bedhampton Springs evaluation outcomes

Topic	Option 1	Option 2
Air quality	Closest residential properties are located 30m south which may be subject to adverse air quality impacts.	Closest residential properties are located 35m south which may be subject to adverse air quality impacts.

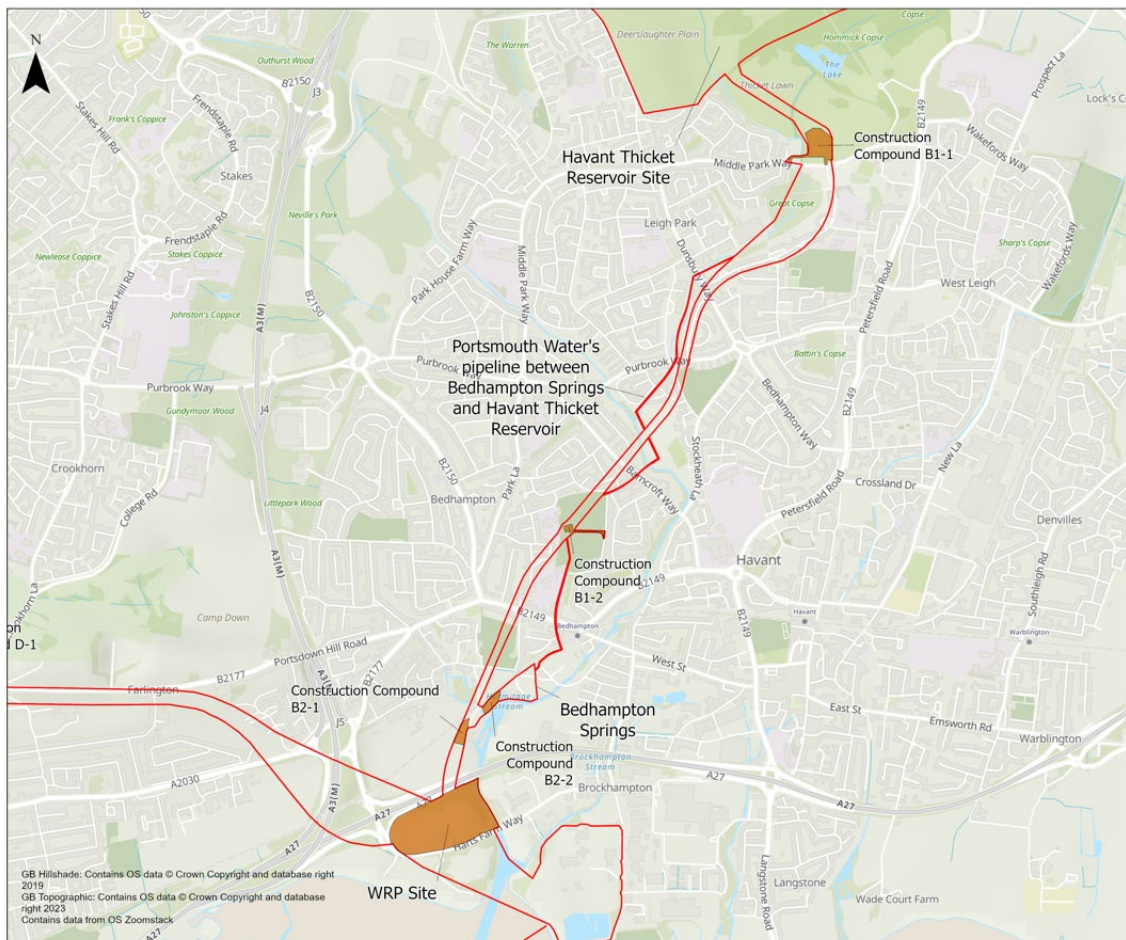
Topic	Option 1	Option 2
Biodiversity	<p>Approximately 370m from Chichester and Langstone Harbours SPA and Ramsar and Solent Maritime SAC.</p> <p>Intersects a hedgerow with trees as a result of open-cut construction.</p> <p>Approximately 7m from floodplain grazing marsh priority habitat at the Hermitage Stream.</p>	<p>Approximately 370m from Chichester and Langstone Harbours SPA and Ramsar and Solent Maritime SAC.</p> <p>In close proximity to hedgerow with trees</p> <p>Approximately 7m from floodplain grazing marsh priority habitat at the Hermitage Stream.</p>
Carbon	<p>For both options, construction and operation of the pipelines would result in the generation of carbon, however these are anticipated to be equal for both options.</p>	
Geology and soils	<p>The route is within a historic landfill. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.</p>	<p>The route is within a historic landfill and would comprise trenchless construction within a potential former sewage works. Construction within these areas could expose contaminants and therefore suitable mitigation would be employed.</p>
Historic environment	<p>The route is approximately 100m north-west of Grade II listed Old Mill House and approximately 200m south-east of Grade II listed Old Rectory and Bidbury House.</p> <p>The route is within the Old Bedhampton conservation area.</p> <p>Archaeological remains have been identified including late-prehistoric remains and the location of a historic village recorded.</p>	<p>The route is approximately 100m north-west of Grade II listed Old Mill House and approximately 200m south-east of Grade II listed Old Rectory and Bidbury House.</p> <p>The route is within the Old Bedhampton conservation area.</p> <p>Archaeological remains have been identified including late-prehistoric remains and the location of a historic village recorded.</p>
Interface with other development	<p>No conflicts with other developments have been identified for either option.</p>	
Landscape and visual	<p>The route intersects the Old Mill House Tree Preservation Order (TPO) group.</p> <p>Construction works may impact the setting and landscape character of the area.</p> <p>Closest residential properties are located 30m south.</p>	<p>Construction works may impact the setting and landscape character of the area.</p> <p>Closest residential properties are located 35m south.</p>

Topic	Option 1	Option 2
	The route intersects a PRow which connects Bedhampton with Broadmarsh Coastal Park. Open-cut construction would result in a temporary loss of vegetation which would require reinstatement.	
Noise and vibration	Closest residential property is 30m away which may be subject to adverse noise and vibration impacts. Potential for impacts to those along haul routes.	Closest residential property is 35m away which may be subject to adverse noise and vibration impacts. Potential for impacts to those along haul routes.
Resource and waste	No major constraints have been identified however it is anticipated that both options would generate a similar volume of materials.	
Socio-economics	Potential for amenity impacts to 2-3 residential properties approximately 30m south. The route intersects a PRow which connects Bedhampton with Broadmarsh Coastal Park.	Potential for amenity impacts to 2-3 residential properties approximately 35m south.
Special category land	The pipeline intersects statutory undertaker land including that owned by Portsmouth Water, National Highways and Network Rail.	
Traffic and transport	Potential to impact road users and residents of Mill Lane temporarily during construction. The route intersects a PRow which connects Bedhampton with Broadmarsh Coastal Park.	No major constraints have been identified.
Water quality, resource and flood risk	Construction works for both options would take place in close proximity to the Hermitage Stream where there is potential for impacts to the water quality of the Hermitage Stream and Langstone Harbour. Both options intersect flood zone 2 and 3 east of Mill Lane and at the south of the Bedhampton Springs site	

5.2.16 Both options had the potential for adverse impacts on ecology, landscape and the historic environment. It was considered that Option 1 would have a greater impact as open-cut trench construction would be used between the WRP site and Mill Lane, therefore vegetation loss and construction works at surface level would be greater when compared to Option 2. Option 2 was therefore progressed for the connection between the WRP and Bedhampton Springs.

Micro-siting

5.2.17 Graphic 5-5 shows the draft Order Limits in Section A and Section B at the Summer 2024 Consultation.



Graphic 5-5: Section A and B draft Order Limits and construction compounds at the Summer 2024 Consultation

- 5.2.18 To support trenchless construction between the WRP and Bedhampton Springs, construction compounds were identified to the west and east of Mill Lane. The draft Order Limits were designed to provide flexibility within the Bedhampton Springs site to ensure the pipeline could be located alongside the existing infrastructure that forms part of this operational site.

5.3 Section C

Summer 2022 Consultation

- 5.3.1 At the Summer 2022 Consultation, the Applicant explained that two underground pipelines would be required to connect Budds Farm WTW and the WRP. One pipeline would transfer treated wastewater from Budds Farm WTW to the WRP, and one pipeline would transfer reject water from the WRP back to Budds Farm WTW where it would be released into the Solent using the existing Eastney LSO via Budds Farm WTW.
- 5.3.2 The Applicant initially considered an open-cut pipeline to connect the WRP and Budds Farm WTW in Section C, however a trenchless pipeline option under the Hermitage Stream and Harts Farm Way was selected as this would avoid works in the local road network and avoid direct intersections with the Hermitage Stream.

5.3.3 Graphic 5-6 shows Section C of the Project as presented at the Summer 2022 Consultation.



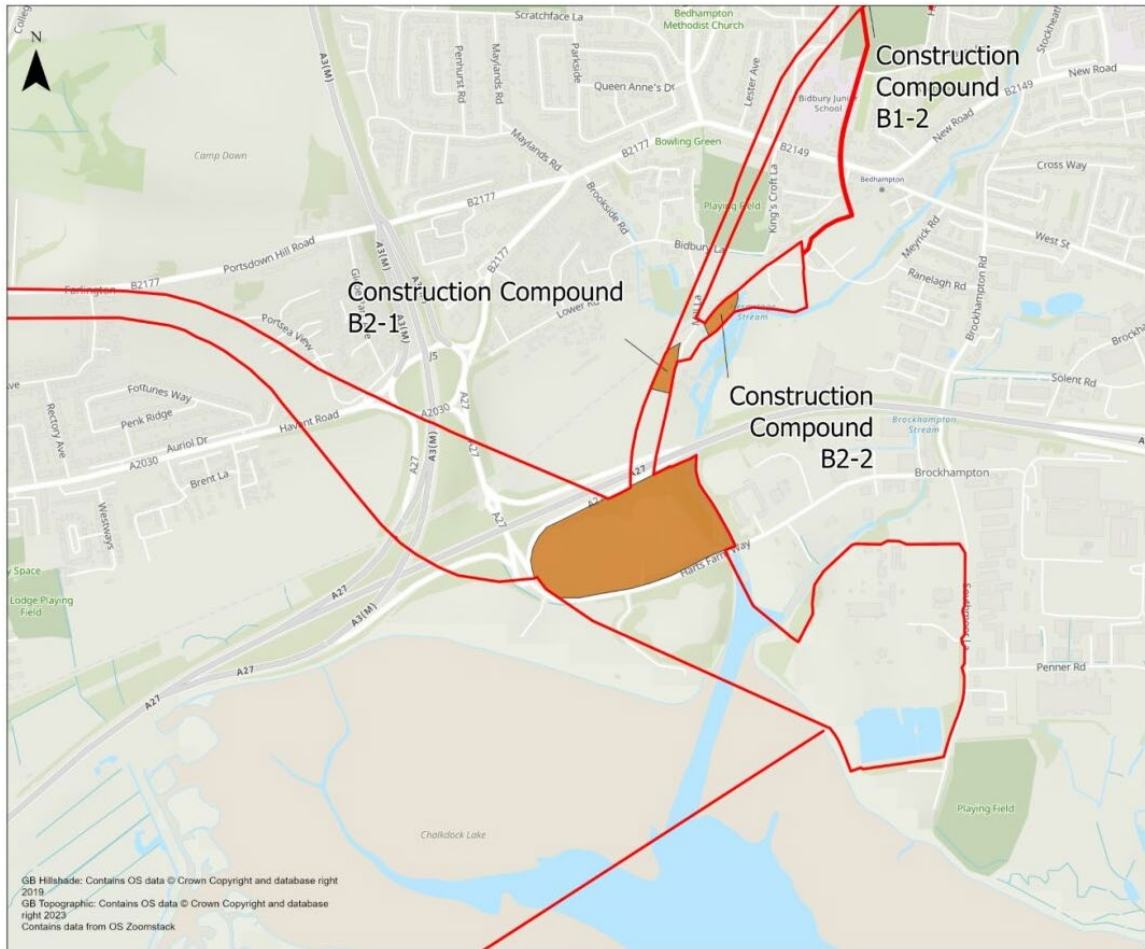
Graphic 5-6: Section C as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

5.3.4 No major refinements to Section C were undertaken following the Summer 2022 Consultation, however the design of the WRP has evolved which has necessitated the need to consider a wider area for this pipeline. This is because the design of the WRP would affect where the treated wastewater from Budds Farm WTW would need to be received by the WRP, and where the reject water would be produced.

Micro-siting

5.3.5 Graphic 5-7 shows the draft Order Limits in Section C.



Graphic 5-7: Section C draft Order Limits and construction compounds

5.3.6 The draft Order Limits in Section C were kept wide to allow for flexibility in the route of the Pipelines between Budds Farm WTW and the WRP site. As set out above, this is as a result of the evolving design of the WRP. This also provides flexibility to ensure that the pipelines and the trenchless construction can be designed so that any effects to the Hermitage Stream and Langstone Harbour can be reduced or avoided.

5.4 Section D

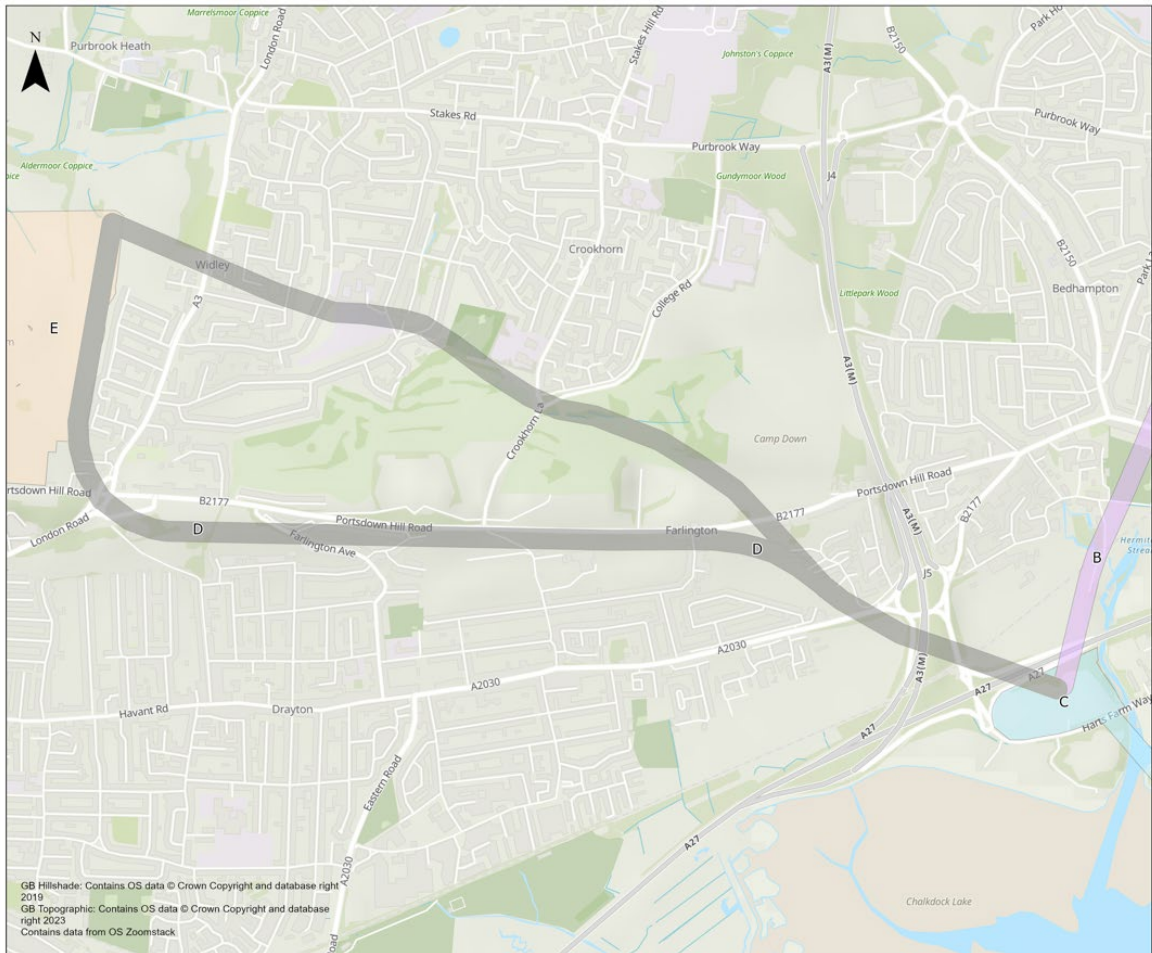
Summer 2022 Consultation

5.4.1 At the Summer 2022 Consultation the Applicant, explained that a tunnel would be used for the pipeline between the HLPS (located at the site of the WRP) and the ridge of Portsdown Hill, where the pipeline would then continue west through Section E. Tunnelling was selected in favour of an open-cut route within the road network to reduce disruption on the road network and adjacent residential properties as this is a densely populated area.

5.4.2 Two tunnel options were shown at the Summer 2022 Consultation. Both tunnel launch shafts would be located at the site of the WRP. The two tunnel options were:

- A southern option which would follow the route of Portsdown Hill Road (B2177). The tunnel reception shaft would either be located at the ridge of Portsdown Hill north of Portsdown Hill Road (B2177) or further north to the west of London Road (A3).
- A northern option which would pass under Widley. The tunnel reception shaft would be located to the west of London Road (A3).

5.4.3 Graphic 5-8 shows Section D of the Project as presented at the Summer 2022 Consultation.



Graphic 5-8: Section D as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

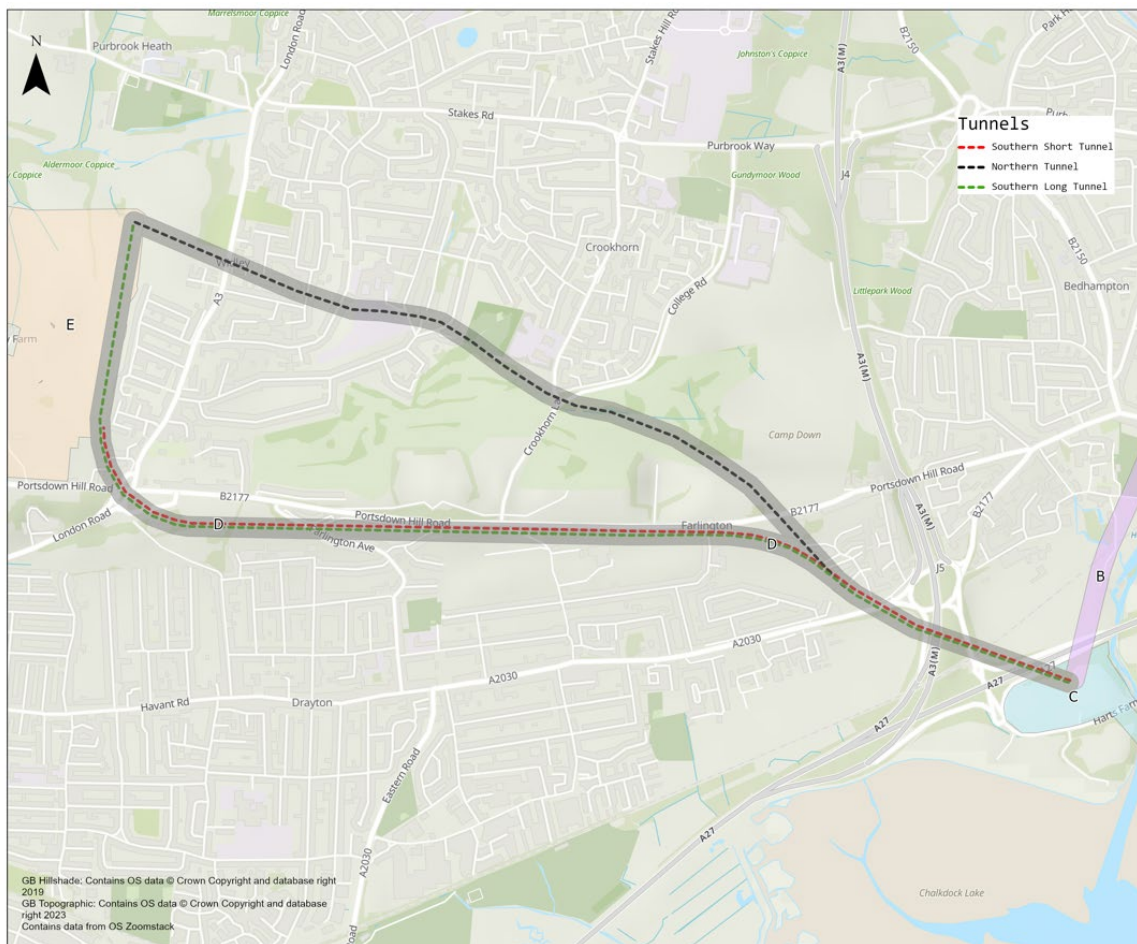
5.4.4 Following the Summer 2022 Consultation, further development and refinement of Section D and the tunnel options between the HLPS and the ridge of Portsdown Hill was undertaken. The aim was to refine the options presented at the Summer 2022 Consultation and identify the locations of reception and intermediate tunnel shafts; in all options the tunnel launch shaft would be located at the site of the WRP as this is the beginning of the tunnel. The options were as follows:

- **Southern Short Tunnel:** The option would follow the route of Portsdown Hill Road (B2177). The tunnel reception shaft would be located at the ridge of Portsdown Hill north of Portsdown Hill Road (B2177). The intermediate tunnel

shaft would be located on land south of Portsdown Hill Road (B2177), west of Gillman Road, and north of Portsmouth Water’s Farlington Works site.

- **Southern Long Tunnel:** The option would follow the route of Portsdown Hill Road (B2177). The tunnel reception shaft would be located west of London Road (A3). The intermediate tunnel shaft would be located on land south of Portsdown Hill Road (B2177), west of Gillman Road, and north of Portsmouth Water’s Farlington Works site.
- **Northern Tunnel:** The option would pass under Widley. The tunnel reception shaft would be located to the west of London Road (A3). Three intermediate tunnel shaft options were identified - one is located north of Portsdown Hill Road (B2177) within Camp Down, the second is located within Portsmouth Golf Course south of College Road, and the third is located within Gauntlett Park west of Morelands Primary School. If the northern tunnel option was to be progressed, only one of the intermediate tunnel shaft options would be required and further assessment work would be undertaken to identify the preferred option.

5.4.5 The tunnel options are shown in Graphic 5-9.



Graphic 5-9: Section D tunnel options

5.4.6 Table 5-3 sets out the evaluation outcomes for the tunnel options.

Table 5-3: Section D tunnel route evaluation outcomes

Topic	Southern Short Tunnel	Southern Long Tunnel	Northern Tunnel
Air quality	<ul style="list-style-type: none"> Human receptors in close proximity to construction work and haul routes may be subject to adverse air quality impacts. 		
Biodiversity	<ul style="list-style-type: none"> Approximately 350m from Chichester and Langstone Harbours SPA and Ramsar. Approximately 350 m from Solent Maritime SAC. Tunnel launch shaft is within a Solent Waders and Brent Goose Strategy Site. The intermediate tunnel shaft is within lowland calcareous grassland priority habitat and a SINC. 		<ul style="list-style-type: none"> Approximately 350m from Chichester and Langstone Harbours SPA and Ramsar. Approximately 350m from Solent Maritime SAC. The tunnel launch shaft, and two of the intermediate tunnel shaft options are within a Solent Waders and Brent Goose Strategy site. One intermediate tunnel shaft is in close proximity to deciduous woodland priority habitat.
Carbon	<ul style="list-style-type: none"> For both options, construction and operation of the pipeline would result in the generation of carbon, however these are anticipated to be equal for both options. 		
Geology and soils	<ul style="list-style-type: none"> The tunnel launch shaft is within the Harts Farm Way historic landfill. Construction within this area could expose contaminants and therefore suitable mitigation would be employed. 		<ul style="list-style-type: none"> The tunnel shaft is within the Harts Farm Way historic landfill and one of the intermediate tunnel shafts is in close proximity to an old chalk pit which may contain contaminated material. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.

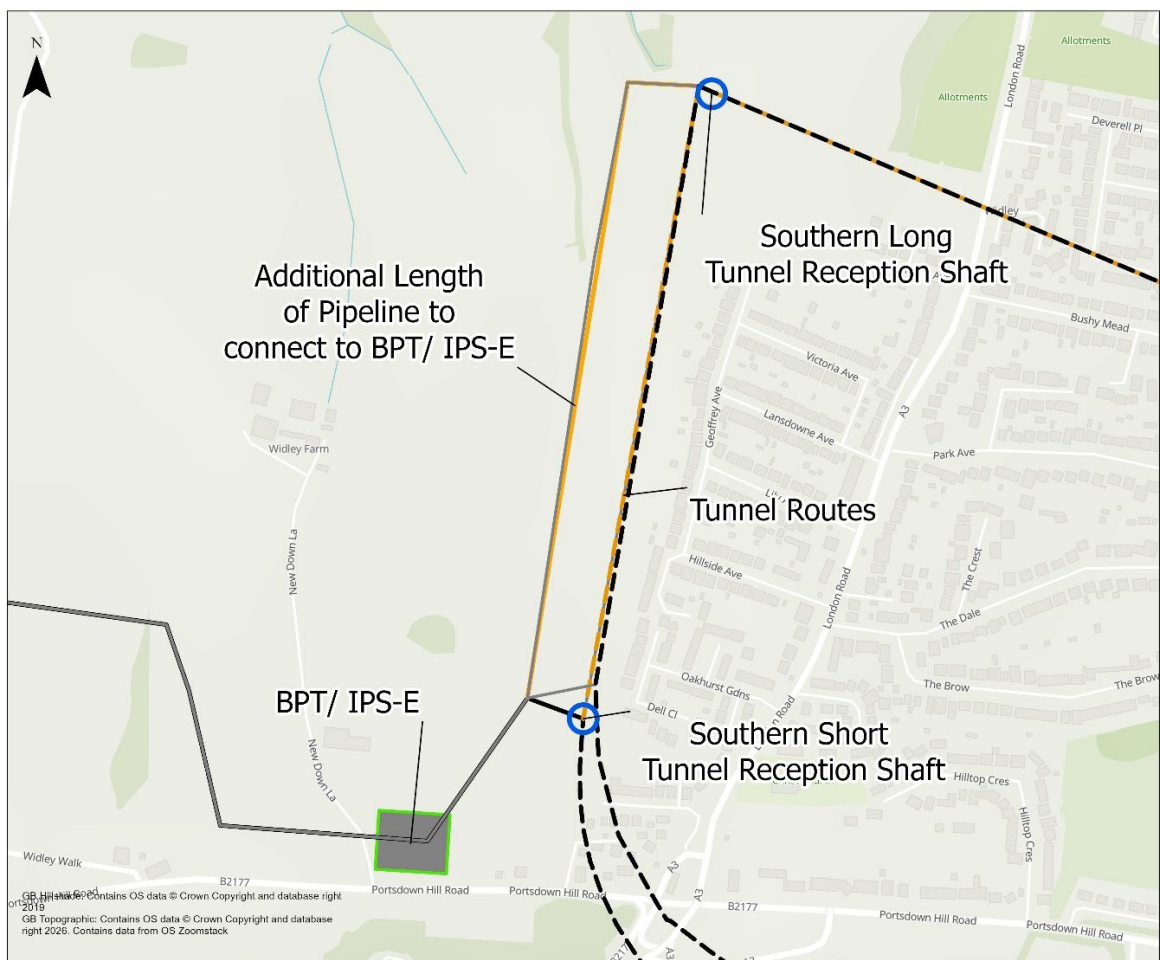
Topic	Southern Short Tunnel	Southern Long Tunnel	Northern Tunnel
Historic environment	<ul style="list-style-type: none"> The intermediate tunnel shaft is approximately 170m south-east of the Fort Purbrook Scheduled Monument and Grade II* listed building. The reception tunnel shaft is approximately 750m of Fort Widley Scheduled Monument and Grade II* listed building. 		<ul style="list-style-type: none"> Two of the intermediate tunnel shaft options are within approximately 330m north of the Fort Purbrook Scheduled Monument and Grade II* listed building. The other intermediate tunnel shaft is approximately 150m west of Bevis's Grave long barrow and early medieval cemetery Scheduled Monument, and in close proximity to the Sunspan Grade II listed building.
Interface with other development	<ul style="list-style-type: none"> The tunnel route and intermediate tunnel shaft have an interface with the Farlington to Nelson Reservoir pipeline route which is being delivered by Portsmouth Water as permitted development. Engagement with Portsmouth Water will be required to align the two projects. 		<ul style="list-style-type: none"> No interfaces with other development have been identified.
Landscape and visual	<ul style="list-style-type: none"> The intermediate tunnel shaft is in a location that is visible from Chichester Harbour AONB. There is potential for construction of the tunnel shafts to impact landscape character. There is potential for visual amenity impacts to residential properties approximately 60m east of the reception tunnel shaft. 	<ul style="list-style-type: none"> The intermediate tunnel shaft is in a location that is visible from Chichester AONB. There is potential for construction of the tunnel shafts to impact landscape character. 	<ul style="list-style-type: none"> One of the intermediate tunnel shafts are in a location that is visible from Chichester Harbour AONB. There is potential for construction of the tunnel shafts to impact landscape character. There is potential for visual amenity impacts to residential properties that are within approximately 70m of the intermediate tunnel shafts.

Topic	Southern Short Tunnel	Southern Long Tunnel	Northern Tunnel
Noise and vibration	<ul style="list-style-type: none"> The tunnel route passes under residential areas which could experience vibration if sufficient mitigation is not implemented during the construction phase. The tunnel reception shaft is located approximately 60m from residential properties which may be subject to noise and vibration during construction if sufficient mitigation is not implemented during the construction phase. 	<ul style="list-style-type: none"> The tunnel route passes under residential areas which could experience vibration if sufficient mitigation is not implemented during the construction phase. 	<ul style="list-style-type: none"> The tunnel route passes under residential areas which could experience vibration if sufficient mitigation is not implemented during the construction phase. The intermediate tunnel shafts are all located within 70m of residential properties which may be subject to noise and vibration during construction if sufficient mitigation is not implemented during the construction phase.
Resource and waste	<ul style="list-style-type: none"> No adverse impacts identified however it is anticipated that both options would generate a similar volume of materials. The tunnel route and launch shaft are within a Sharp Sand and Gravel Mineral Consultation Area (MCA). 		
Socio-economics	<ul style="list-style-type: none"> No major constraints have been identified. 		<ul style="list-style-type: none"> One intermediate tunnel shaft is located within open space at Gauntlett Park and would be accessed using a route adjacent to Morelands Primary School. Another intermediate tunnel shaft is located within Portsmouth Golf Course. Construction of the shafts in these areas would result in temporary loss of these open spaces.
Special category land	<ul style="list-style-type: none"> The tunnel route and the intermediate tunnel shaft are located within land owned by Portsmouth Water who are a statutory undertaker, however it is assumed that most of this land is non-operational and 		<ul style="list-style-type: none"> Two of the intermediate tunnel shafts are located within open space at Gauntlett's Park and Portsmouth City



Topic	Southern Short Tunnel	Southern Long Tunnel	Northern Tunnel
	engagement on any land required would be undertaken with Portsmouth Water.		Golf Course, therefore special category land legislative provisions may apply.
Traffic and transport	<ul style="list-style-type: none"> There is potential for traffic generation during construction which may impact the local road network. 		
Water quality, resource and flood risk	<ul style="list-style-type: none"> The tunnel route, intermediate tunnel shaft and reception tunnel shaft are located within a chalk aquifer. There is potential for adverse impacts to groundwater. No interface with high risk flood zones. 	<ul style="list-style-type: none"> The tunnel route and intermediate tunnel shaft are located within a chalk aquifer. There is potential for adverse impacts to groundwater. Parts of this option are located with a groundwater SPZ and therefore there is potential for impacts to groundwater that is used for groundwater abstraction. No interface with high risk flood zones. 	<ul style="list-style-type: none"> The tunnel route and intermediate tunnel shaft are located within a chalk aquifer. There is potential for adverse impacts to groundwater. Parts of this option are located with a groundwater SPZ and therefore there is potential for impacts to groundwater that is used for groundwater abstraction. No interface with high risk flood zones.

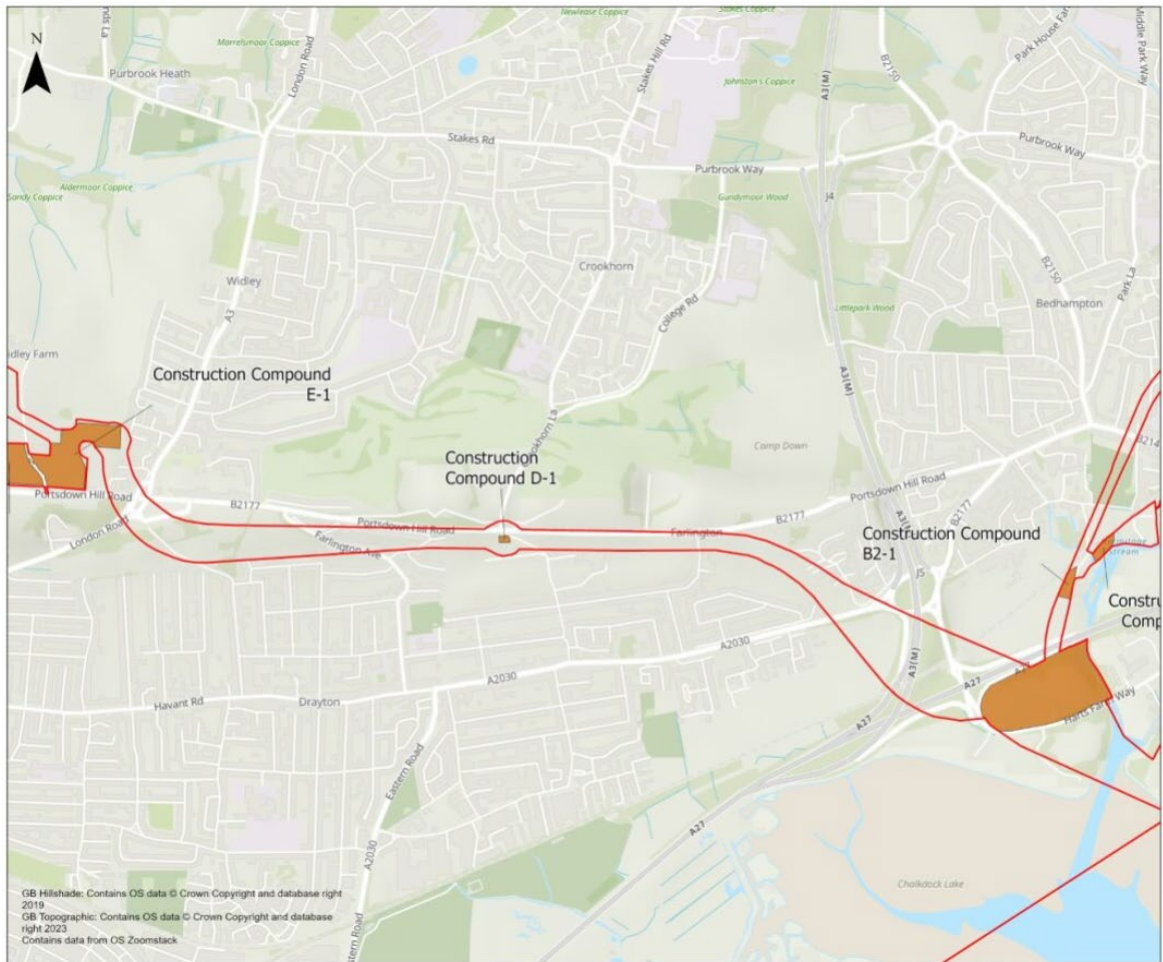
- 5.4.7 The northern tunnel option was not progressed as two of the intermediate tunnel shaft options are located within open space where public access would temporarily be lost during the construction phase. The option is also located within a chalk aquifer and groundwater SPZ at the same location and therefore poses a risk to groundwater flows that are used for public water supplies.
- 5.4.8 The southern short tunnel option and southern long tunnel option have similar constraints, however the tunnel reception shaft for the southern long tunnel option is located further north within a groundwater SPZ, but not within a chalk aquifer. However, this poses a greater potential risk for impacts to groundwater when compared to the southern short tunnel option.
- 5.4.9 The southern short tunnel option is also located in a more optimal location when considering the remaining sections of the pipeline between the WRP site and Otterbourne WSW further west of Section D. This is because the reception shaft for the southern short tunnel option is located at a higher topographical point than the reception shaft for the southern long tunnel option. The reception shaft for the southern short tunnel option is also located in close proximity to the AGP, located at the ridge of Portsdown Hill, which needs to be located at a topographical high point. This is shown in Graphic 5-10. Progressing the southern short tunnel option would therefore result in a shorter pipeline route which would likely result in less overall impacts. Given the above, the southern short tunnel option was progressed.



