Hampshire Water Transfer and Water Recycling Project

Habitats Regulations Assessment – Stage 2 Appropriate Assessment and Marine Conservation Zone – Stage 1 Assessment

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Executive summary

1. Southern Water Services Limited (the Applicant) has produced this report to present the Habitats Regulations Assessment (HRA) Stage 2 Appropriate Assessment and the Marine Conservation Zone (MCZ) Stage 1 Assessment for the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as the 'Project'). In accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and Section 126 of the Marine and Coastal Access Act 2009, the Applicant has an obligation to provide the Secretary of State such information as the authority may reasonably require for the purposes of the assessment. It does this through the documentation produced as part of the HRA and MCZ assessment process.

2. It assesses the Likely Significant Effects (LSE) of the Project, alone or in combination with other plans or projects, on Habitats Sites, including European Marine Sites, and the implications for such sites in light of their respective conservation objectives, and identifies mitigation to avoid or reduce the potential for an adverse effect on integrity (AEoI) of such sites. This report confirms whether subsequent stages of the HRA process are required.

3. The Project is in southern Hampshire, with parts located in and extending from Havant to Otterbourne. The site location and Order Limits of the Project are shown in Appendix B. The Project is considered to be a Project of National Significance and therefore consent for the project will be through the Development Consent Order (DCO) process under the Planning Act 2008.

4. The HRA Stage 1 Screening Assessment concluded that LSE could not be ruled out for the below sites which were therefore taken forward to the Appropriate Assessment stage:

   - River Itchen SAC
   - Chichester and Langstone Harbours SPA
   - Chichester and Langstone Harbours Ramsar
   - Solent Maritime SAC
   - Portsmouth Harbour SPA
   - Portsmouth Harbour Ramsar
   - Solent and Dorset Coast SPA
   - Solent and Southampton Water SPA
   - Solent and Southampton Water Ramsar
   - South Wight Maritime SAC
   - Solent and Isle of Wight Lagoons SAC
   - River Meon Compensatory SAC
   - Singleton and Cocking Tunnels SAC

5. Potential impact pathways identified as requiring Appropriate Assessment include habitat loss and fragmentation (including functionally linked land),

disturbance to qualifying species (including noise, vibration and lighting), hydrological changes, waterborne and airborne pollution, and the introduction or spread of invasive non-native species (INNS).

6. The MCZ Screening Assessment identified Bembridge MCZ as the only MCZ considered to be hydrologically connected to the Eastney Long Sea Outfall (Eastney LSO) as it is located within two tidal excursions. Other MCZs and recommended MCZs considered were screened out on the basis that there is no plausible pathway for effect. For Bembridge MCZ, in the absence of mitigation, potential pathways for effects were identified for waterborne pollution, hydrological change the spread or introduction of INNS. The Bembridge MCZ was therefore taken forward to Stage 1 assessment.

7. The Applicant has committed to a comprehensive list of mitigation and good practice measures to avoid any impacts which could adversely affect the integrity of the Habitats Sites taken through to the HRA Stage 2 Appropriate Assessment and MCZ Stage 1. The Environmental Statement (ES) is accompanied by a Commitments Register that includes a complete list of primary mitigation measures that are embedded within the design of the Project refer to ES Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6). Measures include designing the Project to avoid Habitats Sites, the use of trenchless techniques for Main River crossings, water and airborne pollution prevention and construction drainage controls, habitat reinstatement and planting, operational controls and biosecurity measures.

8. These measures are secured through management plans including:

   - Outline Construction Environment Management Plan (Outline CEMP) (Document reference 7.1, DCO Volume 7)
   - Outline Landscape Environmental Management Plan (Outline LEMP) (Document reference 7.5, DCO Volume 7)
   - Operational Environmental Management Plan (OEMP) (Document reference 7.7, DCO Volume 7)
   - INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7)

9. A project-specific mitigation strategy has also been developed for potential effects on Solent Waders and Brent Goose Strategy (SWBGS) functionally linked land, including the provision and long-term management of replacement habitat to avoid adverse effects on site integrity.

10. The Appropriate Assessment includes an in-combination review of other plans and projects where overlapping pathways could interact with effects from the Project. This includes the relevant planning applications and marine licences within the zones of influence. The in-combination assessment focuses on pathways where the Project could contribute to an adverse effect in combination, and concludes that, with the mitigation and management measures identified and secured, there is no potential for in-combination adverse effects on integrity.

11. The HRA Stage 2 Appropriate Assessment concludes that, subject to the application of secured mitigation and management commitments, the Project

would not result in an adverse effect on integrity of the Habitats Sites either alone or in-combination with other plans or projects. On this basis, no further stages of the HRA process are required.

12. The MCZ Stage 1 Assessment concludes that, with the tertiary mitigation and good practice measures secured, the Project would not pose a significant risk of hindering the achievement of the conservation objectives of Bembridge MCZ. As a result, an MCZ Stage 2 Assessment is not required for the Project.

1 Introduction

1.1 Purpose of report

1.1.1 Southern Water Services Limited (the Applicant) presents this report to provides the Habitats Regulations Assessment (HRA) Stage 2 Appropriate Assessment and the Marine Conservation Zone (MCZ) Stage 1 Assessment for the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as the 'Project'). It assesses the Likely Significant Effects (LSE) of the Project on Habitats Sites, including European Marine Sites, and the implications for such sites in light of their respective conservation objectives, and identifies mitigation to avoid or reduce the potential for an adverse effect on integrity (AEoI) of such sites. This report confirms whether subsequent stages of the HRA process are required. This report also includes a MCZ Stage 1 Assessment that considers potential impacts on MCZs in relative proximity to the Project.

1.1.2 A combined HRA Stage 1 Screening and MCZ Screening Assessment was undertaken by Southern Water in 2024 (Appendix A). That report includes the necessary information to allow the competent authority (the Secretary of State) to decide whether the Project may have a LSE on any Habitats Sites, or is capable of having a LSE on the protected features or supporting processes of any MCZs, in each case either alone or in combination with other plans or projects. The HRA Stage 1 Screening and MCZ Screening Assessment should be read in conjunction with this report and an updated HRA Stage 1 Screening and MCZ Screening Assessment is presented within sections 3.2 to 3.3 to provide a screening assessment of the addition of a Sustainable Drainage System (SuDS) at the Water Recycling Plant (WRP) site which has been included as part of the Project since the original HRA Stage 1 Screening.

1.2 Description of the Project

1.2.1 A detailed description of the Project is set out within Environmental Statement (ES) Chapter 3 Description of the Project, Volume I (Document reference 6.1, DCO Volume 6). A summary of the Project is provided in sections 1.2.2 to 1.2.25.

1.2.2 The Project is in southern Hampshire, with parts located in and extending from Havant to Otterbourne. The site location and Project application boundary is shown in Appendix B. The Project is considered to be a Project of National Significance and therefore consent for the project will be through the Development Consent Order (DCO) process under the Planning Act 2008. The need for the Project is set out within the Case for the Project (Document reference 5.6, DCO Volume 5).

1.2.3 The Project would use an advanced treatment process to turn treated wastewater into purified recycled water at a WRP. The WRP site would be located near Budds Farm Wastewater Treatment Works (WTW), at a site south of Havant. The recycled water would then be transferred via two pipelines to Havant Thicket Reservoir. This would supplement the source water proposed to be stored in the reservoir by Portsmouth Water. Two pipelines would connect the WRP site to Bedhampton Springs, transferring recycled water to Bedhampton Springs and source water back to the WRP site, before onwards transfer to the Otterbourne Water Supply Works (WSW), approximately 35km to the north-west. The transfer of recycled water and source water between Bedhampton Springs and Havant Thicket Reservoir would utilise Portsmouth Water's pipelines between these sites which are subject to a separate planning consent. At Otterbourne WSW, source water would be treated to strict drinking water standards ready for supply to homes and businesses. Reject water created during the water recycling process at the WRP site would be transferred via a pipeline to Budds Farm WTW before utilising existing infrastructure at Budds Farm WTW to enable release via the existing Eastney Transfer Tunnel (TT), Eastney Pumping Station (PS) and Eastney Long Sea Outfall (LSO) operated by the Applicant.

1.2.4 As set out in ES Chapter 1 Introduction, Volume I (Document reference 6.1, DCO Volume 6), the Project comprises the construction, operation and maintenance of the following principal components: As set out in ES Chapter 1 Introduction, Volume I (Document reference 6.1, DCO Volume 6), the Project comprises the construction, operation and maintenance of the following principal components:

1. WRP located at a site north-west of Budds Farm WTW with a maximum output (especially during drought conditions) of approximately 60 megalitres per day (Ml/d) of recycled water. At maximum operation the WRP would also produce a maximum output of approximately 22Ml/d of reject water. Pumping stations would be located at the WRP site to pump process waste to the existing sewer network for transfer to Budds Farm WTW, recycled water to Bedhampton Springs, and source water (from the Havant Thicket Reservoir) to Otterbourne WSW.
2. Underground pipelines between Budds Farm WTW and the WRP site. One pipeline would divert treated wastewater flows from Budds Farm WTW and transfer at maximum operation approximately 82Ml/d of treated wastewater to the water recycling plant (WRP) site. Another pipeline would transfer reject water from the WRP site to the Eastney LSO via the Budds Farm WTW site, and this pipeline would be sized to transfer approximately 82Ml/d to ensure sufficient capacity in the unlikely event of an emergency shutdown of the WRP site. A pumping station would be located at Budds Farm WTW to support the transfer of treated wastewater to the WRP site.
3. Pipelines between the WRP site and Bedhampton Springs, connecting to pipelines being delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir, to enable the transfer at

maximum operation of approximately 60Ml/d of recycled water from the WRP site to Havant Thicket Reservoir and approximately 90Ml/d of source water (water that is used as a source for drinking water) from Havant Thicket Reservoir to the WRP site. Between the WRP and Mill Lane (south-west of Bedhampton Springs), the pipelines would be underground. For the transfers between Mill Lane and Bedhampton Springs the pipelines are expected to be above-ground to avoid the Source Protection Zone at Bedhampton Springs.

4. Underground pipeline to transfer at maximum operation approximately 90Ml/d of source water from the WRP site to Otterbourne WSW.
5. Above Ground Plant (AGP) comprising two Intermediate Pumping Stations (IPSs), one Break Pressure Tank (BPT) and one combined IPS and BPT along the Pipeline between the WRP site and Otterbourne WSW.

1.2.5 The Project would also comprise the use of the following infrastructure:

1. Havant Thicket Reservoir (which has been consented separately by Portsmouth Water and is currently under construction) for the storage of recycled water. Havant Thicket Reservoir (which has been consented separately by Portsmouth Water and is currently under construction) for the storage of recycled water.
2. The existing Eastney LSO, Eastney Pumping Station (PS), and associated Eastney Transfer Tunnel (TT) for the release of reject water from the WRP site. At maximum operation, approximately 22Ml/d of reject water would be transferred to and released from the Eastney LSO. In the unlikely event of an emergency shut down of the WRP site up to 82Ml/d of reject water would be released from the Eastney LSO.
3. Pipelines and other related works that have been consented separately by Portsmouth Water for the transfer of recycled water and source water between Bedhampton Springs and Havant Thicket Reservoir.

1.2.6 The construction and operation of the Project would be supported by other works which are expected to include, but are not limited to:

1. Temporary works to support construction including construction compounds, water storage lagoons and temporary access to construction areas.
2. Permanent works to support operation and maintenance including permanent access to the AGP.
3. Isolation, washout and air valves along the length of the pipelines.
4. Highway works and Public Rights of Way (PRoW) diversions and enhancements where required.

1 Landscaping and mitigation, enhancement, and compensation measures.

1.2.7 The Project will require the demolition, disassembly and/or temporary relocation of a number of small structures.

Commissioning of the Project

1.2.8 Following the completion of construction works, commissioning of the principal components of the Project would be required to ensure the components have been installed correctly prior to the commencement of operation. This would firstly comprise pressure testing the pipelines following construction, followed by full system testing.

1.2.9 Pressure testing of the Project would comprise passing water through all sections of the Pipeline as follows:

1. The Pipelines between Budds Farm WTW and the WRP site would use treated wastewater from Budds Farm WTW.
2. The Pipelines between the WRP site and Bedhampton Springs would use potable water from Otterbourne WSW.
3. The Pipeline between the WRP site and Otterbourne WSW would use potable water from Otterbourne WSW.

1.2.10 The water storage lagoon temporary construction compounds, described in Environmental Statement (ES) Chapter 3 Description of the Project, Volume I (Document reference 6.1, DCO Volume 6), would store potable water used for commissioning of the Pipeline between the WRP site and Otterbourne WSW. Water storage lagoons are not required for other pipeline components of the Project as the WRP site and Havant Thicket Reservoir can be used for this purpose. The water storage lagoons would be used to contain the potable water used for the testing of the Pipeline and the cleaning of this water using a silt buster. They would comprise a lined shallow bunded area of land with a volume that would vary depending on commissioning requirements.

1.2.11 Water would be passed through the pipeline using temporary pumps and pipes, either directly to the Pipelines or using installed washout valves. Once pressure testing has been completed, and the potable water within the water storage lagoons is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced facility. Treated wastewater used for pressure testing of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO.

1.2.12 Full system testing of the Project would take place as follows:

1. The Pipelines between Budds Farm WTW and the WRP site would use treated wastewater from Budds Farm WTW.
2. The Pipelines between the WRP site and Bedhampton Springs would use recycled water.

3. The Pipeline between the WRP site and Otterbourne WSW would use source water from Havant Thicket Reservoir.

Utilisation of the Project

1.2.13 The Project is required to address a water supply deficit during both normal and drought conditions. As set out in the Government's Water Resources Planning Guidance 2023 [1], the Applicant is required to plan for how it will provide water in drought conditions, including up to a 1-in-500 year (extreme) drought as part of its water resource planning statutory obligations. The need to address the water supply deficit in an extreme drought has defined the maximum flows and output of the Project.

1.2.14 At this maximum operation, the Project would transfer approximately 60Ml/d of recycled water to Bedhampton Springs (for onward transfer to Havant Thicket Reservoir) and extract approximately 90Ml/d of source water from Bedhampton Springs for transfer to Otterbourne WSW.

1.2.15 Table 1-1 sets out the approximate maximum flows and output of the Project.

Table 1-1 Approximate maximum flows and output of the Project

Project component	Maximum output/flow
Pipelines between Budds Farm WTW and the WRP site	82Ml/d of treated wastewater transferred from Budds Farm WTW to the WRP site.
	22Ml/d of reject water transferred from the WRP site to Budds Farm WTW and onwards to the Eastney TT, Eastney PS and Eastney LSO (or in the event of an emergency, 82Ml/d of treated wastewater would be transferred from the WRP site back to Budds Farm WTW and onwards to release via the Eastney LSO).
WRP	Produces 60Ml/d of recycled water generated from 82Ml/d of treated wastewater from Budds Farm WTW. 22Ml/d of reject water is also produced (as above).
Pipelines between the WRP site and Bedhampton Springs	60Ml/d of recycled water from the WRP site to Bedhampton Springs (for onward supply to Havant Thicket Reservoir) and 90Ml/d of source water from Bedhampton Springs (sourced from Havant Thicket Reservoir) to the WRP site.
Pipeline between the WRP site and Otterbourne WSW	90Ml/d of source water.

1.2.16 In an extreme drought, the Project is forecast to predominantly operate at this maximum operation. In normal weather conditions (i.e. outside of drought) the Project is required to meet forecast daily water supplies given the scale of supply deficits facing the Applicant's Hampshire supply area.

1.2.17 The Applicant's emerging Water Resources Management Plan (WRMP) 2024 (WRMP24) [2] provides forecasts for the utilisation of the Project for both normal and extreme (1:500) drought conditions under a number of different future scenarios, known as 'situations', which consider different assumptions around population growth, climate change and environmental ambition (e.g. abstraction reductions). Situation 4, which is one of the nine future scenarios considered, is used by all water companies in South East England as a central baseline scenario of forecast supply demand balance for future investment modelling purposes, i.e. it provides the basis for their investment plans. The forecasts in WRMPs are regularly reviewed as part of the five year WRMP cycles and hence may change over time. In assessing the maximum operation of the Project for the purposes of this HRA, this provides some flexibility to accommodate future changes in how the Project might be utilised within that envelope.

1.2.18 Situation 4 in the emerging WRMP24 shows that utilisation of the Project increases over time in both normal and drought conditions in response to increased water scarcity, principally due to reductions in abstractions. The WRP component of the Project is expected to operate predominantly at maximum output (approximately 60Ml/d) in both scenarios from the early 2040s onwards. The transfer flow to Otterbourne WSW is expected to reach its maximum flow (approximately 90Ml/d) in extreme drought conditions from 2040 onwards, when drought orders/permits on the Rivers Test and Itchen (which enable increased abstractions during drought) are assumed to be no longer available. To support essential daily water supplies during normal conditions, the transfer flow to Otterbourne WSW is expected to increase from approximately 23Ml/d in 2034/35 to almost 50Ml/d by 2050, with flows fluctuating thereafter between 40Ml/d and 50Ml/d up to 2075. Note that these are annual average figures and it is likely that the transfer will operate at capacity every year, on some days in the year, i.e. the capacity of 90Ml/d is not just required in an extreme drought events.

Decommissioning

1.2.19 The components of the Project are expected to have a design life of up to 100 years; however, the operational life could be longer than this. Therefore, consent for decommissioning of the Project is not being sought by the Applicant. The condition of the components of the Project would be reviewed at the end of their expected design life to determine whether they remain in a viable condition to continue to operate after this time or whether further maintenance would be suitable. Table 1-2 sets out the expected design life of the Project components.

Table 1-2 Project components expected design life

Component	Expected design life
WRP site	60 years
Pipeline (including tunnelled sections)	100 years
IPSs	60 years

BPTs	100 years

1.2.20 It is anticipated that the programme for decommissioning the components of the Project would be similar to the construction programme for the Project. It is not anticipated that additional land outside of the Order Limits would be required for decommissioning of the Project.

1.2.21 The specific method of decommissioning of the Project at the end of the operational phase is uncertain as the engineering approaches will evolve over this time. Any decommissioning works in connection with the Project would be undertaken using good industry practice and would comply with all relevant statutory requirements applicable at the time. Any decommissioning works would take place in the context of the regulatory framework in place at that time, which may include a requirement to seek additional consents, permits or licences.

1.2.22 Given the Applicant is not seeking consent for decommissioning of the Project, and the regulatory framework for future decommissioning is unknown, the Applicant is not submitting an Outline Decommissioning Environmental Management Plan as part of the DCO application.

1.2.23 During the decommissioning phase, it is anticipated that above-ground assets would be removed, including process, mechanical and electrical equipment, buildings, and associated below-ground structures.

1.2.24 It is anticipated that buried pipeline infrastructure would be left in situ following the end of the Project's operation phase, once drained and capped (and possibly filled in with grout under major assets such as road and railways) depending on industry best practice at the time.

1.2.25 The approach to the assessment of decommissioning is set out in ES Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6).

Development Consent Order Limits

1.2.26 This HRA and MCZ assessment is based on the Order Limits, as shown in ES Figure 1.1 Location of the Project and Order Limits, Volume III (Document reference 6.3, DCO Volume 6). The Order Limits represent the extent of the area within which the development authorised by the DCO may be carried out, including the permanent and temporary land needed for construction, operation and maintenance activities. Within these Order Limits, there is flexibility for the components of the Project to be aligned at the very local scale (micro-siting) to account for potential environmental constraints identified from ongoing surveys prior to the commencement of construction. This will be undertaken at the detailed design stage post-consent.

1.2.27 Within the Order Limits, Works Areas and Limits of Deviation have been defined. These Works Areas and Limits of Deviation define the extent of the area within which the WRP site, the pipelines and AGP would be located and within which they may deviate horizontally. This provides the required level of

flexibility necessary to ensure deliverability and allow for unknowns that would not be identified until the detailed design and construction stages.

1.2.28 The HRA and MCZ assessments are also based on parameters that reflect the maximum footprints and vertical extents within the Works Areas and Limits of Deviation of the WRP site, the AGP and other works including temporary construction compounds as shown on ES Figure 1.1 Location of the Project and Order Limits, Volume III (Document reference 6.3, DCO Volume 6). These parameters are set out and secured in the Design Principles Document (DPD) (Document reference 5.11, DCO Volume 5).

1.3 Legislation summary

Habitats Regulations Assessment

1.3.1 Under the Conservation of Habitats and Species Regulations 2017 (as amended[1]) (the 'Habitats Regulations'), any plan or project which is likely to have a significant effect on a Habitats Site or a European offshore marine site (either alone or in combination with other plans or projects), and which is not directly connected with or necessary to the management of the site, must be subject to an appropriate assessment by the competent authority. The HRA process is designed to test if the plan or project could adversely affect the designated features of a Habitats Site. Within the United Kingdom (UK), all Habitats Sites which were previously referred to as Natura 2000 sites are now referred to as National Site Network (NSN) sites.

1.3.2 HRA refers to the assessment of the potential effects of a development or project on one or more Habitats Sites (Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)). UK Government policy provides that proposals affecting Ramsar sites (wetlands of international importance – both listed and proposed), potential SPAs (pSPAs), proposed SACs (pSACs) and any secured HRA compensatory habitat also require an HRA.

1.3.3 All of the Habitats Sites described in section 1.3.2 were considered within the combined HRA Stage 1 Screening and MCZ Screening Assessment (Appendix A).

1.3.4 When considering the qualifying features of Habitats Sites, Annex I species of the Wild Birds Directive and Annex II species of the Habitats Directive are referred to. Annex I species refers to birds which are the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. Annex II refers to animal and plant species of community interest whose conservation requires the designation of SACs.

[1] All references to legislation are 'as amended' and therefore, this text will not be included going forward in this document.

Marine Conservation Zone Assessment

1.3.5 MCZs are areas of the UK marine environment that are designated under the Marine and Coastal Access Act 2009 (MCAA) [3] to protect a variety of nationally important, rare or threatened habitats and species [4]. Under Section 126 of the MCAA, any acts as part of a plan or project that require a marine licence must be assessed if they are capable of affecting (other than insignificantly) the protected features of an MCZ or any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent (referred to as "supporting processes"). Under Section 149A of the Planning Act 2008 [5] a DCO may include provision deeming a marine licence to have been issued under Part 4 of the MCAA for any activity, and a MCZ assessment has been completed in order to provide adequate information to enable the governing authority to discharge their duties under Section 126 of the MCAA. For the Project a marine licence will be required for installation of the Pipelines under the seabed between Budds Farm WTW and the WRP site, and for construction of the WRP site SuDS outfall below the Mean High-Water Springs (MHWS).

1.3.6 While the MCAA does not stipulate an approach, MCZ Assessment is conducted in line with guidance from the Marine Management Organisation (MMO) as a three-stage process consisting of Screening, Stage 1 MCZ assessment, and the Stage 2 MCZ assessment [4, 6, 7]. The MCZ Assessment starts with a screening exercise to determine through the course of screening that the licensable activity is taking place within or near an area being put forward or already designated as an MCZ and that the activity is capable of affecting (other than insignificantly) either (i) the protected features of an MCZ; or (ii) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent. Where it has been determined through screening that s126 applies, the relevant project will be further assessed to determine which subsections of s126 should apply to the application in two stages: Stage 1 Assessment and Stage 2 Assessment. This staged assessment process is further detailed in Section 2.4 of this report.

2 Assessment methodology

2.1 Structure of the report

2.1.1 The assessment section of this report is divided into the following sections:

1. Summary of HRA Stage 1 – Screening and MCZ Assessment Screening
2. Impact Pathways with potential for LSE on Habitats Sites taken forward to HRA Stage 2 Appropriate Assessment
3. Mitigation Measures to Avoid or Minimise Impacts on Habitats Sites assessed within the Stage 2 HRA
4. Assessment of effects on site Conservation Objectives and Site Integrity to identify any Adverse Effects on Integrity of the Habitats Sites assessed within the Stage 2 HRA
5. Stage 1 MCZ Assessment
6. Conclusions

2.2 Source of guidance

2.2.1 The approach to the HRA has been developed from the legislation described in the 'Legislation Summary' section and informed by the latest guidance for HRA in the UK, namely:

- The Habitats Regulations Assessment Handbook (2013) [8]. The Handbook is informed and regularly updated with amendments to the Regulations, the latest government guidance and case law
- The Habitats and Wild Birds Directives in England and its seas - Core guidance for developers, regulators & land/marine managers (2012) [9] (draft for public consultation)
- Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments (2025) [10]

2.2.2 The approach to MCZ Assessment has been developed from the Marine and Coastal Access Act and informed by the Natural England (NE) guidance on MCZ assessment, namely:

- Guidance on how to use Natural England's Conservation Advice Packages in Environmental Assessments (2021) [6]

2.3 Responsibility for undertaking HRA and MCZ Assessment

2.3.1 The responsibility for undertaking Stage 2 appropriate assessment pursuant to the Habitats Regulations lies with the competent authority (in this case the Secretary of State). Under the Habitats Regulations, the applicant (Southern Water) has an obligation to provide the competent authority with such information as the authority may reasonably require for the purposes of the assessment, and it does this through the documentation produced as part of the HRA process. Similarly, guidance from NE [6] on the MCZ Stage 1 assessment process places the onus on the applicant to provide relevant information to the competent authority in order to progress or deem the marine licence.

2.4 HRA and MCZ process

2.4.1 The combined HRA Stage 1 Screening and MCZ Screening Assessment provides an overview of the assessment processes. This report sets out the HRA Stage 2 – Appropriate Assessment and MCZ Stage 1 Assessment stages, which are summarised in sections 2.4.2 to 2.4.10.

HRA Stage 2 - Assessment of Adverse Effects on site integrity

2.4.2 Regulation 63 of the Habitats Regulations requires that any plan or project, which is not directly connected with or necessary to the management of a Habitats Site, but would be likely to have a significant effect on such a site, either individually or in combination with other plans or projects, shall be subject to an 'Appropriate Assessment' of its implications for the Habitats Site in view of the site's conservation objectives.

2.4.3 The assessment must determine whether or not a project will adversely affect the ecological integrity of the Habitats Site(s) concerned. Site integrity can be described as follows:

"*The integrity of a site is the coherence of its ecological structure and function, across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified."* [11].

2.4.4 For site integrity to be unaffected, there should be no impacts to a Habitats Site's qualifying features resulting in adverse effects to the ecological structure and functioning of the site, its supporting processes and/or adversely affecting the site's ability to meet its conservation objectives.

2.4.5 Where negative effects are identified, the process should consider alternatives to the proposed actions and explore mitigation opportunities, whilst adhering to the precautionary principle. The European Commission (2000) [12] describes when the precautionary principle is triggered as follows:

"*If a preliminary scientific evaluation shows that there are reasonable grounds for concern that a particular activity might lead to damaging effects on the environment, or on human, animal or plant health, which would be inconsistent with the protection normally afforded to these within the European Community, the Precautionary Principle is triggered*."

2.4.6 Where adverse effects on site integrity are identified, the project must be taken through to HRA Stage 3: Derogations. Project proposers must first, in accordance with Regulation 64 of the Habitats Regulations, consider alternative solutions that avoid adverse effects on integrity. Where it is not possible to meet the objectives of the project through alternative solutions, the proposer must demonstrate, in accordance with Regulation 64 of the Habitats Regulations, that there are Imperative Reasons of Overriding Public Interest (IROPI) for the proposal to be granted consent. If there are no feasible alternative solutions and it has been shown that there are imperative reasons of overriding public interest, Compensation Measures will need to be taken. These measures will need to fully offset the damage which will or could be caused to the site to protect the overall coherence of the National Site Network. These Compensatory Measures must be approved by the Secretary of State before the proposal can commence.

2.4.7 The competent authority can only issue consent for a project after having ascertained that it will not adversely affect the integrity of the site concerned, or that it has been demonstrated that the provisions of Regulations 64 and 68 of the Habitats Regulations have been met.

MCZ Assessment Process – Stage 1 Assessment

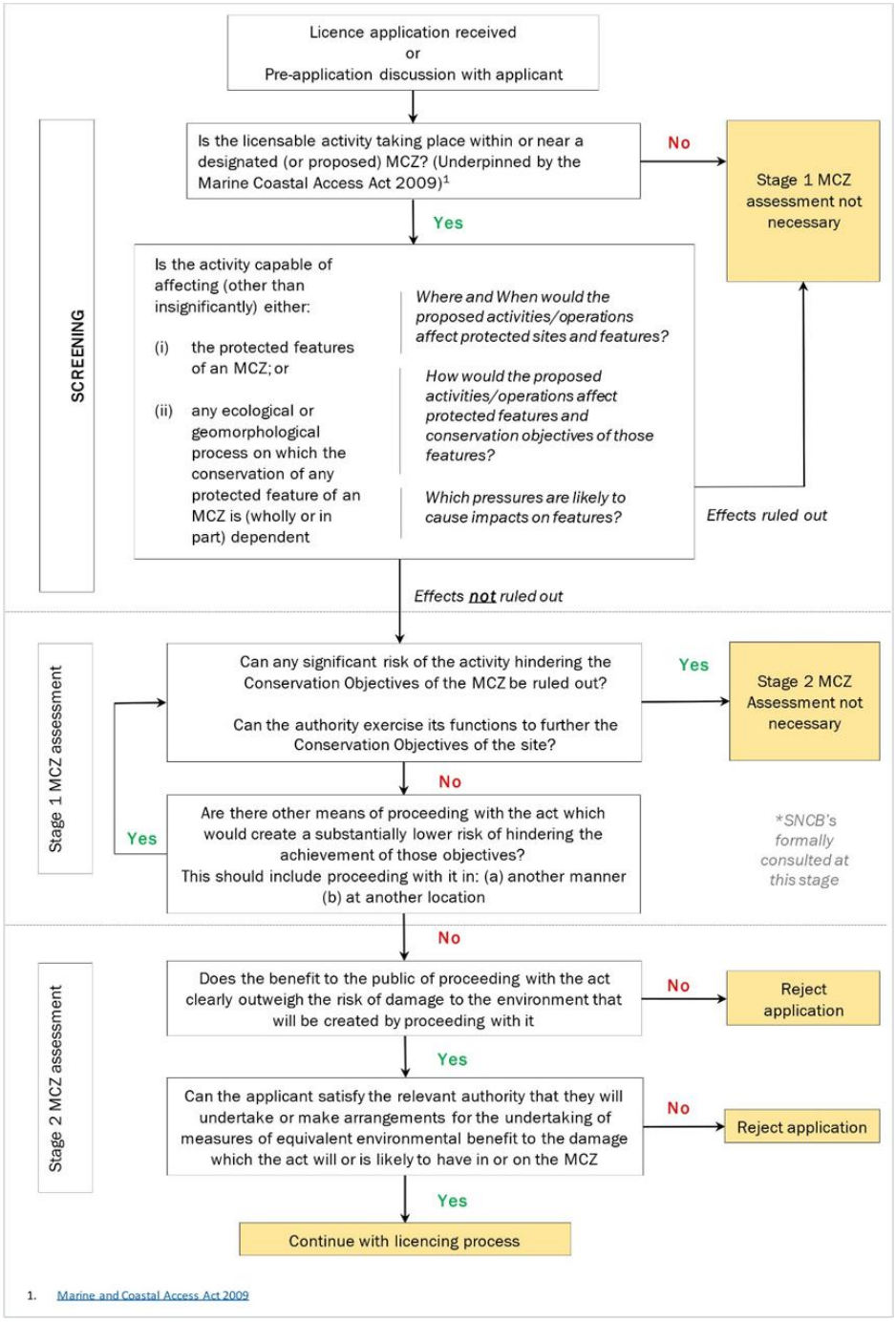
2.4.8 The MCZ Assessment process is outlined in Graphic 2-1. During the Stage 1 assessment, the potential impacts of the project or plan are identified and each of these is assessed against the protected features of the MCZ or the supporting processes. This establishes whether adverse effects are likely to arise on the protected features and whether mitigation measures are required to avoid these effects arising and avoid hindering the achievement of the conservation objectives of the MCZ. If following the consideration of mitigation, it is anticipated that an effect remains, then the project or plan will undertake the Stage 2 assessment.

2.4.9 Stage 1 MCZ Assessment therefore determines whether there is a significant risk of the project activity hindering the achievement of the conservation objectives stated for the MCZ. Where the project or plan in its current form are considered to result in a significant risk of such hinderance, Stage 1 MCZ Assessment will also consider whether there are any alternative means of proceeding with the project or plan that would create a substantially lower risk of hindering the achievement of the conservation objectives stated for the MCZ, including changing methods or undertaking the act at another location. Stage 2 MCZ Assessment determines whether the benefit to the public of proceeding with the act clearly outweighs the risk of damage to the environment that will be created by proceeding with it. If so, the applicant will

need to satisfy the authority that it will undertake or make arrangements for the undertaking of measures of equivalent environmental benefit to the damage that the act associated with the project or plan will or is likely to have in or on the MCZ.