Graphic 5-10: Section D southern tunnel option reception shafts and interface with Break Pressure Tank/Intermediate Pumping Station E

Micro-siting

5.4.10 Graphic 5-11 shows the draft Order Limits in Section D.



Graphic 5-11: Section D draft Order Limits and construction compounds

5.4.11 The draft Order Limits were determined to provide flexibility in the tunnel alignment at the east and west of Section D where the tunnel would change direction. Settlement zones around the locations of tunnel shafts were also included in the draft Order Limits, however it was expected that any settlement would be contained to the immediate vicinity surrounding the tunnel shafts.

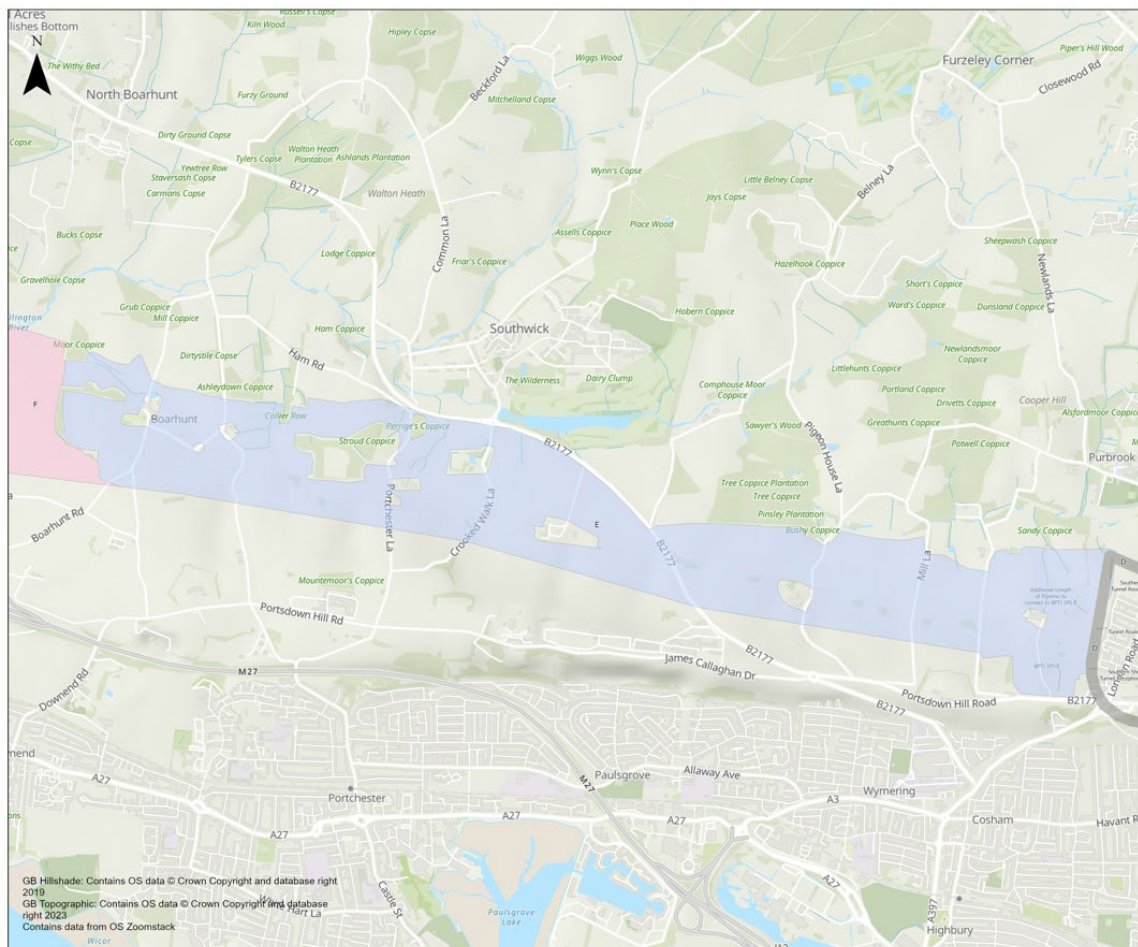
5.4.12 Construction compounds were located in the following locations:

- South of Portsdown Hill Road (B2177) and west of Gillman Road to facilitate the intermediate tunnel shaft.
- West of Widley and north of Portsdown Hill Road (B2177) to facilitate the reception tunnel shaft. This construction compound is located within Section E as it is the same construction compound used for BPT/IPS-E and construction of the pipeline in Section E, however it is also used for the tunnel in Section D.

5.5 Section E

Summer 2022 Consultation

- 5.5.1 At the Summer 2022 Consultation, Section E comprised a wide area spanning east to west along the ridge of Portsdown Hill. The pipeline section was cropped at the south (prior to the Summer 2022 Consultation) to provide a buffer between the Project and the Palmerston Forts that are located on the ridge of Portsdown Hill, which are designated as Scheduled Monuments.
- 5.5.2 Graphic 5-12 shows Section E of the Project as presented at the Summer 2022 Consultation.



Graphic 5-12: Section E as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

- 5.5.3 Following the Summer 2022 Consultation, refinements to the BESPR were undertaken at the eastern end of Section E. This part of Section E is one of the highest topographic high points in the pipeline between the WRP site and Otterbourne WSW; and it was identified that there was potential for adverse landscape character and visual impacts, especially considering the visibility of South Downs National Park to the north. This area is also in close proximity to Fort Widley, which is designated as a Scheduled Monument and Grade II* listed building; it is therefore afforded a high level of protection in planning policy.

5.5.4 The BESPR was located at the south of Section E as this was considered hydraulically optimal, as water within the pipeline could gravitate along the declining gradient as it travelled further west in Section E. As a result of the potential for environmental impacts relating to the historic environment and the landscape character of the area, an alternative route in this area was identified which took the pipeline further north to a lower topographical point and further away from Fort Widley. The BESPR and alternative route are shown in Graphic 5-13.



Graphic 5-13: Section E pipeline options at Fort Widley

5.5.5 Table 5-4 sets out the evaluation outcomes for the BESPR and alternative route.

Table 5-4: East of Section E evaluation outcomes

Topic	BESPR	Alternative
Air quality	<ul style="list-style-type: none"> Human receptors in close proximity to construction work and haul routes may be subject to adverse air quality impacts. 	
Biodiversity	<ul style="list-style-type: none"> Approximately 2km from Portsmouth Harbour Ramsar and SPA. Approximately 2km from Solent and Dorset Coast SPA 	<ul style="list-style-type: none"> Approximately 2km from Portsmouth Harbour Ramsar and SPA. Approximately 2km from Solent and Dorset Coast SPA

Topic	BESPR	Alternative
	<ul style="list-style-type: none"> Approximately 2km from Chichester and Langstone Harbours SPA and Ramsar. Approximately 2km from the Solent Maritime SAC. Potential for impacts to habitats of principal importance as it intersects 10 hedgerows with trees. 	<ul style="list-style-type: none"> Approximately 2km from Chichester and Langstone Harbours SPA and Ramsar. Approximately 2km from the Solent Maritime SAC. Intersects the eastern corner of a Solent Waders and Brent Goose Strategy site (W03G) which is functionally linked land to Portsmouth Harbour Ramsar and SPA. Surveys have not recorded any birds at this site and identified that habitats are of poor quality. Potential for impacts to habitats of principal importance as it intersects 12 hedgerows with trees.
Carbon	<ul style="list-style-type: none"> For both options, construction and operation of the pipeline would result in the generation of carbon, however these are considered to be equal for both options. 	
Geology and soils	<ul style="list-style-type: none"> No major constraints were identified. 	
Historic environment	<ul style="list-style-type: none"> Approximately 150m north of Fort Widley Scheduled Monument and Grade II* listed building and a further Grade II listed building associated with Fort Widley. Approximately 300m west of George Inn, Grade II listed. Within an Area of Archaeological Restraint and Palaeolithic Predictive Model area. Geophysical surveys have confirmed the route crosses cropmarks and have indicated further potential for buried archaeology along the route. Approximately 60m north of a prehistoric burial site. 	<ul style="list-style-type: none"> Approximately 420m north of Fort Widley Scheduled Monument and Grade II* listed building and a further Grade II listed building associated with Fort Widley. Approximately 300m west of George Inn, Grade II listed. Within an Area of Archaeological Restraint and Palaeolithic Predictive Model area. Geophysical surveys have confirmed the route crosses cropmarks and have indicated further potential for buried archaeology along the route. Approximately 300m north of a prehistoric burial site.
Interface with other development	<ul style="list-style-type: none"> No conflicts with other developments have been identified for either option. 	

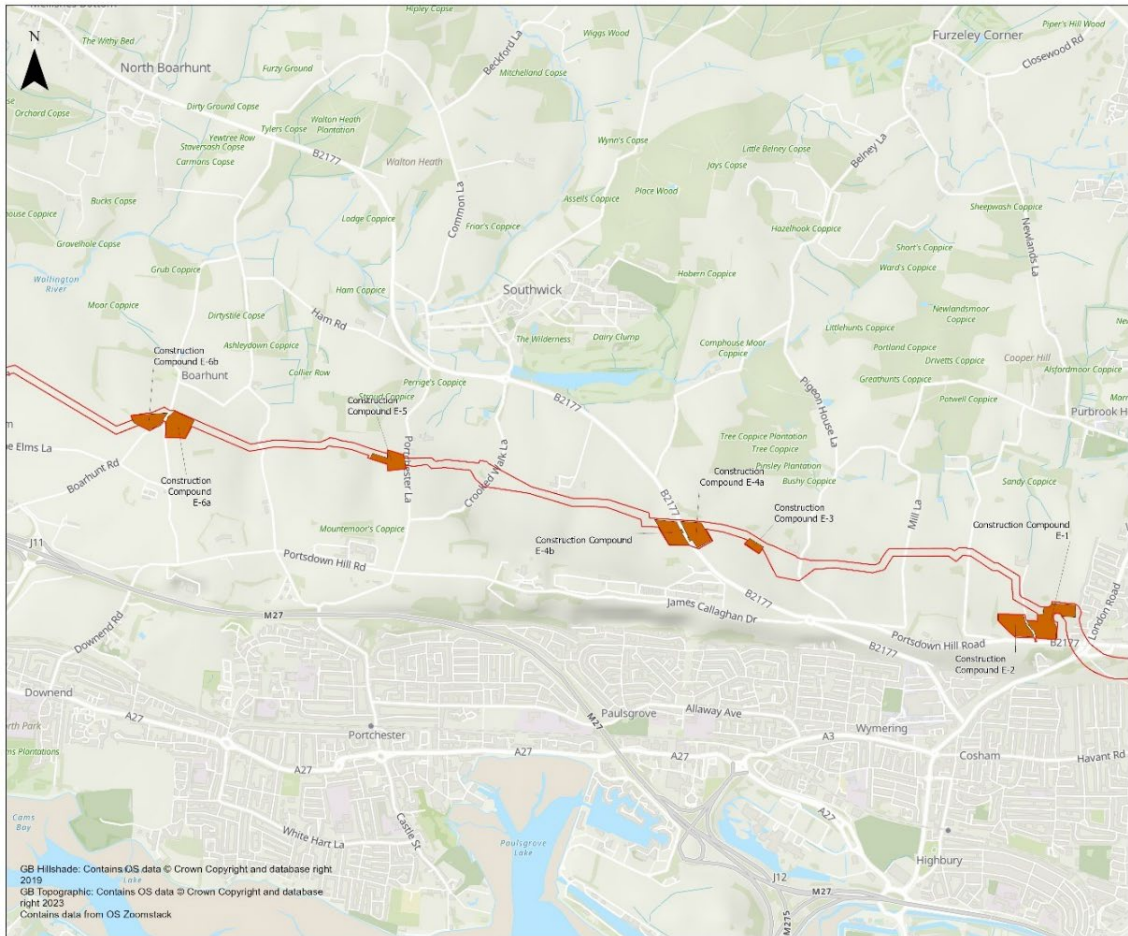
Topic	BESPR	Alternative
Landscape and visual	<ul style="list-style-type: none"> • Approximately 2.2km from the Portsdown Hill Area of Special Landscape Quality (ASLQ) • Approximately 100-150 m north of open access land around Portsdown Hill Road (B2177) which are popular recreation areas with views to the north and south. • Potential for impacts to landscape character especially given the elevated position on Portsdown Hill. • Potential visual amenity impacts to: <ul style="list-style-type: none"> - Portsdown Hill Viewpoint 75m away - Residencies of Widley and west of the A3 - Nearby businesses - The Pilgrims' Long Distance Trail and Cycle Route • There is potential for temporary scarring effects as a result of vegetation loss / replanting which will take time to establish. 	<ul style="list-style-type: none"> • Approximately 2.2km from the Portsdown Hill ASLQ • Approximately 350m north of open access land around Portsdown Hill Road (B2177) which are popular recreation areas with views to the north and south. • Potential for impacts to landscape character. • Potential visual amenity impacts to: <ul style="list-style-type: none"> - Portsdown Hill Viewpoint 75m away - Residencies of Widley and west of the A3 - Nearby businesses - The Pilgrims' Long Distance Trail and Cycle Route - Southwick and Wildey 28/1 footpath - There is potential for temporary scarring effects as a result of vegetation loss / replanting which will take time to establish.
Noise and vibration	<ul style="list-style-type: none"> • The closest residential properties are approximately 30m west which may be subject to adverse noise and vibration impacts. 	
Resource and waste	<ul style="list-style-type: none"> • No adverse impacts identified however it is anticipated that both options would generate a similar volume of materials. • Both options are located with a Brick Clay MCA. 	
Socio-economics	<ul style="list-style-type: none"> • Potential for amenity impacts to residential properties approximately 30m to the west. • Potential for amenity impacts to local businesses including the equestrian centre and other businesses at Fort Widley 200m away and the Churchillian pub 75m away. 	<ul style="list-style-type: none"> • Potential for amenity impacts to residential properties approximately 30m to the west. • Potential for amenity impacts to local businesses including the equestrian centre and other businesses at Fort Widley 460m away and the Churchillian pub 280m away.

Topic	BESPR	Alternative
Special category land	<ul style="list-style-type: none"> No major constraints have been identified. 	
Traffic and transport	<ul style="list-style-type: none"> Construction works have the potential to temporarily impact road users of Mill Lane and Widley Walk and users of the Pilgrims' Trail. 	<ul style="list-style-type: none"> Construction works have the potential to temporarily impact road users of Mill Lane and Widley Walk and users of the Pilgrims' Trail and a PRow.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No major constraints have been identified. The options do not interface with any areas of flood zone 2 or 3. 	

- 5.5.6 The BESPR is closer to the Fort Widley Scheduled Monument and Grade II* listed building and is located on a more elevated position on Portsdown Hill. The alternative is a greater distance from Fort Widley and construction works could utilise existing vegetation to screen views from high ground to the north. The alternative route was therefore identified to be more suitable from the historic environment and landscape and visual reviews.
- 5.5.7 The alternative route intersects a Solent Waders and Brent Goose Strategy site whereas the BESPR is circa 20 m away. The BESPR would therefore likely have a lesser impact on land that is functionally linked land with Portsmouth Harbour SPA. However, surveys undertaken for the Project have recorded low bird activity at this site, they also identified that the habitat is of poor quality, meaning that effects would be minor and mitigation could be implemented to reduce these. Additionally, construction works could be timed to avoid winter periods. It is therefore considered that mitigation could be undertaken to reduce any potential impacts as a result of construction within this land.
- 5.5.8 Given the protection afforded to designated Scheduled Monuments and listed buildings in the NPSWRI and the ability to mitigate potential impacts to the Solent Waders and Brent Goose Strategy site, the alternative route has been progressed in this location.

Micro-siting

- 5.5.9 Graphic 5-14 shows the draft Order Limits in Section E.



Graphic 5-14: Section E draft Order Limits and construction compounds

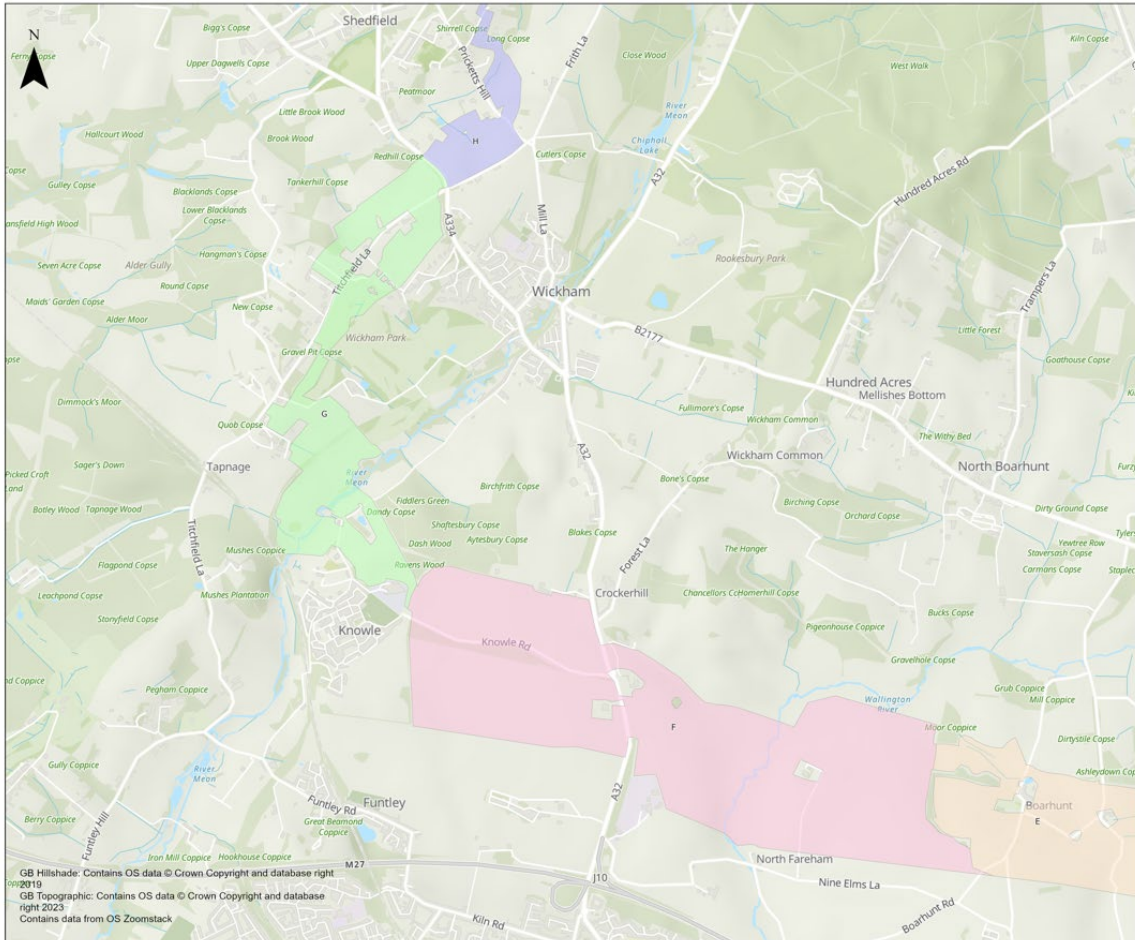
- 5.5.10 The pipeline route is primarily located within agricultural land in Section E and therefore the draft Order Limits were based on a 40 m working width to construct the pipeline, however at certain locations the draft Order Limits were widened where there is the potential for adverse environmental impacts:
- South of Pigeon House Farm, where it is understood there is a World War Two aircraft crash site. The draft Order Limits were widened so that micro-siting can be undertaken once further information about the crash site is known.
 - At Crooked Walk Lane where the pipeline is in close proximity to vegetation and known protected species. The draft Order Limits were widened so that micro-siting can be undertaken following further surveys.
- 5.5.11 The land around Section E contains a number of former chalk pits which have been backfilled with material that may be contaminated. These former chalk pits also contain copses of trees. The pipeline route and draft Order Limits were designed to avoid these chalk pits and associated vegetation.
- 5.5.12 Micro-siting has also been undertaken to align the pipeline route with the route of a pipeline that is being delivered by Portsmouth Water between the Farlington Works and Nelson Reservoir. Continual engagement will be undertaken with Portsmouth Water as the Farlington to Nelson pipeline design is progressed to retain alignment.
- 5.5.13 Construction compounds were located in the following locations:

- Construction Compound E-1: Containing the site and construction compound for BPT/IPS-E and the tunnel reception shaft for the tunnel in Section D. The construction compound and draft Order Limits were located considering identified protected species to the east of the construction compound.
- Construction Compound E-2: To support construction of BPT/IPS-E and construction of the pipeline within Section E.
- Construction Compound E-3: Water storage lagoon for commissioning and testing of the pipeline.
- Construction Compound E-4a: To support construction of the pipeline within Section E. The construction compound has been located to avoid trees and vegetation east of Southwick Road (B2177). This construction compound is one option for a construction compound alongside Southwick Road (B2177), the other option is Construction Compound E-4b.
- Construction Compound E-4b: To support construction of the pipeline within Section E. This construction compound is one option for a construction compound alongside Southwick Road (B2177), the other option is Construction Compound E-4a.
- Construction Compound E-5: To support the construction of the pipeline within Section E and for a water storage lagoon for commissioning and testing of the pipeline. The two uses were combined into one wider construction compound to reduce land take.
- Construction Compound E-6a: To support construction of the pipeline within Section E. The construction compound has been located to avoid vegetation to the east of Boarhunt Road. This construction compound is one option for a construction compound alongside Boarhunt Road, the other option is Construction Compound E-6b.
- Construction Compound E-6b: To support construction of the pipeline within Section E. The construction compound has been located to avoid vegetation to the west of Boarhunt Road. This construction compound is one option for a construction compound alongside Boarhunt Road, the other option is Construction Compound E-6a.

5.6 Section F and Section G

Summer 2022 Consultation

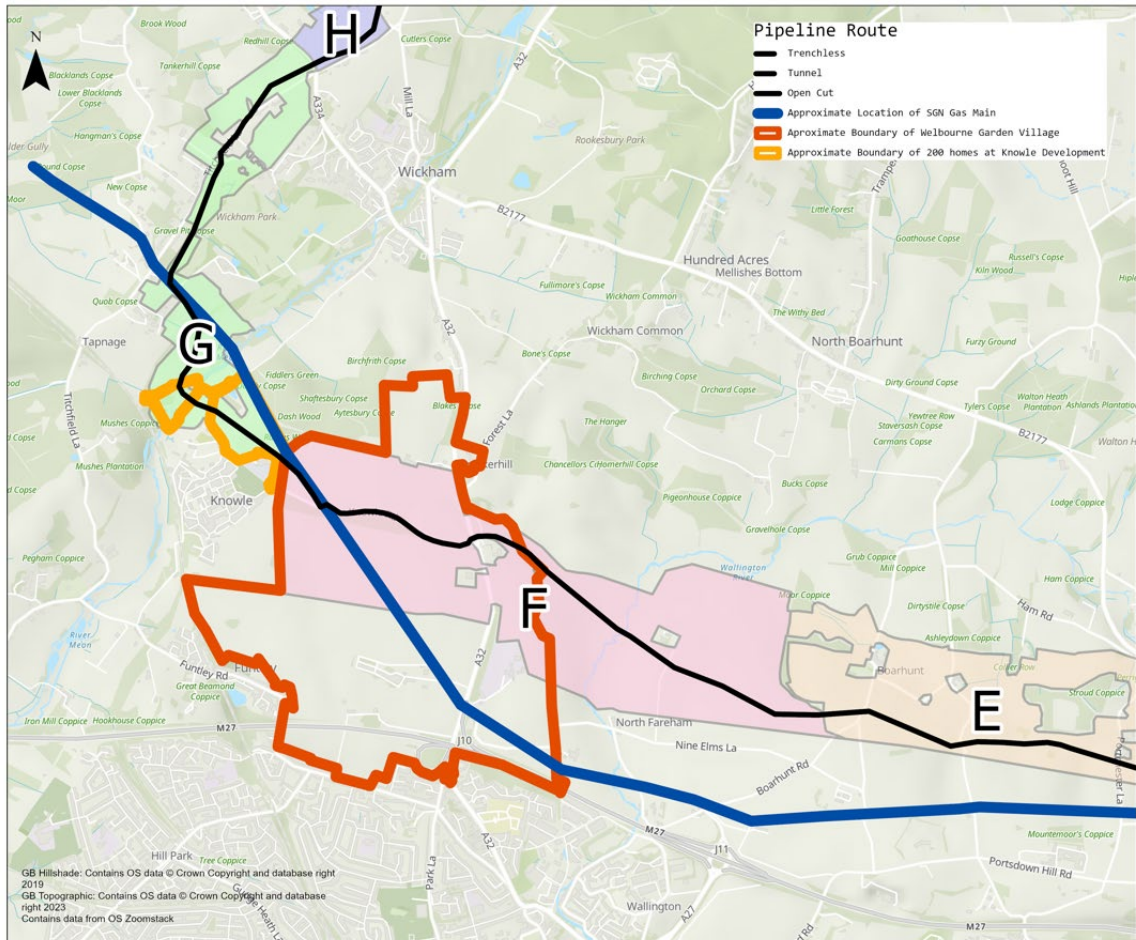
- 5.6.1 Section F and Section G were combined as the developments to the BESPR following the Summer 2022 Consultation overlapped both pipeline sections.
- 5.6.2 At the Summer 2022 Consultation, Section F continued west from Section E and crossed the River Wallington, Hoad's Hill (A32) and the site of the Welborne Garden Village development. Section G continued to the north and crosses the River Meon before passing through Wickham Park Golf Club and following the route of Titchfield Lane.
- 5.6.3 Graphic 5-15 shows Section F and Section G of the Project as presented at the Summer 2022 Consultation.



**Graphic 5-15: Section F and G as shown at the Summer 2022 Consultation
Design development following the Summer 2022 Consultation**

Interface with Welborne Garden Village

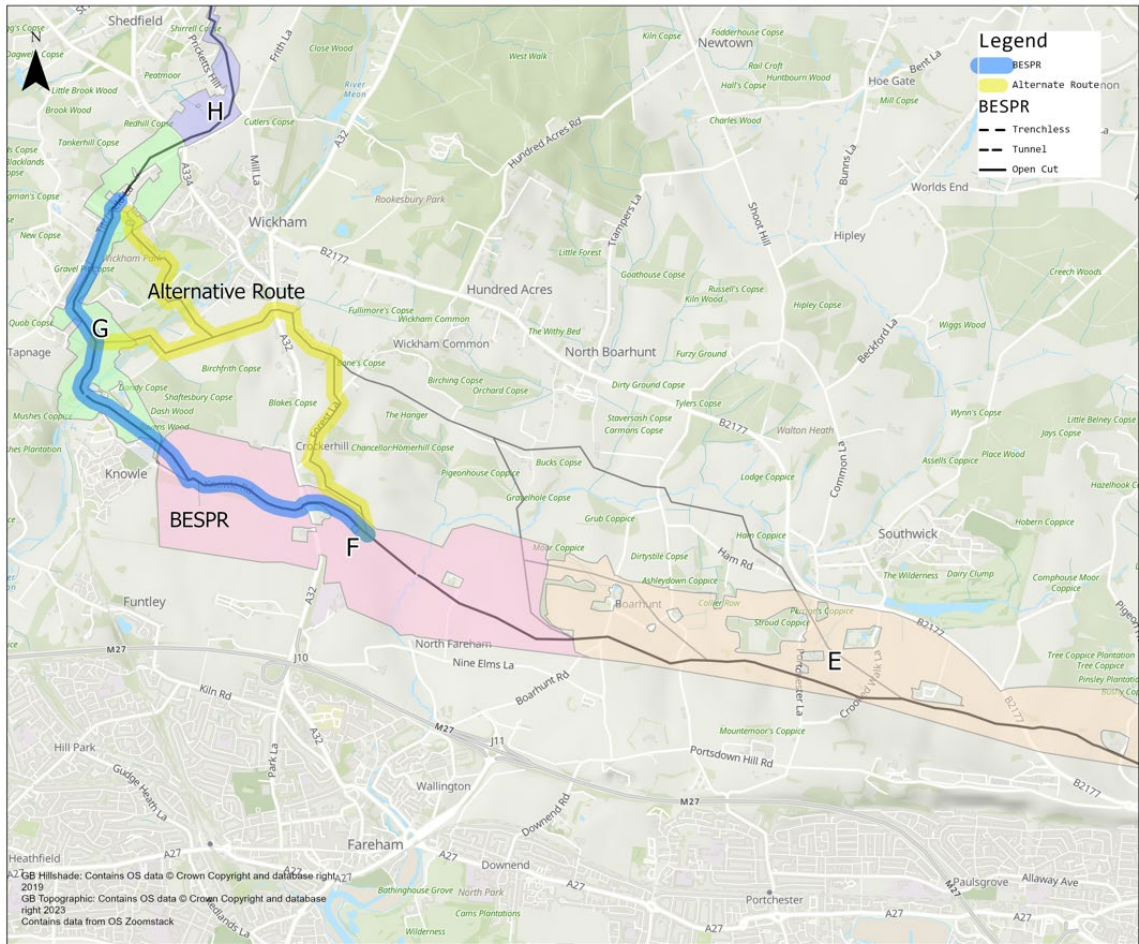
- 5.6.4 The BESPR within Section F passed through the site of the Welborne Garden Village development, which is a development for 6,000 homes, a district centre, employment and industrial uses and four schools that received outline planning permission in 2021 (P/17/0266/OA) and is currently under construction. The BESPR also intersected the site of a development north of Knowle for 200 homes (18/01612/OUT) and an existing gas main. The interface between these and the BESPR is shown in Graphic 5-16.



Graphic 5-16: Section F and G interface with Welborne Garden Village and other development

- 5.6.5 Engagement with Welborne Garden Village was undertaken prior to the Summer 2022 Consultation to discuss whether the pipeline route could be accommodated within the development, and an initial pipeline route was identified. Following the Summer 2022 Consultation, further engagement has been undertaken with Welborne Garden Village which identified risks in relation to the coinciding construction programmes. This could have resulted in construction of the pipeline route in close proximity to built out and occupied residential properties within Welborne Garden Village. This would conflict with the aim to avoid locating infrastructure in close proximity to residential areas wherever possible. Given the uncertainty of locating the pipeline route within Welborne Garden Village, the likely constrained corridor alongside residential properties that would be available for construction of the pipeline route, and the limited potential for implementing mitigation measures, the Applicant sought to identify alternative routes that would avoid intersecting with Welborne Garden Village and impacts on residential properties.
- 5.6.6 To select an appropriate alternative route, a number of pipeline corridor sections that were not progressed at the Summer 2022 Consultation were initially reconsidered. The Applicant also identified further alternatives to ensure that all reasonable options were considered in line with the engineering factors set out in Section 5.1.1.

- 5.6.7 Evaluations took place in order to select an alternative route that was considered to present the most suitable option against the evaluation criteria.
- 5.6.8 Graphic 5-17 shows the alternative routes that were selected for further detailed review.



Graphic 5-17: Section G and F pipeline options at Welborne Garden Village

- 5.6.9 Table 5-5 sets out the evaluation outcomes for the BESPR and alternative route.

Table 5-5: Section F and G interface with Welborne Garden Village evaluation outcomes

Topic	BESPR	Alternative
Air quality	<ul style="list-style-type: none"> Closest residential properties are located 60 m away which may be subject to adverse air quality impacts. 	<ul style="list-style-type: none"> Closest residential properties are located 25 m-30 m away which may be subject to adverse air quality impacts.
Biodiversity	<ul style="list-style-type: none"> Intersects the River Meon which is upstream of the Solent and Southampton Water SPA and Ramsar and the Solent and Dorset Coast SPA. Intersects three hedgerows with trees. Potential for impact to two areas of ancient woodland (Dash Wood 15 m away), protected species and SINCs nearby. 	<ul style="list-style-type: none"> Intersects the River Meon which is upstream of the Solent and Southampton Water SPA and Ramsar and the Solent and Dorset Coast SPA. Intersects four areas of lowland mixed deciduous woodland priority habitat, wet woodland priority habitat, nine hedgerows and five hedgerows with trees. Many of these are located around the River Meon. Potential for impact to two areas of ancient woodland (Carpenters Copse 30 m away and Dash Wood 50 m away), protected species and SINCs nearby.
Carbon	<ul style="list-style-type: none"> For both options, construction and operation of the pipeline would result in the generation of carbon, however these are considered to be equal for both options. 	
Geology and soils	<ul style="list-style-type: none"> There are potential sources of contamination in proximity to the route including farms, backfilled pits and former landfills. Construction within this area could expose contaminants and therefore suitable mitigation would be employed. 	<ul style="list-style-type: none"> There are potential sources of contamination in proximity to the route including former saw mills, industrial estates, potentially infilled chalk pits (unknown material) and infilled channels. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.
Historic environment	<ul style="list-style-type: none"> Approximately 350 m from listed buildings at Webb's Lane Farmhouse and 400 m from a Grade II listed building in Knowle. 	<ul style="list-style-type: none"> Adjacent to the boundary of Park Place estate which includes the Park Place Grade II* listed building approximately 200 m north.

Topic	BESPR	Alternative
	<ul style="list-style-type: none"> • Within the Wickham Park historic deer park (non-designated asset). • Within and adjacent to an area of Palaeolithic potential. • Within a historic water meadow with high potential for archaeological remains. 	<ul style="list-style-type: none"> • Approximately 25 m east of the Grade II listed House at Saw Mills (Pink and Company Limited) and approximately 130 m south of the Grade II listed Castle Farmhouse. • Within the Wickham Park historic deer park (non-designated asset). • Within and adjacent to an area of Palaeolithic potential. • Within a historic water meadow with high potential for archaeological remains. • Various archaeological remains have been identified along the route. This includes cropmarks, several quarry pits in close proximity which are indicative of medieval/post medieval quarry pitting and there is a fishpond complex approximately 150 m north, indicating further potential for archaeological remains.
Interface with other development	<ul style="list-style-type: none"> • Intersects with the Welborne Garden Village development, which received outline planning permission in 2021 for up to 6,000 dwellings, a district and village centre, retail and community facilities, over 100,000 square metres of employment space, a secondary school, three primary schools and various other uses. This development is allocated in Part 3 of Fareham Borough Council's local plan (the Welborne Plan). • Intersects land that comprises proposed residential properties associated with a development proposed by Homes England for 200 homes north of Knowle that has not yet received planning permission (18/01612/OUT). 	<ul style="list-style-type: none"> • Intersects land that comprises green open space associated with a development proposed by Homes England for 200 homes north of Knowle that has not yet received planning permission (18/01612/OUT).