2.4.10 During the Stage 2 assessment the competent authority would initiate wider consultation with government departments and relevant local government organisations to weigh up the benefits of the project or plan against the potential risk of damage to the environment. Discussions at this stage will also consider the potential to offset or create additional habitat [13]. Following this stage, the competent authority will make a decision on whether or not to grant consent for the project or plan, taking into account the information provided in the Stage 2 assessment.

Graphic 2-1 MCZ Assessment Process



Source: Adapted with unchanged content from Natural England, 2022.

2.5 Zone of Influence

2.5.1 The Zone of Influence (ZoI) is the area over which ecological features may be affected by the Project. It covers the Order Limits and the wider landscape where pathways (ecological or hydrological links) exist for the transfer of impacts to ecological features outside the Order Limits. The ZoI for each

ecological feature varies in size depending on the nature of the effects and the sensitivity of the ecological feature to those effects.

2.5.2 Following standard guidance [14], each ZoI has been determined by:

1. The scale, duration, location and timing of the construction and operational activities of the Project.
2. The abundance and distribution (in relation to the construction and operation of the Project) of ecological features, making use of ecological data, including aerial photography and Ordnance Survey (OS) mapping, biological records of protected and notable species and baseline data collected from field surveys.

2.5.3 The process for establishing the ZoI for each ecological feature is detailed within the Technical Appendices which are presented within ES, Volume II (Document reference 6.2, DCO Volume 6):

1. ES Appendix 8.1 Designated sites, Volume II (Document reference 6.2, DCO Volume 6)
2. ES Appendix 8.4 Bats, Volume II (Document reference 6.2, DCO Volume 6)
3. ES Appendix 8.5 Ornithology CONFIDENTIAL, Volume II (Document reference 6.2, DCO Volume 6)
4. ES Appendix 8.7 Riparian mammals, Volume II (Document reference 6.2, DCO Volume 6)
5. ES Appendix 8.9 Freshwater ecology, Volume II (Document reference 6.2, DCO Volume 6)

2.5.4 The ZoI for each ecological feature relevant to this assessment are summarised within Table 2-1.

Table 2-1 Ecological features relevant to the assessment ZoI

Ecological Feature	ZoI
Habitat Site: SAC, SPA, Ramsar Functionally linked site: SWBGS Site	2km, or any site with hydrological connection to the Order Limits. 10km marine ecology hydrological connectivity.
Barbastelle *Barbastella barbastellus* Bechstein's bat *Myotis bechsteinii*	15km
Breeding and non-breeding birds	50 – 750m depending on bird species
Otter	200m
Freshwater fish Southern damselfly	All watercourses crossed by the Project, from 500m upstream of the Order Limits and all watercourses with hydrological connection downstream.

2.6 In-Combination Assessment

2.6.1 The HRA Appropriate Assessment requires an assessment of whether the Project is likely to have an adverse effect on the integrity of a Habitats Site either alone or in-combination with other plans or projects. The purpose of the in-combination assessment is to identify whether the effects of multiple activities which would not result in an adverse effect on site integrity alone could combine to result in such an effect. Therefore, an in-combination assessment has been undertaken of impacts and effects where the Project would result in some level of adverse effect, but which would not have an adverse effect on site integrity alone.

2.6.2 The process for identifying plans and projects which could result in in-combination effects is outlined in the ES Chapter 20, Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6). Developments are presented in ES Appendix 20.1 List of 'other developments' – longlist and shortlist, Volume II (Document reference 6.2, DCO Volume 6). The list of 'other developments' presented within the Environmental Statement Cumulative and In-combination Effects chapter, which was informed by the ZoI for ecological receptors, including Habitats Sites (within 2km of Habitats sites, hydrologically linked sites, and 10km for marine sites), was reviewed in the context of the HRA in-combination assessment to focus the in-combination assessment on relevant plans and projects with potential for in-combination effects on the Habitats Sites assessed within the HRA for the Project. ES Chapter 20, Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6) notes that cumulative impacts on designated sites with bats as a qualifying feature are not considered in the cumulative assessment as there are no Habitats Sites located within 10km of the Order limits which are designated for bats. However, the in-combination assessment within the HRA has assessed in-combination effects on Singleton and Cocking Tunnels SAC.

2.6.3 In addition to the assessment of 'other existing development and/or approved development', the assessment considered the potential for in-combination effects on Habitats Sites associated with other projects proposed by the Applicant and Portsmouth Water. Projects proposed are detailed in Table 2-2.

Table 2-2 In-combination assessment for other projects proposed by the Applicant and Portsmouth Water

Plan or project	Description	Potential in-combination effects assessment
Upgrades to Otterbourne WSW	Upgrades to meet Drinking Water Inspectorate water treatment requirements. Proposals include replacement of the existing surface water and groundwater pre-disinfection system with new pre-disinfection. Construction winter 2025 to summer 2031.	There is the potential for there to be a temporal overlap between the construction phases of the scheme and Project. However, no cumulative effects are anticipated during construction or operation as appropriate mitigation measures will be adopted as part of the construction of the upgrades to the WSW and therefore limit the potential for cumulative effects. The operation of the proposed equipment kiosks would not introduce new sources of contamination risk or change the quality or quantity of surface and groundwaters and therefore there are **no in-combination adverse effects** during operation.
Upgrades to Budds Farm WTW	Installation of additional final settlement tank capacity (HBC OD002 Budds Farm WTW WINEP Deferral U_IMP5). Construction 2026-2029.	The Upgrades to Budds Farm was identified as having the potential to negatively impact Chichester and Langstone Harbour SPA and Ramsar due to the proximity to functionally linked land (Solent Wader Brent Goose Strategy (SWBGS) sites) and therefore has a potential for in-combination effects with the Project. However, the Project has a specific mitigation and compensation strategy for the impacts to SWBGS sites resulting in no residual adverse effects. The Upgrades to Budds Farm WTW scheme will also require a SWBGS mitigation strategy prior to commencement which would be a separate strategy and not consented for as part of the Project, if, if any impacts to SWBGS sites are anticipated, to ensure no residual adverse effects. **No in-combination adverse effects** on integrity are therefore likely.
Utilities – WRP	Provision of the following utilities: potable water, fire supply, communications, electric, and wastewater (HBC OD003).	There will be a temporal overlap between the construction phases of the utilities scheme and the Project. The utility schemes are proposed within open mosaic habitat, hedgerows and hardstanding of existing roads. The water and wastewater utility runs directly through SWBGS site H08. Therefore, the utility schemes could result in negative impacts to habitats and designated sites. With the implementation of mitigation including SWBGS site mitigation, sensitive timing of construction works including enabling , use of an Ecological Clerk of Works (ECoW) and habitat protection, reinstatement and creation secured through the Outline Landscape Environmental Management Plan (LEMP) (Document reference 7.5, DCO Volume 7) and Outline Construction Environment

Plan or project	Description	Potential in-combination effects assessment
		Management Plan (CEMP) (Document reference 7.1, DCO Volume 7) no LSE from the Project are considered likely. It is assumed that the utility schemes will include similar appropriate mitigation and **no in-combination adverse effects** on integrity are likely.
Southampton Link Main (SLM)	Transfer water from Otterbourne WSW to Testwood WSW.	The Scheme's request for an EIA Screening Opinion states that "Having regard to the selection criteria in Schedule 3 of the EIA Regulations 2017 and the location and nature of the Proposed Scheme, with predominately buried pipeline and careful siting and selection of construction techniques and embedded mitigation, it is considered that the Proposed Scheme is unlikely to have significant effects on the environment in relation to biodiversity". It also states that "No significant temporary residual effects are anticipated and there will be no permanent effects". Furthermore, an HRA undertaken for the SLM scheme did not identify any LSE. Therefore, given that no likely significant residual effects have been identified, **no in-combination adverse effects** are anticipated during the construction and operation of the Project.
Andover Link Main (ALM)	Transfer water between operational sites in Winchester and Andover.	The Scheme's request for an EIA Screening Opinion identified that the scheme 'is likely to have significant effects on the environment and is therefore EIA development'. The River Itchen SAC is located 3km from the scheme and the HRA undertaken for the scheme identified no LSE. **No in-combination adverse effects** are therefore likely.
Farlington to Nelson pipeline	Transport treated water from Farlington Water Treatment Works to Nelson Service Reservoir (8km).	Owing to the proximity of the scheme to the Project and temporal overlap during the construction and operational phases there is potential for cumulative effects. The scheme footprint overlaps the Project at numerous locations along its 8km length, including the overlapping of approximately three temporary construction compounds. Only a limited number of documents on the scheme are available, however, the screening opinion was found which concluded that the scheme would not require an EIA. Therefore, it is assumed that LSE are not anticipated. It is anticipated that the scheme would adopt mitigation measures during construction to minimise any potential impacts. It is also anticipated there will be operational measures to manage potential effects from drainage of the new

Plan or project	Description	Potential in-combination effects assessment
		permanent infrastructure and cumulative effects on the water environment are not expected**. No in-combination adverse effects** on integrity are therefore likely.
Farlington Water Treatment Works	Construction of a water pumping station building, surge vessels, electricity substation and associated development including modifications to Gillman Road, provision of external lighting, fencing, surface water drainage, hard and soft landscaping.	There is no surface water connectivity between the scheme to upgrade the existing water treatment works and the Project. It is anticipated that potential environmental impacts at the water treatment works will be managed through best practice mitigation measures to control sediments and turbid runoff, flood risk and accidental spills and leaks. Significant cumulative effects are not anticipated. It is anticipated that any changes to the impermeable footprint of the water treatment works during operation will be managed through a drainage strategy**. No in-combination adverse effects** on integrity are therefore likely.
Ward and Burke Shafts	A pipeline through Havant.	Owing to the possible temporal overlap during the construction and operational phases there is potential for in-combination effects. Both developments are hydraulically connected to the Hermitage Stream and therefore have connectivity to the Solent Maritime SAC, Chichester and Langstone Harbours SPA and Ramsar. The ES for the Havant Thicket Reservoir scheme concludes that “impacts on biodiversity would not result in adverse effects that would be significant from the pipeline and culvert construction. Impacts would be largely temporary in nature, significant trees will be avoided and habitats will be re-instated..." and "No significant effects during the operation phase are anticipated”. Due to the relatively small scale of the scheme and the appropriate mitigation that is proposed **no in-combination adverse effects** are anticipated during the construction and operation of the Project.
Portsmouth Water Bedhampton Springs Site	Security alterations to fences (from 3.5m to 4m), alarms, CCTV masts as a result of the Project.	Owing to the proximity of the scheme and the Project and the possible temporal overlap during the construction and operational phases there is potential for cumulative effects. Both developments are hydraulically connected to the Hermitage Stream and therefore have connectivity to the Solent Maritime SAC, Chichester and Langstone Harbours SPA and Ramsar. It is anticipated that the scheme will have appropriate mitigation in place to prevent impacts to designated sites. Therefore, **no in-combination adverse effects** on site integrity are anticipated.

Plan or project	Description	Potential in-combination effects assessment
Portsmouth Water emergency discharge location for Havant Thicket Reservoir (Hermitage Stream)	Emergency discharge location for Havant Thicket Reservoir (Hermitage Stream).	The ES for the Havant Thicket Reservoir scheme concludes that "Indirect effects through pollution incidents (during construction and maintenance) and changes to water flows will be avoided through mitigation." Due to scale of the scheme and the appropriate mitigation that is proposed, **no in-combination adverse effects** are anticipated during the construction and operation of the Project and adverse effects on site integrity are therefore not anticipated.
Isle of Wight Water Recycling Project	The construction of a Water Recycling Plant on land to the south of Sandown WTW, an outfall to release purified recycled water into the Eastern Yar, and a new below-ground pipeline to transfer purified recycled water from the new WRP to the Eastern Yar at Alverstone.	A HRA undertaken for the scheme identified LSE on Solent and Isle of Wight Lagoons SAC, and Solent and Southampton Water SPA and Ramsar. However, the HRA concludes that there will be no adverse effect on the integrity of these sites. Water quality impacts are restricted to within 1m of the Sandown long shore outfall, which is within the South Wight Maritime SAC, however no qualifying habitats are present in this location. There is no overlap in the areas affected by the scheme and the Project and therefore **no in-combination adverse effects** on the integrity of the Habitats Sites.
Ford Water Recycling Project	The scheme includes the construction of a new water recycling plant capable of producing up to 15 million litres of purified recycled water a day and the associated pipework and pumping facilities.	There are hydrological connections between the scheme and Solent and Dorset Coast SPA. A draft HRA for the scheme identified no LSE on the SPA. There will be no overlap in the areas affected by the scheme and the Project and therefore **no in-combination adverse effects**.

2.6.4 The ES Chapter 20, Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6) identified no potential significant cumulative or in-combination effects for Terrestrial and freshwater biodiversity and for Marine biodiversity from plans and projects scoped into the cumulative and in-combination assessment, which included an assessment of impacts and effects on the Habitats Sites assessed within the HRA. A number of the planning applications scoped into the assessment had potential for in-combination effects on Habitats Sites. Details of these projects are discussed in Table 2-3.

Table 2-3 In-combination assessment for planning applications

Plan or project	Description	Potential in-combination effect assessment
Land to the South of Romsey Avenue Fareham	Residential Development of 225 Dwellings.	The ecological impact assessment of the scheme identifies potential for significant adverse effects on Portsmouth Harbour SPA and Ramsar site due to the loss of arable land designated as a Primary Support Area within the SWBGS and due to disturbance during construction of SPA birds. Measures including SWBGS site compensation and mitigation to minimise noise disturbance is assessed within the ecological impact assessment to result in negligible impacts to Portsmouth Harbour SPA and Ramsar. With these measures, no significant in-combination impacts with the Project are anticipated and **no in-combination adverse effects** on integrity are likely.
Dunsbury Hill Farm, Park Lane, Cowplain, Waterlooville	Hybrid planning application.	The Project, and the scheme are both hydraulically connected to the Hermitage Stream which connects to the Solent Maritime SAC, and Chichester and Langstone Harbours SPA/Ramsar. There is potential for cumulative impacts on the same designated sites during the construction phase. However, the scheme ES and HRA concluded that there are no LSE on any of these statutory designated sites. The Project will have no impact which will undermine the conservation objectives of these sites therefore, **no in-combination adverse effects** during construction or operation are anticipated.
Berewood	Strategic Housing Allocation - West of Waterlooville.	No planning documents relating to terrestrial and freshwater biodiversity are available for the scheme on the HBC planning portal. Planning permission was granted for the scheme in 2012 (APP/10/00828) and construction has begun. Construction of the allocation is due to be completed prior to 2028, and therefore it is unlikely that there will be cumulative effects with the Project during construction. Operational impacts from the housing development are likely to be restricted to recreational disturbance impacts and nutrient impacts and therefore **no operational in-combination adverse effects** are likely.
Land east of College Road, Camp Down, Havant	Application for mixed use residential development comprising 628 dwellings.	The scheme would result in direct impacts to a number of SWBGS sites and potential impacts to Chichester and Langstone Harbours SPA and Ramsar site. The proposals would be required to fully mitigate for any impacts to the SWBGS sites. A consultation response from NE in 2023 included an objection due to the

Plan or project	Description	Potential in-combination effect assessment
		proposed SWBGS mitigation proposed. No more recent details were identified on the planning portal. As the scheme would be required to develop an acceptable mitigation strategy before being granted planning permission, it is considered that there would be **no in-combination adverse effects** on site integrity.
North Portsea Island Phase 5 Coastline	Flood and coastal erosion management scheme.	The scheme is within Solent and Dorset Coast SPA and is within SWBGS P61A Candidate Site associated with Portsmouth Harbour SPA. The scheme is also adjacent to SWBGS P61B and P101 associated with Chichester and Langstone Harbours SPA and Ramsar to which it is hydrologically connected. A specific mitigation and compensation strategy for the impacts to SWBGS sites has been developed for the Project and the scheme resulting in no residual adverse effects. Construction is expected to be complete before commencement of Project. Therefore, cumulative construction effects to the European Designated sites are not anticipated. **No operational in-combination adverse effects** to European designated sites are anticipated due to the nature of this development.
Land At Tipner East, East of The M275 West of Twyford Avenue Portsmouth	Detailed planning application for the redevelopment of site to provide 835 residential units. (Policy PCS1 Tipner).	Detailed planning application for the redevelopment of site to provide 835 residential units. There would be impacts to SWBGS sites and to Chichester and Langstone Harbours SPA and Ramsar. Mitigation and compensation for the proposals will avoid adverse effects on integrity from habitat loss and from noise and visual disturbance. With the implementation of mitigation for both the Project and the Tipner proposals, **no in-combination adverse effects** are likely.
Church Farm House	Proposals include installation of a new and replacement bridge over the River Itchen and river enhancement works	The scheme is hydrologically linked to the River Itchen SAC and therefore has potential for in-combination effects with the Project. The Preliminary Ecological Appraisal for the scheme concludes "The preparation of a Construction Environment Management Plan (CEMP) will ensure protective measures are implemented to avoid harm to habitats and species during development. This includes strategies to prevent river pollution, minimise disturbance to nesting birds, and mitigate impacts on reptiles and amphibians." Due to the proposed mitigation and relatively small size of the scheme, **no in-combination adverse effects** are anticipated.