Topic	BESPR	Alternative
Landscape and visual	<ul style="list-style-type: none"> Approximately 1.7km from the South Downs National Park. Partially within the Forest of Bere ASLQ and approximately 60 m from the Portsdown Hill ASLQ. Potential for impacts to the landscape character of the Portsdown Hill Open Downs (LCA), Forest of Bere East LCA and Meon Valley LCA. Potential for landscape character impacts to landcover, tranquillity, pattern and scale, and visibility. Potential visual amenity impacts to: <ul style="list-style-type: none"> Residencies approximately 60 m away at Albany Farm. Ravenswood House Hospital approximately 50 m away. Two footpaths (Wickham 5/1 and 501/1) which are intersected. National Cycle Network route 224 is intersected. 	<ul style="list-style-type: none"> Approximately 600m from the South Downs National Park. Within the Forest of Bere ASLQ and approximately 1.4km from the Portsdown Hill ASLQ. The Meon Valley ASLQ is approximately 2.3km away and the Cams-Porchester ASLQ is 3.7km away. Potential for impacts to the landscape character of the Meon Valley LCA (within which the pipeline is partly located), Portsdown Hill Open Downs LCA and Forest of Bere East LCA. Potential for landscape character impacts to landcover, tranquillity, pattern and scale, and visibility. Potential visual amenity impacts to: <ul style="list-style-type: none"> Residencies approximately 30 m away at their closest. Albany Care Home and Albany Business Centre circa 150 m away. Wickham Recreational Ground. Two footpaths (Wickham 5/1 and 501/1) which are intersected. National Cycle Network route 224 is intersected.
Noise and vibration	<ul style="list-style-type: none"> Approximately 50 m from Ravenswood House Hospital and 60 m from residential properties at Albany Farm which may be subject to adverse noise and vibration impacts. Potential for impacts to those along haul routes. 	<ul style="list-style-type: none"> Residential receptors are 30 m away at their closest which may be subject to adverse noise and vibration impacts. Potential for impacts to those along haul routes.
Resource and waste	<ul style="list-style-type: none"> Sections are within a Brick Clay MCA and a Soft Sand MCA. 	

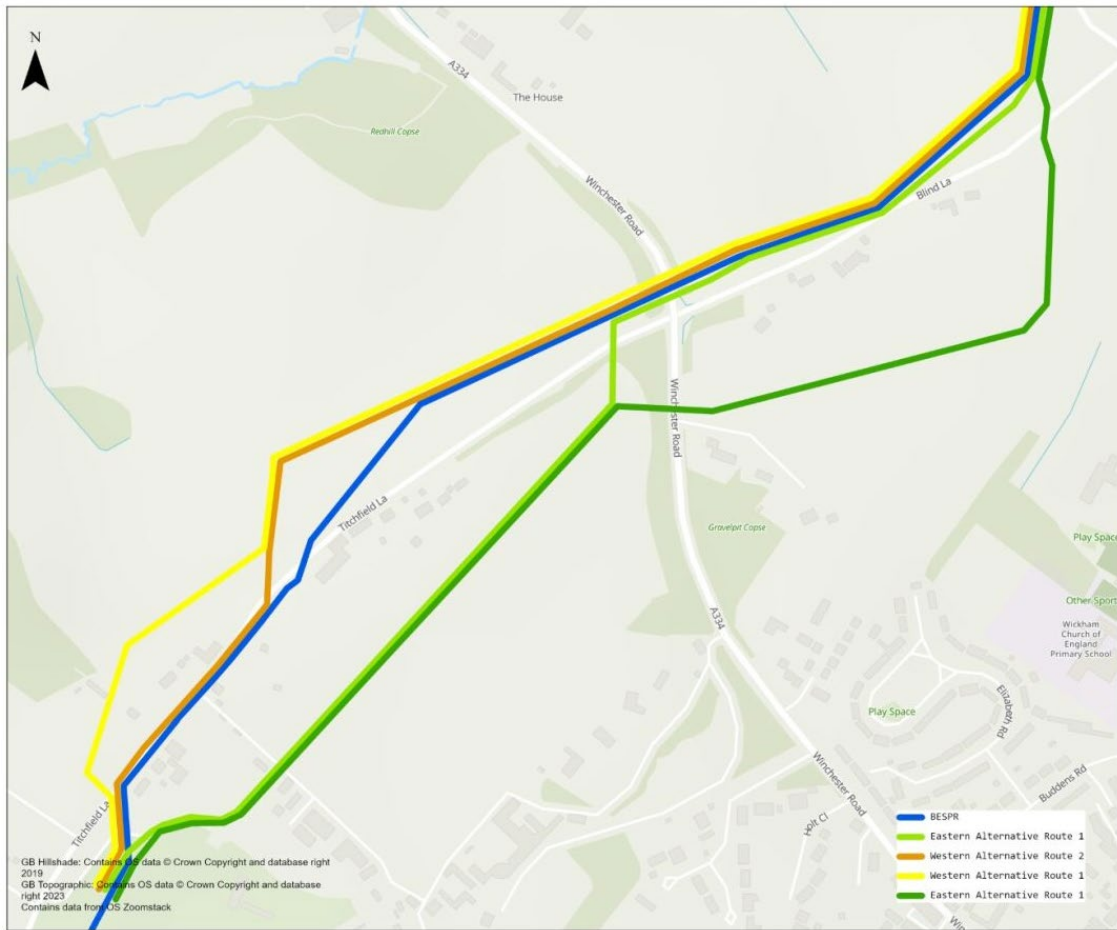
Topic	BESPR	Alternative
Socio-economics	<ul style="list-style-type: none"> • Potential for amenity impacts to Ravenswood House Hospital 50 m away and residential properties 60 m away at Albany Farm. • The route passes through Wickham Park Golf Club including the car park and golf course. • Crosses two footpaths (Wickham 5/1 and 501/1) and National Cycle Network route 224. 	<ul style="list-style-type: none"> • Potential for amenity impacts to residential properties which are approximately 30 m away at their closest. • The route passes through Wickham Park Golf Club including the car park and golf course. • Crosses two footpaths (Wickham 5/1 and 501/1) and National Cycle Network route 224.
Special category land	<ul style="list-style-type: none"> • Located on land owned by Homes England who are a statutory undertaker. 	<ul style="list-style-type: none"> • Potential to interface special category land associated with open space being proposed by Homes England who are a statutory undertaker.
Traffic and transport	<ul style="list-style-type: none"> • Potential to impact road users of Knowle Road, Mayes Lane and the A32 which provides a direct connection to the Strategic Road Network via Junction 10 of the M27. • Potential to impact users of two footpaths (Wickham 5/1 and 501/1) and National Cycle Network route 224. 	<ul style="list-style-type: none"> • Potential to impact road users of Forest Lane, Mayes Lane and the A32 which provides a direct connection to the Strategic Road Network via Junction 10 of the M27. • Potential to impact users of two footpaths (Wickham 5/1 and 501/1) and National Cycle Network route 224.
Water quality, resource and flood risk	<ul style="list-style-type: none"> • In proximity to the River Meon and located within flood zones 2 and 3. • Potential to increase flood risk during construction and/or that flooding could impact construction. 	

- 5.6.10 The outcomes are similar for both options. Whilst the alternative route intersects more designated habitats than the BESPR, trenchless construction would be used to cross the River Meon SPA European designated site, and therefore the risks in relation to impact to connected designated sites and habitat loss are not anticipated for either option. As the alternative route is further from ancient woodland, this route carries a slightly lower consenting risk regarding biodiversity and nature conservation.
- 5.6.11 The BESPR has a greater interface with other development as it intersects both the Welborne Garden Village development, a development for 200 homes north of Knowle and is in close proximity to an existing gas main. There is potential for the BESPR to interface with aspects of these developments, which may be built out or in-construction when the pipeline would be developed. It should be noted that the Welborne Garden Village development is allocated under Part 3 of Fareham Borough Council's local plan, and the NPSWRI states (Paragraph 4.10.22) "*where the proposed development conflicts with a proposal in a development plan or emerging development plan, the Secretary of State should take account of the stage which the development plan document in England has reached. In deciding what weight to give to the plan for the purposes of determining the planning significance of what would be replaced, prevented or precluded, the closer the development plan document is to being adopted by the local planning authority, the greater weight which can be attached to the impact of the proposal on that development plan*". Therefore, there is potential for further consenting risks with the BESPR as a result of conflict with a proposal in a development plan.
- 5.6.12 It was identified that the alternative route is also in close proximity to residential properties where there may be adverse air quality, noise, vibration and visual impacts. When comparing the potential for these impacts across the BESPR and alternative route, it was considered that there was a greater potential to mitigate these potential impacts on the alternative route given the reduced density of residential properties encountered. Progressing with the BESPR would have the potential to impact a greater number of residential properties associated with the Welborne Garden Village development and a development for 200 homes north of Knowle. Additionally, there is uncertainty about the proximity that the BESPR would be to residential properties within these developments.
- 5.6.13 As a result of the increased risks for the BESPR due to conflict with proposed developments, the alternative route was progressed.

[Interface with Titchfield Lane](#)

- 5.6.14 The BESPR shown at the Summer 2022 Consultation routed along Titchfield Lane as it headed north through Section G. Titchfield Lane provides connectivity between Wickham to the north east and Fareham to the South. The pipeline corridor section the Applicant presented at the Summer 2022 Consultation was wide enough for pipeline routes to the east and west of Titchfield Lane to be identified following the consultation. The Applicant received feedback from the Summer 2022 Consultation which highlighted the potential impacts of constructing the pipeline within Titchfield Lane, and this was reiterated through engagement with Hampshire County Council (HCC) and Winchester City Council (WCC), and environmental assessments.

5.6.15 As a result of the potential impacts, the Applicant identified a number of alternative routes to the east and west of Titchfield Lane which are shown in Graphic 5-18.



Graphic 5-18: Section F and G pipeline options at Titchfield Lane

5.6.16 Table 5-6 sets out the evaluation outcomes for the five route options.

Table 5-6: Section F and G interface with Titchfield Lane evaluation outcomes

Topic	BESPR	Eastern Alternative Route 1	Eastern Alternative Route 2	Western Alternative Route 1	Western Alternative Route 2
Air quality	<ul style="list-style-type: none"> Human receptors in close proximity to construction work and haul routes may be subject to adverse air quality impacts. 				
Biodiversity	<ul style="list-style-type: none"> Intersects hedgerows, trees and lowland mixed deciduous woodland priority habitats. Intersects three areas of woodland that support Hazel Dormice (protected species). Approximately 20 m from a protected species. 	<ul style="list-style-type: none"> Intersects hedgerows, trees and lowland mixed deciduous woodland priority habitats. Intersects three areas of woodland that support Hazel Dormice (protected species). 	<ul style="list-style-type: none"> Intersects hedgerows, trees and lowland mixed deciduous woodland priority habitats. Intersects three areas of woodland that support Hazel Dormice (protected species). Within 70 m of the Gravelpit Copse SINC. 	<ul style="list-style-type: none"> Intersects hedgerows, trees and lowland mixed deciduous woodland priority habitats. Approximately 25 m from ancient woodland. Intersects three areas of woodland that support Hazel Dormice (protected species). Approximately 20 m from a protected species. Approximately 25 m from Tankerhill Copse SINC. 	<ul style="list-style-type: none"> Intersects hedgerows, trees and lowland mixed deciduous woodland priority habitats. Intersects three areas of woodland that support Hazel Dormice (protected species). Approximately 20 m from a protected species.
Carbon	<ul style="list-style-type: none"> For both options, construction and operation of the pipeline would result in the generation of carbon, however these are considered to be equal for both options. 				
Geology and soils	<ul style="list-style-type: none"> Potential contaminative 	<ul style="list-style-type: none"> Potential contaminative 	<ul style="list-style-type: none"> Potential contaminative 	<ul style="list-style-type: none"> Potential contaminative land 	<ul style="list-style-type: none"> Potential contaminative land

Topic	BESPR	Eastern Alternative Route 1	Eastern Alternative Route 2	Western Alternative Route 1	Western Alternative Route 2
	land uses adjacent to short stretches of the route comprising farms and a plant nursery. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.	land uses adjacent to short stretches of the route comprising farms and a backfilled pond. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.	land uses adjacent to short stretches of the route comprising farms and a plant nursery. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.	uses adjacent to short stretches of the route comprising farms and a backfilled pond. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.	uses adjacent to short stretches of the route comprising farms, a plant nursery and a backfilled pond.
Historic environment	<ul style="list-style-type: none"> • Intersects two Roman roads. • Potential for features associated with the Roman roads. 	<ul style="list-style-type: none"> • Intersects a Roman road. • Potential for features associated with the Roman road. 		<ul style="list-style-type: none"> • Intersects two Roman roads. • Potential for features associated with the Roman roads. 	
Interface with other development	<ul style="list-style-type: none"> • No adverse impacts identified. 				
Landscape and visual	<ul style="list-style-type: none"> • Intersects a TPO group along Winchester Road. • Within the Forest of Bere LCA area 	<ul style="list-style-type: none"> • Intersects a TPO group along Winchester Road. • Within the Forest of Bere LCA area and the Meon Valley LCA area. 		<ul style="list-style-type: none"> • Intersects a TPO group along Winchester Road. • Within the Forest of Bere LCA area and 	<ul style="list-style-type: none"> • Intersects a TPO group along Winchester Road. • Within the Forest of Bere LCA area and

Topic	BESPR	Eastern Alternative Route 1	Eastern Alternative Route 2	Western Alternative Route 1	Western Alternative Route 2
	<p>and the Meon Valley LCA area.</p> <ul style="list-style-type: none"> • Potential for impacts to landscape character (landcover, tranquillity and pattern and scale). • Potential for visual amenity impacts: • Closest residential receptors are circa 15m away. • Intersects footpath 14/2. 	<ul style="list-style-type: none"> • Potential for impacts to landscape character (landcover and tranquillity). • Potential for visual amenity impacts: • Closest residential receptors are circa 20 m away. • Intersects footpath 1/1. 		<p>the Meon Valley LCA area.</p> <ul style="list-style-type: none"> • Potential for impacts to landscape character (landcover and tranquillity). • Potential for visual amenity impacts: • Closest residential receptors are circa 50 m away. • Intersects footpath 14/2. 	<p>the Meon Valley LCA area.</p> <ul style="list-style-type: none"> • Potential for impacts to landscape character (landcover and tranquillity). • Potential for visual amenity impacts: • Closest residential receptors are circa 15m away. • Intersects footpath 14/2.
Noise and vibration	<ul style="list-style-type: none"> • Closest residential properties are located 15m away which may be subject to adverse noise and vibration impacts. 	<ul style="list-style-type: none"> • Closest residential properties are located 20 m away which may be subject to adverse noise and vibration impacts. • Potential for noise to impact those along haul routes. 		<ul style="list-style-type: none"> • Closest residential properties are located 50 m away which may be subject to adverse noise and vibration impacts. • Potential for noise to impact those along haul routes. 	<ul style="list-style-type: none"> • Closest residential properties are located 15m away which may be subject to adverse noise and vibration impacts. • Potential for noise to impact those along haul routes.

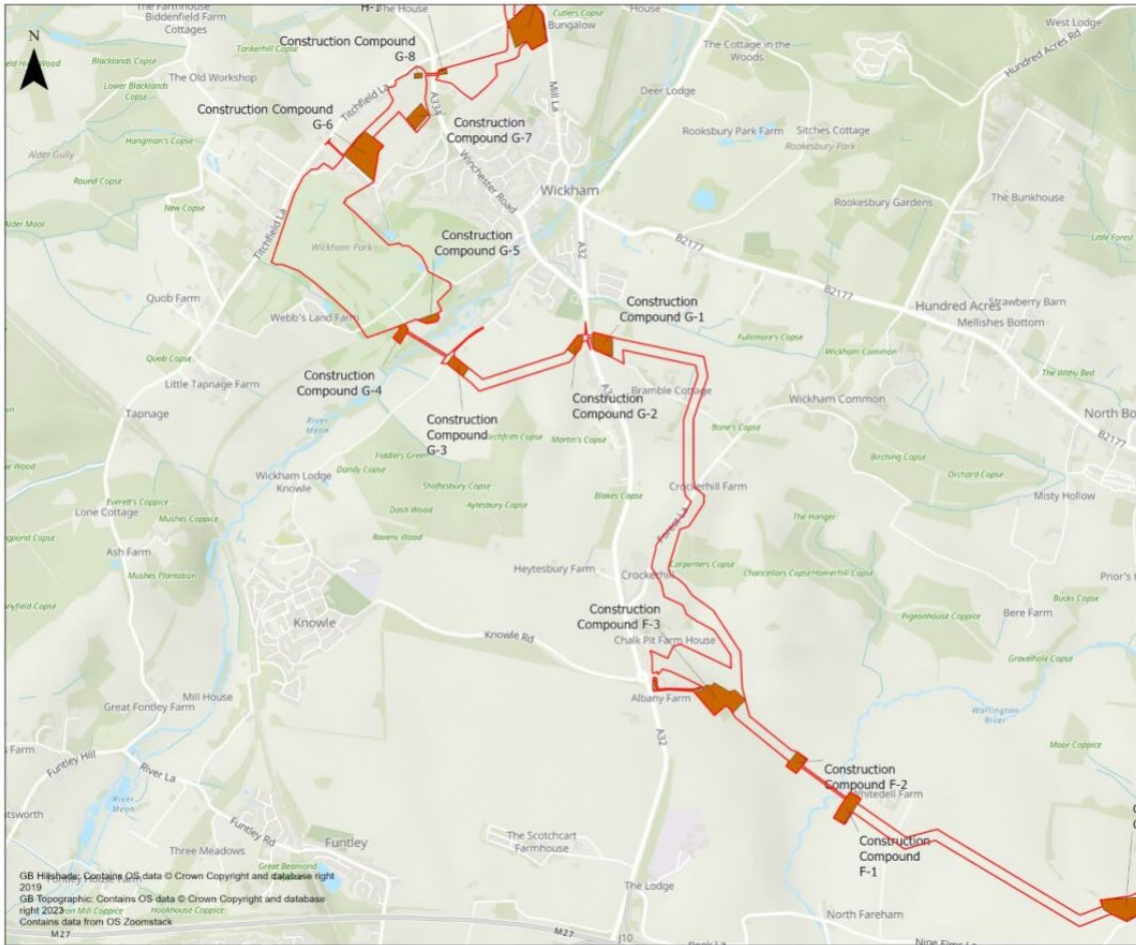
Topic	BESPR	Eastern Alternative Route 1	Eastern Alternative Route 2	Western Alternative Route 1	Western Alternative Route 2
	<ul style="list-style-type: none"> Potential for noise to impact those along haul routes. 				
Resource and waste	<ul style="list-style-type: none"> Within a MCA for Soft Sand. 	<ul style="list-style-type: none"> Within a MCA for Superficial Sand and Gravel and part of a MCA for Soft Sand. 			
Socio-economics	<ul style="list-style-type: none"> Potential for amenity and disruption impacts to residencies 15m away. Potential to impact land used for Wickham Festival every August. Intersects footpath 14/2. Intersects land used by the Paw Paddock business (dog walking field) and a wedding events business. 	<ul style="list-style-type: none"> Intersects land use by the Paw Paddock business (dog walking field) and a wedding events business. Intersects an access route for the Wickham Montessori School. Potential for impacts to Wickham Park Golf Club including parking and land used for Wickham Festival every August. 	<ul style="list-style-type: none"> Potential for amenity and disruption impacts to residencies 20 m away. Potential for impacts to Wickham Park Golf Club including parking and land used for car parking for Wickham Festival every August. Intersects an access route for the Wickham Montessori School. Intersects footpath 1/1. 	<ul style="list-style-type: none"> Potential for amenity and disruption impacts to residencies 50 m away. Intersects land used by the Paw Paddock business (dog walking field) and a wedding events business. Potential to impact land used for Wickham Festival every August. Intersects footpath 14/2. 	<ul style="list-style-type: none"> Potential for amenity and disruption impacts to residencies 15 m away. Intersects land used by the Paw Paddock business (dog walking field) and a wedding events business. Potential to impact land used for Wickham Festival every August. Intersects footpath 14/2.

Topic	BESPR	Eastern Alternative Route 1	Eastern Alternative Route 2	Western Alternative Route 1	Western Alternative Route 2
		<ul style="list-style-type: none"> Potential for amenity and disruption impacts to residencies 20 m away. Intersects footpath 1/1. 			
Special category land	<ul style="list-style-type: none"> No adverse impacts identified. 				
Traffic and transport	<p>Partly routed along Titchfield Lane and intersects Wickham Road. Potential to delay road users, especially the construction works in Titchfield Lane.</p> <ul style="list-style-type: none"> Intersects footpath 14/2. 	<p>Intersects Wickham Road and Titchfield Lane. Potential to delay road users.</p> <ul style="list-style-type: none"> Intersects footpath 1/1. 	<ul style="list-style-type: none"> Intersects Wickham Road and Blind Lane. Potential to delay road users. Intersects footpath 1/1. 	<ul style="list-style-type: none"> Intersects Wickham Road and Titchfield Lane. Potential to delay road users. Intersects footpath 14/2. 	<p>Partly routed along Titchfield Lane and intersects Wickham Road. Potential to delay road users, especially the construction works in Titchfield Lane.</p> <ul style="list-style-type: none"> Intersects footpath 14/2.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No adverse impacts identified. The options do not interface with any areas of flood zone 2 and 3. 				

- 5.6.17 The BESPR and both western alternative routes are all in close proximity of identified protected species and Western Alternative Route 1 is also within proximity to ancient woodland. The BESPR and both western alternative routes also intersect with two Roman Roads, whereas the eastern alternative routes intersect with one Roman Road and therefore have fewer potential historic environment risks. The BESPR and Western Alternative Route 2 would both require construction within Titchfield Lane where temporary road closures may be required. As a result of these constraints, the BESPR and western alternative routes were not progressed.
- 5.6.18 The eastern alternative routes have similar constraints that would require suitable mitigation to reduce impacts. The key differentiating factor between the two options is that Eastern Alternative Route 1 intersects with a field that is used by a dog walking business and a wedding events business which would be temporarily disrupted during the construction phase. Eastern Alternative Route 2 avoids intersecting with these existing businesses. Eastern Alternative Route 1 also intersects the full extent of a field that is used for the Wickham Festival whereas Eastern Alternative Route 2 only intersects the corner of this field.
- 5.6.19 As a result of the reduced environmental impacts and potential disruption on existing businesses compared to the alternative options, Eastern Alternative Route 2 was progressed.

Micro-siting

- 5.6.20 Graphic 5-19 shows the draft Order Limits in Section F and Section G.



Graphic 5-19: Section F and G draft Order Limits and construction compounds

- 5.6.21 Trenchless construction is proposed for the crossing of the River Wallington and the River Meon. The extent of trenchless construction and the locations of the construction compounds were designed to avoid the river corridor habitat and the associated flood risk zones, so that impacts on biodiversity, water quality and flood risk are reduced. Trenchless construction is also proposed for the crossing of Hoad’s Hill (A32) as this is a key highway route between Wickham to the north and the M27 in the south.
- 5.6.22 The construction of the pipeline could result in temporary disruption to the operations of Wickham Park Golf Club, therefore the draft Order Limits were kept wide to allow for flexibility for the route so that it can be developed further through engagement. The aim of this further development and engagement is to reduce impacts on the operations of the golf club. Initial engagement with Wickham Park Golf Club on the route of the pipeline has been undertaken, and this will continue following the Summer 2024 Consultation.
- 5.6.23 The draft Order Limits are also wide east of the roundabout junction between Wickham Road (A32) and Knowle Road. This is to provide flexibility on the alignment of the Project with Welborne Garden Village, specifically the access route and location of Intermediate Pumping Station F (IPS-F) which are located in close proximity to the site of Welborne Garden Village. The site selection undertaken for IPS-F is set out in Section 5.12.

5.6.24 Construction compounds were proposed in the following locations:

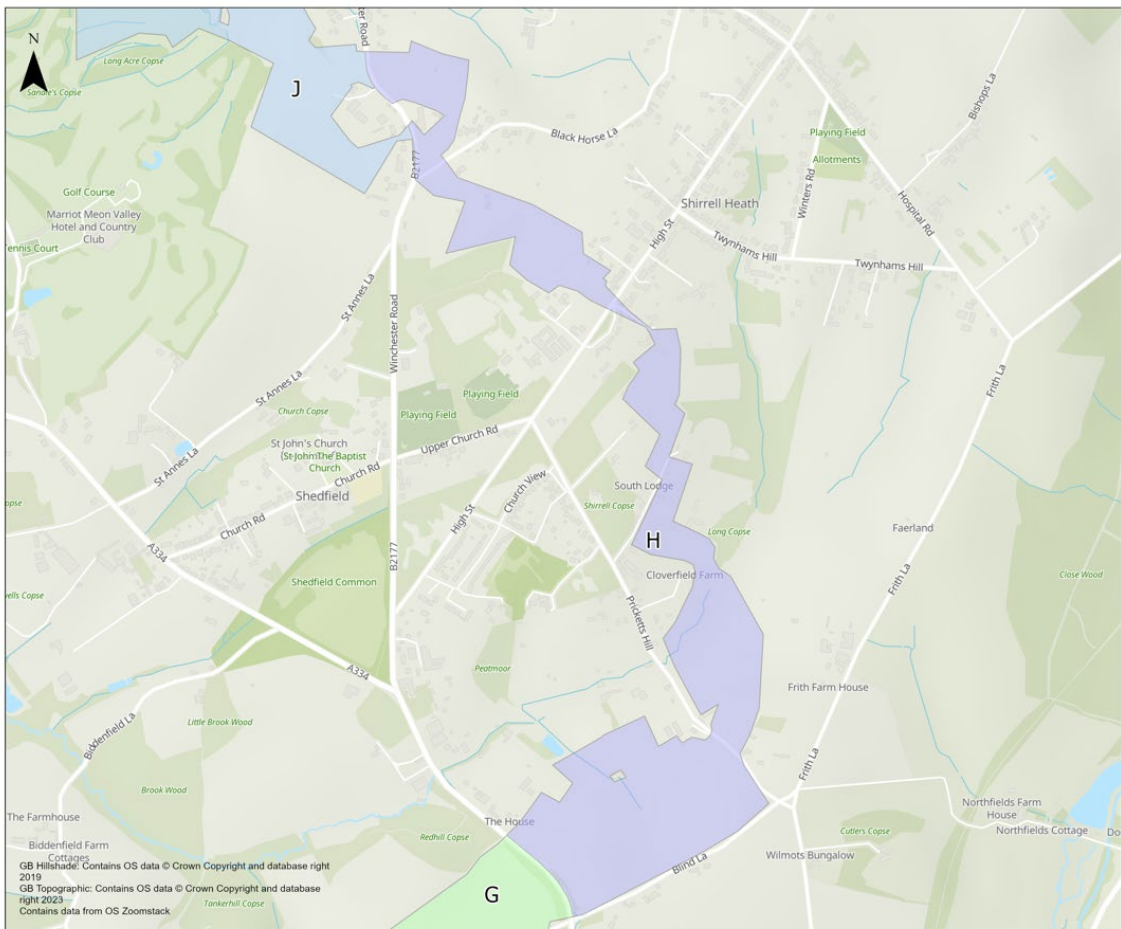
- Construction Compound F-1: Located on the east side of the River Wallington to support trenchless crossing of the watercourse. The construction compound has been located so that it is outside of the flood risk zones and floodplain habitat associated with the River Wallington.
- Construction Compound F-2: Located on the west side of the River Wallington to support trenchless crossing of the watercourse. The construction compound has been located so that it is outside of the flood risk zones and floodplain habitat associated with the River Wallington as far as possible. The eastern edge of the construction compound is located within flood zone 2 and 3. Moving this construction compound outside of these high risk flood zones would require the trenchless construction under the River Wallington to be extended further than is technically practicable for trenchless construction. There is sufficient space within the remaining area of the construction compound to locate the trenchless construction shaft and material storage outside of these high risk flood zones.
- Construction Compound F-3: Located east of the A32 and Albany Farm to support construction of the pipeline within Section F. The construction compound would also facilitate the construction of IPS-F.
- Construction Compound G-1: Located east of Hoad's Hill (A32) to support trenchless crossing of this road.
- Construction Compound G-2: Located west of Hoad's Hill (A32) to support trenchless crossing of this road.
- Construction Compound G-3: Located south-east of Mayles Lane to support trenchless crossing of the River Meon. The construction compound has been located south-east of Mayles Lane so the trenchless crossing of the River Meon can also pass under vegetation north-west of Mayles Lane, therefore avoiding the loss of these habitats. This construction compound avoids areas of flood zone 2 and 3 associated with the River Meon.
- Construction Compound G-4: Located south of Tanfield Road to support trenchless crossing of the River Meon. The construction compound has been located to avoid nearby vegetation associated with the River Meon. This construction compound avoids areas of flood zone 2 and 3 associated with the River Meon.
- Construction Compound G-5: Located within Wickham WTW to provide additional support for the construction of the pipeline within Section G. This construction compound avoids areas of flood zone 2 and 3 associated with the River Meon.
- Construction Compound G-6: Located south-east of Titchfield Lane to support construction of Intermediate Pumping Station G (IPS-G) and the pipeline within Section G.
- Construction Compound G-7: Located west of Winchester Road (A334) to support construction of the pipeline within Section G and accommodate a water storage lagoon.

- Construction Compound G-8: Located west of Winchester Road (A334) to support trenchless crossing of this road. The construction compound has been located outside of vegetation on the west side of Winchester Road (A334).

5.7 Section H

Summer 2022 Consultation

- 5.7.1 Section H continues north from Wickham towards Waltham Chase. The pipeline includes the crossing of Winchester Road (A334) and Winchester Road (B2177).
- 5.7.2 Graphic 5-20 shows Section H of the Project as presented at the Summer 2022 Consultation.



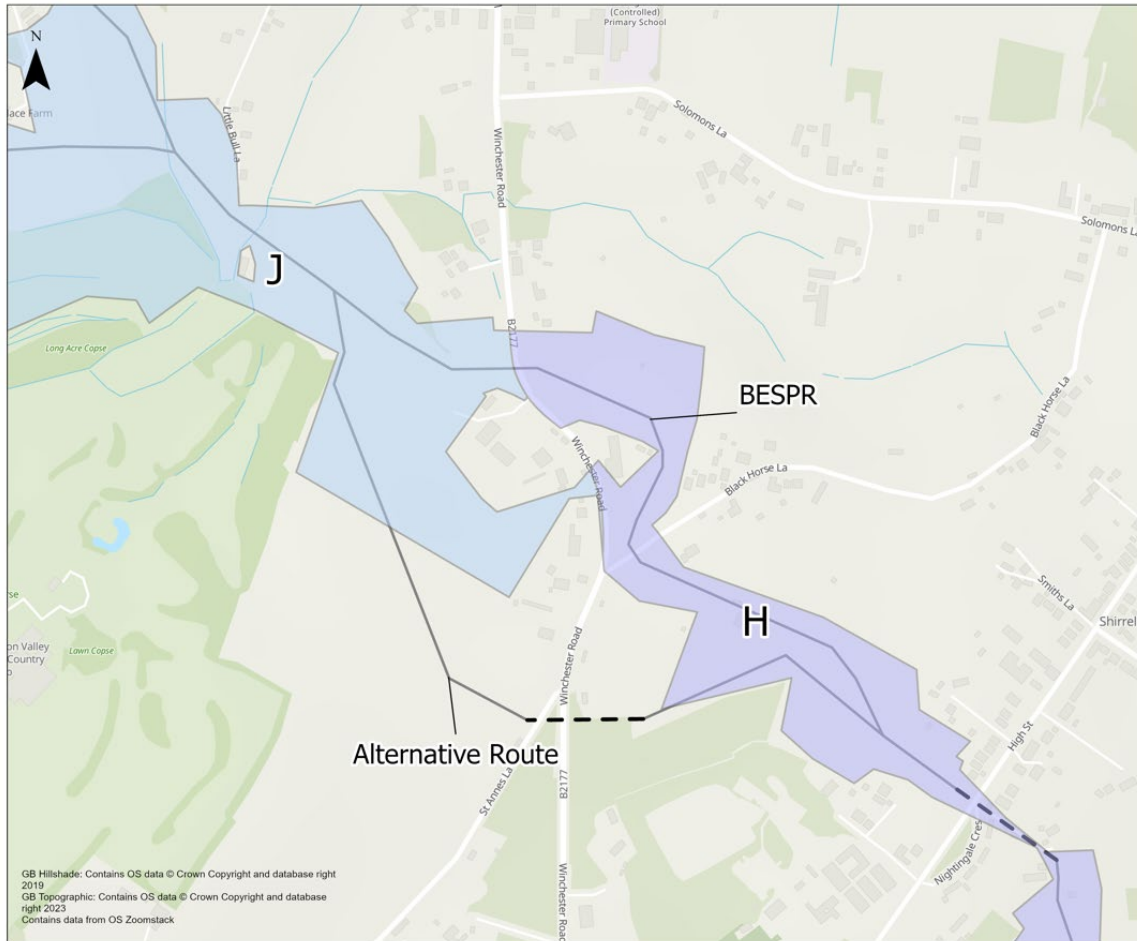
Graphic 5-20: Section H as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

Winchester Road (B2177) Crossing

- 5.7.3 Following the Summer 2022 Consultation, the Applicant received feedback that the construction associated with the BESPR where it intersected north of Blackhorse Lane and east of Winchester Road (B2177) could disrupt the operations of an existing business.

5.7.4 As a result, the Applicant undertook a review to identify whether there were any potential alternatives in this area. An alternative route was identified which is shown in Graphic 5-21. This alternative route was outside of the preferred pipeline corridor that was presented at the Summer 2022 Consultation.



Graphic 5-21: Section H pipeline options at Winchester Road (B2177)

5.7.5 Table 5-7 sets out the evaluation outcomes for the BESPR and alternative route.

Table 5-7: Section H Winchester Road (B2177) crossing evaluation outcomes

Topic	BESPR	Alternative
Air quality	<ul style="list-style-type: none"> Human receptors in close proximity to construction work and haul routes may be subject to adverse air quality impacts. 	
Biodiversity	<ul style="list-style-type: none"> Approximately 4km from Solent and Southampton Water Ramsar and SPA. Approximately 4km from Solent Maritime SAC. Potential for impacts to priority habitats as it intersects seven hedgerows 	<ul style="list-style-type: none"> Approximately 3.8km from Solent and Southampton Water Ramsar and SPA. Approximately 3.8km from Solent Maritime SAC. Potential for impacts priority habitats as it intersects three hedgerows and a strip of

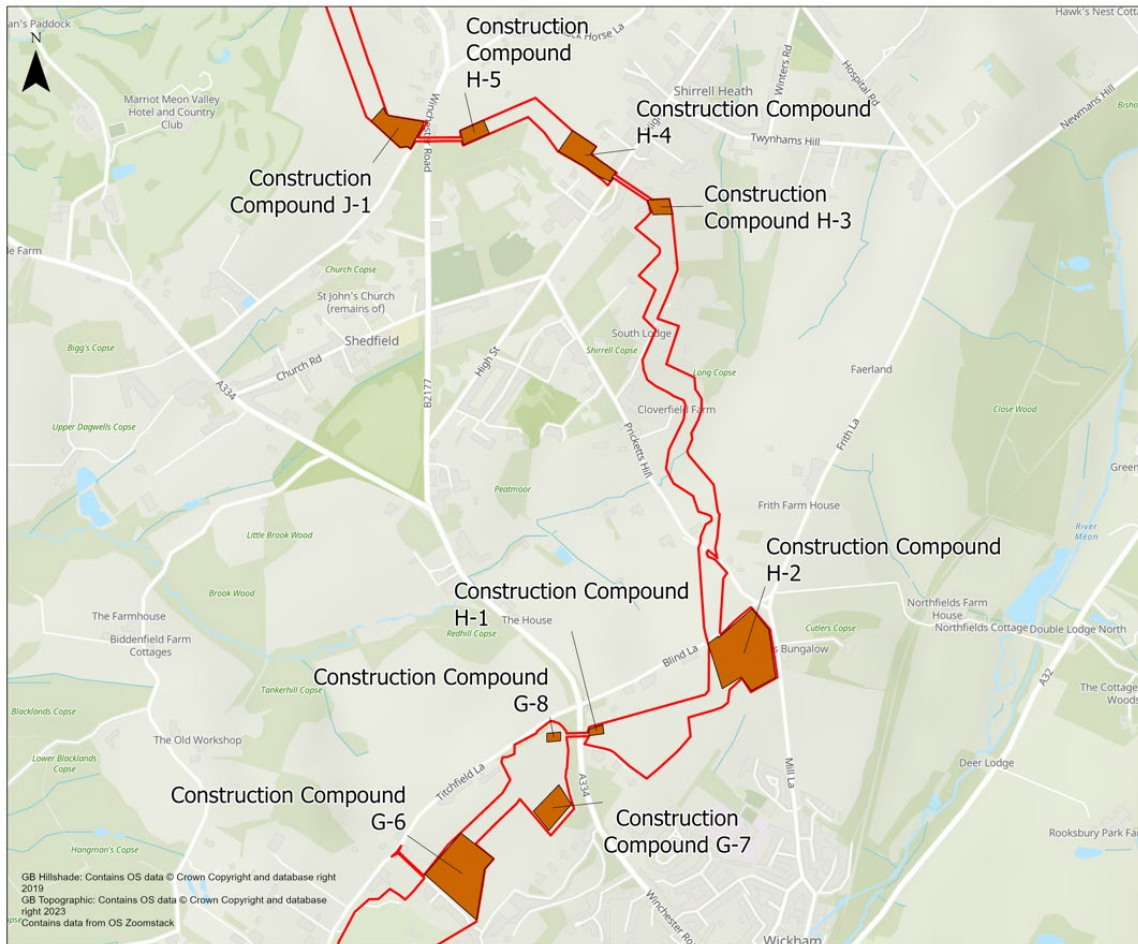
Topic	BESPR	Alternative
	<p>and a strip of lowland mixed deciduous woodland.</p> <ul style="list-style-type: none"> • Within proximity to a protected species that are approximately 20m away at their closest. 	<p>lowland mixed deciduous woodland.</p> <ul style="list-style-type: none"> • Within proximity to a protected species that are approximately 40m away at their closest. St Anne's Wood SINC is within 50m of a trenchless crossing.
Carbon	<ul style="list-style-type: none"> • Temporary contribution to emissions associated with construction activities. 	
Geology and soils	<ul style="list-style-type: none"> • Potential contaminant sources including landfilled areas are adjacent to short stretches of the route. Construction within this area could expose contaminants and therefore suitable mitigation would be employed. 	
Historic environment	<ul style="list-style-type: none"> • Approximately 150m north east of Grade II listed Sandy Hill House. • Unknown archaeological remains could be present. 	<ul style="list-style-type: none"> • Approximately 100m south of Grade II listed Sandy Hill House. • Approximately 60m east of Shedfield House park and garden which is locally designated asset. • Approximately 350m north of Shedfield Conservation Area. • Unknown archaeological remains could be present.
Interface with other development	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Landscape and visual	<ul style="list-style-type: none"> • Potential for impacts to landscape character (landcover, tranquillity and pattern and scale). • There are residential properties located approximately 20m north and 50m - 100m west. • Intersects footpath 13/1. 	<ul style="list-style-type: none"> • Potential for impacts to landscape character (landcover, tranquillity and pattern and scale). • There are residential properties located approximately 100m east. • Intersects footpath 13/1 and 3/2 and runs parallel to footpath 3/1 and 4/2.
Noise and vibration	<ul style="list-style-type: none"> • The closest residential property is 20m away and there are further dwellings within 50m which may be subject to adverse noise and vibration impacts. 	<ul style="list-style-type: none"> • The closest residential property is 30m away and there are further dwellings within 70m which may be subject to adverse noise and vibration impacts.

Topic	BESPR	Alternative
	<ul style="list-style-type: none"> Potential for impacts to those along haul routes. 	<ul style="list-style-type: none"> Potential for impacts to those along haul routes.
Resource and waste	<ul style="list-style-type: none"> No adverse impacts identified. 	
Socio-economics	<ul style="list-style-type: none"> Potential for amenity impacts to residencies and businesses near The Forge Pub and Black Horse Lane. Other businesses may be impacted by traffic disruption on the B2177. 	<ul style="list-style-type: none"> Potential for amenity impacts to a property (farm/livery/stables) adjacent to the B2177 and St Anne's Lane Junction.
Special category land	<ul style="list-style-type: none"> No adverse impacts identified. 	
Traffic and transport	<ul style="list-style-type: none"> Potential to impact road users of Winchester Road (B2177) and Black Horse Lane. Potential to impact users of footpath 13/1. 	<ul style="list-style-type: none"> Potential to impact users of footpaths 13/1, 3/2, 3/1 and 4/2.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No adverse impacts identified. The options do not interface with any areas of flood zone 2 or 3. 	

5.7.6 It was identified that the alternative route would have a reduced potential for interface with identified protected species as it is further away and it is also at a greater distance from the closest residential property. The alternative route would reduce the need to cross Black Horse Lane and would avoid the need for the pipeline to change direction a number of times in this area. Therefore the alternative route was progressed.

Micro-siting

5.7.7 Graphic 5-22 shows the draft Order Limits in Section H.



Graphic 5-22: Section H draft Order Limits and construction compounds

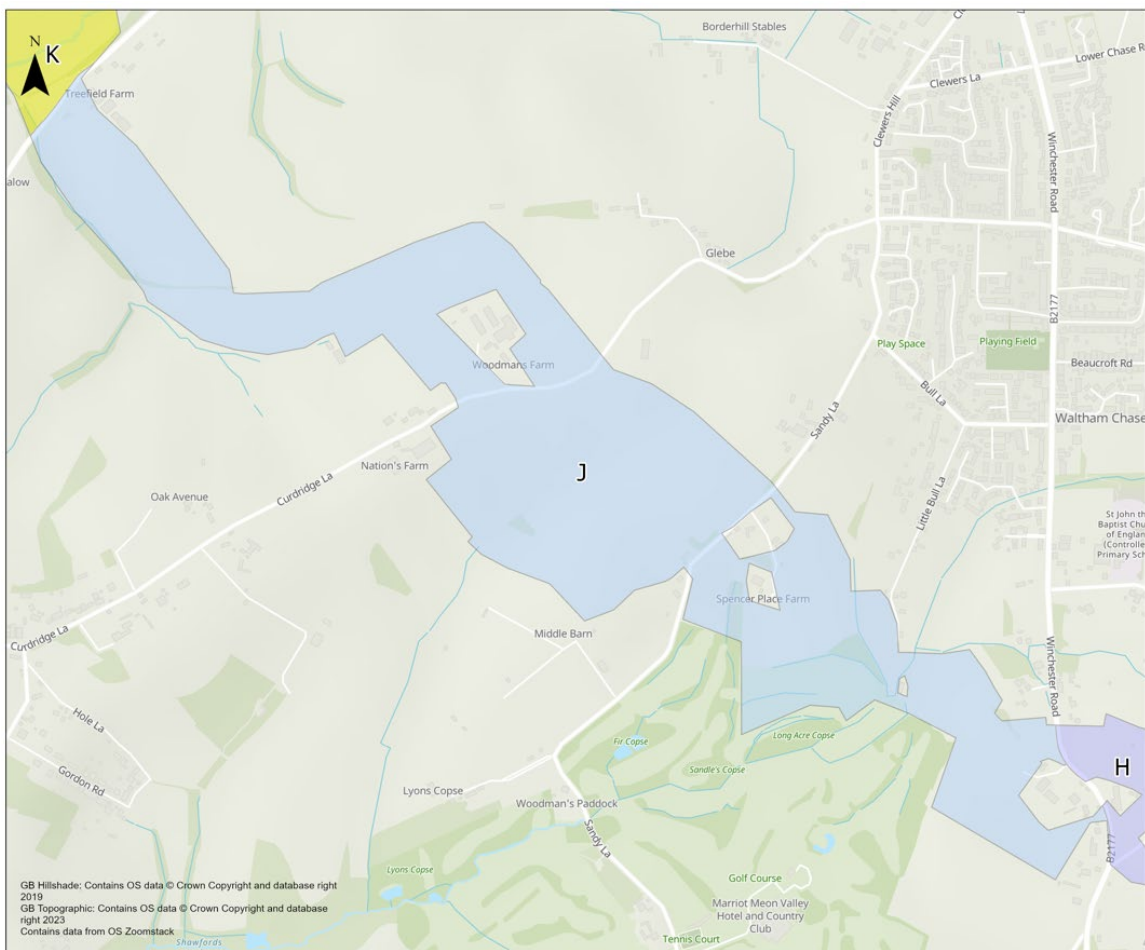
- 5.7.8 Trenchless construction has been proposed for the crossing of Winchester Road (A334) and Winchester Road (B2177). This is because these are key local highway routes that provide connectivity between Wickham and Waltham Chase and adopting a trenchless construction method would remove the need for road closures/diversions. The trenchless crossing of Winchester Road (A334) would avoid the dense vegetation that borders the road, and the trenchless crossing of Winchester Road (B2177) would also avoid woodland around St Anne’s Lane.
- 5.7.9 The pipeline route runs along an access road to the south of High Street in Shirrell Heath. Due to the lack of space available to construct the pipeline within this access road, trenchless construction would be used from the east of the access road to the west of High Street.
- 5.7.10 Construction compounds were located in the following locations:
- Construction Compound H-1: Located on the north east side of Winchester Road (A334) to support trenchless construction for the crossing of the road.
 - Construction Compound H-2: Located south of Blind Lane and west of Mill Lane to support construction of the pipeline within Section H.
 - Construction Compound H-3: Located east of High Street in Shirrell Heath to support trenchless construction of the access road east of High Street.

- Construction Compound H-4: Located west of High Street in Shirrell Heath to support trenchless construction of the access road east of High Street and construction of the pipeline within Section H.
- Construction Compound H-5: Located east of Winchester Road (B2177) to support trenchless construction for the crossing of this road.

5.8 Section J

Summer 2022 Consultation

- 5.8.1 Section J passes west of Waltham Chase from Winchester Road (B2177) to Botley Road (B3035) and the River Hamble. It also crosses Sandy Lane and Curdridge Lane.
- 5.8.2 Graphic 5-23 shows Section J of the Project as presented at the Summer 2022 Consultation.

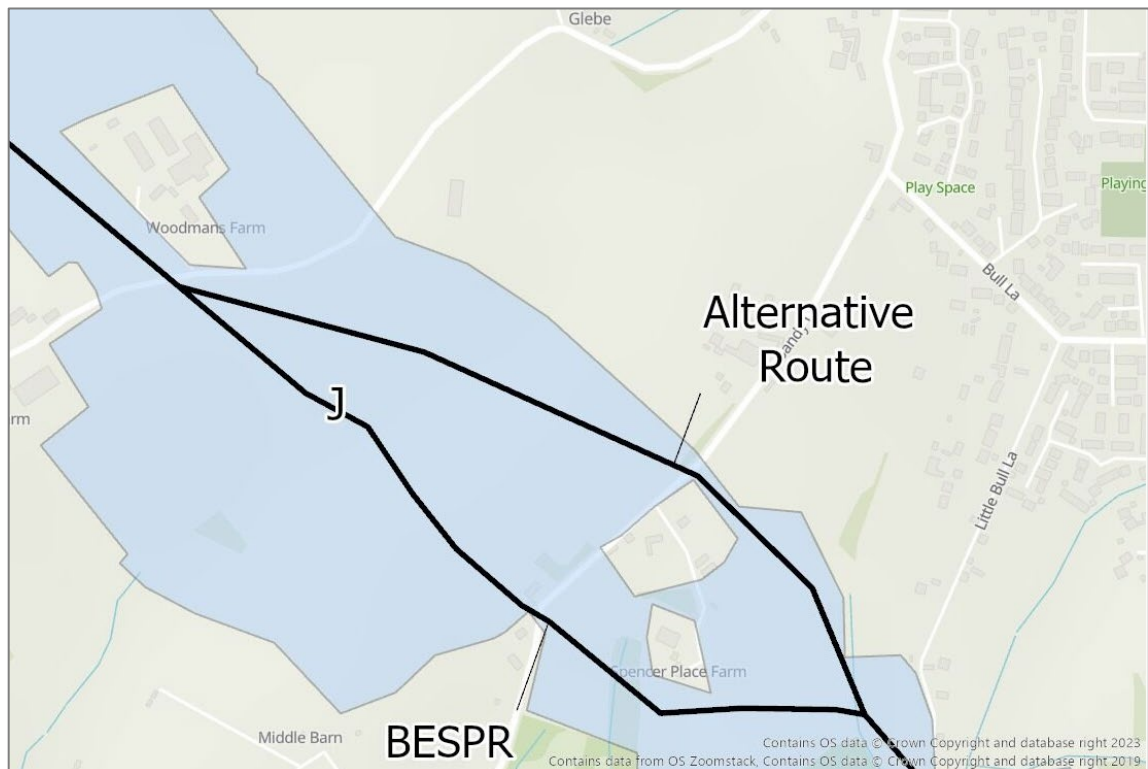


Graphic 5-23: Section J as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

Sandy Lane Crossing

- 5.8.3 The BESPR shown at the Summer 2022 Consultation crossed Sandy Lane within 15 m of a residential property. Construction of the pipeline would have the potential to restrict access to the property and encroach on land associated with the property. Throughout the site selection of the Project, the Applicant has aimed to avoid locating infrastructure near residential properties. As a result of the proximity to the property on Sandy Lane, the Applicant identified an alternative pipeline route.
- 5.8.4 The alternative route is located at the north east of the pipeline section. Consideration was given to the potential for an alternative route in the centre of the pipeline section, however it was considered that this would similarly be in close proximity to existing development and would intersect with more vegetation than the alternative route identified to the north east.
- 5.8.5 Graphic 5-24 shows the BESPR and alternative route.



Graphic 5-24: Section J pipeline options at Sandy Lane

- 5.8.6 Table 5-8 sets out the evaluation outcomes for the BESPR and alternative route.

Table 5-8: Section J Sandy Lane crossing evaluation outcomes

Topic	BESPR	Alternative
Air quality	<ul style="list-style-type: none"> Human receptors in close proximity to construction work and haul routes may be subject to adverse air quality impacts. 	

Topic	BESPR	Alternative
Biodiversity	<ul style="list-style-type: none"> • Within 3.8km of the Solent and Southampton Water Ramsar and SPA. • Within 3.8km of the Solent Maritime SAC. • Intersects deciduous woodland priority habitat. • Within 500m of the Waltham Chase Meadows SSSI. • Within 50 m of ancient woodland at Sandals Copse. • Approximately 60m from a protected species. 	<ul style="list-style-type: none"> • Within 3.9km of the Solent and Southampton Water Ramsar and SPA. • Within 3.9km of the Solent Maritime SAC. • Intersects deciduous woodland priority habitat. • Within 500m of the Waltham Chase Meadows SSSI. • Approximately 20m from a protected species.
Carbon	<ul style="list-style-type: none"> • Temporary contribution to emissions associated with construction activities. 	
Geology and soils	<ul style="list-style-type: none"> • No adverse impacts identified. 	<ul style="list-style-type: none"> • Intersects a historic landfill site. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.
Historic environment	<ul style="list-style-type: none"> • Approximately 150m from Grade II listed Spencer Place. • HER data suggests there are visible earthworks of a post-medieval drainage system and medieval or later cropmarks (field boundaries) on the route of the pipeline. 	<ul style="list-style-type: none"> • Approximately 90m from Grade II listed Spencer Place. • HER data suggests there is a group of medieval or later cropmarks (field boundaries) on the route of the pipeline.
Interface with other development	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Landscape and visual	<ul style="list-style-type: none"> • Adjacent to Meon Valley Hotel, Golf & Country Club which is 80m away at its closest. Visual disturbance may be caused. • Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility given the elevation). 	<ul style="list-style-type: none"> • Adjacent to Meon Valley Hotel, Golf & Country Club which is 100m away at its closest. Visual disturbance may be caused. • Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility).

Topic	BESPR	Alternative
	<ul style="list-style-type: none"> The route passes through a gap between two buildings on Sandy Lane, including a residential property (2 Mohawk Cottages) 15m away and an agricultural building 25m away. A footpath along the western boundary may be impacted during construction. Temporary scarring effects as a result of vegetation loss / replanting. 	<ul style="list-style-type: none"> The route is 45m from the closest property on Sandy Lane. There are further residences along this road within 100m that may be impacted. A footpath along the western boundary may be impacted during construction. Temporary scarring effects as a result of vegetation loss / replanting.
Noise and vibration	<ul style="list-style-type: none"> The closest residential property is 15m away and there are further dwellings within 50m which may be subject to adverse noise and vibration impacts. Potential for impacts to those along haul routes. 	<ul style="list-style-type: none"> The closest residential property is 45 m away and there are further dwellings within 50m which may be subject to adverse noise and vibration impacts. Potential for impacts to those along haul routes.
Resource and waste	<ul style="list-style-type: none"> Waste will be generated during construction. The route is within a Soft Sand MCA. 	
Socio-economics	<ul style="list-style-type: none"> Potential for amenity impacts to scattered residencies. Potential for amenity impacts to users of footpath 6/1 (Shedfield) which is intersected. Potential for impacts to Sandy Acres Guide Campsite. 	<ul style="list-style-type: none"> Potential for amenity impacts to scattered residencies. Potential for impacts to Catnaps Cattery at Spencer Place Farm.
Special category land	<ul style="list-style-type: none"> No adverse impacts identified. 	
Traffic and transport	<ul style="list-style-type: none"> Potential to impact road users of Sandy Lane. Potential to impact users of footpath 6/1 (Shedfield). 	<ul style="list-style-type: none"> Potential to impact road users of Sandy Lane.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No adverse impacts identified. The options do not interface with any areas of flood zone 2 or 3. 	

5.8.7 A number of potential impacts were identified as a result of the proximity of the BESPR to residential properties. Protected species were identified within 20 m of the alternative route meaning there is less flexibility than at the BESPR to employ

a 30 m avoidance buffer, therefore mitigation would need to be implemented to ensure that any impacts are minimised and reduced during the construction phase.

5.8.8 As the alternative route is in less close proximity to the nearest residential property compared to the BESPR, which is just 15 m away from the nearest residential property, the alternative route was progressed.

Woodmans Farm

5.8.9 The BESPR presented at the Summer 2022 Consultation passed west of Woodmans Farm which is located north of Curdridge Lane. Environmental surveys identified a number of protected species in this area and therefore an alternative route to the east of Woodmans Farm was identified. The BESPR and alternative route are shown in Graphic 5-25.



Graphic 5-25: Section J pipeline options at Woodmans Farm

5.8.10 Table 5-9 sets out the evaluation outcomes for the BESPR and alternative route.

Table 5-9: Section J Woodmans Farm evaluation outcomes

Topic	BESPR	Alternative
Air quality	<ul style="list-style-type: none"> Human receptors in close proximity to construction work and haul routes may be subject to adverse air quality impacts. 	

Topic	BESPR	Alternative
Biodiversity	<ul style="list-style-type: none"> • Intersects priority habitats including four hedgerows with trees and two hedgerows. • Approximately 1km from Waltham Chase Meadows SSSI. • Within proximity to a protected species which is approximately 10m away at their closest. • There are links to hazel dormouse habitats and the hedgerows with trees have bat roosting potential. 	<ul style="list-style-type: none"> • Intersects three priority habitat hedgerows. • Approximately 900m from Waltham Chase Meadows SSSI. • There are links to hazel dormouse habitats and trees with bat roosting potential.
Carbon	<ul style="list-style-type: none"> • Temporary contribution to emissions associated with construction activities. 	
Geology and soils	<ul style="list-style-type: none"> • Adjacent (off site) to the BESPR there is a sand pit that may contain contamination. Construction within this area could expose contaminants and therefore suitable mitigation would be employed. 	<ul style="list-style-type: none"> • No adverse impacts identified.
Historic environment	<ul style="list-style-type: none"> • Intersects two parallel cropmarks and a possible route of a Roman road. 	<ul style="list-style-type: none"> • Intersects three parallel cropmarks and a possible route of a Roman road. • Approximately 45m from the Bishop's Waltham historic deer park boundary (non-designated heritage asset).
Interface with other development	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Landscape and visual	<ul style="list-style-type: none"> • Approximately 1.8km from the South Downs National Park. • Approximately 550m and 800m from small blocks of ancient woodland (within Meon Valley Hotel & Golf Course and Oakwood Copse). • Potential for impacts to landscape character (landcover, tranquillity, 	<ul style="list-style-type: none"> • Approximately 1.8km from the South Downs National Park. • Approximately 500m and 1km from small blocks of ancient woodland (within Meon Valley Hotel & Golf Course and Oakwood Copse). • Potential for impacts to landscape character (landcover, tranquillity,

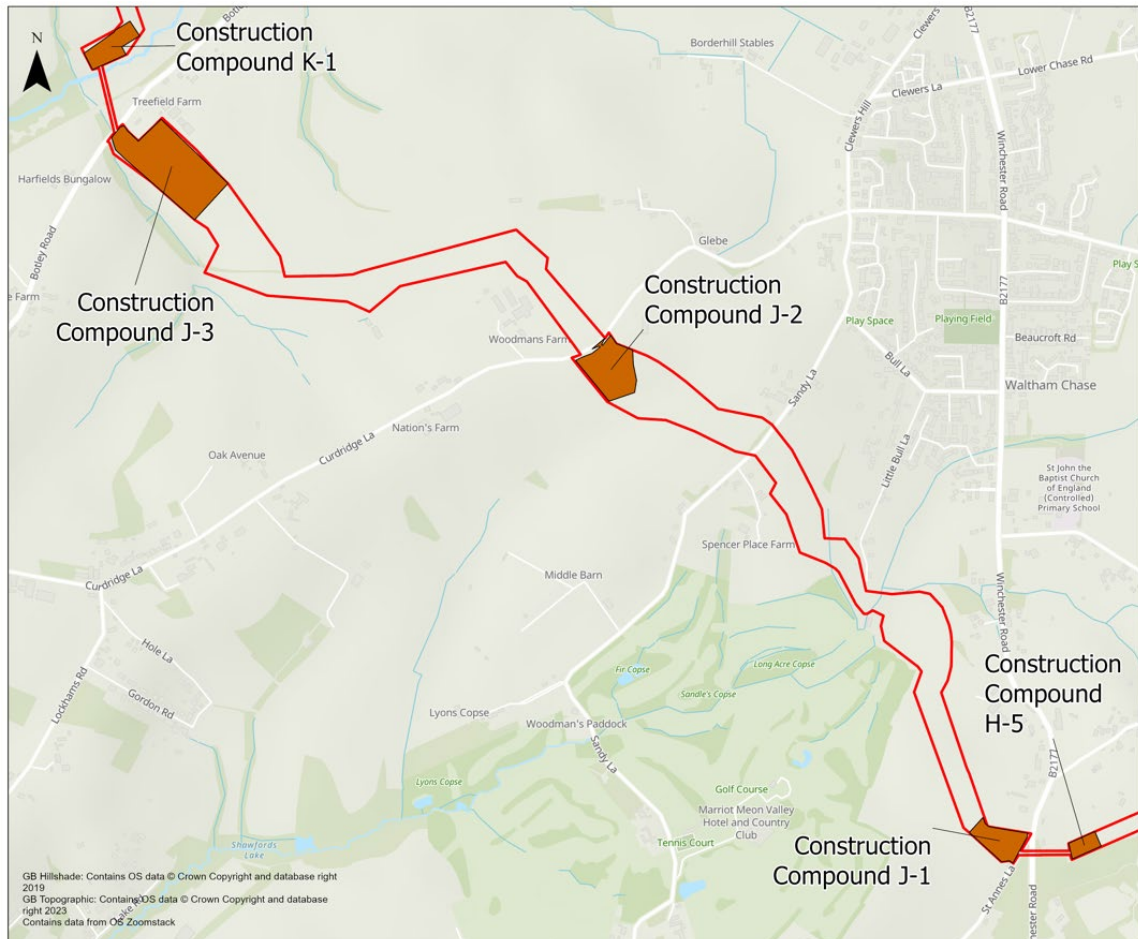
Topic	BESPR	Alternative
	<p>pattern and scale and visibility).</p> <ul style="list-style-type: none"> • There are residential properties at Woodmans Farm circa 60m away and other scattered residencies approximately 150 m away. • Footpaths including Curdridge 4/1 and Shedfield 5/1 may be impacted during construction. • Temporary scarring effects as a result of vegetation loss / replanting. 	<p>pattern and scale and visibility).</p> <ul style="list-style-type: none"> • There are residential properties at Woodmans Farm circa 120m away and other scattered residencies approximately 270m away. • Footpaths including Curdridge 4/1 and Shedfield 5/1 may be impacted during construction. • Temporary scarring effects as a result of vegetation loss / replanting.
Noise and vibration	<ul style="list-style-type: none"> • The closest residential property is 60m away and there are commercial units 80 m away which may be subject to adverse noise and vibration impacts. • Potential for impacts to those along haul routes. 	<ul style="list-style-type: none"> • The closest residential property is 120m away and there are commercial units 50 m away which may be subject to adverse noise and vibration impacts. • Potential for impacts to those along haul routes.
Resource and waste	<ul style="list-style-type: none"> • Waste will be generated during construction. • The route is within a Soft Sand MCA. 	
Socio-economics	<ul style="list-style-type: none"> • Potential for amenity impacts to residential properties which are 60m away at their closest. • Potential for impacts to businesses at Woodmans Farm (including mechanics, vehicle repairs and others). 	<ul style="list-style-type: none"> • Potential for amenity impacts to residential properties which are 120m away at their closest. • Potential for impacts to businesses at Woodmans Farm (including mechanics, vehicle repairs and others).
Special category land	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Traffic and transport	<ul style="list-style-type: none"> • Potential to impact road users of Curdridge Lane, a minor road providing connectivity between Wickham to the east and Botley to the west. 	
Water quality, resource and flood risk	<ul style="list-style-type: none"> • No adverse impacts identified. The options do not interface with any areas of flood zone 2 or 3. 	

5.8.11 The BESPR is within approximately 10 m from a protected species which means the Applicant would not be able to implement a suitable 30 m buffer zone. No protected species were identified on the alternative route at this stage of the assessment process. For the remaining criteria considered, the review outcomes were similar, although the alternative route was considered to have marginally

higher potential historic environment impacts due to its proximity to a historic deer park which is a locally designated historic environment asset. It was considered that the alternative route should be progressed as a result of the reduced potential for direct impacts on protected species.

Micro-siting

5.8.12 Graphic 5-26 shows the draft Order Limits in Section J.



Graphic 5-26: Section J draft Order Limits and construction compounds

5.8.13 The draft Order Limits were drawn sufficiently wide to allow for future flexibility in multiple locations within Section J:

- West of Winchester Road (B2177) and south of Little Bull Lane. There are a number of dense lines of trees in this location and protected species have also been identified. Further surveys are therefore required to determine the location of the pipeline route.
- Sandy Lane. As explained above, protected species were identified on the route of the preferred pipeline route. Therefore, the draft Order Limits were widened to allow for flexibility in the routing of the pipeline to respond to the location of the protected species at the time of construction.

- West of Sandy Lane, the preferred pipeline route intersects an area where a number of hedgerows and lines of trees converge. Further surveys are therefore required to determine the location of the pipeline route.
- North of Curdrige Lane. The preferred pipeline route intersects with two dense lines of trees. Further surveys are therefore required to determine the location of the pipeline route.

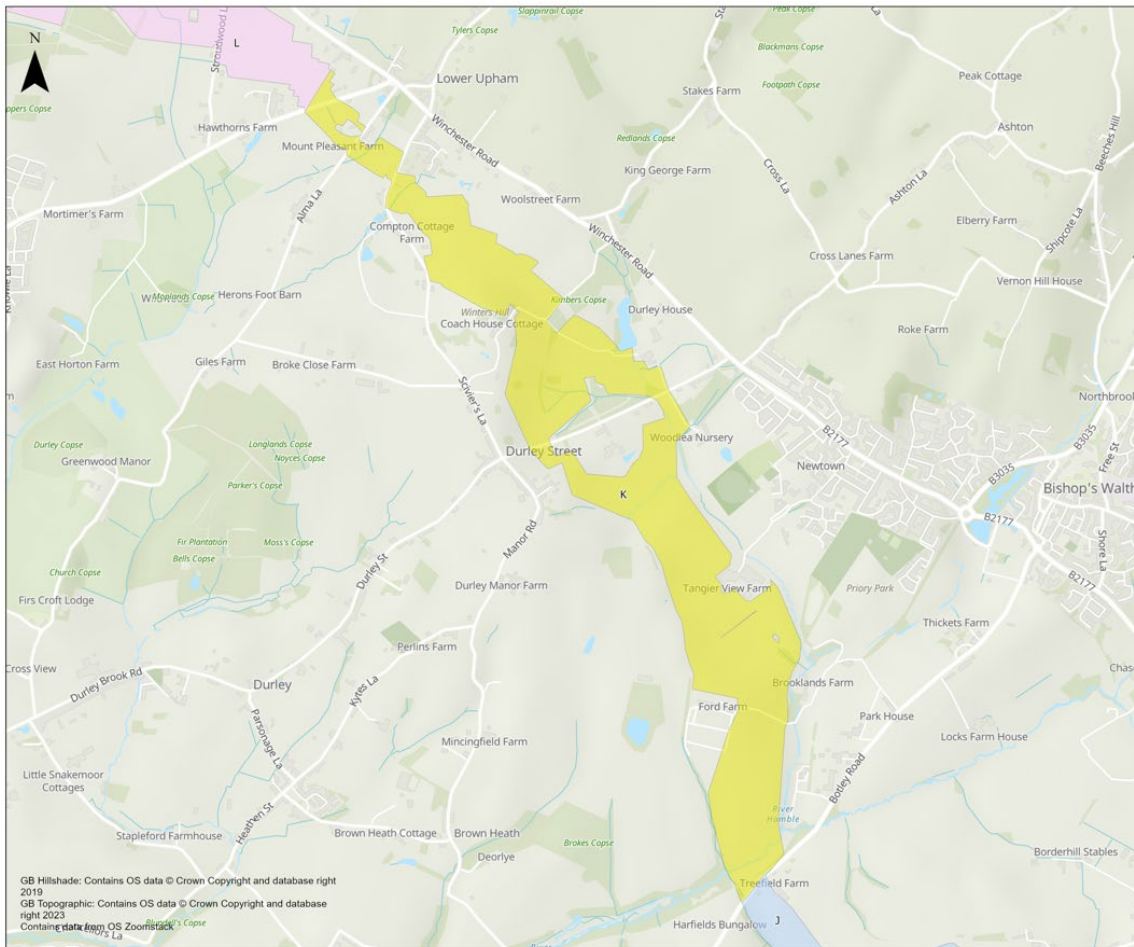
5.8.14 Construction compounds were located in the following locations:

- Construction Compound J-1: Located west of St Annes Lane to support the trenchless crossing of Winchester Road (B2177) and St Annes Lane as described in Section H.
- Construction Compound J-2: Located south of Curdrige Lane to support construction of the pipeline within Section J.
- Construction Compound J-3: Located south-east of Botley Road (B3035) to support construction of the pipeline within Section J and the trenchless crossing of Botley Road (B3035) and the River Hamble. Described in Section K. The construction compound was located outside of the high risk flood zones associated with the River Hamble.

5.9 Section K

Summer 2022 Consultation

- 5.9.1 At the Summer 2022 Consultation, Section K passed west of Bishop's Waltham from Botley Road (B3035) to Mortimers Lane (B3037). Section K also crossed the River Hamble, Winters Hill, Scivier's Lane and Alma Lane. At Winters Hill near Durley Street, two options were shown in Section K. This was to allow further assessments and investigations to be undertaken following the Summer 2022 Consultation as the Applicant identified overhead electricity lines and a watercourse on the eastern option, and residential properties close to the western option.
- 5.9.2 Graphic 5-27 shows Section K of the Project as presented at the Summer 2022 Consultation.



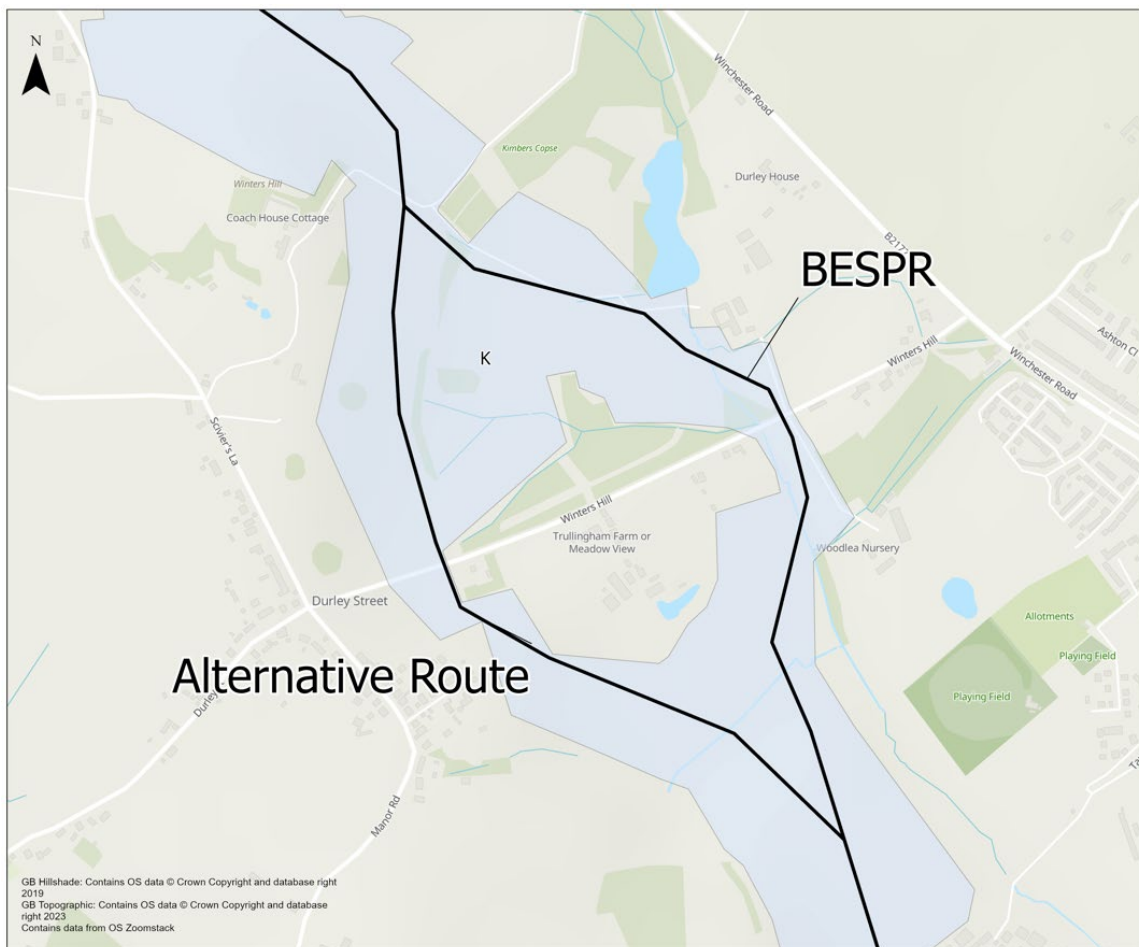
Graphic 5-27: Section K as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

Winters Hill Road Crossing

- 5.9.3 At Winters Hill Road, Section K had two options. The BESPR was located in the eastern option within Section K. Two options were presented at the Summer 2022 Consultation as the BESPR to the east was in close proximity to an overhead electricity line and an upstream tributary of the River Hamble, and the western option was in close proximity to residential properties.
- 5.9.4 When developing these options, the Applicant was aware of an existing Esso pipeline in the area and that Esso’s Southampton to London Pipeline Project, (a pipeline that transfers oil from the Fawley Refinery to Heathrow Airport), was to be located alongside the existing Esso pipeline. Therefore, further engineering investigations would be required to determine the most suitable crossing point of this pipeline.
- 5.9.5 Following the Summer 2022 Consultation, the Applicant identified that the BESPR was intersecting the Esso pipelines in a location that was heavily constrained. This is because the BESPR would be crossing Esso’s pipelines at Winters Hill road meaning the Esso pipelines would be deeper than would usually be required in order to cross this road. To ensure that sufficient buffers are implemented from the

Esso infrastructure in line with relevant guidance, regulations and engagement with Esso, the Applicant’s pipeline would therefore need to be constructed at an even deeper depth. Additionally, there is a watercourse upstream of the River Hamble and a Roman Road in this area that would constrain construction activities. As a result, an alternative route was identified within the western section of Section K. This alternative route intersects the Esso pipelines in open agricultural land and which means there is less potential for construction restrictions as it is in a less constrained area. Graphic 5-28 shows the two pipeline routes.