Plan or project	Description	Potential in-combination effect assessment
Battery Energy Storage System	Battery Energy Storage System on Land at Portsmouth Water Bedhampton Water Treatment Works.	The scheme is hydrologically connected to Solent Maritime SAC and Chichester and Langstone Harbours SPA and Ramsar via the Hermitage Stream. Therefore, there is potential for in-combination effects on these designated sites. The Ecologist Consultee Response document on Havant planning portal states "The application is accompanied by an Ecological Impact Assessment (EcIA) (Enzygo, May 2025)". However, the EcIA is not available on the planning portal. The consultee response does not include any mention of designated sites. Considering that the footprint of the scheme overlaps with the footprint of temporary construction compound B1-3 of the Project, it is assumed there will be no temporal overlap in construction. It is also assumed that runoff from the scheme during operation would be managed by an operational drainage strategy. Therefore, **no in-combination adverse effects** are considered likely during the construction and operation of the Project.
Land at Sinah Lane, Hayling Island	Erection of 195 dwellings, associated open space, pumping station, substation and formation of new vehicular access off Sinah Lane. Change of use of land from agricultural to a Wader and Brent Geese Refuge Area.	The scheme is located within SWBGS site H34C, a core area supporting Chichester and Langstone Harbour SPA. A CEMP for the scheme includes mitigation measures for the SPA. Given that planning permission has been granted and construction works have commenced and assuming the scheme incorporates environmental good practice into the design and construction, **no in-combination adverse effects** are anticipated during the construction and operation of the Project.
Land west of, Hulbert Road, Havant	Outline planning application with all matters reserved except access for the development of up to 100 dwellings.	The Project, and the scheme are both hydraulically connected to the Hermitage Stream which connects to the Solent Maritime SAC, and Chichester and Langstone Harbours SPA/Ramsar. There is potential for in-combination impacts on the same designated sites during the construction phase. However, it has been assessed that with the implementation of environmental management plans, the Project would have a negligible impact on the designated sites and it is anticipated that appropriate mitigation measures will be adopted as part of the construction of the housing project (e.g. surface water drainage plan and pollution prevention measures) and therefore limit the potential for in-combination effects to occur. Therefore, **no in-combination adverse effects** are anticipated.
Fort Widley Portsdown Hill	Installation of a battery energy storage system and associated infrastructure and access	The scheme is located approximately 227m from SWBGS site W03G, which is functionally linked land to Portsmouth Harbour SPA and Ramsar. The SWBGS

Plan or project	Description	Potential in-combination effect assessment
		site is located within the Order Limits of the Project. As construction of the Project in this location would take place outside of the non-breeding period, there will be no significant effects on this designated site. **No in-combination adverse effects** are considered likely during the construction and operation of the Project.

2.6.5 The ES Appendix 20.1 List of 'other developments' – longlist and shortlist list, Volume II (Document reference 6.2, DCO Volume 6) includes a number of housing developments (including some significant schemes such as Welborne (6000 dwellings) North Whitley (3500 dwellings) Land East of Horndean (800 dwellings) Fir Tree Farm, and Horton Heath (450 dwellings)) which are located within the Solent Catchment and therefore have the potential for significant in-combination effects on the Solent Habitats Sites as a result of increased nutrients entering the Habitats Sites (Chichester and Langstone Harbour SPA/Ramsar, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar and Portsmouth Harbour SPA/Ramsar). However, these schemes would also be required to demonstrate Nutrient Neutrality, including where necessary through purchasing nutrient credits from a mitigation scheme, which would avoid any in-combination effects with the Project. A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). This assessment identified a reduction in Total Nitrogen (TN) during operation and there is therefore no potential for in-combination effects on nutrients associated with the Project and new housing developments.

2.6.6 There is also the potential for housing developments included in the list of 'other developments' within 5.6km of the Solent Habitats Sites to result in increased recreational disturbance of Habitats Sites, which could result in in-combination effects with disturbance activities during the construction of the Project. However, these developments would be required to mitigate for these impacts such as through payments in accordance with the Bird Aware Solent Revised Strategy [15]. The Project will also implement mitigation during construction to minimise the risk of disturbance of qualifying species. There is therefore no potential for in-combination effects as a result of disturbance of qualifying bird species from the Project and the new housing developments.

2.6.7 A number of Marine Licences have been identified as having potential impacts on the Solent Habitats Sites, including Solent and Dorset Coast SPA, Chichester and Langstone Harbours SPA/Ramsar, and Portsmouth Harbour SPA/Ramsar as detailed in ES Appendix 20.2 Cumulative effects assessment, Volume II (Document Reference 6.2, DCO Volume 6). A summary of relevant licences with potential for in-combination effects with the Project is outlined in Table 2-4.

Table 2-4 In-combination assessment for marine licenses

Plan or project	Description	Potential in-combination effect assessment
MLA/2019/00027	Southern Water - Maintenance of existing works on coastal outfalls in the South of England) is a ten-year licence for minor maintenance works on multiple coastal outfalls located along the coasts of the Isle of Wight, Hampshire, Sussex, and Kent. These outfalls include both short-sea and long-sea structures situated below Mean High Water Springs. The maintenance activities will be carried out as needed throughout the duration of the licence, with each activity lasting between 1 to 10 days.	The maintenance activities may involve piling and sediment removal, which can cause abrasion and disturbance to the seabed substrate. This may lead to changes in habitat structure, removal of the substrate, and the physical loss of habitat. There is also the potential for disturbance of qualifying species either within the Habitats Sites or within functionally linked land. If there was a temporal overlap between the construction of the Project and the outfall maintenance there would be a potential for an in-combination impact. The HRA for the maintenance works identified the potential for small scale habitat loss within the Habitats Sites, however, a conclusion of no adverse effect on integrity was reached as any habitat loss would be small and therefore a de minimis approach was determined. The Project would not result in any habitat losses which could result a significant in-combination effect. Mitigation measures for the Project would avoid or minimise any potential impacts from the Project such as sediment disturbance and the potential outfall maintenance would also be required to implement mitigation measures to avoid or minimise any impacts to the Habitats Sites. Therefore, **no in-combination adverse effects** are considered likely.
MLA/2017/00478/6	A ten-year licence for maintenance dredging and disposal for HMNB Portsmouth. Sediment disposal is at Nab Tower (east of Isle of Wight) with a small percentage at Hurst Fort (north-west of the Isle of Wight) in adverse weather conditions.	There is a potential for cumulative impacts if both developments overlap temporally; such as sediment contamination risk, and changes in smothering and siltation rates affecting qualifying habitats. The dredging locations in Portsmouth Harbour and the sediment disposal locations at Nab Tower or Hurst Fort do not overlap with areas directly impacted by the Project. Mitigation measures for the Project would avoid or minimise any potential impacts from the Project. The HRA for the dredging development includes mitigation measures to avoid significant impacts to the Habitats Sites, including avoidance of dredging of identified contaminated areas. Therefore, **no in-combination adverse effects** are likely.
MLA/2025/00190	Gosport Boatyard Maintenance Dredging.	The licence and the Project are hydraulically connected to Solent Maritime SAC and Chichester and Langstone Harbours SPA and Ramsar. Therefore, there is potential for in-combination effects. However, the licence is for maintenance dredging in an already heavily modified and trafficked water body and there are no activity overlaps which would cause an in-combination effect. Therefore, assuming the licence incorporates environmental good practice, **no in-**

Plan or project	Description	Potential in-combination effect assessment
		combination adverse effects are considered likely during the construction and operation of the Project.
MLA/2024/00022	A ten-year dredging licence for Gosport Marina, with disposal of sediment at Nab Tower and Hurst Fort	There is a potential for cumulative impacts if both developments overlap temporally; such as sediment contamination risk, and changes in smothering and siltation rates affecting qualifying habitats. The dredging locations in Gosport Marina and the sediment disposal locations at Nab Tower or Hurst Fort do not overlap with areas directly impacted by the Project. Mitigation measures for the Project would avoid or minimise any potential impacts from the Project. The HRA for the dredging development includes mitigation measures to avoid significant impacts to the Habitats Sites. Therefore, **no adverse in-combination effects** are likely.

2.6.8 The assessment of in-combination effects has included a review of other committed developments (see Chapter 20 Cumulative and in-combination effects, Volume I (Document reference 6.1, DCO Volume 6) that will be delivered prior to commencement of construction that may impact the terrestrial and freshwater biodiversity baseline within the Order Limits. These developments may result in changes to the habitats baseline. The ES Chapter 8 Terrestrial and Freshwater Biodiversity, Volume I (Document reference 6.1, DCO Volume 6) identified that there would be minor changes to habitats of up to Low value (agricultural fields or amenity grassland) and these changes are unlikely to negatively affect distribution or abundance of species and habitats, including qualifying habitats and species for Habitats Sites, and therefore will not result in potential significant in-combination effects on Habitats Sites or qualifying habitats and species.

2.6.9 The Havant Thicket Reservoir Project (ref. DCO 004 in ES Appendix 20.1 List of 'other developments' – longlist and shortlist, Volume II (Document reference 6.2, DCO Volume 6) is treated as both future baseline and part of the cumulative and in-combination assessment. Construction of the reservoir has commenced and is due to be completed by 2029. Construction of the Project is anticipated to commence in 2028 and there would potentially be an overlap in later construction activities associated with the reservoir and the start of construction associated with the Project which could lead to in-combination effects. The Havant Thicket Reservoir site is within the Havant Bechstein's Bat Area and therefore there is a potential for significant in-combination effects on bats. This is discussed further in the Singleton and Cocking Tunnels SAC assessment section. Havant Thicket Reservoir is included in water quality modelling which has informed the HRA assessment for compensatory flows from Havant Thicket Reservoir into Hermitage Stream and Langstone Harbour and therefore this represents an in-combination assessment.

2.7 Consultation and engagement

2.7.1 The Environment Agency (EA), NE and the MMO have been consulted throughout the HRA and MCZ assessment processes. This has included reviewing and commenting on draft versions of the combined HRA Stage 1 Screening Assessment and MCZ Screening Assessment, and draft versions of the Stage 2 Appropriate Assessment and MCZ Stage 1 Assessment. These comments have been considered and addressed in subsequent revisions of the reports.

2.7.2 Five EIA Working Groups have been established as forums for ongoing engagement with statutory bodies regarding the Project. These Working Groups when combined cover all of the assessment topics considered by the EIA. A full description of each of the EIA Working Groups, the key stakeholders, and an overview of the topics presented can be found in ES Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6) and Volume 5.9 Statement of Engagement (Statement of Commonality appended) (Document reference 5.9, DCO Volume 5).

2.7.3 The Biodiversity and Water Environment EIA Working Group which includes land quality, hydrogeology, water, marine ecology and terrestrial and freshwater ecology. There have been 11 Biodiversity and Water Environment EIA Working Group meetings between summer 2022 and autumn 2025. Technical officers from NE, EA, the MMO and local councils attended the EIA Working Group meetings.

2.7.4 The EA, NE and the MMO have been engaged on a monthly basis through a Technical Working Group (TWG). These meetings allowed for the regular communication of progress on key elements such as terrestrial and freshwater biodiversity surveys, key findings, scheme development and mitigation. This has been the main forum for engagement on HRA and MCZ engagement.

2.7.5 One-to-one technical engagement with key stakeholders on the Project and matters relating to terrestrial and freshwater biodiversity has also taken place outside of the TWG, as reflected in the draft Statements of Common Ground (SOCGs). These meetings were held to allow communication of progress on key matters for the HRA and MCZ. Regular meetings have taken place with NE to discuss the four affected Solent Wader and Brent Goose Sites (SWBGS) (H90, H130, H08 and W03G), during 2024 and 2025. These meetings aimed to agree appropriate mitigation, particularly for the WRP site and the candidate site located on Portsdown Hill. Natural England have confirmed that in principle the approach to mitigation for SWBGS sites is appropriate.

2.7.6 A freshwater biodiversity workshop took place on 4 March 2024 with NE and the EA to discuss and agree the survey methodologies. No issues or concerns requiring further meetings or workshops over and above the regular TWG meetings already scheduled were raised.

2.7.7 A terrestrial biodiversity workshop took place on 20 March 2024 with NE. Terrestrial survey methodologies were discussed and no concerns raised. A key outcome of this workshop was the need for further discussion on the bat Habitat Suitability Modelling (HSM) methodology with NE bat specialists. This HSM meeting was held on 3 May 2024 where the approach to HSM was discussed. NE set out some expectations which the Applicant addressed within their approach. In November 2024, NE confirmed they had no further comment regarding HSM.

2.7.8 Additionally, there has been consultation with stakeholders regarding the Environmental Statement which has informed the HRA including summer 2022 consultation; summer 2024 consultation and spring 2025 consultation.

3 Screening: assessment of likely significant effects

3.1 Background

3.1.1 A HRA Stage 1 Screening and MCZ Screening Assessment was undertaken for the Project in April 2024 (Appendix A). Since this assessment a SuDS at the WRP site has been included as part of the Project and will attenuate and treat surface water at the WRP site. This would comprise an outfall to discharge surface water into the Hermitage Stream. The outfall would consist of a concrete lined channel running from an attenuation basin within the WRP site to a concrete headwall structure that would discharge into the Hermitage Stream. Therefore, due to these design changes, an updated HRA Stage 1 Screening and MCZ Screening Assessment for the Project was undertaken to include the SuDS at the WRP site. The results of the Stage 1 Screening are summarised within sections 3.2 to 3.3.

3.2 Habitats sites potentially affected by the Project

3.2.1 The HRA Stage 1 Screening and MCZ Screening Assessment identified that, in the absence of mitigation, the Project could have LSE on the following sites, which have therefore been taken forward to the Appropriate Assessment stage:

1. River Itchen SAC
2. Chichester and Langstone Harbours SPA
3. Chichester and Langstone Harbours Ramsar
4. Solent Maritime SAC
5. Portsmouth Harbour SPA
6. Portsmouth Harbour Ramsar
7. Solent and Dorset Coast SPA
8. Solent and Southampton Water SPA
9. Solent and Southampton Water Ramsar
10. South Wight Maritime SAC
11. Solent and Isle of Wight Lagoons SAC
12. River Meon Compensatory SAC

3.2.2 In addition, Singleton and Cocking Tunnels SAC has been included within this report despite being screened out during the Stage 1 Screening report. Following completion of the Stage 1 Screening Report, in response to stakeholder comments from Havant Borough Council, it was considered that the SAC should be assessed within the Stage 2 HRA due to the potential for

impacts on functionally linked land within the area of Havant Borough Council and this is discussed further within section 4.

3.2.3 Table 3-1 provides a summary of the Habitats Sites that are potentially subject to LSE arising from the Project, as identified at Stage 1 and subsequent stakeholder consultation on the Stage 1 assessment, the impact pathways during the construction and operation phases and the qualifying features affected.

Table 3-1 Summary of LSE screening conclusions

Habitats site	Impact Pathway	Qualifying features potentially affected
River Itchen Special Area of Conservation (SAC)	Habitat loss and fragmentation during construction	• 3260 Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1044 Southern damselfly *Coenagrion mercurial* • 1355 Otter *Lutra lutra* • 1163 Bullhead *Cottus gobio* • 1096 Brook lamprey *Lampetra planeri* • 1106 Atlantic salmon *Salmo salar*
	Disturbance during construction	• 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon • 1355 Otter
	Hydrological change during construction	• 3260 Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1044 Southern damselfly • 1355 Otter • 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon
	Waterborne pollution during construction including runoff, turbidity and sedimentation	
	Airborne pollution during construction	

Habitats site	Impact Pathway	Qualifying features potentially affected
	Invasive non-native Species (INNS) during construction	• 3260 Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1044 Southern damselfly • 1355 Otter • 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon
	Hydrological change and waterborne pollution during operation	• 3260 Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1044 Southern damselfly • 1355 Otter • 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon
	INNS during operation	• 3260 Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1044 Southern damselfly • 1355 Otter • 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon

Habitats site	Impact Pathway	Qualifying features potentially affected
Chichester and Langstone Harbours SPA	Habitat loss and fragmentation during construction Disturbance during construction Hydrological change during construction Waterborne pollution during construction including runoff, turbidity and sedimentation Airborne pollution during construction INNS during construction Hydrological change and waterborne pollution during operation INNS during operation	Qualifying breeding bird species: • A191 Sterna sandvicensis; Sandwich tern • A193 Sterna hirundo; Common tern • A195 Sterna albifrons; Little tern Qualifying migratory bird and wintering bird species: • A675 Dark-bellied brent goose Branta bernicla bernicla • A048 Common shelduck Tadorna tadorna • A050 Eurasian wigeon Anas penelope • A052 Eurasian teal Anas crecca; • A054 Northern pintail Anas acuta • A056 Northern shoveler Anas clypeata • A069 Red-breasted merganser Mergus serrator • A137; Ringed plover Charadrius hiaticula • A141 Grey plover Pluvialis squatarola • A144 Sanderling Calidris alba • A149 Dunlin Calidris alpina alpina • A157 Bar-tailed godwit Limosa lapponica • A160 Eurasian curlew Numenius arquata • A162 Common redshank Tringa totanus • A169 Ruddy turnstone Arenaria interpres;

Habitats site	Impact Pathway	Qualifying features potentially affected
		Qualifying internationally important assemblage of birds: • 93239 Over winter the area regularly supports: 93,230 waterfowl (5-year peak mean 1991/92-1995/96)
Chichester and Langstone Harbours Ramsar	Habitat loss and fragmentation during construction	Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes. Assemblages of international importance with species with peak counts over winter (76,480 waterfowl – 5 peak mean 1998/99-2002/2003) Species/populations occurring at levels of international importance with peak counts in spring/autumn: • Ringed plover • Black-tailed godwit Limosa limosa islandica • Common redshank Species/populations occurring at levels of international importance with peak counts in winter: • Dark-bellied brent goose • Common shelduck • Grey plover • Dunlin Species/populations regularly supported during the breeding season that have been identified for possible future consideration: • Little tern
	Disturbance during construction	
	Hydrological change during construction	
	Waterborne pollution during construction including runoff, turbidity and sedimentation	
	Airborne pollution during construction	
	INNS during construction	
	Hydrological change and waterborne pollution during operation	
	INNS during operation	

Habitats site	Impact Pathway	Qualifying features potentially affected
Solent Maritime SAC	Habitat loss and fragmentation during construction	Annex I habitats that are a primary reason for selection of this site: • 1130 Estuaries • 1320 Spartina swards Spartinion maritimae • 1330 Atlantic salt meadows Glauco-Puccinellietalia maritimae Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • 1110 Sandbanks which are slightly covered by sea water all the time • 1140 Mudflats and sandflats not covered by seawater at low tide • 1150 Coastal lagoons, Priority feature • 1210 Annual vegetation of drift lines • 1220 Perennial vegetation of stony banks • 1310 Salicornia and other annuals colonizing mud and sand • 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") Annex II species present as a qualifying feature, but not a primary reason for site selection: • 1016 Desmoulin's whorl snail *Vertigo moulinsiana*
	Disturbance during construction	• 1140 Mudflats and sandflats not covered by seawater at low tide
	Hydrological change during construction	All qualifying features.
	Waterborne pollution during construction including runoff, turbidity and sedimentation	

Habitats site	Impact Pathway	Qualifying features potentially affected
	Airborne pollution during construction	
	INNS during construction	
	Hydrological change and waterborne pollution during operation	
	INNS during operation	
Portsmouth Harbour SPA	Habitat loss and fragmentation during construction	Internationally important numbers of the following migratory bird and wintering bird species: • A675 Dark-bellied brent goose • A069 Red-breasted merganser • A149 Dunlin • A616 Black-tailed godwit
	Disturbance (to functionally linked land only) during construction	
	Hydrological change during construction	
	Waterborne pollution during construction including runoff, turbidity and sedimentation	
	INNS during construction	
	Hydrological change and waterborne pollution during operation	
	INNS during operation	
Portsmouth Harbour Ramsar	Habitat loss and fragmentation (of functionally linked land only) during construction	Dark-bellied brent goose populations occurring at levels of international importance
	Disturbance (of functionally linked land only) during construction	

Habitats site	Impact Pathway	Qualifying features potentially affected
	Hydrological change during construction	Intertidal mudflat areas possessing extensive beds of eelgrass *Zostera marina* and *Zostera noltei* which support grazing dark-bellied brent geese populations. The mud-snail *Hydrobia ulvae* is found at extremely high densities, which helps to support the wading bird interest of the site. Common cord-grass *Spartina anglica* dominates large areas of the saltmarsh and there are also extensive areas of green algae *Enteromorpha* spp and sea lettuce *Ulva lactuca.* More locally the saltmarsh is dominated by sea purslane *Halimione portulacoides* which gradates to more varied communities at the higher shore levels. The site also includes a number of saline lagoons hosting nationally important species. Dark-bellied brent goose populations occurring at levels of international importance
	Waterborne pollution during construction including runoff, turbidity and sedimentation	
	INNS during construction	
	Hydrological change during operation	
	INNS during operation	
Solent and Dorset Coast SPA	Hydrological change during construction	Internationally important population of breeding birds: • A191 Sandwich tern • A193 Common tern • A195 Little tern
	Waterborne pollution during construction including runoff, turbidity and sedimentation	
	INNS during construction	
	Hydrological change and waterborne pollution during operation	
	INNS during operation	
Solent and Southampton Water SPA	Hydrological change during construction	Qualifying breeding bird species: • A176 Mediterranean Gull *Larus melanocephalus* • A191 Sandwich tern • A192 Roseate tern *Sterna dougalli* • A193 Common tern
	Waterborne pollution during construction including runoff, turbidity and sedimentation	
	INNS during construction	

Habitats site	Impact Pathway	Qualifying features potentially affected
	Hydrological change and waterborne pollution during operation	• A195 Little tern Qualifying migratory bird and wintering bird species: • A052 Eurasian teal • A137 Ringed plover • A616 Black-tailed godwit • A675 Dark-bellied brent goose Internationally important wintering waterbird assemblage of 51,361 individuals (5-year peak mean 1991/92-1995/96).
	INNS during operation	
Solent and Southampton Water Ramsar	Hydrological change during construction	Wetland habitats characteristic of the biogeographic region including saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs. Important assemblage of rare plants and invertebrates. At least 33 invertebrates and at least eight plants included in the British Red Data Book are represented on site. Waterfowl assemblages of international importance. Peak count of 51,343 waterfowl in winter. • Species occurring at levels of international importance: • Dark-bellied brent goose • Black-tailed godwit • Eurasian teal
	Waterborne pollution during construction including runoff, turbidity and sedimentation	
	INNS during construction	
	Hydrological change and waterborne pollution during operation	
	INNS during operation	
South Wight Maritime SAC	Waterborne pollution during construction including runoff, turbidity and sedimentation	• 1170 Reefs • 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts • 8330 Submerged or partially submerged sea caves
	INNS during construction	
	Hydrological change and waterborne pollution during operation	

Habitats site	Impact Pathway	Qualifying features potentially affected
	INNS during operation	
Solent and Isle of Wight Lagoons SAC	Waterborne pollution during construction including runoff, turbidity and sedimentation	• 1150 Coastal lagoons
	INNS during construction	
	Waterborne pollution during operation	
	INNS during operation	
Singleton and Cocking Tunnels SAC	Habitat loss and fragmentation during construction	• 1308 Barbastelle Barbastella barbastellus • 1323 Bechstein's bat *Myotis bechsteinii*
	Disturbance during construction	
	Hydrological change and waterborne pollution during operation	
River Meon Compensatory SAC	Habitat loss and fragmentation during construction	• 3260 Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1106 Atlantic salmon
	Disturbance during construction	
	Hydrological change during construction	
	Waterborne pollution during construction including runoff, turbidity and sedimentation	
	Airborne pollution during construction	

Habitats site	Impact Pathway	Qualifying features potentially affected
	INNS during construction	
	Hydrological change and waterborne pollution during operation	
	INNS during operation	

3.3 Summary of MCZ Screening Assessment

3.3.1 The HRA Stage 1 Screening and MCZ Screening Assessment (Appendix A) undertaken by the Applicant in 2024 sets out that amongst the MCZs and recommended MCZs (rMCZs), only Bembridge MCZ is considered to be hydrologically connected to the Eastney LSO as it is situated within two tidal excursions.

3.3.2 The following MCZs and rMCZs have been identified as screened out due to being located further than two tidal excursions from the Eastney LSO and therefore there being no potential pathway for effect:

1. Selsey Bill and the Hounds MCZ
2. Utopia MCZ
3. Yarmouth to Cowes MCZ
4. Pagham Harbour MCZ
5. Offshore Overfalls MCZ
6. Kingmere MCZ
7. The Needles rMCZ

3.3.3 The MCZ Screening assessment identified that, in the absence of mitigation the Project could have LSE on Bembridge MCZ.

3.3.4 Table 3-2 provides a summary of the qualifying features that are potentially subject to LSE arising from the Project, as identified in the MCZ Screening assessment.

Table 3-2 Summary of MCZ screening conclusions

Marine Conservation Zone	Impact Pathway	Qualifying features potentially affected
Bembridge MCZ	Waterborne pollution during construction	Habitat: • Subtidal coarse sediment • Subtidal mixed sediments • Subtidal mud • Subtidal sand • Maerl beds - highly sensitive to seabed activities and takes a long time to recover from damage • Seagrass beds • Sheltered muddy gravels Species: • Sea-pen and burrowing megafauna communities • Native oyster *Ostrea edulis* • Short snouted seahorse *Hippocampus hippocampus* • Stalked jellyfish Calvadosia campanulata • Stalked jellyfish *Haliclystus* species • Peacock's tail *Padina pavonica* - at the most eastern edge of their distribution and are considered to seed other populations around the Isle of Wight
	INNS during construction	
	Hydrological change and waterborne pollution during operation	
	INNS during operation	

3.4 Potential impact pathways arising from the Project

Construction

3.4.1 As summarised in Table 3-1 and Table 3-2 and outlined in section 3 of the HRA Stage 1 Screening and MCZ Screening (Appendix A) there are a number of impact pathways during the construction phase which have potential to result in LSE on Habitats Sites and MCZ. Details of these impact pathways are outlined below and discussed in detail in the assessment of adverse effects on integrity (section 4):

1. **Habitat loss and Habitat fragmentation** (permanent and temporary):
   a. Construction of infrastructure associated with the Project removing or replacing features that contribute to or are functionally linked to the Habitats Sites.
   b. Creation of barriers between habitats or migration of species.
2. **Disturbance of qualifying species** (direct and indirect):
   a. Temporary construction lighting adversely affecting nocturnal activities of species through disturbance and displacement.
   b. Increased visual, noise and vibrational effects disturbing protected and/or notable species which are qualifying features of Habitats Sites.
   c. Underwater noise and vibration creating temporary barriers to migration, injury or behavioural changes to migratory fish including disturbance of spawning fish.
   d. Fragility of juvenile fish/larvae/eggs (both migratory and non-migratory species) may make them more vulnerable to underwater noise and vibration causing disorientation, displacement and potentially injury or death. These fish populations may comprise prey species that qualifying bird species are reliant upon and therefore, underwater noise could indirectly affect bird species via a reduction in prey availability as well as directly affect aquatic qualifying features.
3. **Hydrological change.** Indirect effects on Habitats Sites, MCZ, functionally linked land or designated features:
   a. Risk of changes to water flows or quantities during construction of the Project could cause habitat degradation or loss of groundwater dependent qualifying features during watercourse crossing or pipeline construction.
   b. Risk of changes to water quality during construction of the Project due to the disturbance of sediment causing habitat degradation or loss during pipeline and SuDS outfall construction.
   c. Adverse effects on the geomorphology and water quality of the surface water drainage network, as well as groundwater and marine waters during pipeline and SuDS outfall construction. This in turn could affect aquatic ecology.

4. **Waterborne pollution.** Temporary direct or indirect effects on Habitats Sites, MCZ, functionally linked land or designated features:

   a. Runoff or spills associated with construction activities or from exposure of historic contaminated soil may have an impact pathway to adjacent or hydrologically connected Habitats Sites, including temporary hydrological connection in flood risk areas.

5. **Airborne pollution.** Temporary direct effects on Habitats Sites, functionally linked land or designated features due to:

   a. Emissions from vehicles or plant and dust from construction activities associated with the Project may result in deposition on Habitats Sites within 250m of the Project, based on guidance from NE (2018) [16] and the Institute of Air Quality Management (IAQM) (2024) [17].

6. **Introduction and or spread of invasive non-native species and pathogens**:

   a. The construction of the Project may result in the unintentional spread of unknown invasive non-native species (INNS) or pathogens.

   b. Transfer of INNS to or from construction sites on machinery, vehicles, footwear or clothing. Where INNS are known to be within or close to the site, there is a risk of plant seeds or fragments, animals or eggs being transported on machinery, vehicles or by foot, from one site or river catchment to another.

   c. Introduction or spread of INNS or pathogens to watercourses during installation of pipeline at watercourse crossings and construction of the SuDS outfall. This poses a risk of spreading INNS from one river catchment to another, or to sensitive habitats or locations downstream. There is also a risk of temporary alteration of the hydrological regime facilitating or altering the spread of INNS already present within the watercourse.

   d. Introduction or spread of INNS or pathogens through water used during construction (e.g., for washing vehicles and machinery). Water used for construction purposes or to wash vehicles or equipment, the source of that water may act as a vector for the transportation of INNS to or from the site or elsewhere.

   e. Introduction of INNS or pathogens via environmental mediums or materials brought to construction sites from external sources (e.g., soils or plants for landscaping and planting design).

   f. Removal of INNS from site in excavation spoils or cleared vegetation.

   g. Release of INNS or pathogens to the natural environment during testing and commissioning of the Pipeline.

Operation

3.4.2 As summarised in Table 3-1 and Table 3-2 and outlined in section 3 of the combined HRA Stage 1 Screening and MCZ Screening Assessment (Appendix A), there are a number of impact pathways during the operational phase which have potential to result in LSE on Habitats Sites and MCZ. Impact pathways identified during operation of the Project are discussed in detail in the assessment of adverse effects on integrity in this assessment.

3.4.3 It should be noted that risk pathways arising from emergency scenarios are operationally exceptional events, occurring during emergency situations only, and therefore considered very unlikely to occur during the operation of the Project. Therefore, these impact pathways are not considered further within this assessment, as agreed with NE and confirmed in the Statement of Common Ground (Document reference 5.8, DCO Volume 5). The potential release of raw water to the natural environment through the following pathways, considered non-operational or emergency events:

1. Emergency drain down of an isolated section of the Havant Thicket Reservoir to Otterbourne WSW pipeline through the washouts as a result of external causes of pipe failure, resulting in source water being discharged to the surrounding natural environment (land or water).
2. Power or equipment failure at Otterbourne WSW resulting in activation of run to waste mode and source water discharging to the sewer network.
3. Emergency shut down of the WRP resulting in activation of run to waste mode and source water being discharged to the Solent through the Eastney LSO.

3.4.4 Risk pathways arising from emergency scenarios are assessed in the ES Chapter 14 Major Accidents and Disasters, Volume 1 (Document reference 6.1, DCO Volume 6) and in the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7).