Graphic 5-28: Section K pipeline options at Winters Hill

5.9.6 Table 5-10 sets out the evaluation outcomes for the BESPR and alternative route.

Table 5-10: Section K Wintershill Road crossing evaluation outcomes

Topic	BESPR	Alternative
Air quality	<ul style="list-style-type: none"> Human receptors in close proximity to construction work and haul routes may be subject to adverse air quality impacts. 	
Biodiversity	<ul style="list-style-type: none"> Intersects the Upper Hamble River which is hydraulically connected to the Solent and Southampton Water SPA and Ramsar and the Solent Maritime SAC. 	<ul style="list-style-type: none"> Intersects a wet ditch connected to the Upper Hamble River which is hydraulically connected to the Solent and Southampton

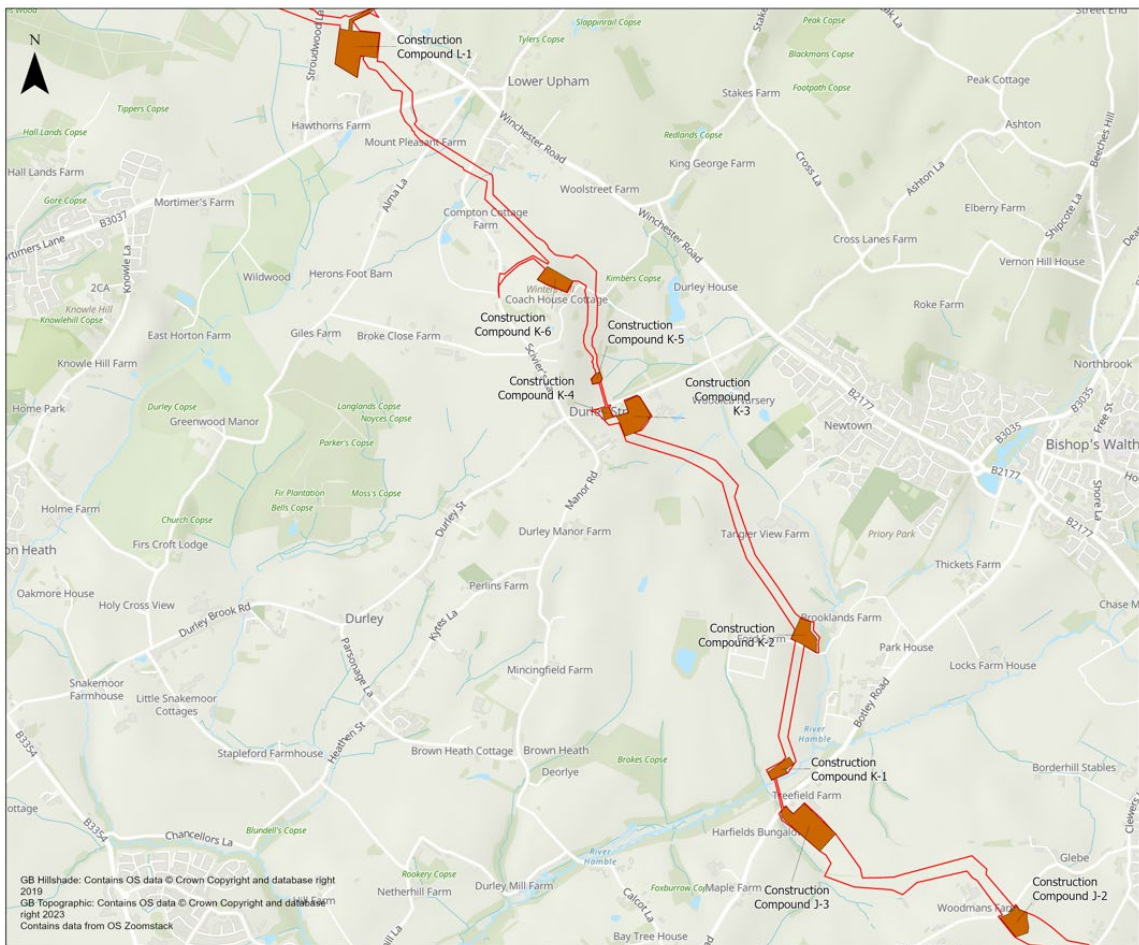
Topic	BESPR	Alternative
	<ul style="list-style-type: none"> Intersects priority habitats including deciduous woodland, floodplain grazing marsh and 13 hedgerows. Intersects Kimbers Copse SINC. 	<p>Water SPA and Ramsar and the Solent Maritime SAC.</p> <ul style="list-style-type: none"> Intersects four hedgerows, a wet ditch and parkland within Wintershill Park.
Carbon	<ul style="list-style-type: none"> Temporary contribution to emissions associated with construction activities. 	
Geology and soils	<ul style="list-style-type: none"> No adverse impacts identified. 	
Historic environment	<ul style="list-style-type: none"> Within the northern extent of Bishop's Waltham historic deer park (non-designated heritage asset) and Wintershill Park (locally designated park and garden). Interfaces with the alignment of a Roman road where there is potential for archaeological remains. 	<ul style="list-style-type: none"> Within the northern extent of Bishop's Waltham historic deer park (non-designated heritage asset) and Wintershill Park (locally designated park and garden). Interfaces with remnants of a medieval or later field system in the form of cropmarks and earthworks.
Interface with other development	<ul style="list-style-type: none"> The pipeline route intersects with the Esso Southampton to London Pipeline Project. 	
Landscape and visual	<ul style="list-style-type: none"> A short section is within parkland associated with Wintershill Hall Park (locally designated park and garden). Potential to impact the landscape character of the Durley Claylands LCA area. Potential for impacts to landscape character (landcover, pattern and scale and visibility). Within 70m of residential properties on Wintershill Road, Manor Road and Scivier's Lane. Potential for impacts to national trails including Pilgrims Trail and Allan King Way. Temporary scarring effects as a result of vegetation loss / replanting. 	<ul style="list-style-type: none"> Within parkland associated with Wintershill Hall Park (locally designated park and garden). Potential to impact the landscape character of the Durley Claylands LCA area. Potential for impacts to landscape character (landcover, pattern and scale and visibility). Within 70m of residential properties on Wintershill Road, Manor Road and Scivier's Lane. Temporary scarring effects as a result of vegetation loss / replanting.

Topic	BESPR	Alternative
Noise and vibration	<ul style="list-style-type: none"> The closest residential properties are 70m away and they may be subject to adverse noise and vibration impacts. Potential for impacts to those along haul routes. 	
Resource and waste	<ul style="list-style-type: none"> Waste will be generated during construction. The route is within a Brick Clay MCA. 	
Socio-economics	<ul style="list-style-type: none"> Potential for impacts to nearby residential and commercial properties due to disruption to Wintershill Road. Potential for amenity impacts to users of the Pilgrims Trail and Allan King Way national trails and two other footpaths. 	<ul style="list-style-type: none"> Potential for impacts to nearby residential and commercial properties due to disruption to Wintershill Road. Potential for amenity impacts to users of three local footpaths which are intersected.
Special category land	<ul style="list-style-type: none"> No adverse impacts identified. 	
Traffic and transport	<ul style="list-style-type: none"> Potential to impact road users of Wintershill Road which is intersected. 	
Water quality, resource and flood risk	<ul style="list-style-type: none"> No adverse impacts identified. The options do not interface with any areas of flood zone 2 or 3. 	

- 5.9.7 The alternative route would reduce impact on biodiversity and nature conservation as this route does not directly cross the Upper Hamble River which is functionally linked to an SPA, Ramsar and an SAC, however it does cross a wet ditch which is connected to the Upper Hamble. When considering alternatives in the context of the NPSWRI and the Habitats Regulations, the alternative route is preferred. Additionally, the alternative route does not intersect the Kimbers Copse SINC and crosses fewer priority habitats, however, the weight given to these in the NPSWRI is not as great as considerations for the Upper Hamble and its functional links.
- 5.9.8 The alternative route intersects the non-designated park and garden at Wintershill Hall to a greater extent than the BESPR and therefore poses a greater impact as construction of the pipeline could adversely affect landscape character, heritage significance and also parkland habitat. There is potential for the alternative route to adversely affect the parkland at Wintershill Hall as a result of the loss or impact to mature trees, however it is anticipated that the pipeline could be routed to avoid loss of trees and construction within root protection areas which would reduce risks associated with this option.
- 5.9.9 As a result of the constructability challenges associated with the BESPR's interface with the Esso pipelines and the greater consenting risk in relation to crossing the Upper Hamble River, the alternative route was progressed. This pipeline also meant that the pipeline was a greater distance from the Upper Hamble River and avoids intersecting with a Roman road.

Micro-siting

5.9.10 Graphic 5-29 shows the draft Order Limits in Section K.



Graphic 5-29: Section K draft Order Limits and construction compounds

- 5.9.11 As explained above, the preferred pipeline route in Section K passes through an area of parkland north of Winters Hill. Due to the potential for impacts to the landscape character, historic significance and parkland habitat, micro-siting has been undertaken to reduce impacts where practicable. The draft Order Limits avoid intersecting with the root protection areas of the trees within the parkland. Trenchless construction would also be used underneath Winters Hill and the line of trees at the southern boundary of the parkland. A reduced construction working width of 20 m would be used to cross the line of trees at the northern boundary of the parkland.
- 5.9.12 Trenchless construction of Botley Road (B3035) and the River Hamble has been proposed to limit impacts on the road, the watercourse and surrounding vegetation. The trenchless crossing and location of construction compounds have also been designed to avoid flood risk zones and floodplain habitat associated with the River Hamble as far as possible.
- 5.9.13 Construction compounds were located in the following locations:
- Construction Compound K-1: Located north of the River Hamble to support the trenchless crossing of the River Hamble and Botley Road (B3035). The

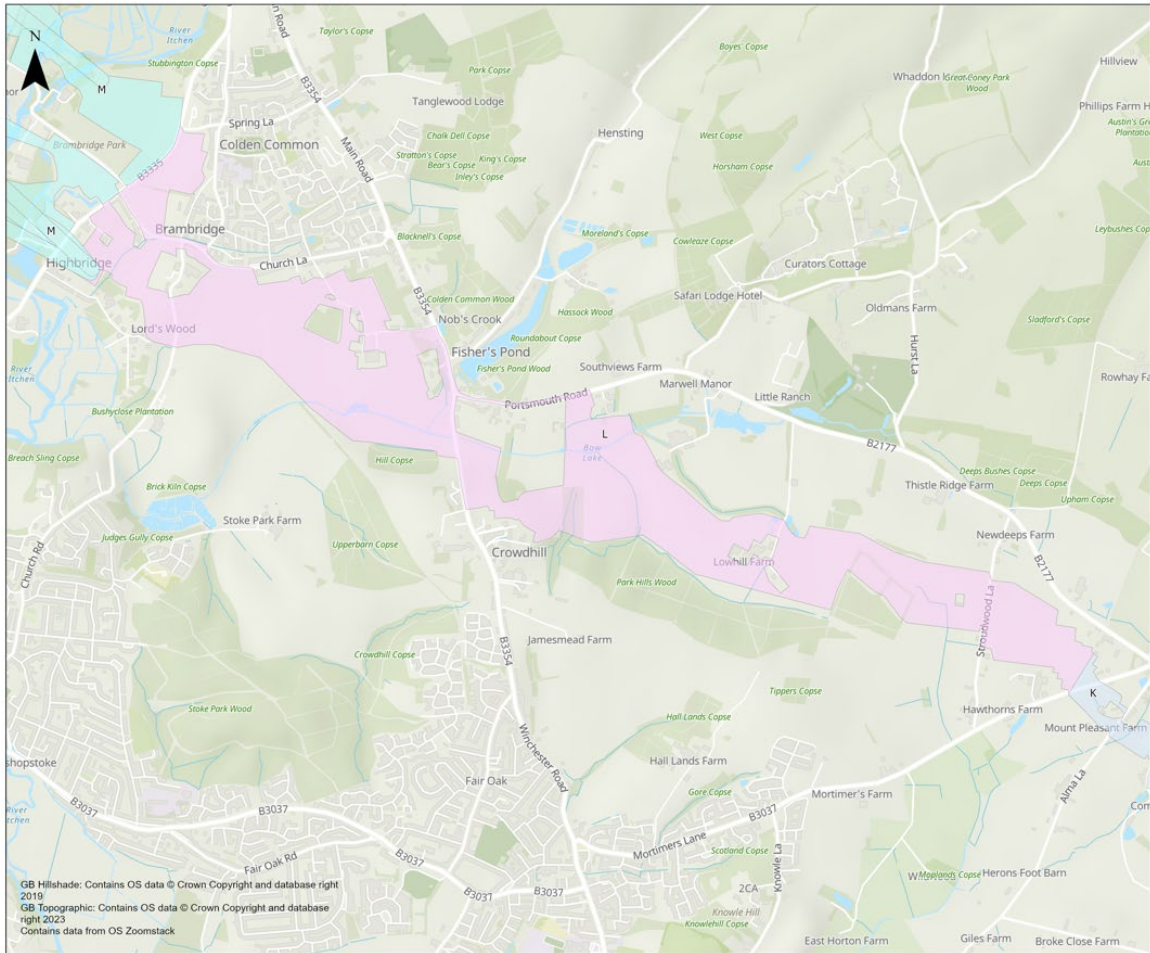
construction compound on the southern side of the River Hamble and Botley Road (B3035) is located in Section J. The south edge of this construction compound was located in flood zones 2 and 3 associated with the River Hamble. This was due to existing vegetation and overhead electricity cables would prevent moving the construction compound further north.

- Construction Compound K-2: Located east of Brooklands Farm to support construction of the pipeline in Section K.
- Construction Compound K-3: Located south of Winters Hill to support construction of the pipeline in Section K.
- Construction Compound K-4: Located south of Winters Hill to support the trenchless crossing of Winters Hill.
- Construction Compound K-5: Located north of Winters Hill to support the trenchless crossing of Winters Hill.
- Construction Compound K-6: Located east of Scivier's Lane to support the construction of BPT-K and the pipeline in Section K.

5.10 Section L

Summer 2022 Consultation

- 5.10.1 Section L continues from Section K and passes north of Fair Oak and Horton Heath, through Fisher's Pond and south of Colden Common. At the Summer 2022 Consultation two options were presented at Fisher's Pond. The northern option routed along Portsmouth Road (B2177) whereas the southern option was located in agricultural land and was in close proximity of the Park Pale at Marwell Scheduled Monument.
- 5.10.2 Graphic 5-30 shows Section L of the Project as presented at the Summer 2022 Consultation.



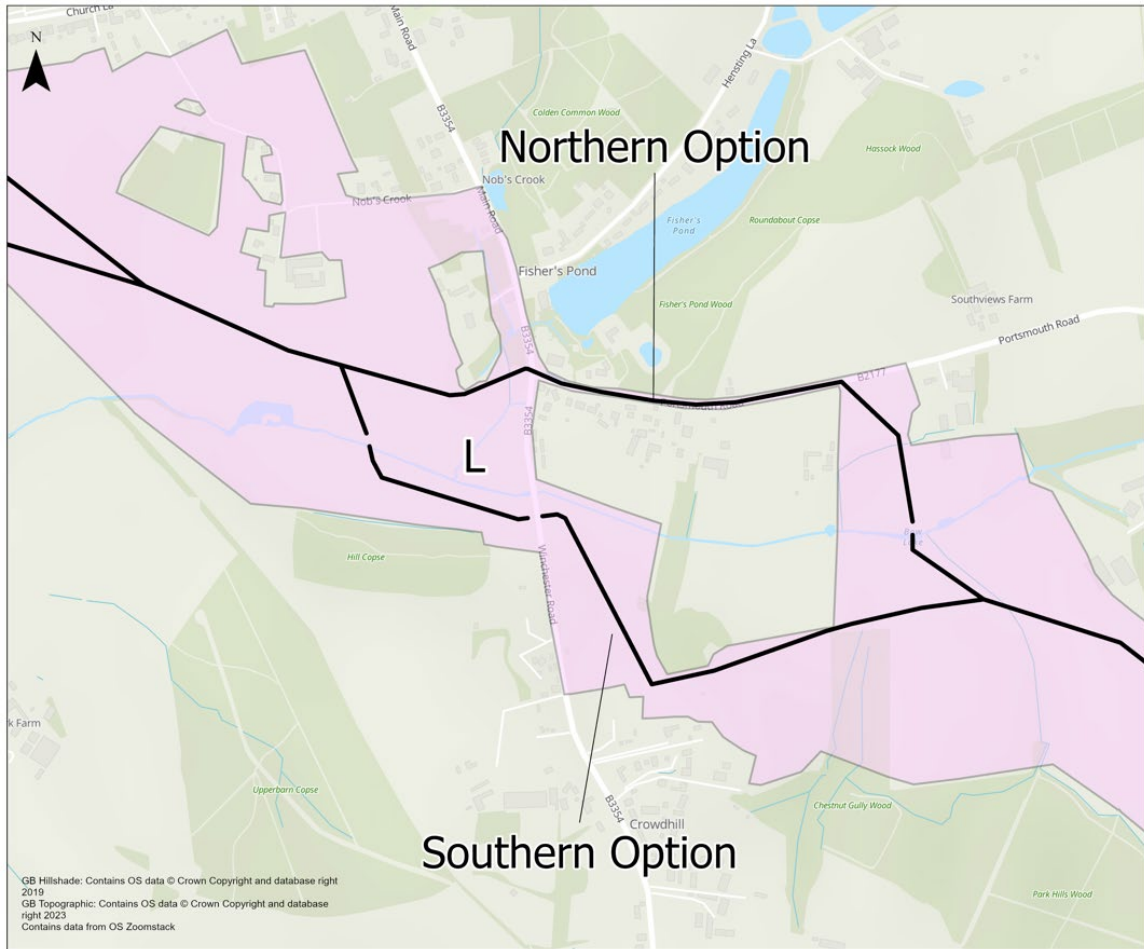
Graphic 5-30: Section L as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

Fisher's Pond

5.10.3 At the Summer 2022 Consultation, two options were presented at Fisher's Pond as explained above. Two options were presented so that a route could be selected considering consultation feedback and further surveys and investigations. The two options presented are shown in Graphic 5-31 and comprise the following:

- **Northern Option:** The northern option crosses the Bow Lake watercourse and then routes along Portsmouth Road (B2177) before crossing the junction between Portsmouth Road (B2177) and Winchester Road (B3354).
- **Southern Option:** The southern option routes to the north of Crowdhill and is located west of the Park Pale at Marwell Scheduled Monument before crossing Winchester Road (B3354). West of Winchester Road (B3354) the option crosses the Bow Lake watercourse.



Graphic 5-31: Section L pipeline options at Fisher's Pond

5.10.4 Table 5-11 sets out the evaluation outcomes for the northern option and the southern option.

Table 5-11: Section L Fisher's Pond evaluation outcomes

Topic	Northern option	Southern option
Air quality	<ul style="list-style-type: none"> Closest residential properties are located approximately 15m away along Portsmouth Road which may be subject to adverse air quality impacts. 	<ul style="list-style-type: none"> Closest residential properties are located approximately 80m away along Winchester Road which may be subject to adverse air quality impacts.
Biodiversity	<ul style="list-style-type: none"> Intersects Bow Lake which is connected to and upstream of the River Itchen SAC and SSSI. Potential for impacts to habitats of principal importance as the route intersects improved grassland, lowland meadow and hedgerow habitats. 	<ul style="list-style-type: none"> Intersects Bow Lake which is connected to and upstream of the River Itchen SAC and SSSI. Potential for impacts to habitats of principal importance as the route intersects improved grassland, lowland meadow and hedgerow habitats.

Topic	Northern option	Southern option
	<ul style="list-style-type: none"> • Within 10m of Fisher’s Pond Wood (ancient woodland), semi-natural Woodland and a SINC. • Potential for impacts to habitats that may support protected species. 	<ul style="list-style-type: none"> • Within 10m of ancient woodland and semi-natural Woodland. • Intersects Fielders Farm Meadows (Eastleigh) SINC and is in close proximity to The Mount, Fair Oak and Horton Heath SINC and Chestnut Gully Wood SINC. • Potential for impacts to habitats that may support protected species.
Carbon	<ul style="list-style-type: none"> • Temporary contribution to emissions associated with construction activities. 	
Geology and soils	<ul style="list-style-type: none"> • There are land uses with potential for contaminants in proximity to the route including a maintenance garage, recycling / scrap yard and a business park. Construction within this area could expose contaminants and therefore suitable mitigation would be employed. 	<ul style="list-style-type: none"> • There are land uses with potential for contaminants along a stretch of the route associated with a historic landfill and an embankment which the route intersects. Construction within this area could expose contaminants and therefore suitable mitigation would be employed.
Historic environment	<ul style="list-style-type: none"> • Approximately 135m west of the Park Pale at Marwell, 400m west of Marwell Manor Scheduled Monument and 140m north of the Park Pale at Marwell, south of Fisher’s Pond Scheduled Monument (at its closest point, the pipeline route is approximately 140m north of this Scheduled Monument, but visibility of the asset is not available from this location whereas direct visibility is provided from the east). • Archival research has identified that the route crosses a medieval fishpond within Marwell Park. As a result of the association with the deer park and nearby scheduled assets, the 	<ul style="list-style-type: none"> • Approximately 70m west of the Park Pale at Marwell, south of Fisher’s Pond Scheduled Monument. • Stakeholder engagement has identified a medieval fishpond ‘Eleven Acre Pond’ which is intersected by the route and is associated with the nearby Scheduled Monument. This fishpond could be of national significance. • Intersects Winchester Road which is located on a raised causeway, which is believed to be a dam feature associated with the Eleven Acre pond and may be of national significance. • Within Marwell historic deer park, a locally designated asset.

Topic	Northern option	Southern option
	<p>medieval fishpond could be of national significance.</p> <ul style="list-style-type: none"> • Within Marwell historic deer park, a locally designated asset. • Intersects a post-medieval drainage system at Bow Lake which is visible as earthworks. 	<ul style="list-style-type: none"> • Intersects a post-medieval drainage system at Bow Lake (visible as earthworks) and a cropmark of a medieval or later field boundary.
Interface with other development	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Landscape and visual	<ul style="list-style-type: none"> • Within 10m of Fishers Pond Wood ancient woodland. Micro-siting to avoid this is challenged by physical constraints (residential properties and overhead cables). • Potential to impact the landscape character of the Fair oak Wooded Farmland LCA area. • Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility). • The closest residential properties are 15m away. • The Fair Oak and Horton Heath 27/1 footpath is crossed via trenchless construction methods (no impacts anticipated). • Temporary scarring effects as a result of vegetation loss / replanting. 	<ul style="list-style-type: none"> • Within 10m of ancient woodland / semi-natural woodland and 45m from Hill Copse ancient woodland. • Potential to impact the landscape character of the Fair oak Wooded Farmland LCA area. • Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility). • The closest residential properties are approximately 80 m away on Winchester Road. • The Fair Oak and Horton Heath 27/1 footpath is crossed via open-cut construction methods (potential for amenity impacts). • Temporary scarring effects as a result of vegetation loss / replanting.
Noise and vibration	<ul style="list-style-type: none"> • There are approximately 10 residential properties along Portsmouth Road within 15m of the route which may be subject to adverse noise and vibration impacts. • Potential for impacts to those along haul routes. 	<ul style="list-style-type: none"> • There are residential properties 80 m away on Winchester Road and 120m away within Hillview Manor Park which may be subject to adverse noise and vibration impacts.

Topic	Northern option	Southern option
		<ul style="list-style-type: none"> Potential for impacts to those along haul routes.
Resource and waste	<ul style="list-style-type: none"> No adverse impacts identified. 	
Socio-economics	<ul style="list-style-type: none"> Construction along Portsmouth Road would restrict access and disrupt a number of residential and commercial properties on Portsmouth Road / village of Fisher's Pond. Commercial properties include a haulage company, equestrian facility, a pub and a fishery. The Fair Oak and Horton Heath 27/1 footpath is crossed via trenchless construction methods (no impacts anticipated). Potential for traffic disruption on the B2177 to affect access to Marwell Zoo and Resort which is considered to be a regional tourist attraction. 	<ul style="list-style-type: none"> Potential for amenity impacts to residential properties 80m away on Winchester Road and 120m away within Hillview Manor Park. Potential for amenity impacts to the Fair Oak and Horton Heath 27/1 footpath which is crossed via open-cut construction methods.
Special category land	<ul style="list-style-type: none"> No adverse impacts identified. 	
Traffic and transport	<ul style="list-style-type: none"> Impacts to road users of the B2177 and B3354 due to closure/diversion of roads. Potential for delays to pedestrians and cyclists from road and pathway closures. 	<ul style="list-style-type: none"> Impacts to users of footpath Horton Heath 27/1.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No adverse impacts identified. Both options intersect flood zones 2 and 3 as they cross the Bow Lake watercourse. 	

5.10.5 Both options are in proximity to ancient woodland. The northern option is within 10 m of ancient woodland at Fisher's Pond Wood as it runs along Portsmouth Road (B2177). The northern option would be constrained to the highway boundary of Portsmouth Road (B2177), and therefore there is no potential to implement buffers from the ancient woodland so that the pipeline is further away from it. The southern option was also at its closest within 10 m of ancient woodland north of Crowdhill. However, it was considered that at the micro-siting stage the southern option could be developed further to ensure a 15 m buffer (in line with Natural England and Forestry Commission guidance) [14] could be implemented when defining the draft Order Limits (which was undertaken as set out in Section 5.10.13). The northern option could not be developed further to ensure a 15 m buffer could be

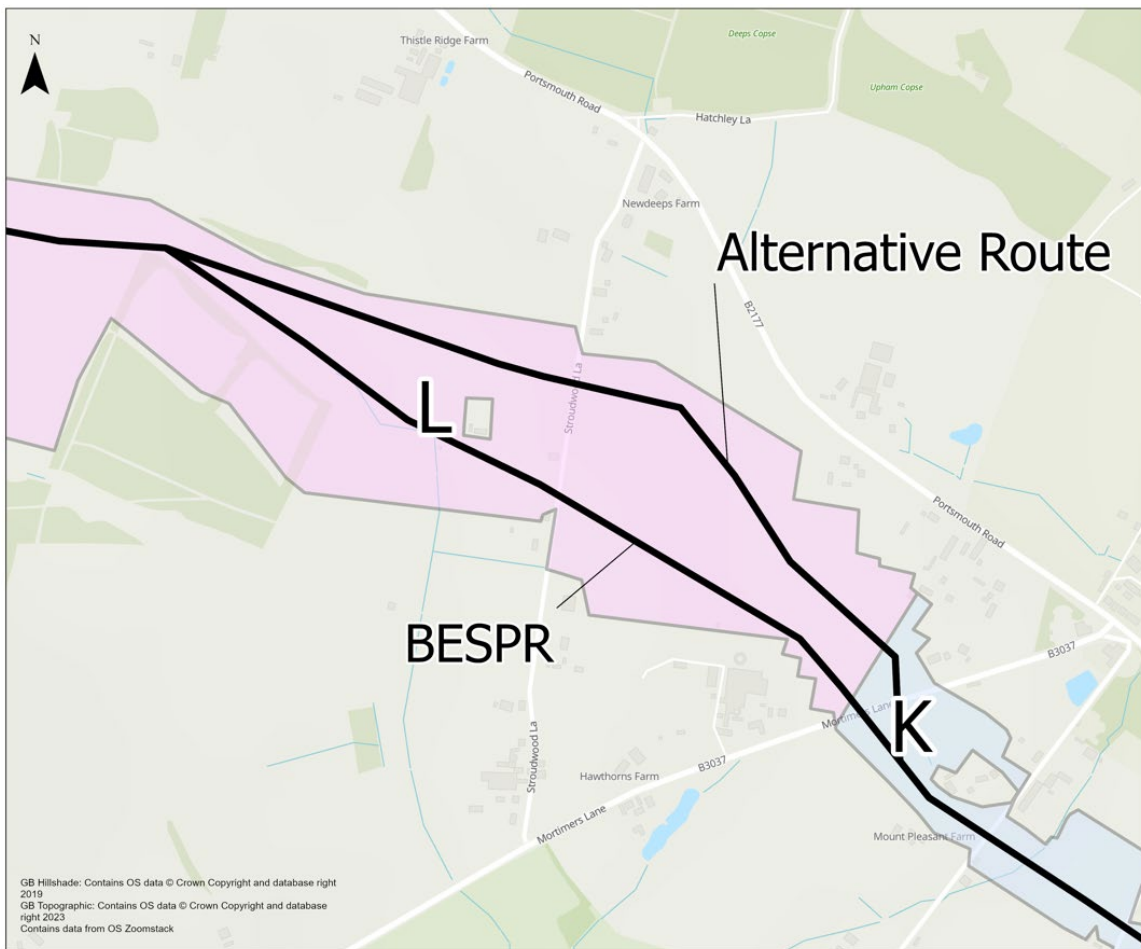
implemented as this route was restricted by the highway boundary. The southern option is also located within the Fielders Farm Meadows SINC, which is a local wildlife site located east of Winchester Road (B3354) where there may be habitat losses.

- 5.10.6 The northern option has a number of traffic and transport, landscape and visual, noise and vibration and socio-economic constraints due to its location within Portsmouth Road (B2177). Construction of the pipeline within Portsmouth Road (B2177) would require a temporary closure of this road and Winchester Road (B3354), which are key highway links in this area of Hampshire. There are also a number of residential properties located to the south and north of Portsmouth Road (B2177) which would be affected by noise and vibration, disruption of views and potentially temporary disruptions to properties. The southern option avoids these impacts as it is not located in the highway network and is a greater distance from residential properties so any impacts on residential receptors would likely be reduced compared to the northern option.
- 5.10.7 The evaluation identified the potential presence of a medieval fishpond complex in the area of both the southern and northern options. This medieval fishpond complex is associated with the Marwell Park, the Marwell Manor Scheduled Monument and the Park Pale at Marwell Scheduled Monument. It is understood that the fishpond complex would have been fed by the Bow Lake watercourse. Stakeholder engagement has identified this fishpond complex as 'Eleven Acre Pond', which is a non-designated asset that may potentially be of equivalent significance to a Scheduled Monument. It is understood that the Park Pale at Marwell Scheduled Monument and Winchester Road (B3354) are located on the site of the former pond dams. The southern option intersects the Winchester Road (B3354) dam and therefore is considered to have a greater potential for harm without mitigation on the Eleven Acre Pond when compared to the northern option. At this stage it was anticipated that micro-siting could be undertaken to ensure the trenchless crossing of Winchester Road (B3354) passed at a suitable depth below the dam feature so that the potential risk for impacts on the asset are reduced. Further assessment of the potential impacts and identification of suitable mitigation is required as part of the ongoing environmental assessments, as well as engagement with the relevant regulator.
- 5.10.8 Both options intersect with areas of flood zone 2 and 3. The southern option has a greater intersection with these high risk flood zones when it runs parallel to the Bow Lake watercourse to the east and west of Winchester Road (B3354). The northern option crosses the Bow Lake watercourse at a near perpendicular angle and therefore has less intersection with high risk flood zones.
- 5.10.9 The southern option was progressed as it avoids locating the pipeline within Portsmouth Road (B2177) which would be required for the northern option. It is considered that micro-siting could be undertaken to reduce potential impacts on the southern option, which included minimising the risk of harm to a historic asset which could be of national significance through the design of a trenchless crossing and ensuring a 15 m buffer from ancient woodland was built into the draft Order Limits. The southern option has a greater interface with flood zone 2 and 3, however this option presents greater opportunity for mitigating environmental

effects and technical constraints compared to the northern option. Section 5.10.16 sets out how construction compounds were located considering flood risk.

West of Stroudwood Lane

5.10.10 Feedback received following the Summer 2022 Consultation highlighted that the BESPR passed through land that is used as a garden in an area west of Stroudwood Lane. Throughout the site selection process, the Applicant has aimed to avoid locating infrastructure in close proximity to residential properties, wherever practicable. As a result of the potential for impacts to residential land, the Applicant considered whether there were alternative routes in this area. Graphic 5-32 shows the BESPR and alternative route that was identified further north in the pipeline section.



Graphic 5-32: Section L pipeline options west of Stroudwood Lane

5.10.11 Table 5-12 sets out the evaluation outcomes for the BESPR and alternative route.

Table 5-12: Section L west of Stroudwood Lane evaluation outcomes

Topic	BESPR	Alternative
Air quality	<ul style="list-style-type: none"> Human receptors in close proximity to construction work and haul routes may be subject to adverse air quality impacts. 	

Topic	BESPR	Alternative
Biodiversity	<ul style="list-style-type: none"> • Intersects lowland deciduous woodland priority habitat, 11 hedgerows, tree lines and woodland. • Within 15m of another lowland deciduous woodland priority habitat. • Potential for impacts to habitats that may support protected species including bats, badgers and other nesting birds. 	<ul style="list-style-type: none"> • Intersects lowland deciduous woodland priority habitat, nine hedgerows, tree lines and woodland. • Potential for impacts to habitats that may support protected species including bats, badgers and other nesting birds.
Carbon	<ul style="list-style-type: none"> • Temporary contribution to emissions associated with construction activities. 	
Geology and soils	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Historic environment	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Interface with other development	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Landscape and visual	<ul style="list-style-type: none"> • Approximately 310m from the South Downs National Park. • Areas of ancient woodland are within 180m of the route and there are tree corridors connected to the ancient woodland close to construction areas. • Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility given proximity to a pre-school and presence of open fields). • Potential for visual amenity impacts: <ul style="list-style-type: none"> - Village Pre-School on Mortimers Lane circa 15m away. - Businesses along Stroudwood Lane (crossing the route). - Residencies and businesses which are 	<ul style="list-style-type: none"> • Approximately 215m from the South Downs National Park. • Areas of ancient woodland are within 280m of the route and there are tree corridors connected to the ancient woodland close to construction areas. • Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility given proximity to a pre-school and presence of open fields). • Potential for visual amenity impacts: <ul style="list-style-type: none"> - Village Pre-School on Mortimers Lane circa 100m away. - Businesses along Stroudwood Lane (crossing the route). - Residencies and businesses which are

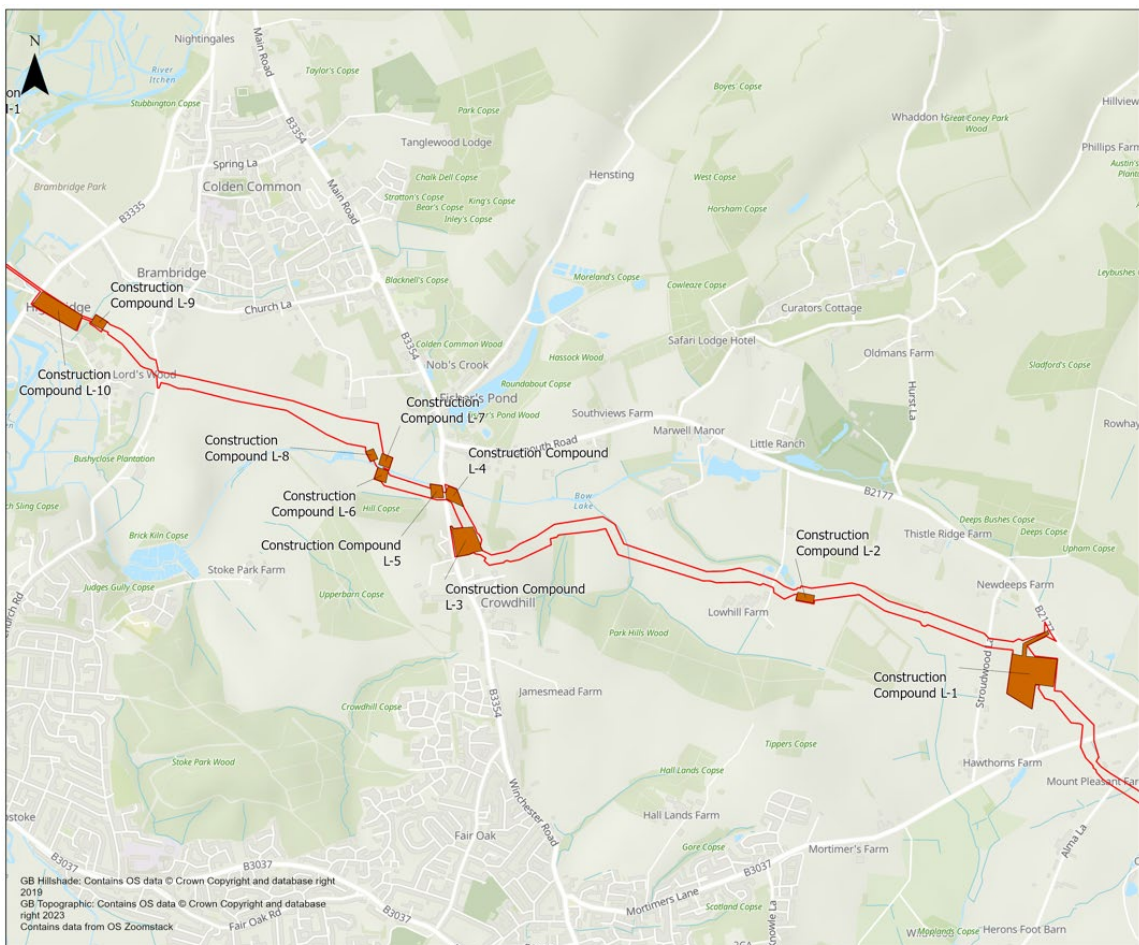
Topic	BESPR	Alternative
	<p>30m away at their closest.</p> <ul style="list-style-type: none"> - Other scattered residencies and businesses. • Intersects footpath Fair Oak and Horton Heath 23/1. • Temporary scarring effects as a result of vegetation loss / replanting. 	<p>50m away at their closest.</p> <ul style="list-style-type: none"> • Other scattered residencies and businesses. • Intersects footpath Fair Oak and Horton Heath 23/1. • Temporary scarring effects as a result of vegetation loss / replanting.
Noise and vibration	<ul style="list-style-type: none"> • The closest residential property is 30m away and there are further dwellings within 50m which may be subject to adverse noise and vibration impacts. • Potential for impacts to those along haul routes. 	<ul style="list-style-type: none"> • The closest residential properties are 50m away and there are further dwellings and commercial units within 80m which may be subject to adverse noise and vibration impacts. • Potential for impacts to those along haul routes.
Resource and waste	<ul style="list-style-type: none"> • Waste will be generated during construction. • The route is within a Brick Clay MCA. 	
Socio-economics	<ul style="list-style-type: none"> • Potential for impacts to a residential dwelling 30m from the route on Stroudwood Lane and other residencies around the route. • Potential for impacts to local amenities including a local garden centre and Upham Village Hall. • Potential for amenity impacts to users of footpath Fair Oak and Horton Heath 23/1. 	<ul style="list-style-type: none"> • Potential for impacts to residential dwellings 50m from the route on Stroudwood Lane and other residencies around the route. • Potential for impacts to local amenities including a local garden centre and Upham Village Hall. • Potential for amenity impacts to users of footpath Fair Oak and Horton Heath 23/1.
Special category land	No adverse impacts identified.	
Traffic and transport	<ul style="list-style-type: none"> • Potential to impact road users of Stroudwood Lane and Mortimers Lane. • Potential to impact users of footpath Fair Oak and Horton Heath 23/1. 	
Water quality, resource and flood risk	<ul style="list-style-type: none"> • Potential for geomorphological impacts to an unnamed watercourse west of Stroudwood Lane 	<ul style="list-style-type: none"> • Potential for geomorphological impacts to an unnamed watercourse west of Stroudwood Lane

Topic	BESPR	Alternative
	<p>resulting from open-cut construction.</p> <ul style="list-style-type: none"> The option does not interface with any areas of flood zone 2 or 3. 	<p>resulting from open-cut construction.</p> <ul style="list-style-type: none"> Potential for impacts to a Secondary A bedrock aquifer that may be encroached by the route. The option does not interface with any areas of flood zone 2 or 3.