3.4.5 Details of the impact pathways identified during operation of the Project are outlined below and discussed in detail in the assessment of adverse effects on integrity (section 4):

1. **Hydrological change**. Indirect effects on Habitats Sites, MCZ, functionally linked land or designated features.
   a. Changes in water quality as a result of the addition of recycled water to Havant Thicket Reservoir has the potential to affect water quality in the Hermitage Stream catchment and downstream sites during compensatory flows from Havant Thicket Reservoir to Riders Lane Stream, through Hermitage Stream and into Langstone Harbour.
   b. Changes in water quality within Hermitage Steam and Langstone Harbour as a result of the outfall from the WRP site SuDS.
   c. Changes to the flow or quantity of water entering watercourses or feeding reliant habitats as a result of the operation and maintenance activities of the Project.

d. The operation of the WRP as part of the operational phase of the Project would alter the existing discharge from the Eastney LSO due to the water recycling process and reduced volume of treated wastewater. Reject water from the WRP process would be combined with the remaining Budds Farm WTW treated wastewater (not needed for water recycling) and released via the existing Eastney LSO into the Solent. In the event of an emergency shut down of the WRP site, water within the WRP would be returned via the same reject water pipeline by opening the run to waste valve. Run to waste mode would also be activated to release water that does not meet the water quality requirements at the WRP. In this scenario water would be returned to Budds Farm WTW and be released using the Eastney TT, Eastney PS and discharged through the Eastney LSO. This would not increase the volume of water released through the Eastney LSO. As such, these releases have the potential to alter the dispersion pathway and concentration of existing compounds within the discharge. This would potentially modify the water quality which in turn could affect marine ecology.

e. Operational processes resulting in source water entering the River Itchen from Otterbourne WSW and/or Chickenhall WTW. This includes potential overflows to run to waste mode from the inlet balancing tank, from waste stream discharge at Otterbourne WSW and from storm spill procedures at Chickenhall WTW. Source water entering the River Itchen has the potential to alter the water quality and nutrient levels in the receiving water body.

3. **Waterborne pollution**. Direct or indirect effects on Habitats Sites, MCZ, functionally linked land or designated features:

   a. Accidental release of pollutants during operation including contaminated sediment, treatment chemicals, oils, fuels or lubricants, to surface water or groundwater during operational maintenance could adversely affect the water quality of the surface water drainage network as well as groundwater and marine waters.

   b. Routine maintenance and testing of washouts would require the release of source water within the Pipelines. Raw/source water released to surface water or groundwater could adversely affect the water quality of the surface water drainage network as well as groundwater and marine waters.

4. **Disturbance of qualifying species**. Direct or indirect effects on Habitats Sites due to:

   a. The operation and maintenance of the Project may result in increased levels of disturbance, depending on the activity this may comprise visual, vibration and noise disturbance. This can also potentially result in harm from temporary or permanent injury to aquatic species depending upon the intensity of the noise and vibration.

5. **Introduction and or spread of invasive non-native species and pathogens**:

   a. It is not considered that the addition of recycled water from the WRP into Havant Thicket Reservoir poses any additional INNS or pathogen risk, given

the recycled water treatment will be to a standard at which the risk of INNS presence is considered negligible.

b. However, the following activities have been identified as potential INNS pathways during operation of the Project:

   i. The accidental release of INNS to the natural environment during routine maintenance testing of the washouts. Regular testing of the washouts would require the release of source water within the Pipelines. However, this risk will be minimal as washout water will be captured and tankered away.

   ii. Operational processes at Otterbourne WSW resulting in untreated source water entering the River Itchen. The wastewater treatment process at Chickenhall WTW is unlikely to remove all INNS functional groups and the final effluent from the treatment process is discharged directly to the River Itchen. Thus, any untreated source water entering the sewer network at Chickenhall WTW from Otterbourne WSW has the potential to introduce INNS or pathogens from an outside catchment to the River Itchen. The disposal of sludge waste from Chickenhall WSW to Budds Farm WTW also poses a potential new INNS pathway, due to the potential presence of INNS from the untreated source water being present in the sludge waste.

c. All operational INNS pathways are set out in the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7).

4 Mitigation

4.1 Embedded and good practice measures

4.1.1 The following section outlines the mitigation measures which have been developed to avoid or minimise the risk of any impacts which could adversely affect the Habitats Sites and qualifying habitats and species outside of the Habitats Sites and the MCZ. The strategy has followed the mitigation hierarchy, with impacts avoided in the first instance through refinements of the design of the Project and construction areas and methods. This has included the use of trenchless techniques where the pipeline is located within Habitats Sites. Where avoidance of impacts is not possible, mitigation measures are provided which will mitigate the potential impacts to avoid adverse effects on the integrity of the Habitats Sites and the MCZ.

4.1.2 The ES is accompanied by a Commitments Register that includes a complete list of primary mitigation measures that are embedded within the design of the Project refer to ES Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6).

4.1.3 Good construction practices are set out and secured in the Outline Construction Environmental Management Plan (Outline CEMP) (Document reference 7.1, DCO Volume 7) and will manage the effects of construction. The measures contained in the Outline CEMP are secured by a requirement in Schedule 2 to the DCO. A detailed CEMP will be produced and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the DCO.

Measures to avoid and reduce habitat loss and habitat fragmentation

4.1.4 A range of measures have been embedded into the Project design to avoid or reduce habitat loss and habitat fragmentation. These include:

1. Avoiding direct impacts to Habitats Sites and MCZs.
2. Designing the Project to avoid, where reasonably practicable, non-statutory designated sites.
3. Avoiding ancient woodland and any potential ancient woodland sites not included in the ancient woodland inventory to avoid direct impacts to ancient woodland habitats and associated impacts to bats.
4. Designing the Project to avoid, where reasonably practicable, priority habitats.
5. All Main Rivers will be crossed using trenchless techniques, along with those detailed within the Watercourse Crossing Schedule, refer to Appendix B of the CEMP (Document reference 7.1, DCO Volume 7) for list of watercourses.
6. For trenchless watercourse crossings, the Pipeline would be installed at least 2.5m below the bed of Main Rivers and at least 1.2m below the bed of Ordinary Watercourses (dependent on local geology and geomorphological risks) and the tunnel shafts associated with the Pipeline would avoid the chalk aquifer where reasonably practicable (particularly in Source Protection Zones

(SPZ), and using a methodology that excludes groundwater (and therefore any dependant ecological features). In addition, the indicative design has a depth of 10m for the trenchless crossing of the River Itchen and 4.5m at the River Hamble and the River Meon[2].

7. Inclusion of leak detection measures on the pipeline transfer, whether via flow and pressure monitoring or active acoustic monitoring. This will be designed to automatically shut the pipeline system down in the event a leak starts, therefore no long-term leakages of raw source water are likely to occur.
8. Implementing a reduced working width of 20m when crossing sensitive constraints, including vegetation of ecological importance for protected species or priority habitats. The locations of the reduced working widths are detailed in the Reduced Working Widths Schedule (Appendix A of the Outline CEMP (Document reference 7.1, DCO Volume 7)) and the General Arrangement Plans (Document reference 2.7, DCO Volume 2).
9. Designing the Project to utilise, where reasonably practicable, existing gaps in vegetation, to minimise vegetation loss and reduce the creation of new (albeit temporary) gaps in linear vegetation features.

4.1.5 The Outline CEMP (Document reference 7.1, DCO Volume 7) includes measures to reduce and avoid damage to retained habitats. Where sensitive features are to be retained within or immediately adjacent to the Order Limits, an appropriate buffer zone will be created where this extends within the Order Limits. The buffers will be established using appropriate fencing and signage. A suitable method statement has been produced to ensure that construction works are undertaken in a manner that reduces the risk of damage or disturbance to the sensitive feature, this sits within the Outline CEMP.

4.1.6 For the proposed SuDS outfall, there is a specific design principle included in the DPD (Document reference 5.11, DCO Volume 5) which states that *" Opportunities to improve bank protection, estuarine (including gravel bars and mudflats that are exposed during low tide) and riparian habitats in the tidal Hermitage Stream will be explored during the detailed design of the WRP SuDS outfall and delivered where practicable. The design of the hard infrastructure comprised in the SuDS outfall will seek to reduce disturbance of the existing scour protection on the banks of Hermitage Stream and not protrude into Hermitage Stream more than existing outfalls. The design will retain existing transitional habitats (including gravel bars and mudflats that are exposed during low tide) at the foot of the banks and avoid operational disturbance to these habitats."*

4.1.7 The Outline CEMP (Document reference 7.1, DCO Volume 7) includes measures to minimise damage to tree roots resulting in the loss of trees. Construction exclusion zones will be set up around trees to be retained. This will separate root protection areas (RPAs) and ancient tree buffer zones from the construction works including enabling area using temporary tree protection fencing where practicable. The protective fencing will be maintained for the duration of the construction phase and checked on a regular basis. In the event that an RPA or buffer zone cannot be

[2] The Applicant cannot commit to these depths not changing during detailed design, but they are very unlikely to get shallower. The River Itchen crossing is least likely to get any shallower due to the railway crossing and Network Rail's acceptance criteria for settlement. The River Meon and Hamble current depths are the minimum cover based on the diameter of the pipe jack required for the crossings, which is dictated by the length of drive, geology etc.

excluded from the construction works including enabling area, mitigation such as ground protection and manual excavation will be utilised. No machinery or material will be stored within the ancient tree buffer zone.

4.1.8 A habitat reinstatement strategy has been produced for the Project. The strategy provides information on seeding and planting specifications, including plant mixes and includes areas of habitat creation required for secondary mitigation. The habitat reinstatement plan which is informed by this strategy forms part of the Outline LEMP (Document reference 7.5, DCO Volume 7) which includes measures such as reinstating habitats at trenched open-cut sections as soon as possible following the completion of construction of a crossing where key features are a priority for immediate reinstatement. In addition to this, the Outline LEMP (Document reference 7.5, DCO Volume 7) will include secondary mitigation such as addressing the loss of Habitats of Principal Importance or high distinctiveness habitats by the translocation of botanical plants of interest or turves of species rich habitats, or creation of new areas of habitats subject to loss within the Order Limits.

4.1.9 Monitoring of habitat planting is required as part of the Outline LEMP (Document reference 7.5, DCO Volume 7) and reinstatement strategy. This includes an aftercare regime which incorporates the quick replacement of any failed planting and undertaking of any remedial work required. This will ensure that for example hedgerows which are important bat commuting corridors are successfully reinstated as quickly as possible.

4.1.10 There would be several stages to trenched open-cut construction at watercourse crossings as detailed in the Outline CEMP (Document reference 7.1, DCO Volume 7). At ordinary watercourses where trenched open-cut construction would be used, the Contractor will implement the following:

1. Installation of a temporary dam will be undertaken upstream and downstream of the crossing point and the trench excavated in a dry environment.
2. River flow will be maintained between the two dams using a temporary pump or flume using fish friendly filters. All pumps/flumes/diversion channels will be appropriately sized to maintain downstream flows whilst minimising upstream impoundment.
3. The time a temporary dam is in place will be restricted as far as reasonably practicable and fish rescue will be undertaken between the temporary dams prior to dewatering.
4. The pipeline will be installed at a minimum depth of 1.2m below the bed of the watercourse.
5. Where diversion channels are used, geotextiles or similar will be used to line the channel and prevent sediment release into the watercourse.
6. Scour protection may be required to protect the riverbed downstream of the dam from high energy flow at any outlets from flumes/pumps.

4.1.11 Pre-construction habitat suitability assessments will identify the potential for fish and sensitive freshwater macroinvertebrates to be present. If the hydrological connectivity of the impacted area does not provide opportunity for fish to move out of the area of impact, fish rescue and relocation to an unimpacted refuge will be

undertaken as required at open-cut watercourse crossings, prior to work commencing to prevent fragmentation of habitat used by qualifying fish species.

4.1.12 A specific mitigation strategy for the impacts to the SWBGS sites, namely H08 at the WRP site, has been developed and the mitigation proposals have been agreed in principle with Natural England. The impact of loss of functionally linked land will be mitigated through the delivery and maintenance of suitable habitat elsewhere. A site adjacent to Chichester Harbour has been identified. While the proposed mitigation is located within an existing candidate site, at present the site is used for arable crops and, because of rotation, is largely unsuitable for the birds for considerable lengths of time including during the key winter season. There is evidence that the birds move freely between Langstone and Chichester harbours suggesting that a site next to the latter would be supporting the same population as those affected by the loss of H08. The proposed mitigation site is 9km from the WRP site. Whilst this is some distance from the impacted site, it is arguably more important to look at how far the site is from brent goose roost sites nearby. While these are not definitively known for Chichester Harbour, Hampshire and Isle of Wight Wildlife Trust have confirmed that both Dell Quay and East Head within Chichester Harbour experience large numbers of brent geese at high tide suggesting that these are likely roosts. In addition, there are a number of sand banks to the south and east of Thorney Island (including Pilsey Island; SWBGS site C10H) which appear to be suitable roosting habitat. All of these are within 5km of the proposed mitigation site. This strongly suggests that the site is ideally suited to serve the population of brent geese that forms the qualifying feature of Chichester and Langstone Harbours SPA and Ramsar and prevent adverse effects on site integrity from the loss of SWBGS site H08.

4.1.13 The mitigation strategy would secure the ownership and management of the site to ensure it is consistently available to the birds and in a good condition. A minimum of 2.5ha of the site would be secured and managed as high quality, optimal habitat (permanent grassland, managed with a low sward) suitable not only for brent geese but also waders.

4.1.14 Southern Water will contract a specialist company to purchase the requisite area of the site and secure its management for at least the lifetime of the asset delivered by the Project. A draft management plan for the site setting out the detail of how this will be produced by the specialist company and agreed with NE. The management of the mitigation site will be secured via Conservation Covenant or Section 106 agreement. This will include monitoring surveys for a minimum of three years to ensure the mitigation site is successfully delivering functional mitigation. The surveys will consist of six surveys per year to cover the core wintering and passage period (spread from September – March inclusive), targeting high tide periods and capturing Spring tides and likely consisting of transects and vantage points. The overall site is larger than 2.5ha and the final area delivered would depend how the topography and shape could be divided up to ensure the best outcome for use of the site by target bird species.

4.1.15 As the proposed mitigation site is adjacent to Chichester Harbour, it is recognised that it may be subject to flooding, either from high tides or rising sea levels. An assessment has been undertaken of the risk of flooding from rising sea levels. This identifies that all of the site remains above the projected mean high tide level for

2100 and in particular the south western corner of the site where it is intended to secure the mitigation area. As such, predicted rises in sea levels are not considered likely to impact the availability of the site for brent geese. An assessment of the risk of impact from tidal flooding events identified that only a small proportion of the northern boundary of the site would be affected by the most extreme flooding events. The site is expected to drain naturally as the tide recedes and, therefore, there would only be a very short-term impact on the availability of some of the site. As such, predicted tidal flood events are not considered likely to impact the availability of the site for brent geese. Assessment of coastal erosion risk identifies that predicted coastal erosion is not considered likely to impact the availability of the site for brent geese.

4.1.16 Active involvement has been maintained with NE throughout the development of this mitigation and support for the principles of the approach has been agreed as confirmed in the Statement of Common Ground (Document reference 5.8, DCO Volume 5).

4.1.17 This mitigation strategy will ensure that there are no adverse impacts on qualifying birds and waterbird assemblages from permanent loss of functionally linked land as a result of the Project and therefore no adverse effects on the integrity of the site as a result of impacts to qualifying species both within the SPA and within functionally linked land outside of the SPA.

4.1.18 Where surveys and HSM identified important bat commuting habitat which is subject to temporary fragmentation during construction due to the severance of hedgerows or other linear vegetation features, temporary fencing will be used to reduce habitat fragmentation and to maintain linear connectivity during construction. This will be undertaken using Heras fencing with camouflage netting or another similar temporary fencing. Temporary fencing would be put in place across key commuting habitats at the end of each working day. Habitats will be reinstated as soon as possible following completion of construction works and temporary features (either temporary fencing or dead hedging) would remain in place along key commuting routes until planting is sufficiently established to reinstate the severed feature. The reinstatement of hedgerows and treelines located along key commuting corridors will be with 1.5m standards rather than whips to ensure impacts are as short-term as possible with a quicker establishment period.

4.1.19 To prevent temporary fragmentation of bat habitat due to artificial lighting, where practicable, night-working will be avoided during the main active bat season (May to October) in the vicinity of key commuting corridors for bats identified from the HSM or surveys. If night-time working is required, linear connectivity will be maintained across the site through the retention of dark corridors in line with good practice. In these locations, lighting must face downwards and away from the linear feature (hedgerow, treeline or watercourse), and where necessary, light shields will be implemented to retain the dark corridors along key connective locations.

4.1.20 To prevent permanent fragmentation due to artificial lighting, where key connective locations for Annex II bat species have been identified, ‘complete darkness’ on a feature is required where illuminance is at or below 0.2 lux on the horizontal plane and at or below 0.4 lux on the vertical plane. Planting of trees, in combination with

temporary fencing (as described in section 4.1.18), will ensure that there is long-term shielding from light from the WRP during the operational phase, in order to retain a dark corridor.