5.10.12 Similar constraints were identified for both options. The alternative route is further from the nearest residential properties, existing businesses, and community facilities. Therefore there is less potential for impacts relating to amenity, noise and vibration. The alternative route also intersects less areas of vegetation compared to the BESPR. The alternative route was therefore progressed.

Micro-siting

5.10.13 Graphic 5-33 shows the draft Order Limits in Section L.



Graphic 5-33: Section L draft Order Limits and construction compounds

- 5.10.14 At Fisher's Pond, the draft Order Limits were defined with a 15 m buffer from ancient woodland located north of Crowdhill. Trenchless construction of Winchester Road (B3354) and the Bow Lake watercourse have also been proposed.
- 5.10.15 The draft Order Limits pass north of Low Hill Farm. In this area, consideration was given to whether the pipeline could be located further to the north or south. A route to the south of Low Hill Farm was not progressed as this area is constrained by existing farm buildings, overhead power lines and ancient woodland at Park Hills Wood. Additionally, a route further to the north of Low Hill Farm was not progressed as this would intersect with dense vegetation and a watercourse upstream of the Bow Lake watercourse. This area is shown in Graphic 5-34.



Graphic 5-34: Section L draft Order Limits and construction compounds at Low Hill Farm

- 5.10.16 Construction compounds were located in the following locations:
- Construction Compound L-1: Located south west of Portsmouth Road (B2177) and north of Mortimers Lane (B3007) to support construction of the pipeline within Section L.

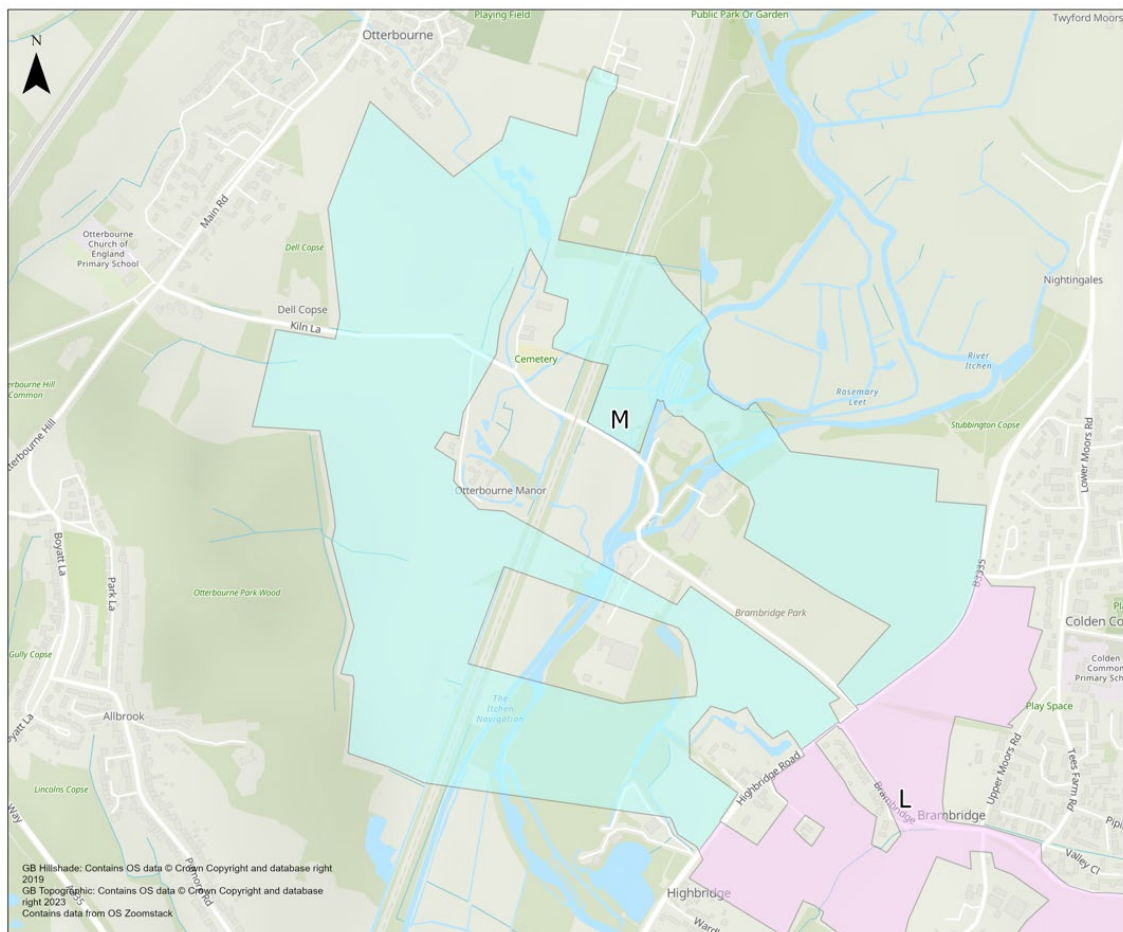
- Construction Compound L-2: Located east of Low Hill Farm for a water storage lagoon that will support the commissioning of the pipeline prior to the completion of construction.
- Construction Compound L-3: Located east of Winchester Road (B3354) to support construction of the pipeline within Section L. This construction compound was initially located further north, however it has been moved further south to reduce land taken within the Fielders Farm Meadows SINC and the medieval fishpond complex at Fisher's Pond.
- Construction Compound L-4: Located east of Winchester Road (B3354) to support trenchless crossing of this road. This construction compound is within flood zone 2 and 3. There are no other locations for this construction compound as the trenchless construction under Winchester Road (B3354) needs to be perpendicular to the highway and existing overhead power lines and the Bow Lake watercourse to the north and south further reduce the land available. The size of this construction compound was reduced and construction compound L-3 to offset for this reduction.
- Construction Compound L-5: Located west of Winchester Road (B3354) to support trenchless crossing of this road. The western and northern edges of construction compound is within flood zone 2 and 3. There are no other locations for this construction compound as the trenchless construction under Winchester Road (B3354) needs to be perpendicular to the highway and existing overhead power lines and the Bow Lake watercourse to the north and south further reduce the land available.
- Construction Compound L-6: Located south of the Bow Lake watercourse to support trenchless crossing of the watercourse. The southern half of the construction compound is located in flood zone 2 and 3. There are no other locations for this construction compound as the flood zone is bounded to the north by the Bow Lake watercourse and the south by ancient woodland. Moving the construction compound east or west would also not avoid the flood zone.
- Construction Compound L-7: Located north of the Bow Lake watercourse to support trenchless construction of the watercourse.
- Construction Compound L-8: Located north of the Bow Lake watercourse for a water storage lagoon that will support the commissioning of the pipeline prior to the completion of construction.
- Construction Compound L-9: Located east of a watercourse upstream of the River Itchen at Brambridge to support trenchless construction of this watercourse.
- Construction Compound L-10: Located east of Highbridge Road (B3335) to support trenchless crossing of a watercourse upstream of the River Itchen at Brambridge and support trenchless construction under the River Itchen. This construction compound was moved to the east of Highbridge Road (B3335) following engagement with Natural England and the Environment Agency as the initial location west of Highbridge Road (B3335) was within a marshy habitat that was considered to have ecological value and be an optimal habitat for reptiles. The construction compound is located partially within flood zone 2 and 3, which runs through a section of the construction compound. There are no

alternative undeveloped locations outside of flood zones on the east side of the River Itchen that would accommodate a crossing of the River Itchen within the chalk geology (see River Itchen route selection in Section 5.11.3).

5.11 Section M

Summer 2022 Consultation

- 5.11.1 Section M comprises the final section of the Pipeline between the WRP site and Otterbourne WSW and crosses the River Itchen. Two options for the crossing of the River Itchen were proposed due to the environmental sensitivity of the River Itchen, and the proximity to the South Downs National Park in this location.
- 5.11.2 Graphic 5-35 shows Section M of the Project as presented at the Summer 2022 Consultation.



Graphic 5-35: Section M as shown at the Summer 2022 Consultation

Design development following the Summer 2022 Consultation

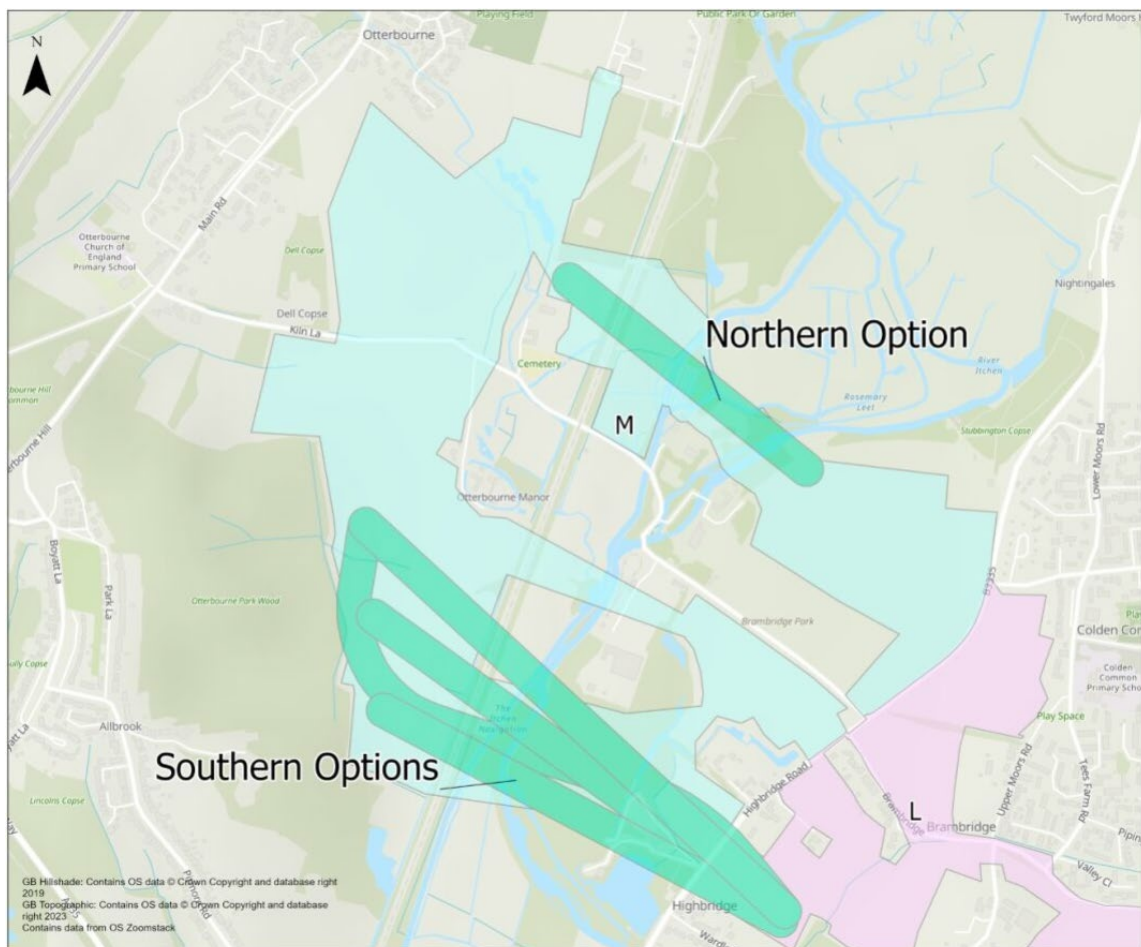
River Itchen Crossing

- 5.11.3 Following the Summer 2022 Consultation, further environmental surveys and engineering investigations were undertaken to support the site selection of an option for crossing the River Itchen. This also considered feedback from the

Summer 2022 Consultation, including from the South Downs National Park Authority who expressed preference for the southern route that was shown at the Summer 2022 Consultation. The two options for the River Itchen crossing were:

- **Northern option:** This option routed further north along the western side of Golden Common. The trenchless crossing of the River Itchen would be from Brambridge Park to north of Kiln Lane.
- **Southern option:** This option was located to the south and routed through Brambridge. The trenchless crossing of the River Itchen would be from east of Highbridge Road (B3335) to east of Otterbourne Park Wood. From here the pipeline route would continue north and cross Kiln Lane.

5.11.4 The northern and southern options are shown in Graphic 5-36.



Graphic 5-36: Section M pipeline options at the River Itchen

5.11.5 Table 5-13 sets out the evaluation outcomes for the northern and southern tunnel options. Where measurements are referenced for the southern option, these measurements were taken from the closest southern option to the relevant receptor.

Table 5-13: Section M River Itchen crossing evaluation outcomes

Topic	Northern option	Southern option
Air quality	<ul style="list-style-type: none"> Closest residential properties are located 180m away which may be subject to adverse air quality impacts. Human receptors along haul routes may be subject to adverse air quality impacts. 	
Biodiversity	<ul style="list-style-type: none"> The option is in proximity to the River Itchen SSSI and SAC with the tunnel route passing beneath it, the eastern shaft being circa 60m away and the western shaft being circa 300m away. Potential for impacts to the River Itchen SAC during construction. Potential for impacts to habitats and species (including otters) that are qualifying features of the River Itchen SAC and SSSI. Potential for impacts to groundwater during construction which may impact the River Itchen SSSI which is groundwater dependent. Potential impacts to priority habitats in proximity to the tunnel shafts. 	<ul style="list-style-type: none"> The option is in proximity to the River Itchen SSSI and SAC with the tunnel route passing beneath it, the eastern shaft being circa 190 m away and the western shaft being circa 200m away. Potential for impacts to the River Itchen SAC during construction. Potential for impacts to habitats and species that are qualifying features of the River Itchen SSSI. Potential for impacts to groundwater during construction that may impact the River Itchen SSSI which is groundwater dependent. Potential impacts to priority habitats in proximity to the tunnel shafts. Potential for the western tunnel shaft to indirectly impact ancient woodland 80m away at Otterbourne Park Wood.
Carbon	<ul style="list-style-type: none"> Temporary contribution to emissions associated with construction activities. 	
Geology and soils	<ul style="list-style-type: none"> The tunnel route would cross a railway that could expose contaminants and therefore suitable mitigation would be employed. 	<ul style="list-style-type: none"> The tunnel route would cross a railway, an infilled water channel and a historic landfill that could expose contaminants and therefore suitable mitigation would be employed.
Historic environment	<ul style="list-style-type: none"> The eastern tunnel shaft is within Brambridge Park (locally designated park and garden) which may contain 	<ul style="list-style-type: none"> The western tunnel shaft is at its closest circa 180m from the Otterbourne Manor Scheduled Monument and associated listed buildings.

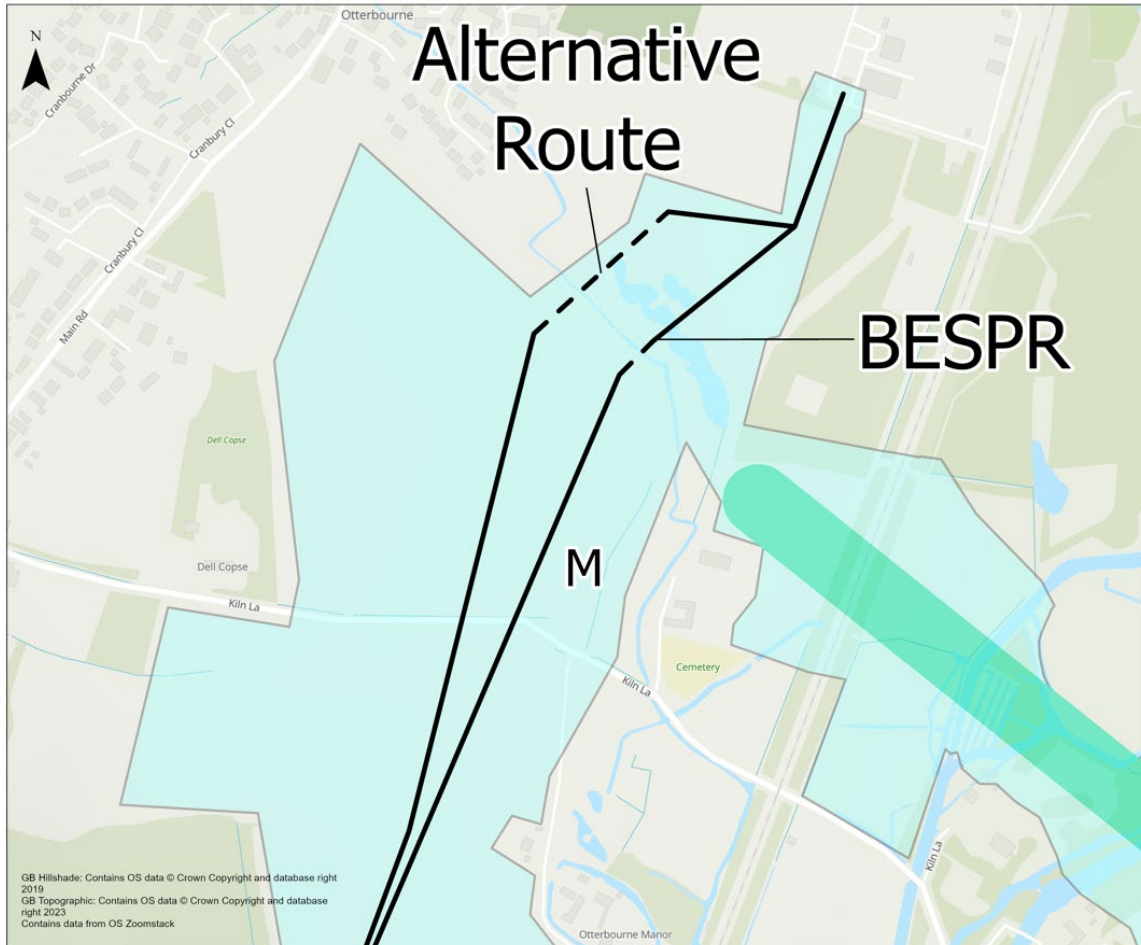
Topic	Northern option	Southern option
	associated archaeological remains.	<ul style="list-style-type: none"> The eastern tunnel shaft is within an area of Palaeolithic potential.
Interface with other development	<ul style="list-style-type: none"> No adverse impacts identified. 	
Landscape and visual	<ul style="list-style-type: none"> The eastern tunnel shaft is within the South Downs National Park. Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility) of the South Downs National Park during construction. Potential for amenity impacts to users of a footpath during construction. 	<ul style="list-style-type: none"> Potential for landcover impacts to the Winchester LCA area. Potential for tranquillity impacts to the Itchen Valley LCA area. Potential for indirect effects to ancient woodland 80 m from the western tunnel shaft. Potential for amenity impacts to users of a footpath during construction.
Noise and vibration	<ul style="list-style-type: none"> The closest residential properties are 180m away which may be subject to adverse noise and vibration impacts. Potential for noise impacts to those along haul routes. 	<ul style="list-style-type: none"> The closest residential properties are 180m away which may be subject to adverse noise impacts. Potential for noise impacts to those along haul routes.
Resource and waste	<ul style="list-style-type: none"> No adverse impacts identified. 	
Socio-economics	<ul style="list-style-type: none"> Potential for impacts to nearby residents and businesses 350m away on Kiln Lane and 380m away in Highbridge. 	<ul style="list-style-type: none"> Potential for impacts to residents the closest of which are 180m away at Otterbourne Manor.
Special category land	<ul style="list-style-type: none"> No adverse impacts identified. 	
Traffic and transport	<ul style="list-style-type: none"> No adverse impacts identified. 	
Water quality, resource and flood risk	<ul style="list-style-type: none"> Located within chalk bedrock which is a Principal Aquifer and a SPZ 1. During construction and operation there is potential for the tunnel and shafts to impact groundwater abstractions and the River Itchen which is groundwater dependent. 	<ul style="list-style-type: none"> No adverse impacts identified – the option is located within London Clay bedrock which has lower permeability. The construction compound on the eastern side of the River Itchen may be located in or near flood zone 2 and 3.

Topic	Northern option	Southern option
	<ul style="list-style-type: none"> The construction compound on the western side of the River Itchen may be located in or near flood zone 2 and 3. 	

- 5.11.6 Two significant constraints were identified for the northern option. First, the northern option is located within chalk geology which is a SPZ 1 and therefore trenchless construction on this route has the potential to disturb groundwater flows and groundwater quality that supports the River Itchen as well as the SAC and SSSI designations. The southern option was not located in chalk geology (or the associated SPZ 1) and therefore the risk to the River Itchen is reduced.
- 5.11.7 Secondly, the northern option passes through the South Downs National Park which is afforded the highest status of protection in relation to landscape and scenic beauty in the NPSWRI. Construction of the northern option has the potential to adversely impact on the special landscape quality of the national park. The southern option was not located in the South Downs National Park and therefore avoids the risk of direct impacts by developing in it.
- 5.11.8 As a result of the constraints identified on the northern option, the southern option was progressed. The southern option crosses an upstream tributary of the River Itchen which the northern option does not, and the site selection in relation to this is discussed in the following section.

Crossing of an upstream tributary of the River Itchen

- 5.11.9 The southern River Itchen crossing option crosses an upstream tributary of the River Itchen, which is considered to be environmentally and hydrologically linked to the River Itchen SAC and SSSI. The BESPR consisted of a trenchless crossing of this watercourse but construction works would still take place within flood zones 2 and 3 and floodplain habitat meaning the potential for impacts could remain. Due to the potential impacts to this watercourse and the designated sites in the River Itchen, an alternative route and trenchless crossing was identified. The alternative route proposed an extended trenchless crossing that spanned the watercourse, the flood zones and the floodplain habitats. The BESPR and the alternative are shown in Graphic 5-37.



Graphic 5-37: Section M pipeline options at River Itchen tributary crossing

5.11.10 Table 5-14 sets out the evaluation outcomes for the BESPR and alternative route.

Table 5-14: Section M River Itchen tributary crossing evaluation outcomes

Topic	BESPR	Alternative
Air Quality	<ul style="list-style-type: none"> Closest residential properties are located 80m away which may be subject to adverse air quality impacts. Human receptors along haul routes may be subject to adverse air quality impacts. 	<ul style="list-style-type: none"> Closest residential properties are located 100m away which may be subject to adverse air quality impacts. Human receptors along haul routes may be subject to adverse air quality impacts.
Biodiversity	<ul style="list-style-type: none"> The route and works to construct the trenchless crossing of the tributary would be located within floodplain grazing marsh priority habitat which could be functionally linked to the River Itchen SAC. There is potential for impacts during construction. 	<ul style="list-style-type: none"> No adverse impacts identified – the route crosses a tributary of the River Itchen and adjacent floodplain grazing marsh priority habitat via trenchless construction methods.

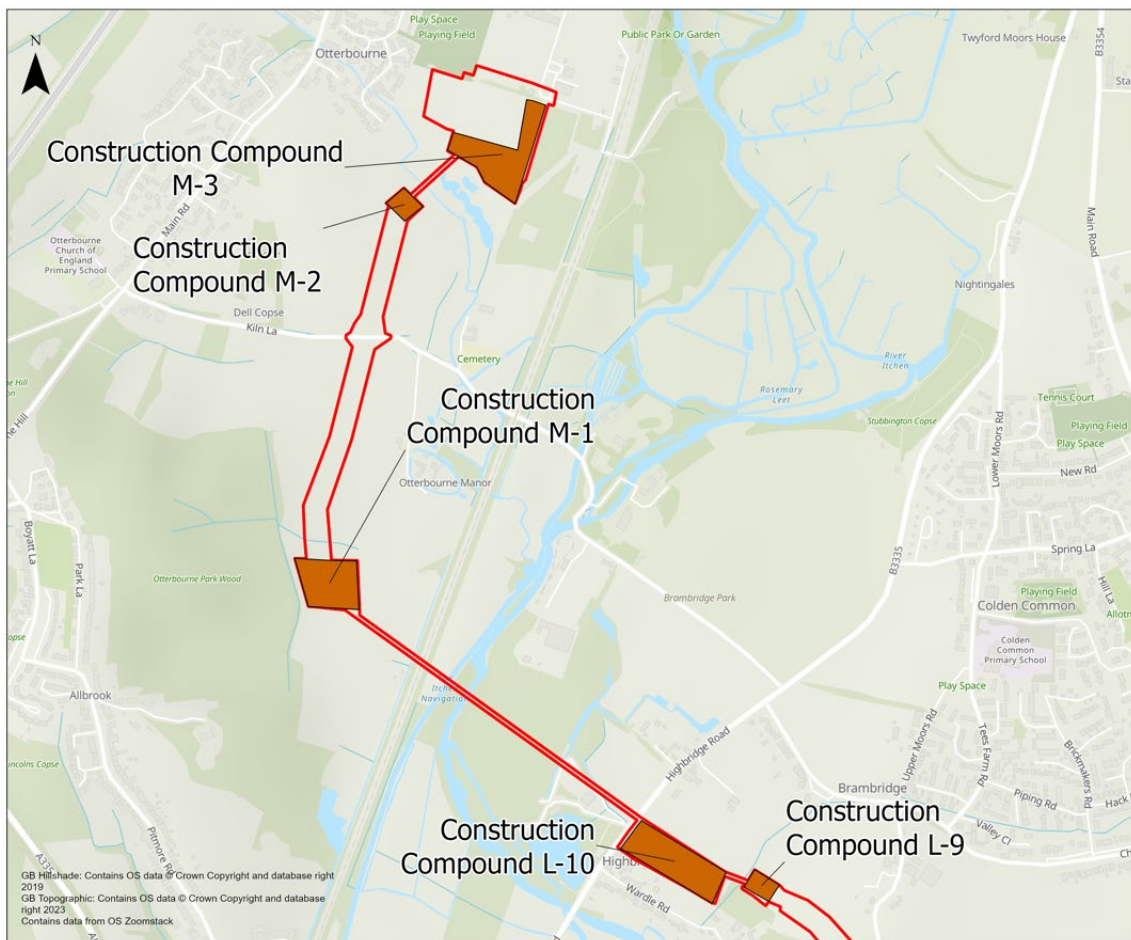
Topic	BESPR	Alternative
	<ul style="list-style-type: none"> Due to hydrological connectivity, there is potential for construction to indirectly impact sites and habitats which could include the River Itchen SAC / SSSI which is connected to the Solent and Dorset Coast SAC and Solent & Southampton Water SPA / Ramsar. 	
Carbon	<ul style="list-style-type: none"> Temporary contribution to emissions associated with construction activities. 	
Geology and soils	<ul style="list-style-type: none"> No adverse impacts identified. 	
Historic Environment	<ul style="list-style-type: none"> Approximately 150m from Otterbourne Manor Scheduled Monument. Within an area with palaeolithic potential which carries risks of known/unknown remains. 	
Interface with other development	<ul style="list-style-type: none"> No adverse impacts identified. 	
Landscape and visual	<ul style="list-style-type: none"> Approximately 300m from the South Downs National Park. Potential for construction to impact vegetation corridors connected to ancient woodland blocks within 80m to the north, west and south. Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility). Potential for impacts to a cemetery at Old St Matthew's Church circa 150m away. Potential for visual amenity impacts: <ul style="list-style-type: none"> Residencies which are 80m away at their closest at Otterbourne Manor and 235m away on Greenacres Drive. Footpaths that are intersected including 	<ul style="list-style-type: none"> Approximately 400m from the South Downs National Park. Potential for construction to impact vegetation corridors connected to ancient woodland blocks within 80m to the north, west and south. Potential for impacts to landscape character (landcover, tranquillity, pattern and scale and visibility). Potential for impacts to a cemetery at Old St Matthew's Church circa 150m away. Potential for visual amenity impacts: <ul style="list-style-type: none"> Residencies which are 100m away at their closest at Otterbourne Manor and 160m away on Greenacres Drive. Footpaths that are intersected including

Topic	BESPR	Alternative
	<p>Otterbourne 6/1 and Otterbourne 7/1.</p> <ul style="list-style-type: none"> • Temporary scarring effects as a result of vegetation loss / replanting. 	<p>Otterbourne 6/1 and Otterbourne 7/1.</p> <ul style="list-style-type: none"> • Temporary scarring effects as a result of vegetation loss / replanting.
Noise and vibration	<ul style="list-style-type: none"> • The closest residential properties are 80m away and there are commercial properties within 125m which may be subject to adverse noise and vibration impacts. • Potential for impacts to those along haul routes. 	<ul style="list-style-type: none"> • The closest residential properties are 100m away and there are commercial properties within 205m which may be subject to adverse noise and vibration impacts. • Potential for impacts to those along haul routes.
Resource and waste	<ul style="list-style-type: none"> • Waste will be generated during construction. • The route is within a Brick Clay MCA. 	
Socio-economics	<ul style="list-style-type: none"> • Potential for impacts to residential properties 80 m away at Otterbourne Manor and 235m away at Greenacres Drive. • Potential for impacts to local businesses including a solar farm (Southern Water asset adjacent to the route) and Hensting Alpacas due to impacts to Kiln Lane. • Potential for amenity impacts to users of footpaths Otterbourne 6/1 and Otterbourne 7/1. 	<ul style="list-style-type: none"> • Potential for impacts to residential properties 100 m away at Otterbourne Manor and 160m away at Greenacres Drive. • Potential for impacts to local businesses including a solar farm (Southern Water asset adjacent to the route) and Hensting Alpacas due to impacts to Kiln Lane. • Potential for amenity impacts to users of footpaths Otterbourne 6/1 and Otterbourne 7/1.
Special category land	<ul style="list-style-type: none"> • No adverse impacts identified. 	
Traffic and transport	<ul style="list-style-type: none"> • Potential to impact road users of Kiln Lane. • Potential to impact users of footpaths Otterbourne 6/1 and Otterbourne 7/1. 	
Water quality, resource and flood risk	<ul style="list-style-type: none"> • Construction activities may impact the River Itchen through sediment, contaminant, geomorphology and/or hydrology changes. • The route is mapped on Secondary Aquifers and is within the Central Hants Lambeth Group WFD Groundwater Body. • The route is located within the River Itchen (SSSI and SAC) catchment, a Sensitive Catchment under the Urban Waste Water Treatment Directive. • Intersects an area with high probability of surface water flooding. 	

5.11.11 The evaluation identified that the alternative route and the BESPR had similar constraints, however the alternative route was preferred in the biodiversity and nature conservation evaluation as a result of the reduced impact on the upstream tributary of the River Itchen and the River Itchen SSSI and SAC. In addition, the alternative is further from the South Downs National Park and residential properties. The alternative design would also ensure that construction works would be located outside of flood zones 2 and 3 which are intersected by the BESPR. As a result the alternative route was progressed.

Micro-siting

5.11.12 Graphic 5-38 shows the draft Order Limits in Section L.



Graphic 5-38: Section M draft Order Limits and construction compounds

5.11.13 The construction compound on the western side the River Itchen has been located east of Otterbourne Park Wood. A 15 m buffer from the ancient woodland at Otterbourne Park Wood has been implemented in line with Natural England and Forestry Commission Guidance.

5.11.14 At the crossing of Kiln Lane, the draft Order Limits were widened as this road is flanked by lines of trees, and further surveys will be undertaken prior to construction to determine the most appropriate crossing point. A reduced working width of 20 m would be used when crossing Kiln Lane and the lines of trees to the north and south of the road.

5.11.15 Construction compounds were located in the following locations:

- Construction Compound M-1: Located east of Otterbourne Park Wood to support trenchless crossing of the River Itchen.
- Construction Compound M-2: Located north of Kiln Lane and south of an upstream tributary of the River Itchen to support the trenchless crossing of this watercourse.
- Construction Compound M-3: Located south of Otterbourne WSW and north of an upstream tributary of the River Itchen to support the trenchless crossing of this watercourse and the interface of the Project with Otterbourne WSW.

5.12 Above ground plant site selection

Updates following the Summer 2022 Consultation

- 5.12.1 As explained in Section 5.1, as the development of the Pipeline between the WRP site and Otterbourne WSW was undertaken, the hydraulic profile was reviewed to identify whether any changes to the configuration of the AGP was necessary. This also considered the changes to the diameter, transfer time and transfer volume of the pipeline that occurred following the Summer 2022 Consultation. During a severe drought, 90 (MI/d of water would be transferred from Havant Thicket Reservoir to Otterbourne WSW, however outside of severe drought conditions, a smaller ‘sweetening flow’ would be required to ensure that the infrastructure remains in working order.
- 5.12.2 At the Summer 2022 Consultation, it was proposed that the Pipeline between the WRP and Otterbourne WSW would be 1200 millimetres (mm) (1.2 m) in diameter and transfer a sweetening flow of 7.5MI/d. However, this relatively low transfer volume within a relatively large diameter pipeline would lead to a transfer time of approximately 6 days. It was confirmed with the Drinking Water Inspectorate that 24 hours was the maximum allowable transfer time to ensure water quality did not deteriorate within the pipeline. Therefore, at this stage, the diameter of the Pipeline between the WRP site and Otterbourne WSW was reduced to 800 mm with an increased sweetening flow of 20MI/d to achieve this requirement.
- 5.12.3 These changes to the pipeline diameter and transfer volume had an impact on the hydraulic profile of the pipeline, and therefore the number of AGP required to support the flow of water within the pipeline. Further hydraulic review was undertaken and further AGP were identified in addition to those presented at the Summer 2022 Consultation. Table 5-15 sets out the AGP that were presented at the Summer 2022 Consultation and the additional AGP that were identified following the Summer 2022 Consultation.