4.1.21 To prevent the loss of suitable but unconfirmed roosting features, a ratio of one bat box for every two PRF-I (a Potential Roosting Feature (PRF) that is only suitable for individual or very small numbers of bats) that are lost and a ratio of two bat boxes for every one PRF-M (a PRF that is suitable for multiple bats and may therefore be used by a maternity colony) lost, will be installed in suitable retained habitat within the proposed mitigation areas. There are no confirmed bat roosts at present; however, given the highly transient nature of bats and the time until the start of construction, there is a small possibility that bats will be found roosting in trees to be removed. Therefore, if bat roosts are confirmed during pre-construction surveys, appropriate mitigation will be implemented.

Measures to avoid and reduce disturbance of qualifying species

4.1.22 The following embedded design and tertiary mitigation measures will be implemented to avoid and reduce disturbance to qualifying species:

1. The Project has been designed to avoid Habitat Sites, which will reduce the potential for disturbance of qualifying species within the Habitats Sites.
2. Both construction and operational lighting design will follow good practice to minimise illuminating hedgerows and ecologically sensitive habitats, to avoid disruption to retained vegetation and the species using these features for resting places, foraging or commuting routes.
3. All Main Rivers will be crossed using trenchless techniques, along with those detailed within the Watercourse Crossing Schedule (refer to Appendix B of the Outline CEMP (Document reference 7.1, DCO Volume 7)) which will minimise the risk of disturbance of qualifying species within the Habitats Sites.
4. Completion of pre-works checks for evidence of otter field signs including potential holt sites and potential features for roosting bats prior to the start of construction works including enabling.
5. Designing the Project to avoid, where reasonably practicable, known ecological features. For instance, the avoidance of otter holts is incorporated into the design to retain these features and reduce the potential for impact pathways.
6. Adoption of sensitive construction methodologies to ensure continued accessibility for otter to the majority of suitable foraging and commuting habitats while securing construction works including enabling areas where the risk to individual otter is greatest.
7. Construction traffic controls such as dipped headlights and reduced speed limits when working after dark during winter months or where night-time working is required.
8. Various monitoring considerations during construction, as required, to ensure baselines are not changed or disturbance of ecological features does not occur.

9. For otter, avoidance buffers of 30m from confirmed resting areas (couches) and 200m from confirmed natal holts will be used during construction, based on current guidance [18]. While it may be possible to reduce this to 100m, this would be an on-site decision by a suitably experienced ecologist made at the pre-construction stage and dependent on the type of work, topography and natural screening. If the presence of cubs was to be confirmed, construction works including enabling within this buffer may need to be suspended for approximately 8-10 weeks until it has been confirmed the cubs are mobile, or the presence of cubs is ruled out. If these avoidance buffers are not possible, a NE Mitigation licence will be required.
10. For otter, additional noise or light screening or other suitable light and noise abatement measures (in lieu of or additional to natural screening planting) for construction works including enabling within 30m of a watercourse requiring night-time operation (or within 200m of a natal site) will reduce potential disturbance to otter.
11. For otter, potential requirement for cessation of certain overnight construction works including enabling or curtailment within 2hrs of sunset or sunrise, if appropriate on a site-specific basis and findings of pre-commencement survey (as per ECoW advice following pre-works checks).
12. Installation of acoustic barriers during construction within 30m of any bat roosts for construction works likely to result in significant noise disturbance as advised by an ECoW.
13. Insulation of pumps, generators and plant or fencing of distinct areas of the construction footprint with acoustic fencing (ready hoard or Heras fencing) in particularly sensitive areas will reduce noise disturbance from construction noise to Solent Waders and Brent Goose Strategy (SWBGS) sites.

4.1.23 To reduce potential disturbance to sensitive qualifying bird species from construction noise a ‘soft start’ methodology will be implemented if percussive or vibration piling works is required at Budds Farm WTW. Each piling event will commence with the hammer energy as low as is reasonably practical, followed by a gradual ramp-up to full hammer energy. For example, a soft start methodology adopted for percussive piling maintains the hammer energy at 10% for approximately 35 minutes and increases the hammer energy to between 20 – 95% for a maximum of 200 minutes [19]. The slow increasing of noise levels will avoid a sudden impulsive loud noise and the subsequent startle effect on qualifying species present. The disturbance threshold of different qualifying bird species is varied, for example brent goose are very sensitive to noise stimuli [20] and a ‘soft start’ alone is unlikely to be sufficient to avoid significant impacts to qualifying species from disturbance and therefore, additional measures as outlined in section 4.1.24 to 4.1.27 will be implemented.

4.1.24 Watching briefs will be undertaken during the non-breeding bird season (September to March inclusive) when construction noise is predicted to be greater than 50LAeq at the boundaries of sites H08, H130 (WRP SuDS outfall and connection) and H90 and Chichester and Langstone Harbours SPA and Ramsar. Watching briefs will be undertaken for at least two hours either side of high tide as this is deemed the most sensitive time period for qualifying species due to the reduced availability of feeding and roosting areas within the intertidal zone. Therefore, significant numbers of qualifying species are more likely to be present within the Zol during this time period

and at risk of being exposed to anthropogenic disturbance. If 1% or more of the estimated population of any one qualifying species of Chichester and Langstone Harbours SPA and Ramsar and Portsmouth Harbour SPA and Ramsar are present within the ZoI, enabling or construction works estimated to produce noise levels above 50dB LAeq or an agreed level above baseline noise levels (to be agreed with NE) will cease to prevent adverse effects on site integrity due to anthropogenic disturbance. The number of birds considered to be 1% of the qualifying species population will be informed by the estimated citation population for the Habitats Site and recent WeBS core count data. For qualifying species locally or regionally in decline, the 1% threshold may not be sufficient to ensure no adverse effects on site integrity and therefore, this threshold will be considered on a species-specific basis. Watching briefs may also be required during construction works predicted to be greater than 50LAeq and undertaken outside of this timeframe (two hours either side of high tide). The approach to undertaking watching briefs outside of this timeframe will be discussed and agreed under consultation with NE prior to any noisy works commencing. Based on noise modelling outputs, cessation of enabling and construction works may be required during compound construction (65LAeq), compound operation (67LAeq), trenchless crossing pipe installation (69LAeq) and shaft construction (75LAeq) at Budds Farm WTW. The watching briefs will identify the species present and their abundance within the ZoI. The ZoI and the required survey area for watching briefs will be up to 300m depending on the type of construction works being undertaken. This ZoI will be agreed based on noise contour figures and consultation with NE. Noise model outputs are detailed in ES Chapter 15 Noise and vibration, Volume I (Document reference 6.1, DCO Volume 6).

4.1.25 Additionally, if air temperatures of 0°C or lower are forecast on site at any point within a 24-hour period, for five consecutive days leading up to or during any activities that will produce noise levels above 50dB LAeq then construction works estimated to produce noise levels above 50dB LAeq or an agreed level above baseline noise levels (to be agreed with NE) must cease. This is based on the nearest meteorological station to the site. Once air temperatures have been above 0°C for three consecutive days, then construction works can recommence.

4.1.26 Where the potential for loss or disturbance of SWBGS sites has been identified at the WRP, Portsdown Hill and Budds Farm WTW, and engagement was undertaken with NE to ensure appropriate mitigation is provided. Regular meetings with NE took place between April 2024 and August 2025 to discuss and agree suitable mitigation.

4.1.27 Construction works including enabling within W03G and H130 SWBGS sites will be timed to avoid the wintering bird season. Construction works within W03G and an adjacent buffer of at least 175m, which aligns with the western field boundary in the field immediately west of Pigeon House Lane, and the eastern field boundary in the field immediately east of Mile Lane will be completed outside of the non-breeding season from September to March inclusive. Any existing or created gaps in these hedgerows as a result of the Project will be filled with visual/acoustic fencing (ready hoard or Heras fencing). Additionally, construction works at H130 and within a 200m buffer (if sheet piling is required for the WRP SuDS outfall) will be completed outside of the non-breeding period from September to March inclusive.

4.1.28 Trenched open-cut crossings of watercourses will be subject to pre-construction surveys for freshwater receptors. If the potential presence of fish or

macroinvertebrates of note is identified, pre-construction habitat suitability assessments of trenched open-cut watercourse crossings will be undertaken. If it is established that fish could be present, construction works including enabling will proceed under a method statement for fish during open-cut trenching at watercourse crossings. The method statement will be agreed with the EA and delivered by the ECoW, as outlined in the Outline CEMP (Document reference 7.1, DCO Volume 7). The method statement will include appropriate mitigation to ensure no adverse effects on the species potentially present, such as (but not limited to) the following measures:

1. Prior to commencing on site, all relevant legislation, including requirements for licences, and consents will be identified and confirmation of full compliance obtained.
2. The ECoW will ensure that a watching brief is in place during construction, checking the working area for signs of spills, pollution and during all operations regarded as high risk of potential harm to the environment.
3. If dewatering of a works area within a watercourse with the potential for fish to be present is required, the ECoW will advise on risks and monitor as necessary.
4. The method statement will include measures for a fish rescue to be undertaken prior to dewatering. The depth and size of the rescue area will determine the method used (electric fishing backpack or generator or hand netting if a small area). The dewatered area will be assessed as the water levels are lowered, including checks of the substrate to be confident that no fish remain in the area. Fish will temporarily be stored in an aerated holding tank before being returned to the watercourse at the nearest suitable safe release location.
5. Large boulders or stones, gravels and pebbles will be moved from the working area prior to dewatering and retained to be used for reinstatement.
6. Any cofferdams will be monitored regularly to ensure that no fish enter the area and become entrapped or in distress. If fish do get into the construction works area such as through flooding of the area, construction works must stop and a fish rescue team will be employed to ensure safe removal of any fish that get trapped.
7. EA permits will be sought to ensure that the fish rescue team can use the appropriate methodology and move the fish, prior to any rescue (electric fishing or fish movement permits as necessary).
8. If fish are discovered in a watercourse undergoing dewatering or damming works where a fish rescue need has not previously been identified, construction works will stop immediately and a fish rescue will be undertaken before construction works can recommence. Unexpected fish rescue will only proceed with the necessary permissions or permits from the EA and carried out by appropriately trained staff.

4.1.29 The Outline CEMP (Document reference 7.1, DCO Volume 7) sets out measures to avoid and reduce disturbance of qualifying species as detailed in section 4.1.22. The measures contained in the Outline CEMP are secured by a requirement in Schedule 2 to the DCO. A detailed CEMP will be produced and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the

DCO. A qualified and experienced Ecological Clerk of Work (ECoW) would be available during the construction phase, to advise, supervise and report on the delivery of the mitigation methods and controls described in the Outline CEMP. The ECoW would be supported as necessary by appropriate specialists. The ECoW will ensure that the CEMP is implemented. Where individuals of any species protected by biodiversity legislation are noted during the construction works, construction operations will stop in those areas and the ECoW contacted for further advice on how to proceed, as indicated in the Outline CEMP.

4.1.30 The Outline CEMP (Document reference 7.1, DCO Volume 7) also sets out measures to minimise the risk of animal entrapment. Where there would be a risk of animal entrapment, such as where excavations have to be left open overnight and cannot be covered, one 45° ramp every 50m will either be included in the construction of the excavation or placed within it to allow animals to escape. Deeper excavations would be appropriately fenced to prevent animals from gaining access. All excavations left open overnight or longer will be checked for animals prior to the continuation of works or infilling. During the construction phase, machinery which could harm animals, including otter, will be made safe or cordoned off with temporary fencing at the end of each working day. Any sections of exposed pipework will be securely covered with capping to prevent otter or other animals entering.

Measures to avoid and reduce changes to water quality and hydrological change

4.1.31 A range of measures have been embedded into the Project design to avoid or reduce hydrological change. They include:

1. All tunnels and trenchless crossings of watercourses and other barriers will use a methodology that excludes groundwater, minimising direct disturbance of groundwater and therefore any dependant ecological features.
2. Tunnel shafts associated with trenchless crossings would be avoided where practicable in the chalk aquifer (particularly in SPZ).
3. Where trenchless crossings are to be used, the launch and reception pits will be set back at least 8m from the bank tops either side of the river. The pipeline will be installed at a minimum of 2.5m below the hard bed of main rivers and 1.2m below the hard bed of ordinary watercourses; this will avoid interaction with active bed sediments and reduce the chances of exposure and interference with the natural geomorphology of watercourses. Ground investigation will be undertaken in advance of the detailed design of trenchless crossings and settlement calculations will be made to ensure that the bed levels of watercourses are not affected by the construction works including enabling. Buffer strips will be left alongside water features to reduce runoff and fine sediment entering the channel.
    a. Measures required to manage the quality and quantity of construction stage drainage are set out in the main body of the Outline CEMP (under WE4 and WE5) (Document reference 7.1, DCO Volume 7) and include the requirement for the Contractor to produce a Construction Drainage Plan.

b. A range of measures will be incorporated to manage potential contamination risks during Pipeline construction.

c. Where the pipeline has the potential to be installed below groundwater level in permeable strata, clay stanks would be used at regular intervals to prevent the pipeline acting as a preferential pathway.

4.1.32 The Outline CEMP (Document reference 7.1, DCO Volume 7) requires that the Contractor undertake a detailed Foundation Works Risk Assessment (FWRA) in line with CL:AIRE's Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention [21]. The detailed FWRAs will provide an assessment for each of the proposed foundation types for the WRP site and Above Ground Plant, and an assessment of construction methodologies for trenchless crossings, tunnels and shafts respectively. The detailed FWRAs will include detailed Piling Risk Assessments and an assessment of other foundation types. The detailed FWRA will be undertaken in consultation with the EA, relevant local planning authority and other relevant bodies (if applicable). In Source Protection Zone 1 (SPZ1), where penetrating the chalk or other sensitive groundwater areas where trenchless construction, tunnelling or foundations are proposed, the detailed FWRA will be undertaken in consultation with the EA, relevant local planning authority and the relevant water company (if applicable) and permits or consents will be obtained prior to any construction works (including enabling works) commencing in the SPZ (if required). The Outline Foundation Works Risk Assessments (Document reference 7.15, DCO Volume 7) include outline versions of the Piling Risk Assessment.

4.1.33 A Voids Treatment Protocol will be developed to document how voids encountered during construction within the chalk would be mitigated to avoid impacts on groundwater bodies.

4.1.34 The Project will adhere to a Water Monitoring Plan. An Outline Water Monitoring Plan is included in ES Appendix 19.9 Outline Water Monitoring Plan, Volume II (Document reference 6.2, DCO Volume 6) and this will form the basis of the Water Monitoring Plan. The requirement for a Water Monitoring Plan is secured within the Outline CEMP (Document reference 7.1, DCO Volume 7). The plan includes long-term groundwater monitoring in key areas (from installation to post-construction) to ascertain seasonal variability in groundwater levels and monitor groundwater fluctuations pre-, during and post-construction. The Water Monitoring Plan will be agreed with the EA and will confirm the pre-construction baseline and verify predicted impacts to the local groundwater regime from temporary and permanent construction effects during and post-construction. The Water Monitoring Plan includes trigger levels and action plans (to enable mitigation to be implemented based on the monitored conditions).

4.1.35 The Outline CEMP (Document reference 7.1, Volume 7) requires the contractor to produce a Construction Drainage Plan to manage the quality and quantity of construction stage drainage. The plan will be informed by surveys undertaken by a specialist drainage contractor, to locate drains and create pre-construction drawings to ensure appropriate reinstatement. It will include measures to minimise water within the working area, ensure ongoing drainage of surrounding land, reduce/remove risk of sediment entrainment and measures to capture and

attenuate surface runoff and ensure that there are no changes to runoff rates and flood risk (as set out in the Outline CEMP (Document reference 7.1, Volume 7).

4.1.36 The incorporation of additional phosphorus treatment measures in the water recycling process at the WRP would reduce the phosphorus content of the recycled water to acceptable levels, and the discharge of recycled water into Havant Thicket Reservoir would be subject to an environmental permit. Phosphorus would be removed using high-rejection membranes within the WRP site. Full details are within ES Chapter 3 Description of the Project, Volume I (Document reference 6.1, DCO Volume 6). The results of the water quality modelling for Havant Thicket Reservoir presented in ES Appendix 19.11 Havant Thicket Reservoir water quality modelling, Volume II (Document reference 6.2, DCO Volume 6) indicate that negligible change is predicted to occur in the Havant Thicket Reservoir between the 'classic' (i.e., the period of reservoir operation prior to introduction of recycled water from the WRP) and 'post-WRP' (i.e., the period of reservoir operation following introduction of recycled water from the WRP) operation scenarios. TP concentrations are forecast as 21 µg P/l (annual mean). These very low concentrations reflect the phosphorus removal measures.