Table 5-15: AGP presented at the Summer 2022 Consultation and additional AGP identified following the Summer 2022 Consultation

AGP	Location
AGP presented at the Summer 2022 Consultation	
Break Pressure Tank 1	North of Portsdown Hill and east of New Down Lane.

AGP	Location
Intermediate Pumping Station 3	North-west of Titchfield Lane and south west of Winchester Road (A334).
Intermediate Pumping Station 4	South-east of Titchfield Lane and south of Wickham Park Golf Club.
Break Pressure Tank 4	North of Durley Street and East of Scivier's Lane.
Additional AGP identified following the Summer 2022 Consultation	
Intermediate Pumping Station A	North of Portsdown Hill and east of New Down Lane. Note: The Applicant identified the need for an additional IPS (Intermediate Pumping Station A) at the same site as Break Pressure Tank 1 following the Summer 2022 Consultation. Depending on the final hydraulic design of the Pipeline between the WRP site and Otterbourne WSW, this site could comprise only a BPT, or a combined BPT and IPS.
Intermediate Pumping Station B	East of Wickham Road (A32) and west of the River Wallington.

Above Ground Plant being progressed and naming updates

- 5.12.4 As a result of the pipeline route amendment resulting from the review to consider the interface of the BESPR with Welborne Garden Village as set out in Section 5.6.4, Intermediate Pumping Station 4 is no longer required (as the pipeline route that Intermediate Pumping Station 4 was on is no longer being proposed).
- 5.12.5 The AGP site naming was also updated prior to the Summer 2024 Consultation to align with the pipeline sections they are located in. Table 5-16 sets out the initial AGP naming and the updated naming. These AGP are the sites that were progressed to the Summer 2024 Consultation.

Table 5-16: Above Ground Plant progressed and naming updates

Initial AGP Site Name	Updated AGP Site Name
AGP progressed	
Break Pressure Tank 1 / Intermediate Pumping Station A	Break Pressure Tank / Intermediate Pumping Station E
Intermediate Pumping Station B	Intermediate Pumping Station F
Intermediate Pumping Station 3	Intermediate Pumping Station G
Break Pressure Tank 4	Break Pressure Tank K
AGP not progressed	
Intermediate Pumping Station 4	N/a

- 5.12.6 The following sections provide an overview of the process undertaken to develop the AGP that are being progressed. The approach to the development of AGP is set out in Section 5.1.15.

Break Pressure Tank / Intermediate Pumping Station E

- 5.12.7 BPT/IPS-E consists of either a BPT or IPS, or a combination of both. This is because it is located at one of the highest topographic points between the WRP site and Otterbourne WSW. The zone for BPT/IPS-E that was presented at the Summer 2022 Consultation was located north of Portsdown Hill Road (B2177) on land to the west and east of New Down Lane.
- 5.12.8 The initial site that was identified for BPT/IPS-E within the wider zone shown at the Summer 2022 Consultation is shown in Graphic 5-39.



Graphic 5-39: Break Pressure Tank/Intermediate Pumping Station E initial site

- 5.12.9 This site was identified because it is at the highest topographic location within the wider zone. It also utilises the dense vegetation located along the northern side of Portsdown Hill Road (B2177) to screen views from the south. The site can also be accessed from New Down Lane located to the west of the site.
- 5.12.10 It was initially intended for the site to be located adjacent to the existing Portsmouth Water service reservoir site (George Reservoir) located to the east, however a corridor has been retained to allow space for Portsmouth Water's proposals to construct a pipeline between the Farlington Works and the Nelson Reservoir.
- 5.12.11 The evaluation outcomes for the initial site for BPT/IPS-E are shown in Table 5-17.

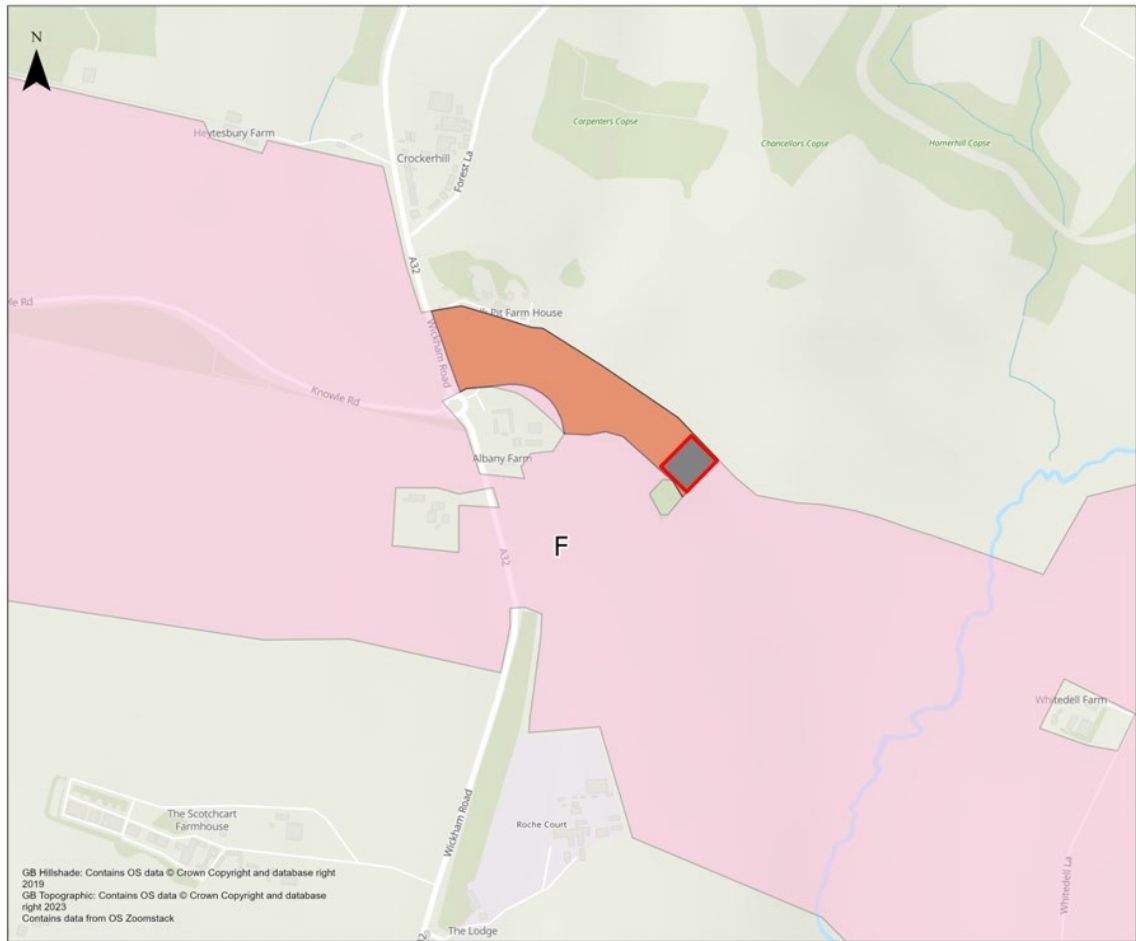
Table 5-17: Break Pressure Tank / Intermediate Pumping Station E evaluation outcomes

Topic	Evaluation Outcomes
Air Quality	<ul style="list-style-type: none"> Potential for dust, plant and vehicle emissions to adversely impact human receptors in close proximity.
Biodiversity	<ul style="list-style-type: none"> The site is located within 2km of the Solent and Dorset Coast SPA and the Chichester and Langstone Harbours SPA and Ramsar. The site is bounded by hedgerows and trees which could be directly or indirectly affected. The site is 150 m from the Portsdown SSSI. Protected species have been identified off-site to the north east.
Carbon	<ul style="list-style-type: none"> Construction and operation of the site would result in the generation of carbon emissions, however these are considered to be the same irrespective of the chosen site.
Geology and soils	<ul style="list-style-type: none"> The site is located in ALC Grade 3 land and other land (non-agricultural, urban).
Historic Environment	<ul style="list-style-type: none"> The site is approximately 240 m east of the Fort Widley Scheduled Monument and grade II* listed building. There is potential for impacts to the setting of this asset.
Interface with other development	<ul style="list-style-type: none"> Portsmouth Water intend to construct a pipeline between Farlington Works and Nelson Reservoir which may be located to the east of the AGP.
Landscape and visual	<ul style="list-style-type: none"> The site is located on a raised topographical location where there is potential for impacts on views and landscape character.
Noise and vibration	<ul style="list-style-type: none"> The closest residential receptors are located approximately 95 m away who may experience noise and vibration impacts during the construction phase.
Resource and waste	<ul style="list-style-type: none"> Construction of the site would generate waste materials from excavations at the site however these are considered to be the same irrespective of the site chosen.
Socio-economics	<ul style="list-style-type: none"> There is potential for adverse amenity impacts to nearby residential properties and existing businesses as a result of noise, vibration and air quality impacts.
Special category land	<ul style="list-style-type: none"> No major constraints identified.
Traffic and transport	<ul style="list-style-type: none"> Construction of the site has the potential to increase traffic movements on Portsdown Hill Road and New Down Lane however vehicle movements could be managed through suitable management plans.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No major constraints have been identified. The site is not located in flood zone 2 or 3.

- 5.12.12 The largest constraints for BPT/IPS-E were in relation to biodiversity, historic environment and landscape and visual. Although the site itself did not include protected species, these were identified to the north east of the site. Therefore the construction compound and draft Order Limits were developed so that suitable buffers are implemented from these and mitigation measures could be implemented during the construction phase to reduce any indirect impacts. It was not considered that identifying alternative sites was required from a biodiversity perspective.
- 5.12.13 The historic environment and landscape and visual constraints resulted from the elevated topographic location of the site, and the proximity to Fort Widley. It was considered that the initial location of the site was likely to be most suitable location for BPT/IPS-E as it was located close to existing built form at the ridge of Portsdown Hill, and could be integrated with vegetation north of Portsdown Hill Road (B2177). Consideration was given to alternatives further north that would be at a lower topographic elevation, however it was considered that these would have greater visual prominence as they could not integrate with existing vegetation and built form which the initial site takes advantage of. It was also considered that the BPT/IPS-E could be designed so that landscape and visual and historic environment impacts were reduced further. The initial site was progressed as the preferred site for BPT/IPS-E.

Intermediate Pumping Station F

- 5.12.14 The need for IPS-F was identified following the Summer 2022 Consultation, and the process for identifying this site is set out in Section 5.1 and Section 5.12.1. The zone for IPS-F was located east of the Wickham Road (A32) and Knowle Road roundabout and bordered the Welborne Garden Village Development.
- 5.12.15 The initial site for IPS-F was located at the south-east of the zone. This was because it avoided land that Welborne Garden Village had identified for the development of allotments and recreational land at the north of the zone, and avoided most of the existing overhead power line that is located at the centre of the zone. Access to the zone would be via Albany Farm. The zone and initial site for IPS-F is shown in Graphic 5-40.



Graphic 5-40: Intermediate Pumping Station F initial site

5.12.16 The evaluation outcomes for the initial site for IPS-F are shown in Table 5-18.

Table 5-18: Intermediate Pumping Station F evaluation outcomes

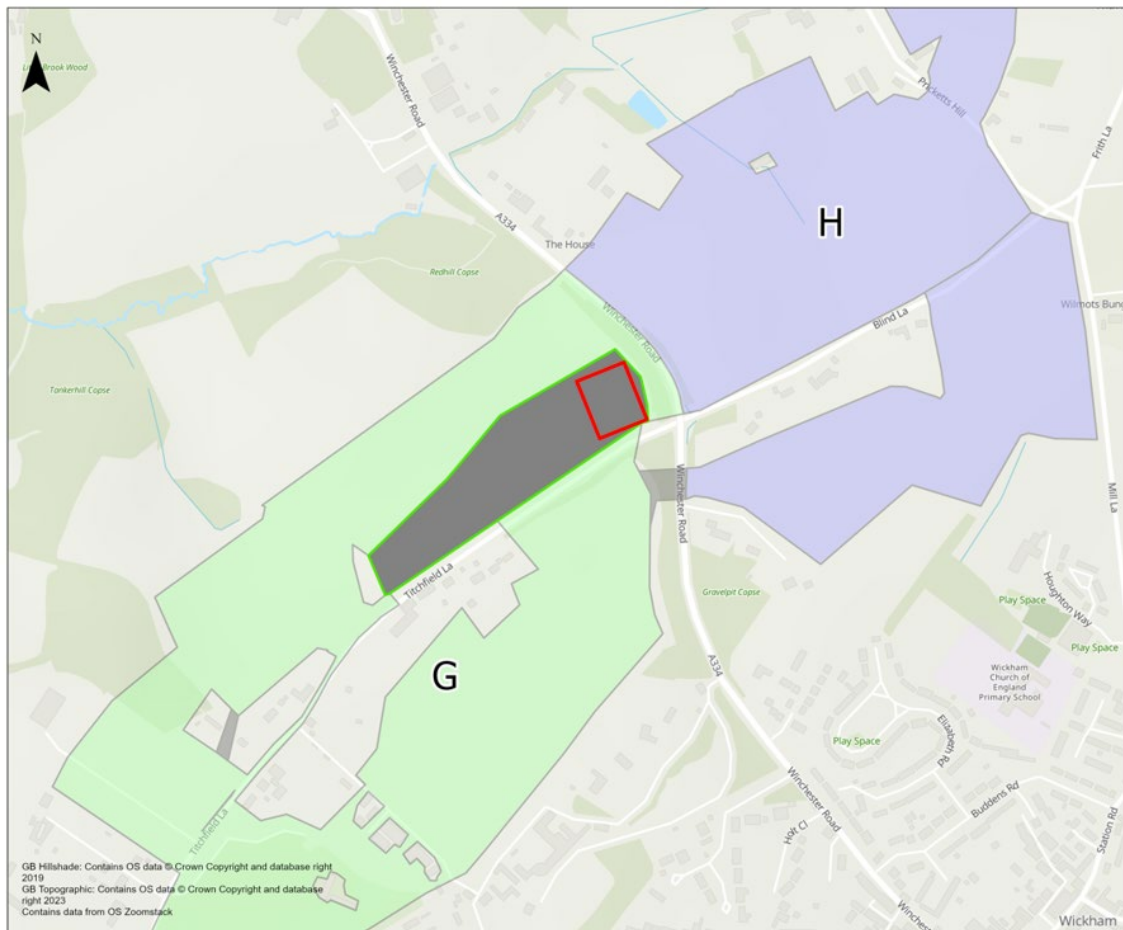
Topic	Evaluation Outcomes
Air Quality	<ul style="list-style-type: none"> Potential for dust, plant and vehicle emissions to adversely impact human receptors in close proximity.
Biodiversity	<ul style="list-style-type: none"> The site is located 2.2km north of the Solent and Dorset Coast SPA. The site is bounded by hedgerows and trees and may support protected species.
Carbon	<ul style="list-style-type: none"> Construction and operation of the site would result in the generation or carbon emissions, however these are considered to be the same irrespective of the chosen site.
Geology and soils	<ul style="list-style-type: none"> The site is located north of a former chalk pit which may have been infilled and contain contaminated material. Construction within this area could expose contaminants and therefore suitable mitigation would be employed. The site is located in ALC Grade 2 land.

Topic	Evaluation Outcomes
Historic Environment	<ul style="list-style-type: none"> The site is located 300 m from the closest listed building which is grade II. The surrounding area has records of medieval and post-medieval field systems and cropmarks.
Interface with other development	<ul style="list-style-type: none"> No other developments that would conflict with the site have been identified, however further engagement with Welborne Garden Village and HCC would be required to determine the location of the permanent access to the site.
Landscape and visual	<ul style="list-style-type: none"> The site is located within the Forest of Bere ASLQ. Construction works and the permanent presence of the IPS have the potential to adversely affect the landscape quality and character of this area.
Noise and vibration	<ul style="list-style-type: none"> Albany Farm care home is within 300m of the site and 50m from the potential construction and permanent access. There is potential for construction activity and vehicle movements to result in noise and vibration impacts.
Resource and waste	<ul style="list-style-type: none"> Construction of the site would generate waste materials from excavations at the site however these are considered to be the same irrespective of the site chosen.
Socio-economics	<ul style="list-style-type: none"> There is potential for amenity impacts and disruption to access of the Albany Farm care home and business park.
Special category land	<ul style="list-style-type: none"> No major constraints have been identified.
Traffic and transport	<ul style="list-style-type: none"> No major constraints have been identified.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No major constrains have been identified. The site is not located in flood zone 2 or 3.

- 5.12.17 The largest constraint identified for the initial IPS-F site was its location within the Forest of Bere ASLQ. It was considered that the initial site would have the least potential for impacts on the landscape in this area as it is located adjacent to an existing copse of trees, which IPS-F could utilise for screening and seek opportunities to extend and enhance. Locating IPS-F elsewhere may mean that it would be more visually prominent. It was also considered that the design of the IPS in this location could reduce landscape and visual impacts.
- 5.12.18 The initial site was progressed as the preferred site for IPS-F.
- 5.12.19 At this point it was noted that following the Summer 2024 Consultation, further engagement with Welborne Garden Village and HCC would be required to confirm the permanent access details for IPS-F alongside the progression of the Welborne Garden Village development.

Intermediate Pumping Station G

5.12.20 The zone for IPS-G was identified at the Summer 2022 Consultation and was located north-west of Titchfield Lane and south west of Winchester Road (A334). The initial site for IPS-G was located at the north eastern end of the zone, alongside existing vegetation that could act as screening. The initial site for IPS-G within the wider zone presented at the Summer 2022 Consultation is shown in Graphic 5-41.



Graphic 5-41: Intermediate Pumping Station G initial site

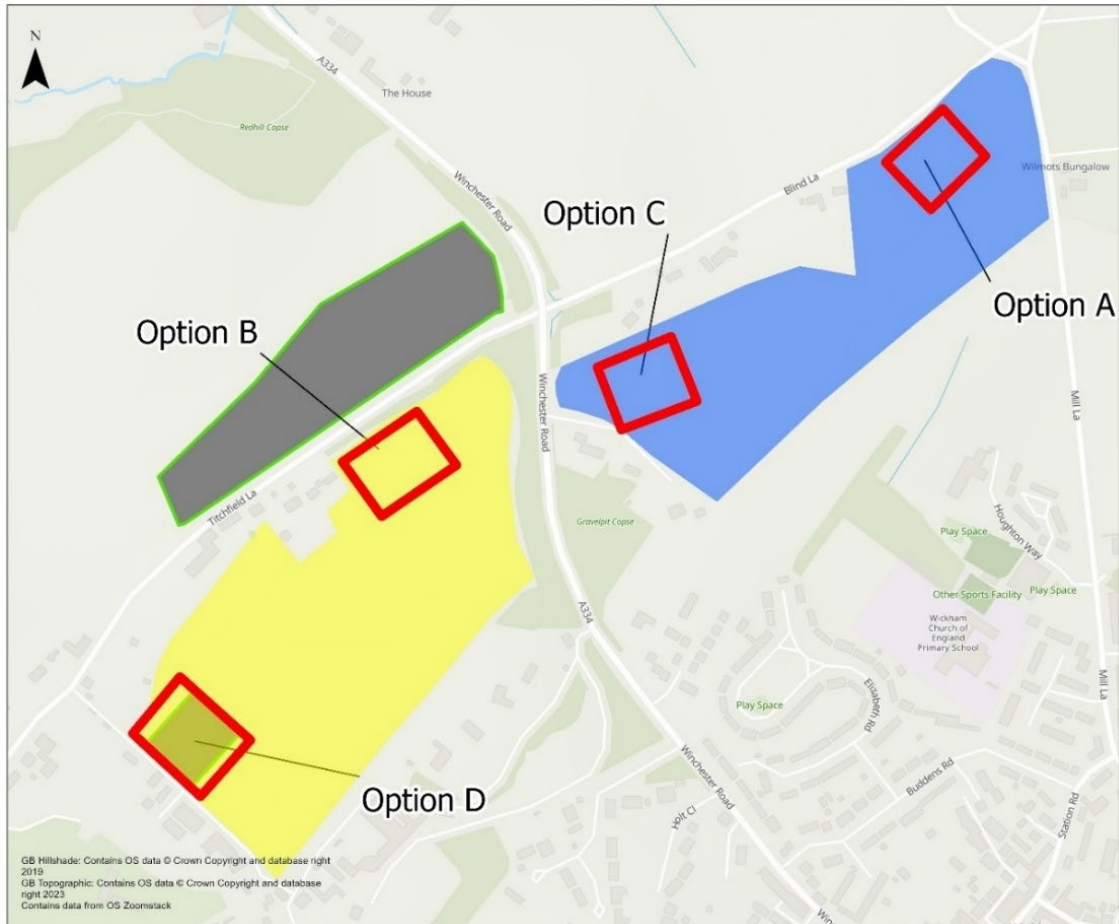
5.12.21 The evaluation outcomes for the initial site for IPS-G are shown in Table 5-19.

Table 5-19: Intermediate Pumping Station G evaluation outcomes

Topic	Evaluation Outcomes
Air Quality	<ul style="list-style-type: none"> Potential for dust, plant and vehicle emissions to adversely impact human receptors in close proximity.
Biodiversity	<ul style="list-style-type: none"> The site is approximately 3km east of the Solent and Southampton Water SPA and Ramsar and the Solent Maritime SAC. The site is bordered by woodland, and a new access would be gained through this woodland.

Topic	Evaluation Outcomes
	<ul style="list-style-type: none"> The site is within 50m of Redhill Copse which is a SINC and ancient woodland. There is potential for indirect impacts on these sites.
Carbon	<ul style="list-style-type: none"> Construction and operation of the site would result in the generation of carbon emissions, however these are considered to be the same irrespective of the chosen site.
Geology and soils	<ul style="list-style-type: none"> The site is located in a combination of ALC Grade 2 and Grade 3 land.
Historic Environment	<ul style="list-style-type: none"> There are a number of listed buildings located within 400m of the site. A roman road passes in close proximity of the site and there are a number of known archaeological assets within the area.
Interface with other development	<ul style="list-style-type: none"> No other developments have been identified that would conflict with this site.
Landscape and visual	<ul style="list-style-type: none"> The site is approximately 650m from the South Downs National Park. The closest residential properties are located approximately 130m from the site which may experience temporary visual impacts.
Noise and vibration	<ul style="list-style-type: none"> The closest residential properties are located approximately 130 m from the site which may experience temporary noise and vibration impacts during the construction phase.
Resource and waste	<ul style="list-style-type: none"> Construction of the site would generate waste materials from excavations at the site however these are considered to be the same irrespective of the site chosen.
Socio-economics	<ul style="list-style-type: none"> The closest residential properties are located approximately 130m from the site which may experience temporary amenity impacts. The site is located on land used by a wedding business and a dog walking business. These existing businesses could be permanently displaced as a result of construction of the IPS at this site.
Special category land	<ul style="list-style-type: none"> No major constraints have been identified.
Traffic and transport	<ul style="list-style-type: none"> No major constraints have been identified.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No major constraints have been identified. The site is not located in flood zone 2 or 3.

5.12.22 The largest constraint identified was that the initial site for IPS-G would result in the potential displacement of two existing businesses. Identifying an alternative site within the wider zone would also not avoid this impact, therefore zones and sites were identified in the wider area. These zones were considered to be hydraulically suitable and were identified in line with the approach set out in Section 5.1 and Section 5.12.1. The following sites and zones were identified which are shown in Graphic 5-42.



Graphic 5-42: Intermediate Pumping Station G alternative site options

5.12.23 Table 5-20 sets out the evaluation outcomes for the four additional sites.



Table 5-20: Intermediate Pumping Station G alternative site evaluation outcomes

Topic	Alternative Option A	Alternative Option B	Alternative Option C	Alternative Option D
Air Quality	<ul style="list-style-type: none"> Potential for dust, plant and vehicle emissions to adversely impact human receptors in close proximity. 			
Biodiversity	<ul style="list-style-type: none"> The site is bordered by woodland, and a new access would be gained through this woodland. The site is located approximately 80m from Cutlers Copse SINC. 	<ul style="list-style-type: none"> The site is bordered by woodland to the north-west and a new access would be gained through this woodland. The site is located approximately 50m north of the Gravelpit Copse SINC. 	<ul style="list-style-type: none"> The site is bordered by woodland to the north and south. The site is located approximately 60m north of the Gravelpit Copse SINC. 	<ul style="list-style-type: none"> Protected species have been identified in the same field as the site, but not within the site.
Carbon	<ul style="list-style-type: none"> Construction and operation of the site would result in the generation or carbon emissions, however these are considered to be the same irrespective of the chosen site. 			
Geology and soils	<ul style="list-style-type: none"> The site is location in ALC Grade 3 land. 			
Historic Environment	<ul style="list-style-type: none"> A roman road passes in close proximity of the site and there are a number of known archaeological assets within the area. 	<ul style="list-style-type: none"> The site is approximately 35m from a grade II listed building. The site is within the Wickham Park historic deer park. There is potential for archaeological features associated with the deer park. 	<ul style="list-style-type: none"> The site is within the Wickham Park historic deer park. There is potential for archaeological features associated with the deer park. 	<ul style="list-style-type: none"> A roman road passes in close proximity of the site and there are a number of known archaeological assets within the area.
Interface with other development	<ul style="list-style-type: none"> No other developments have been identified that would conflict with this site. 			

Topic	Alternative Option A	Alternative Option B	Alternative Option C	Alternative Option D
Landscape and visual	<ul style="list-style-type: none"> The site is approximately 20m from the South Downs National Park. The closest residential properties are located approximately 50m from the site which may experience temporary visual impacts. 	<ul style="list-style-type: none"> The site is approximately 650m from the South Downs National Park. The closest residential properties are located approximately 40m from the site which may experience temporary visual impacts. 	<ul style="list-style-type: none"> The site is approximately 340m from the South Downs National Park. The closest residential properties are located approximately 20m from the site which may experience temporary visual impacts. 	<ul style="list-style-type: none"> The site is approximately 1km from the South Downs National Park. The closest residential properties are located approximately 20m from the site which may experience temporary visual impacts.
Noise and vibration	<ul style="list-style-type: none"> The closest residential properties are located approximately 20m from the site which may experience temporary noise and vibration impacts during the construction phase. 	<ul style="list-style-type: none"> The closest residential properties are located approximately 40m from the site which may experience temporary noise and vibration impacts during the construction phase. 	<ul style="list-style-type: none"> The closest residential properties are located approximately 20m from the site which may experience temporary noise and vibration impacts during the construction phase. 	
Resource and waste	<ul style="list-style-type: none"> Construction of the site would generate waste materials from excavations at the site however these are considered to be the same irrespective of the site chosen. 			
Socio-economics	<ul style="list-style-type: none"> The closest residential properties are located approximately 20m from the site which may experience temporary amenity impacts. 	<ul style="list-style-type: none"> There are a number of residential properties and existing businesses within 200m that may experience temporary amenity impacts. 	<ul style="list-style-type: none"> The closest residential properties are located approximately 20m from the site which may experience temporary amenity impacts. 	

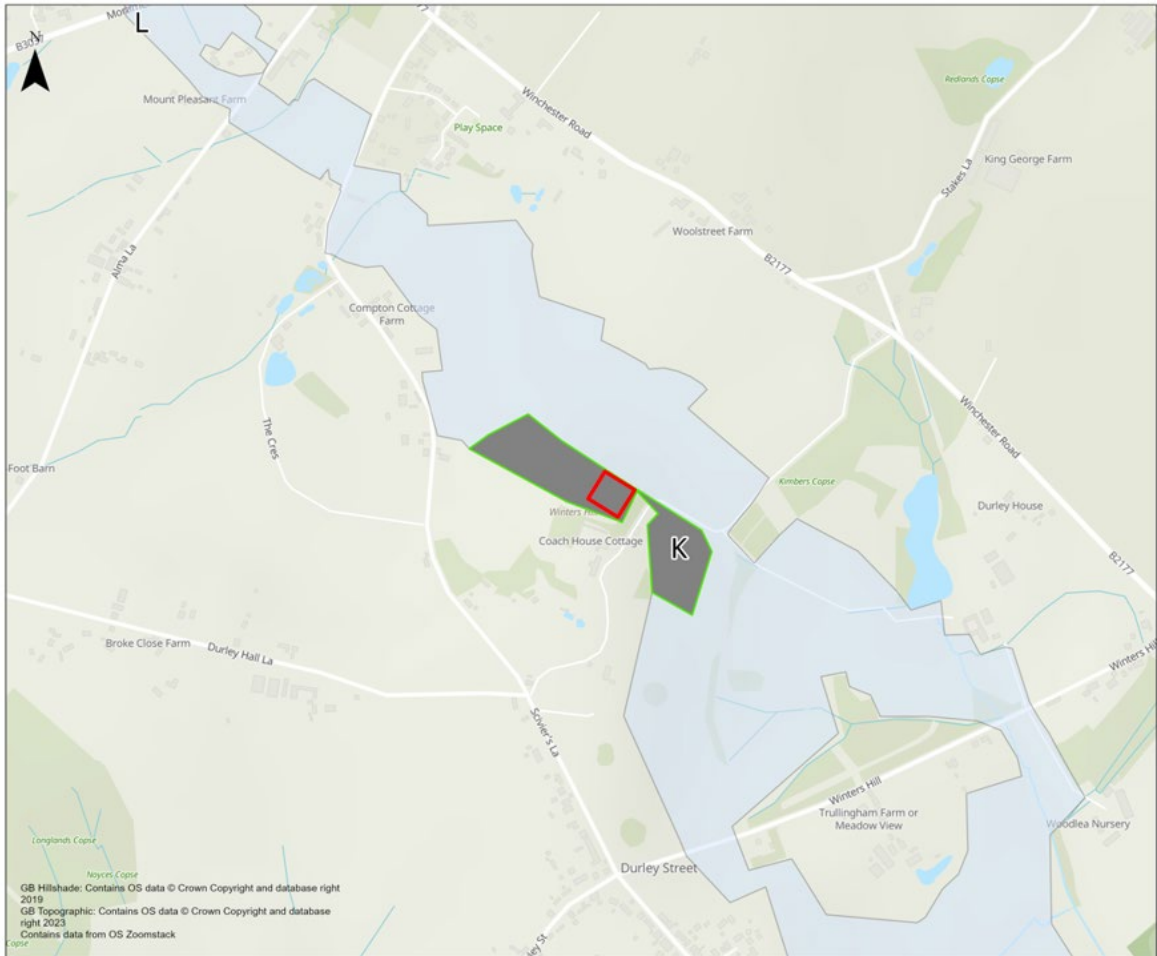


Topic	Alternative Option A	Alternative Option B	Alternative Option C	Alternative Option D
	<ul style="list-style-type: none"> The site is located on land that is used for Wickham Festival parking. 			
Special category land	<ul style="list-style-type: none"> No major constraints have been identified. 			
Traffic and transport	<ul style="list-style-type: none"> No major constraints have been identified. 			
Water quality, resource and flood risk	<ul style="list-style-type: none"> No major constraints have been identified. The site is not located in flood zones 2 or 3. 			

- 5.12.24 Alternative option A was not considered to be suitable as it was approximately 20 m from the South Downs National Park and therefore posed an increased potential for impacts that could compromise the purpose of the national park which is afforded a high status of protection in relation to landscape and scenic beauty under the NPSWRI.
- 5.12.25 Alternative option B and C were both located in close proximity to areas of woodland and trees, and may require the removal of trees to provide a permanent access to the IPS. These sites were also in close proximity to residential properties.
- 5.12.26 Alternative option D could utilise an existing access track to the east of Titchfield Lane, it was also the furthest site from the South Downs National Park, and was also located in close proximity to existing industrial and farm buildings. Locating the IPS in this area has a greater potential to integrate with the existing built and natural form compared to the other alternative options because of this. In addition, alternative option D avoids land used for Wickham Festival and has a reduced likelihood of impacting local businesses. As a result of this, alternative option D was selected as the preferred site for IPS-G.

Break Pressure Tank K

- 5.12.27 The zone for BPT-K was identified at the Summer 2022 Consultation and was located north of Wintershill Hall and east of Scivier's Lane. The initial site for BPT-K was located at the centre of the zone so that the BPT could be screened by existing vegetation to the north, east and south. The western and eastern sections of the zone were not selected as the BPT would be more visually prominent within the parkland landscape. The initial site for BPT-K within the wider zone presented at the Summer 2022 Consultation is shown in Graphic 5-43.



Graphic 5-43: Break Pressure Tank K initial site

5.12.28 The evaluation outcomes for the initial site for BPT-K are shown in Table 5-21.

Table 5-21: Break Pressure Tank K evaluation outcomes

Topic	Evaluation Outcomes
Air quality	<ul style="list-style-type: none"> Potential for dust, plant and vehicle emissions to adversely impact human receptors in close proximity.
Biodiversity	<ul style="list-style-type: none"> The site is bordered by woodland and trees to the north, south and east. Creating an access to the site from Scivier's Lane may also result in the loss of hedgerow. The site is approximately 50m from Kimbers Copse which is designated as ancient woodland and a SINCC.
Carbon	<ul style="list-style-type: none"> Construction and operation of the site would result in the generation or carbon emissions, however these are considered to be the same irrespective of the chosen site.
Geology and soils	<ul style="list-style-type: none"> The site is located in a combination of ALC Grade 3 and Grade 4 land.

Topic	Evaluation Outcomes
Historic environment	<ul style="list-style-type: none"> The site is in close proximity of the historic park and garden at Winters Hill. There is potential for effects to the setting of this area.
Interface with other development	<ul style="list-style-type: none"> No other developments have been identified that would conflict with this site.
Landscape and visual	<ul style="list-style-type: none"> The South Downs National Park is located approximately 500m north east. There are residential properties located immediately south at Winters Hill Hall which may experience visual amenity impacts.
Noise and vibration	<ul style="list-style-type: none"> There are residential properties located immediately south at Winters Hill Hall which may experience temporary noise and vibration impacts temporarily during the construction phase.
Resource and waste	<ul style="list-style-type: none"> Construction of the site would generate waste materials from excavations at the site however these are considered to be the same irrespective of the site chosen.
Socio-economics	<ul style="list-style-type: none"> There are residential properties located immediately south at Winters Hill Hall which may experience amenity effects.
Special category land	<ul style="list-style-type: none"> No major constraints have been identified.
Traffic and transport	<ul style="list-style-type: none"> No major constraints have been identified.
Water quality, resource and flood risk	<ul style="list-style-type: none"> No major constraints have been identified. The site is not located in flood zones 2 or 3.

5.12.29 The evaluation did not identify any major constraints that could only be resolved through identifying alternative sites. The design of the BPT will consider ways to limit visual impacts on Winters Hill Hall located to the south of the site however existing vegetation currently provides screening. The initial site was progressed as the preferred site for BPT-K.

5.13 Review of Water Recycling Plant site selection

Water Recycling Plant Site Selection Background

5.13.1 As the site selection for the WRP initially took place earlier in the project development process, the site size parameters for the WRP have also changed throughout the process as the Applicant's understanding of what is required has developed. As a result, a review of the site selection was undertaken to review the outcomes of the initial site selection to test that the assumptions remained up to date and consider whether any other sites may be suitable for the WRP. A report detailing the review of the WRP site selection can be found in Appendix E.

5.13.2 The site selection for the WRP has consisted of the stages set out in Table 5-22.

Table 5-22: WRP site selection minimum site size criteria overview

Project Stage	Minimum WRP Site Size	Overview of the minimum size requirements
Stage 1 (RAPID Gate 1)	3.2 ha	For a 61MI/d WRP, a minimum of 32,000 m ² (3.2 ha) permanent land take is required for the development of above and below-ground assets such as buildings, process units and kiosks. Additional permanent land required for landscaping and mitigation, and additional temporary land for construction have not been included in this minimum site size.
Stage 2 (RAPID Gate 2)	4.0 ha	For a 61MI/d WRP, a minimum of 4.0 ha permanent land take is required. Additional permanent land required for landscaping and mitigation, and additional temporary land for construction have not been included in this minimum site size.
Stage 3 (Summer 2022 Consultation)	6.0 ha	For a 15MI/d WRP with potential to expand to 60MI/d, a minimum of 6.0 ha permanent land take is required. This includes land required for temporary construction areas, tunnel shafts for connecting pipelines, and the HLPS.

5.13.3 The site selection that was undertaken at Stage 2 and Stage 3 selected a site called WRP_72 which was located on undeveloped land north of Harts Farm Way, south of the A27 and west of the Hermitage Stream. This site was considered to be the preferred site as it is located on undeveloped land and there is an absence of environmental constraints compared to other sites that are adjacent to Langstone Harbour. It was noted that this site has planning permission for an employment development and is located on a former household landfill.

Purpose and Approach

5.13.4 As a result of feedback received at the Summer 2022 Consultation on the selection of WRP_72, the Applicant undertook a review of the site selection process with the aim of ensuring that all reasonable alternative sites for the WRP had been considered and reviewed.

5.13.5 The review consisted of three key parts:

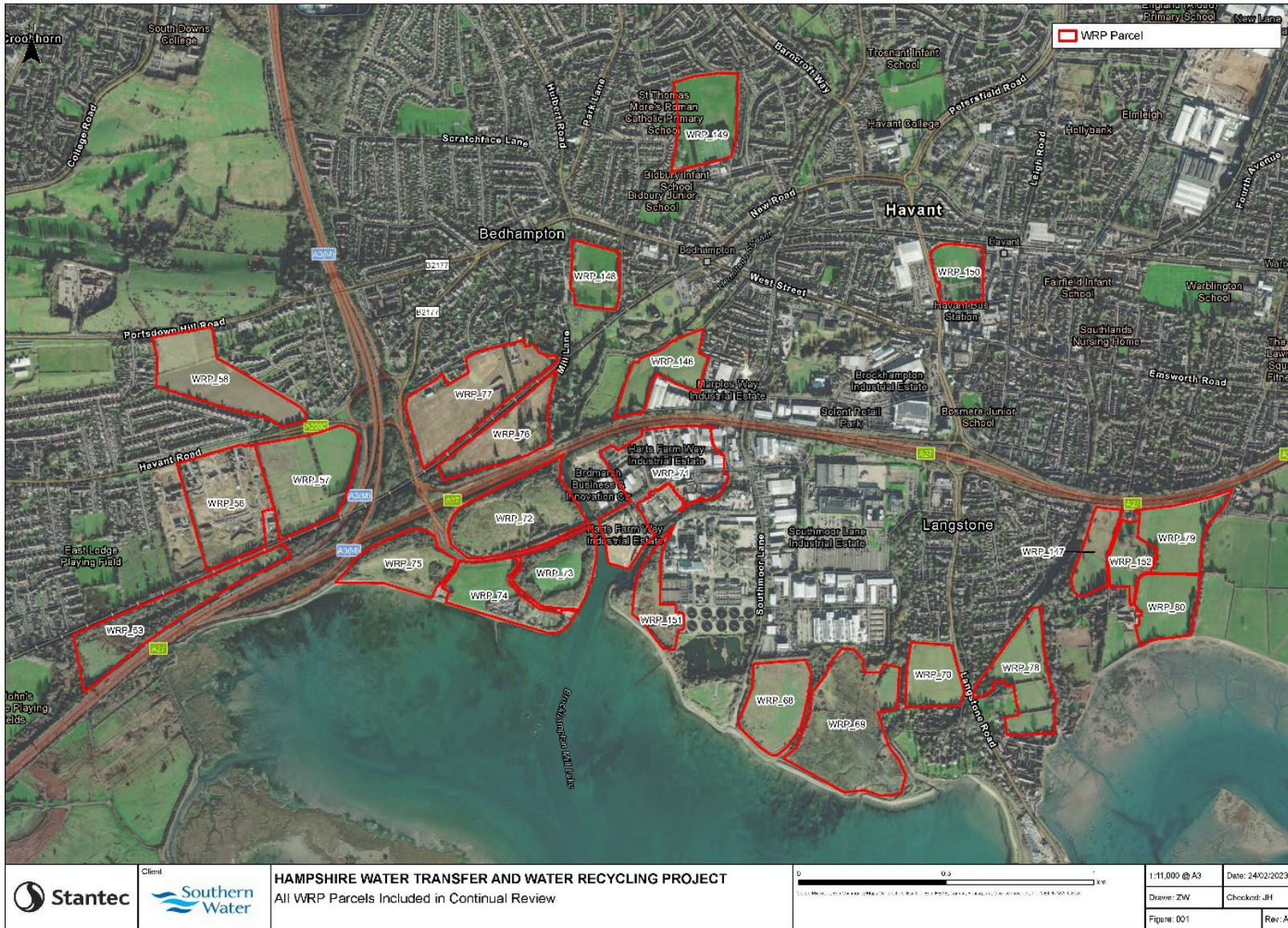
- All sites that had been identified through the site selection at Stage 2 and Stage 3 were re-reviewed. Sites that had the potential for significant adverse impacts were not progressed.
- As a result of feedback from stakeholders identifying that there was potential for developed employment sites in the proximity of Budds Farm WTW to become available, the Applicant considered new sites that hadn't been previously identified. Sites that had the potential for significant adverse impacts were not progressed.
- A land availability and best value review was undertaken on the sites where the risk of significant adverse impacts were not identified in the previous two stages.

- 5.13.6 Engagement with HBC was undertaken throughout this process to seek views on the proposed approach and outcomes.

Review of Identified Sites

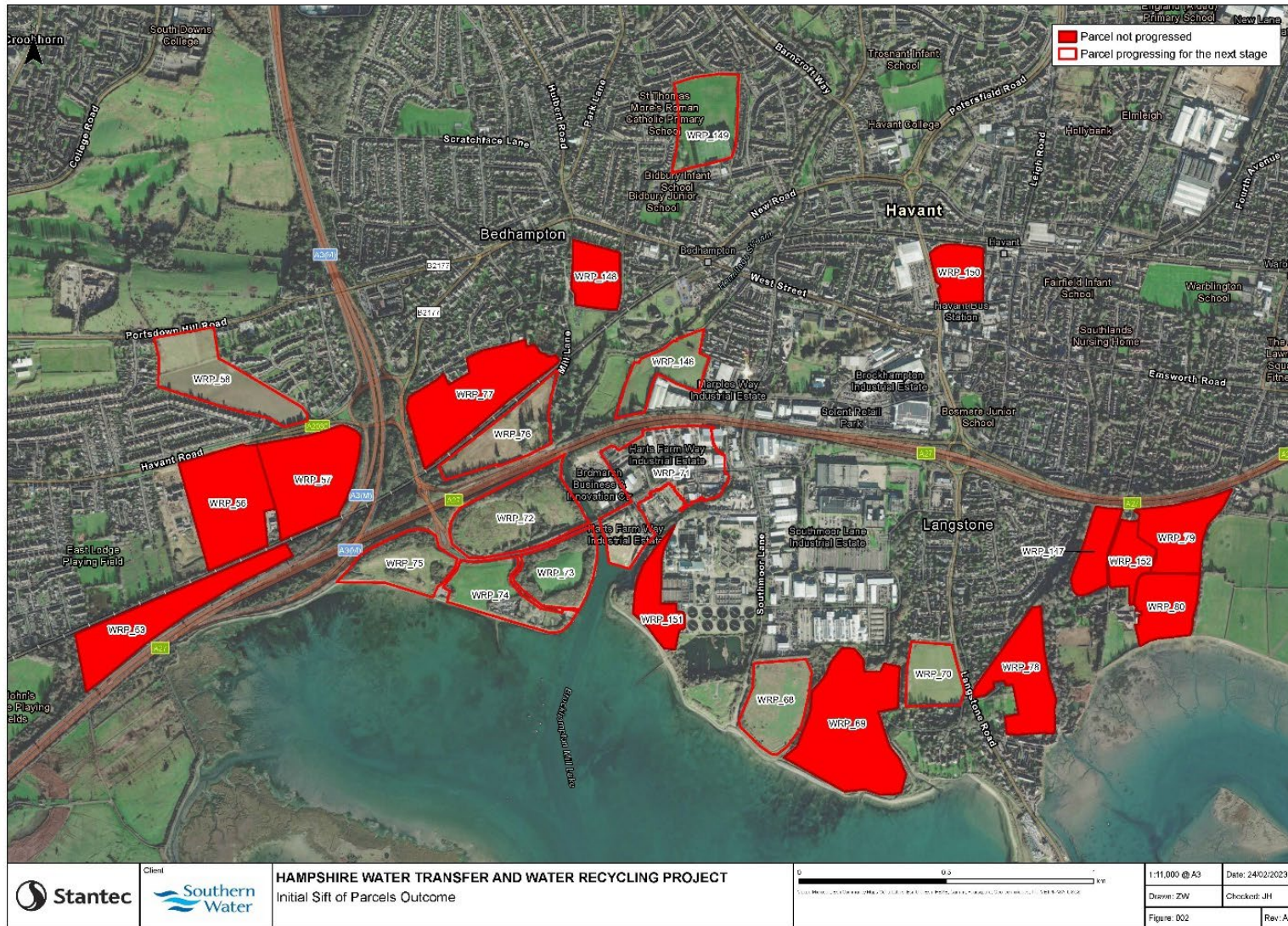
- 5.13.7 The first part consisted of a review of all sites that had been identified in previous stages in the WRP site selection as set out in Table 5-22. These sites are shown in Graphic 5-44.

Hampshire Water Transfer and Water Recycling Project Scheme Development Report



Graphic 5-44: All sites considered in previous stages of the Water Recycling Plant site selection

- 5.13.8 The following criteria were then applied to determine the sites that should be subject to further review:
- Sites must be larger than 3.2 ha. This was considered to be the minimum site size to locate the WRP. A site of 3.2 ha would not provide space for construction compounds for construction of the WRP or tunnel shafts for the water transfer pipelines. Sites that were larger than 6 ha would be preferred as these sites would provide the opportunity to locate tunnel shafts and construction compounds alongside the WRP. A minimum site size of 3.2 ha was selected to ensure the Applicant was considering all practicable options for the WRP.
 - Sites should not be located on land being developed for housing. Many areas of land in the Havant area are currently being developed for housing, and therefore these would not be suitable for locating the WRP.
 - Sites should not be located on open green space that is allocated in the HBC local plan. Siting the WRP on existing open space would result in the permanent loss of this land that is used for sport or recreation. The Applicant only considered open green space to ensure that all practicable options for the WRP were considered. Were sites located on open green space not allocated by HBC, constraints associated with the loss of this open green space was incorporated into the decision making process.
 - Sites should not be located within sensitive environmental designations. Sites that have a high degree of protection under environmental and planning legislation and policy, such as the NPSWRI, are not considered suitable for locating the WRP. These designations comprised SACs, SPAs, Ramsar sites, SSSIs, and National Landscapes which were present in the proximity of Budds Farm WTW.
- 5.13.9 Graphic 5-45 shows the outcome of the application of the above criteria. Sites shown in red were not progressed for further review.



Graphic 5-45: Water Recycling Plant sites progressed for detailed review

5.13.10 Table 5-23 sets out the outcomes of the detailed review which identified risks with the remaining sites from a planning, environmental and engineering perspective.

Table 5-23: Water Recycling Plant site planning, environmental and engineering review outcomes

Site	Review Outcomes
WRP_58	<ul style="list-style-type: none"> • Within the Fields off Havant Road SINC. • Potentially visible from the Chichester Harbour National Landscape (formerly AONB) • In close proximity to residential properties to the east and west where there may be air quality and noise impacts. • Within a candidate site designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA. • The site has significant elevation changes and therefore level working platforms would need to be formed. • The site is approximately 550 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI. • The site is approximately 2.40km from the Chichester Harbour National Landscape. • The site is within ALC Garde 3 land.
WRP_68	<ul style="list-style-type: none"> • The site is within 20 m of the Chichester and Langstone Harbours SPA and Ramsar, the Solent Maritime SAC and the Langstone Harbour SSSI. • Within a secondary support area designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA. • Within the Big Field SINC. • Within flood zone 2 and 3 and is subject to tidal flooding. Engineering works may be required to mitigate flood risks. • The site is within approximately 20 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI. • The site is approximately 550 m from the Chichester Harbour National Landscape. • The site is partially within ALC Grade 1 land.
WRP_70	<ul style="list-style-type: none"> • The site is approximately 30 m from the Chichester Harbour National Landscape. • Within a secondary support area designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA.

Site	Review Outcomes
	<ul style="list-style-type: none"> • In close proximity to residential properties to the north and south where there may be air quality and noise impacts. • Existing utilities have been identified on the site which would need to be diverted. • The site is approximately 90 m from the Langstone Harbour SSSI and approximately 240 m from the Solent Maritime SAC and the Chichester and Langstone Harbours SPA and Ramsar. • The site is partially within ALC Grade 1 land.
WRP_71	<ul style="list-style-type: none"> • The site currently consists of a number of existing warehouses and offices that are in occupation and would need to be removed. • Existing utilities have been identified on the site which would need to be diverted. • The site is approximately 400 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar and the Langstone Harbour SSSI. • The site is approximately 1km from the Chichester Harbour National Landscape. • The site is within ALC Grade 1 land.
WRP_72	<ul style="list-style-type: none"> • The west of the site is within a low use site designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA. • The principle of built development at WRP_72 is demonstrated through the allocation of the site for employment development in the HBC Allocations Plan (2014) [4] and through the granting of the previous outline planning permission (APP/21/00189 [5]) (since expired and not implemented) for use classes E (commercial, business and service), B2 (general industrial) and B8 (storage or distribution), which is a similar industrial use to the WRP site. Within a former landfill site. Mitigation measures would need to be implemented during the construction phase. • The site is approximately 170 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar and the Langstone Harbour SSSI. • The site is approximately 1.45km from the Chichester Harbour National Landscape. • The site is partially located in ALC Grade 1 land.
WRP_73	<ul style="list-style-type: none"> • The site is within 20 m of the Chichester and Langstone Harbours SPA and Ramsar, the Solent Maritime SAC and the Langstone Harbour SSSI. • Within a candidate site designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA.

Site	Review Outcomes
	<ul style="list-style-type: none"> • Within a former landfill site. Mitigation measures would need to be implemented during the construction phase. • Parts of the site are within flood zone 2 and 3. • The site is approximately 1.35km from the Chichester Harbour National Landscape. • The site is not within an ALC area.
WRP_74	<ul style="list-style-type: none"> • The site is within 20 m of the Chichester and Langstone Harbours SPA and Ramsar, the Solent Maritime SAC and the Langstone Harbour SSSI. • Within a secondary support area designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA. • Within a former landfill site. Mitigation measures would need to be implemented during the construction phase. • Parts of the site are within flood zone 2 and 3. • The site is approximately 1.35km from the Chichester Harbour National Landscape. • The site is not within an ALC area.
WRP_75	<ul style="list-style-type: none"> • The site is within 20 m of the Chichester and Langstone Harbours SPA and Ramsar, the Solent Maritime SAC and the Langstone Harbour SSSI. • Within a core area designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA. • Within a former landfill site. Mitigation measures would need to be implemented during the construction phase. • Parts of the site are within flood zone 2 and 3. • The site is approximately 1.80km from the Chichester Harbour National Landscape. • The site is within ALC Grade 1 land.
WRP_76	<ul style="list-style-type: none"> • Access to the site is constrained and construction of a new access could reduce the developable area below 32,000m² (3.2 ha). A buffer zone from the railway to the north would also need to be implemented which would further reduce the developable area. • The site is in close proximity to residential properties to the east where there may be air quality and noise impacts. • The site is approximately 560 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI.

Site	Review Outcomes
	<ul style="list-style-type: none"> The site is approximately 1.60km from the Chichester Harbour National Landscape. The site is within ALC Grade 1 land.
WRP_146	<ul style="list-style-type: none"> The northern part of the site is within a SPZ. Development of the WRP could adversely impact groundwater that is a source for drinking water. Parts of the site are within flood zone 2 and 3. An existing culvert passes under the site which would need to be diverted. Part of the site is allocated for employment development in the HBC local plan. The site is in close proximity to residential properties to the north where there may be air quality and noise impacts. The site is approximately 650 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI. The site is approximately 1.35km from the Chichester Harbour National Landscape. The site is partially within ALC Grade 1 land.
WRP_149	<ul style="list-style-type: none"> The site is located within a heavily populated area and is bordered by residential properties and a school. There is potential for air quality and noise impacts. Development of the site would result in loss of open green space used by Havant Rugby Football Club. The site is within a SPZ. Development of the WRP could adversely impact groundwater that is a source for drinking water. The site is approximately 1.55km from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI. The site is approximately 1.70km from the Chichester Harbour National Landscape. The site is within urban land according to the ALC.

5.13.11 Following the evaluation of the sites set out in Table 5-23, the following sites were not considered for further review due to the potential for significant adverse impacts that were unlikely to not be capable of being mitigated to an acceptable level:

- WRP_58
- WRP_68
- WRP_70
- WRP_71
- WRP_73

- WRP_74
- WRP_75
- WRP_76
- WRP_146
- WRP_149

5.13.12 It was considered that mitigation measures could be implemented if the WRP was located at WRP_72 to reduce identified impacts to an acceptable level.

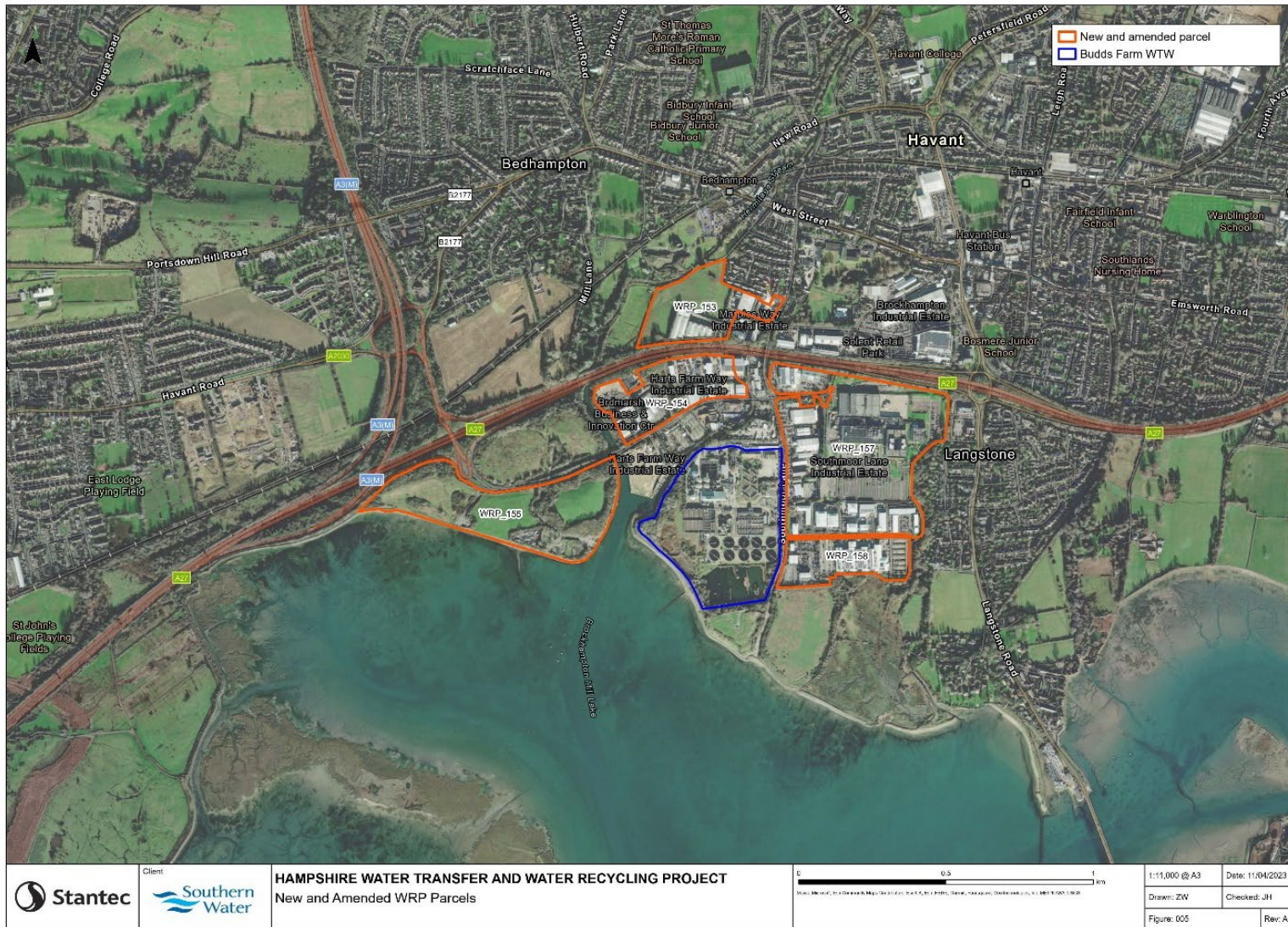
Identification of New Sites and Amended Sites

5.13.13 As well as undertaking a review of previously identified sites (as set out in Section 5.13.7), the Applicant also identified new sites and amended some of the existing sites. The Applicant identified new sites that were located on existing employment development as a result of engagement feedback that suggested that there may be existing employment development in the Havant area that could becoming available within suitable timescales to warrant consideration. It was considered that these sites could be suitable for the WRP.

5.13.14 The Applicant also considered whether sites that were reviewed and not progressed in the previous stage could be amended to improve their suitability in environmental, planning and engineering terms. The following new and amended sites were identified:

- WRP_71 which was not progressed at the previous stage, was amended to align with the boundary of Harts Farm Way to the south and to incorporate additional employment units to the west to form WRP_154.
- WRP_73, WRP_74 and WRP_75 which were not progressed at the previous stage, were merged together to form WRP_155.
- WRP_146 which was not progressed at the previous stage, was expanded to include the adjacent employment units to the south-east to form WRP_153.
- WRP_157 was a new site comprising employment units east of Southmoor Lane and north of Penner Road.
- WRP_158 was a new site comprising employment units east of Southmoor Lane and south of Penner Road.
- Budds Farm WTW was also included, to re-confirm whether the WRP could be located within this site.

5.13.15 The new and amended sites that were identified are shown in Graphic 5-46.



Graphic 5-46: Identified new and amended Water Recycling Plant sites

5.13.16 The new and amended sites were then reviewed against the same criteria used to review sites in Section 5.13.10. The outcomes are set out in Table 5-24.

Table 5-24: Water Recycling Plant new sites planning, environmental and engineering review outcomes

Site	Review Outcomes
WRP_153	<ul style="list-style-type: none"> • The northern part of the site is within a SPZ. Development of the WRP could adversely impact groundwater that is a source for drinking water. • Parts of the site are within flood zone 2 and 3. • An existing culvert passes under the site which would need to be diverted. • Part of the site is allocated for employment development in the HBC local plan. • The site is in close proximity to residential properties to the north where there may be air quality and noise impacts. • The site currently consists of a number of existing warehouses and offices that are in occupation and would need to be removed. • The site is within approximately 650 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI. • The site is approximately 1.20km from the Chichester Harbour National Landscape.
WRP_154	<ul style="list-style-type: none"> • The site currently consists of a number of existing warehouses and offices that are in occupation and would need to be removed. • Existing utilities have been identified on the site which would need to be diverted. • The west of the site is a candidate site designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA. • The site is approximately 400 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI. • The site is approximately 1km from the Chichester Harbour National Landscape.
WRP_155	<ul style="list-style-type: none"> • The site is within 20 m of the Chichester and Langstone Harbours SPA and Ramsar, the Solent Maritime SAC and the Langstone Harbour SSSI. • Within a core area, secondary support area, and low use site designated in the Solent Waders and Brent Goose Strategy. Therefore the site could be functionally linked with the Chichester and Langstone Harbours SPA. • Within a former landfill site. Mitigation measures would need to be implemented during the construction phase. • Parts of the site are within flood zone 2 and 3.

Site	Review Outcomes
	<ul style="list-style-type: none"> The site is approximately 1.35km from the Chichester Harbour National Landscape.
WRP_157	<ul style="list-style-type: none"> The site currently consists of a number of existing warehouses and offices that are in occupation and would need to be removed. Existing utilities have been identified on the site which would need to be diverted. The site is approximately 200 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI. The site is approximately 370 m from the Chichester Harbour National Landscape.
WRP_158	<ul style="list-style-type: none"> The site currently consists of a number of existing warehouses and offices that are in occupation and would need to be removed. Existing utilities have been identified on the site which would need to be diverted. The site is approximately 200 m from the Solent Maritime SAC, the Chichester and Langstone Harbours SPA and Ramsar, and the Langstone Harbour SSSI. The site is approximately 370 m from the Chichester Harbour National Landscape.
Budds Farm WTW	<ul style="list-style-type: none"> The site is within 20 m of the Chichester and Langstone Harbours SPA and Ramsar, the Solent Maritime SAC and the Langstone Harbour SSSI. When considering the need for future expansion and development at Budds Farm WTW, there is insufficient space to accommodate the WRP at Budds Farm WTW without significant redevelopment of the WTW. The site is approximately 770 m from the Chichester Harbour National Landscape.

5.13.17 Following the review, the below sites were progressed to the land availability and best value review stage along with WRP_72, which was progressed in the previous stage, as these sites were considered to perform the best against the criteria:

- WRP_154
- WRP_157
- WRP_158

Land Availability and Best Value Review

5.13.18 A review was undertaken to determine the potential for the remaining WRP sites becoming available and the implications for delivering these sites. This considered the likelihood of a site becoming vacant, as well as the time and cost implications of any enabling works including site clearance and demolition.

- 5.13.19 This stage also considered best value criteria associated with acquiring and developing these sites for the WRP. The best value review used the management of value study methodology (used extensively across government and public sector projects) and considered sites against the following drivers:
- Constructability and engineering – considering the complexity of the deliverability of the site.
 - Carbon emissions – considering embodied carbon, operational carbon and construction carbon.
 - Programme (time) – considering time to deliver the WRP in accordance with the requirements for the Project.
 - Environment and sustainability – considering the potential to mitigate any potential adverse impacts on the existing environment at the site.
 - Asset management – considering the alignment with wider asset management strategies including for Budds Farm WTW.
 - Engagement and planning – considering the likelihood of gaining acceptance from stakeholders.
- 5.13.20 Out of the three remaining sites, WRP_72 was preferred as it was the only remaining undeveloped site and therefore demolition works and loss of existing employment development would not be required prior to development of the WRP.

Outcomes

- 5.13.21 The WRP site selection review process identified that WRP_72 remained the best performing site for the WRP against the defined criteria set out in the WRP site selection review. This site was also considered to perform the best in the land availability and best value review as the site was undeveloped. This was due to its lower environmental, planning and deliverability risks in comparison to alternative sites, which all had greater environmental constraints, or existing development and therefore greater deliverability implications.
- 5.13.22 The site selection process identified that WRP_72 is a former landfill site and this was considered as part of the review undertaken at Stage 4 and the initial site selection undertaken at Stage 2. The evaluations concluded that the potential risks associated with the site being a former landfill were capable of being mitigated to an acceptable level and that impacts would be considered as part of the EIA and other environmental assessments. There is no restriction in the legislative and policy framework on the use of former landfill sites and the NPSWRI and NPPF starting principle is to make best use of previously developed or 'brownfield' land. In addition, Havant Borough Council had allocated the site as employment land in its local plan and the site had the benefit of an outline planning permission for industrial and warehousing use, which further illustrated its suitability for development in accordance with the adopted development plan and land use framework. A number of the sites considered were identified to have risks associated with historic landfill and ground contamination; as much of the area around Budds Farm WTW is reclaimed land that has been filled with waste. When undertaking the site selection process, it was considered that mitigation measures

could be implemented to reduce any adverse effects to an acceptable level, and that bespoke details would be developed depending on the site selected.

6 Stage 5: Summer 2024 Consultation to Spring 2025 Consultation – refinement of the Project

6.1 Design development approach and methodology

- 6.1.1 Following the Summer 2024 Consultation, further scheme development was undertaken to refine the draft Order Limits, draft Limits of Deviation and other elements of the Project. This design evolution process was followed in accordance with the NPSWRI (section 3.6), the design approach as set out in the Design Approach Document (Document reference 5.12, DCO Volume 5), and to ensure the implementation of good design (Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on good design), through having regard to consultation feedback, stakeholder engagement and any additional requirements for mitigation and enhancement identified since Stage 4.
- 6.1.2 Scheme development undertaken at Stage 5 was informed by having regard to the following:
- Feedback from the Summer 2024 Consultation.
 - Feedback from ongoing engagement with landowners and stakeholders including local planning authorities and statutory environmental bodies.
 - Information from ongoing environmental assessments and surveys.
 - Engineering design development, including the interface between the Project and existing Southern Water and Portsmouth Water assets.
 - Consideration of additional security requirements at AGP sites.
 - Identified approved or planned development.
- 6.1.3 The above inputs were considered and where required, alternative designs were identified by the Project's engineers to avoid or reduce the identified constraint(s). The alternative designs were identified in line with the following as far as reasonably practicable:
- Avoiding high risk flood zones (zone 2 and 3).
 - Avoiding interfaces with existing utilities.
 - Ensuring sufficient space would be available to undertake construction tasks.
 - Avoiding adverse impacts to the hydraulics of the pipeline route by introducing large topographical changes.
 - Alignment with the Project's overarching commitments in relation to the environment as set out in ES Appendix 3.1 Primary mitigation, Volume II (Document reference 6.2, DCO Volume 6).
 - Reducing impacts on existing land uses as far as possible by locating pipeline routes, or land for environmental mitigation and enhancement at the edge of agricultural fields.

- 6.1.4 The alternative designs and the Summer 2024 Consultation (Stage 4) designs were then evaluated against the evaluation criteria explained below, and the best performing option against the criteria was progressed. The evaluations were undertaken by the subject matter experts, and the criteria and sub-criteria was the same as was used in Stage 4 which is presented in Table 5-1. The criteria included the following considerations:
- Air quality
 - Biodiversity and nature conservation
 - Carbon and climate change
 - Geology and soils
 - Historic environment
 - Interface with other developments
 - Landscape and visual amenity
 - Noise and vibration
 - Resource and waste management
 - Socio-economics
 - Special category land
 - Traffic and transport
 - Water quality, resources and flood risk
- 6.1.5 In addition to the disciplines listed above, subject matter experts in engineering, planning and land matters supported the evaluations.
- 6.1.6 The outcome from this process was the identification of a number of design refinements which were consulted on at the Spring 2025 Consultation. An overview of these design refinements is provided in this section, and set out in detail in Appendix F.
- 6.1.7 Due to their nature and scale, several design related matters did not require the full evaluation against the criteria described above. In such cases, these were classed as other minor amendments and are also reported in Appendix F.

6.2 Environmental Mitigation and Enhancement Areas

- 6.2.1 The mitigation and enhancement proposals for the Project were additionally developed following the Summer 2024 Consultation, which resulted in the identification of new land and amendments to the draft Order Limits.
- 6.2.2 Findings from the EIA were used to determine the location of mitigation proposals where impacts were identified. The mitigation and enhancement proposals were also developed having regard to the delivery of Environmental Net Gain, feedback from the Summer 2024 Consultation and ongoing engagement with key stakeholders. The enhancement proposals consider opportunities identified by stakeholders such as the HCC Biodiversity Information Centre.
- 6.2.3 Consideration was given to identifying proposals that would be multifunctional in order to maximise benefits provided. For instance, where land was identified to be

required for mitigation purposes, it was considered whether enhancement proposals could take place at the same location to complement the mitigation, provide additional benefit and incorporate good design.

6.2.4 The outcome of this process was the inclusion of Environmental Mitigation and Enhancement Areas (EMEA) within the Project.

6.2.5 EMEAs included in the DCO application are shown on the Works Plans (Document reference 2.3, DCO Volume 2) and the Design Principles (contained within the Design Principles Document (Document reference 5.11, DCO Volume 5)) include further information on the characteristics of each EMEA. The Project is seeking consent to deliver these environmental enhancements, but these will only be implemented subject to securing agreements with landowners.

6.3 Design refinements

6.3.1 The key design refinements made at Stage 5 were as follows:

- Amendments to the Order Limits at Bedhampton Springs to facilitate construction vehicle access to working areas.
- Addition of a pumping station within the existing Budds Farm WTW to pump treated wastewater to the WRP. It was previously considered that the transfer from Budds Farm WTW to the WRP would use gravity.
- Amendment to the Limits of Deviations for AGP sites to accommodate additional security and emergency measures requirements.
- Avoidance of protected species and veteran trees that had been identified through environmental surveys.
- Refinements to reduce impacts on existing land uses, including businesses and farms.
- Amendments to the Order Limits to include environmental mitigation and enhancements.

6.3.2 Appendix F sets out all refinements that were made to the Project at Stage 5.

6.4 Review of the Water Recycling Plant site selection

6.4.1 Following the Summer 2024 Consultation, further environmental surveys of the WRP site were undertaken to support the EIA process. This identified the presence of open mosaic habitat, which is a priority habitat, at the WRP site.

6.4.2 A check of the previous stages of the WRP site selection process was therefore undertaken to verify whether the presence of open mosaic habitat would result in WRP_72 being viewed as less preferable for the location of the WRP.

6.4.3 This check did not result in any changes to the WRP site selection outcomes, as it was considered that the presence of open mosaic habitat could be mitigated to an acceptable level, and therefore the environmental reviews in the previous stages of the WRP site selection remained unchanged.

7 Stage 6: Spring 2025 Consultation to DCO application – refinement of the Project

7.1 Design development approach and methodology

- 7.1.1 Stage 6 represented the final stage of scheme development undertaken to refine the Project following the Spring 2025 Consultation, ahead of the DCO application.
- 7.1.2 The Stage 6 approach and methodology was consistent with that undertaken at Stage 5, explained in section 6.1.
- 7.1.3 Scheme development undertaken at Stage 6 was informed by having regard to the following:
- Feedback from the Spring 2025 Consultation.
 - Feedback from ongoing engagement with landowners and stakeholders including local planning authorities and statutory environmental bodies.
 - Information from ongoing environmental assessments and surveys.
 - Engineering design development, including the interface between the Project and existing Southern Water and Portsmouth Water assets.
 - Identified approved or planned development.
- 7.1.4 The approach to identifying and evaluating alternative designs (where required) was consistent with the approach at Stage 5 (see section 6.1.1). The evaluations compared the alternative designs against the design as presented at the Spring 2025 Consultation (Stage 5 design).
- 7.1.5 The outcome from Stage 6 was further design development of several of the Stage 5 design refinements that were presented at the Spring 2025 Consultation and the identification of some additional design refinements. The following Stage 5 design refinements were subject to further refinements at Stage 6:
- Design Refinement 1 – Budds Farm Wastewater Treatment Works
 - Design Refinement 2 – Water Recycling Plant
 - Design Refinement 3 – Pipeline Sections A and B
 - Design Refinement 9 – Intermediate Pumping Station F
 - Design Refinement 20 – Break Pressure Tank K
 - Design Refinement 22 – Construction Compound L-1
 - Design Refinement 24 – Pipeline Section L
- 7.1.6 As well as this, further design refinements were made in the following locations at Stage 6:
- Design Refinement 26 – Wickham Meadows SINC
 - Design Refinement 27 – Barley Mow / Pricketts Hill
 - Design Refinement 28 – Five Oaks Farm

- 7.1.7 Within the existing Otterbourne WSW, works to treat Invasive Non-Native Species (INNS) at Otterbourne WSW were added to the Project
- 7.1.8 Several other minor amendments to the design also occurred during Stage 6. All design refinements are set out in Appendix G.

7.2 Environmental Mitigation and Enhancement Areas

- 7.2.1 The EMEAs presented at the Spring 2025 Consultation were also refined further at Stage 6, having regard to Spring 2025 Consultation feedback, outcomes from ongoing environmental assessment and further design development. These amendments are outlined in Appendix G.
- 7.2.2 EMEAs included in the DCO application are shown on the Works Plans (Document reference 2.3, DCO Volume 2) and the Design Principles (contained within the Design Principles Document (Document reference 5.11, DCO Volume 5)) include further information on the characteristics of each EMEA.

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