4.1.37 Washouts are located at topographical low points along the alignment of the Pipeline to facilitate commissioning and emptying source water and treated water from a section of the Pipeline for repair and maintenance. If there is a requirement for release of flows during routine maintenance, this source water will be tankered away and disposed at an appropriate facility. This will prevent any release of source water into the environment during operational maintenance thus preventing any pollution or erosion. It is expected that valves would have a design life of 2,500 opening and closing cycles. Therefore, if valves are to be tested every 6 months, the valves would not need replacing during the intended lifetime of the Project unless testing identified the need for replacement.

4.1.38 Washouts will also be used in the event of an emergency. Emergency drain downs, for example in the event of a burst in the Pipeline, are considered to be operationally exceptional and not likely to occur during the operation of the Project. As stated in ES Chapter 14, Major Accidents and Emergencies, Volume 1 (Document reference 6.1, DCO Volume 6) mitigation for the very unlikely emergency use of washouts during the operation of the Project is secured through the Operational Environmental Management Plan (OEMP) (Document reference 7.7, DCO Volume 7).

Measures to avoid waterborne pollution

4.1.39 A range of measures have been incorporated into the Outline CEMP (Document reference 7.1, Volume 7) to manage potential contamination risks, including the requirement to produce a Construction Drainage Plan and Pollution Prevention Management Plan.

4.1.40 Wastewater from construction activities (such as dewatering) will be treated where necessary prior to release to foul sewer, ground or surface water to achieve compliance with the appropriate consents or permits.

4.1.41 A SuDS is included in the design of the WRP site to treat surface water runoff from the WRP site and ensure water that is discharged into the Hermitage Stream is not polluted (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)). The construction of the SuDS outfall on the banks of Hermitage Stream will be designed and managed to not add waterborne pollutants including the use of marine grade concretes. The cofferdam would extend approximately 2m into the Hermitage Stream, and approximately 4m along the Hermitage Stream. Any water that enters the cofferdam would be over pumped back into the Hermitage Stream, ensuring no contamination enters the watercourse. It is anticipated that the construction duration of the SuDS outfall would be approximately six weeks. The final design and construction methodology are currently unknown; therefore the assessment of LSE resulting from the construction of the SuDS outfall has been undertaken based on the likely worst case scenario including the use of construction machinery and associated chemicals (e.g. fuel, lubricants, coolants) during the construction resulting in pollution risk and the use of concrete creating a risk of pollution in the tidal zone of Hermitage Stream. Tertiary mitigation to avoid pollution in the tidal zone is set out in the Outline CEMP (Document reference 7.1, DCO Volume 7) including using a temporary cofferdam, sandbags or other appropriate measure to enclose and create a dry environment for concrete work near water.

4.1.42 The Outline CEMP (Document reference 7.1, DCO Volume 7) includes measures to minimise damage to watercourses through pollution. No trenchless crossings will take place within 5m of the bank top of any watercourse. Open-cut crossing points are only within low value non-sensitive habitat, where good practice guidance for pollution prevention will be followed. Pre-condition surveys of these open-cut crossings at the detailed design stage will be undertaken to check that the baseline has not changed.

4.1.43 The Outline CEMP (Document reference 7.1, DCO Volume 7) includes measures to avoid waterborne pollution. This includes:

1. Fuels, oils, lubricants and other chemicals to be clearly labelled and the site should retain an up-to-date Control of Substances Hazardous to Health (COSHH) inventory.
2. Fuels, oils, lubricants and other chemicals to be stored in bunded compound (the volume of which shall be at least equivalent to the capacity of the tank or tanks plus 10%), located in designated areas taking into account security, location of sensitive features and pathways (such as drains and watercourses), and inspected at least weekly for signs of spillage, leaks and damage.
3. Portable bowsers with built-in bunds should be used for any refuelling activities required in working area. Use of the portable bowsers will be restricted to designated areas within the working area that have been identified as being suitable for refuelling, and the bowsers will be returned to the construction compound overnight.
4. Small plant to be provided with drip trays.
5. All construction plant should be inspected for fuel leaks before being delivered to working areas.

6. Biodegradable oils to be used where reasonably practicable.
7. Concrete or cement mixing (if required) and washing areas should be located at least 10m away from nearest water body; Washing areas to incorporate settlement and recirculation systems to allow water to be reused and all washing out of equipment would take place in a contained area and the water collected for disposal off-site.
8. Washing areas to incorporate settlement and recirculation systems to allow water to be re-used and all washing out of equipment will take place in a contained area and the water collected for disposal off-site.
9. A Pollution Prevention Management Plan to be prepared for pollution events will provide detail as to how to report and deal with environmental incidents including measures to manage spills (e.g. through use of spill kits), or the release of hazardous substances, and to clean up following an incident.

4.1.44 The WRP is located on the site of a former landfill. Piled foundations will be cast in situ (continuous flight auger piles) to reduce the risk associated with landfill leachate, and to reduce the potential for the creation of new contamination pathways for contamination to migrate into the underlying Principal Aquifers and adjacent surface water features. AGP comprising buildings upon shallow foundations and, for example, tanks would also be cast in situ. Tunnels and shafts would include both pre-cast and cast elements to reduce potential risks of creating pathways for contamination to migrate into the underlying aquifers. This is detailed within the Outline Foundation Works Risk Assessment (Document reference 7.4, DCO Volume 7).

4.1.45 In areas which are considered to represent a potentially unacceptable risk to land quality and ground conditions receptors without mitigation, remediation strategies would be developed following the guidance provided within the appropriate contaminated land statutory guidance and, for example the EA Land Contamination Risk Management Framework [22]. Further ground investigation, including monitoring should it be considered necessary, would be undertaken in areas considered to potentially pose an unacceptable risk to land quality and ground conditions receptors. In order to determine whether an unacceptable risk is posed, the results of the ground investigation would be interpreted and compared against relevant screening criteria, this will aid in informing whether a remediation strategy is required for that area of the Project as secured by the Outline CEMP (Document reference 7.1, DCO Volume 7). See ES Chapter 11, Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6), ES Appendix 11.1 Response to Havant Borough Council Environmental Control Officer, Volume II (Document reference 6.2, DCO Volume 6) and ES Appendix 11.2 Geotechnical and geo-environmental reports, Volume II (Document reference 6.2, DCO Volume 6) for further detail on which areas are considered to require further ground investigation; in particular Appendix 11.2 which includes an outline remediations options appraisal and outline remediation strategy for the WRP site.

4.1.46 The outline remediation strategy for the WRP contains the following key elements to mitigate potential risks to land quality and ground conditions receptors including the risk of contamination to migrate into the underlying Principal Aquifers and

adjacent surface water features. These measures are secured by the Outline CEMP (Document reference 7.1, DCO Volume 7).

1. Health and safety legislation
2. Development and adherence to risk assessments and method statements
3. The placement of contaminated soil stockpiles on impermeable surfaces
4. Appropriate storage of fuels and oils with processes in place to manage any leaks or spills from equipment
5. Watching brief and discovery strategy during ground works
6. Landfill gas protection measures
7. Selection of piling and shaft/tunnel construction methodology
8. Soil excavation, re-use and disposal

4.1.47 For construction of the SuDS outfall for the WRP site at the intertidal section of Hermitage Stream, a temporary cofferdam, sandbags or other appropriate measure, will be used to enclose and create a dry environment for concrete work near water (as set out in environmental measure ref MB1 in Table 5-1 of the Outline CEMP (Document reference 7.1, DCO Volume 7)). This serves as a precautionary measure and tertiary mitigation to avoid pollution in the tidal zone. The construction of the SuDS will also include suitable scour protection to reduce impacts on the existing transitional habitats at the foot of the banks of the channel. Refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6).

4.1.48 Any releases of source water resulting from routine maintenance or testing of washout valves during operation would be collected directly by a tanker, with no source water discharged to the environment (land or watercourse). Testing of a washout valve would result in the release of approximately 4.5m^3 of source water from the Pipelines, requiring only one tanker and would be required approximately every six months, or in accordance with the relevant operating regime.

Measures to avoid and reduce airborne pollution

4.1.49 Where the potential for changes to air quality to occur during construction of the Project have been identified as a pathway to impact for Habitats Sites, mitigation measures will be implemented to minimise impacts.

4.1.50 The Outline CEMP (Document reference 7.1, DCO Volume 7) includes measures to minimise dust and reduce airborne pollution when preparing and maintaining the construction site. This includes the development and implementation of a Dust Management Plan to be approved by the discharging authority and:

1. Plan site layouts so that machinery and dust causing activities are located away from sensitive features, as far as is reasonably practicable within constraints of the Order Limits.
2. Erect solid screens or barriers around dusty activities during construction works.

3. Use a dust suppression system where there is a high potential for dust production and the site is active for an extensive period.
4. Management of runoff from any dust suppression to ensure contaminated runoff does not enter Hermitage Stream or Langstone Harbour.
5. Keep site fencing, barriers and scaffolding clean using wet methods.
6. Materials that have a potential to produce dust should not be stored on-site for extended periods, unless being re-used on site. Material will be appropriately managed (e.g. covered, grassland).
7. Manage storage areas to prevent wind whipping.

4.1.51 The Outline CEMP (Document reference 7.1, DCO Volume 7) also details measures to be taken during construction activities to reduce airborne pollution. Measures include:

1. Only use cutting, grinding, or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.
2. Ensure an adequate water supply on the site for effective dust or particulate matter suppression or mitigation, using non-potable water where appropriate.
3. Use enclosed chutes and conveyors and covered skips.
4. Reduce drop heights from handling equipment and use fine water sprays on such equipment wherever appropriate.
5. Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages after the event using wet cleaning methods.
6. Avoid scabbling (roughening of concrete surfaces) if possible.
7. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
8. For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

4.1.52 The Outline CEMP (Document reference 7.1, DCO Volume 7) includes measures to reduce Non-Road Mobile Machinery (NRMM) pollutant emissions from construction. Measures include:

1. All vehicles would switch off engines when stationary - no idling vehicles.
2. Avoid the use of diesel- or petrol-powered generators and instead use mains electricity or battery powered equipment where reasonably practicable.
3. Impose and clearly indicate a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas.
4. NRMM and plant to be well maintained. If any emissions of dark smoke occur, then the relevant machinery should stop immediately and any problem rectified.
5. All NRMM will use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004) where reasonably practicable.

6. Consideration given to the siting of NRMM within the working area. Where practicable, locating generators and plant at the greatest distance from features would reduce the potential for air quality effects.
7. All diesel NRMM to be fitted with Diesel Particulate Filter (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting).

Measures to avoid and reduce the introduction and or spread of non-native species and pathogens

4.1.53 The INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7) sets out the Projects approach to INNS management and how the introduction or spread of INNS and pathogens will be avoided.

4.1.54 The INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7) identifies reasonable steps to comply with legislation and exercise due diligence and sets out measures to mitigate the introduction or spread of INNS and pathogens during construction. A precautionary approach will be applied, carrying out site-specific method statements for INNS prior to construction based on detailed design, and following good practice management in the identification and mitigation of INNS.

4.1.55 Mitigation includes the delivery of an INNS toolbox talk to construction workers and operatives to enable them to identify INNS and a protocol for washing down all footwear, personal protective equipment, equipment and vehicles or plant before they are moved between construction sites.

4.1.56 The Contractor will provide suitable INNS method statement(s) in accordance with the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7). This will set out how identifiable areas with the potential presence of plant species listed in Schedule 9 of the Wildlife and Countryside Act (WCA) 1981 [23] and other INNS would be demarcated, and how any affected soils would be appropriately managed throughout the construction works including enabling, including any disposal.

4.1.57 The INNS method statement(s) will include biosecurity good practice for the purposes of informing all staff and contractors working on the Project of INNS-related measures to be implemented during daily work processes. It will align with Southern Water's own Environmental Management System Manual on INNS [24].

4.1.58 During pressure testing of the pipeline, water from the following sources would be used to ensure the risk of introducing INNS is negligible: treated wastewater from Budds Farm WTW for the pipelines between Budds Farm WTW and the WRP site, and potable water from Otterbourne WSW for the pipelines between the WRP site and Bedhampton Springs and the pipeline between the WRP site and Otterbourne WSW.

4.1.59 Water storage lagoons would be used to store the potable water used for the testing of the Pipeline between the WRP site and Otterbourne WSW and this water would be cleaned using a silt buster. Water would be passed through the pipeline using temporary pumps and pipes, either directly to the pipelines or using installed washout valves. Once pressure testing has been completed, and the water within the water storage lagoons is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced facility. Treated

wastewater used for pressure testing of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing and commissioning.

4.1.60 Full system testing of the pipeline would use water from the following sources to ensure there is no risk of introducing INNS: treated wastewater from Budds Farm WTW for the Pipelines between Budds Farm WTW and the WRP site, and source water from Havant Thicket Reservoir for the Pipelines between the WRP site and Bedhampton Springs and between the WRP site and Otterbourne WSW.

4.1.61 During operational maintenance testing of the washouts, source water would be used and the discharge will be collected directly by a tanker with no water discharged to the natural environment, as outlined in the OEMP (Document reference 7.7, DCO Volume 7).

4.1.62 The EA's position statement on managing the risk of spread of Invasive Non-Native Species through raw water transfers [25] indicates that the focus should be on any new pathways that the transfer creates and not on species-specific management. It also states that new schemes that create a hydrological connection between isolated catchments (such as the Project) must have mitigation measures in place to ensure INNS cannot be spread by the new transfer. The EA's position statement was considered in developing the approach set out in the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7).

4.1.63 The INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7) provides a risk assessment of the potential for release of INNS. This assessment indicates that the operation of the WRP carries a low-risk INNS score compared to Havant Thicket Reservoir. Although the management of INNS at Havant Thicket Reservoir will be under Portsmouth Water's operational control, the presence of INNS within the reservoir is a material concern to the Southern Water INNS Biosecurity Plan, given it is the same source water that will be abstracted and transferred under the Project. Portsmouth Water has produced the Havant Thicket Reservoir INNS Biosecurity Plan [26].

4.1.64 The Havant Thicket Reservoir INNS Biosecurity Plan recognises that it would be unreasonable and disproportionate to seek to completely eradicate INNS from Havant Thicket Reservoir given its proposed use as an open source water storage reservoir with public access. But in utilising multiple INNS risk assessment tools, and assessing the effectiveness of the mitigation measures proposed, the Portsmouth Water Plan aims to limit the presence of INNS in the reservoir to as low as is reasonably practicable while accepting that there will remain a residual risk of potential INNS presence. The inclusion of a robust INNS Monitoring Plan, to be implemented and partnered with an INNS Response Plan, and a database and incident reporting for enhanced communication of INNS risk internally and externally should ensure that if any INNS are identified in the reservoir then they are managed by Portsmouth Water to negligible levels effectively.

4.1.65 The water to be transferred to Otterbourne WSW under Southern Water's Project will be abstracted using the same offtake structure of the reservoir as the

Portsmouth Water transfers, in which screens of 12mm bars at 150mm centres are currently proposed. This large screen spacing is unlikely to screen out any INNS except for large terrestrial mammals, therefore there is the potential for all other INNS functional groups to be present in the source water to be transferred to Otterbourne WSW. The transfer water will be treated to potable standards at Otterbourne WSW. Although this is not specific mitigation designed to control the presence of INNS, this advanced water treatment will remove INNS from the water processed at Otterbourne WSW.

4.1.66 To eliminate the potential impacts of untreated source water entering the River Itchen from operational processes at Otterbourne WSW and Chickenhall WTW, INNS Treatment at Otterbourne WSW will be included to treat the process waste flows and run to waste flows that is produced by the existing treatment process before it enters the sewer network. This would treat the waste flows of the existing treatment process at Otterbourne WSW to ensure any INNS in the source water would be removed and not further spread. The INNS Treatment at Otterbourne WSW would produce sludge, which would be disposed of via a suitably licensed facility.

4.1.67 Once flows have passed through Otterbourne WSW and directed to supply, the waste stream will be subject to the following process to remove INNS: Lamella settlers to help settle the high solid loading from centrate, and two stages of filtering to remove any INNS or particles containing INNS. The first filtering process will use coarse 1mm Boll type pressure strainers and the second filtering process will use fine 25µm Boll type pressure strainers. Any liquid waste from the INNS Treatment at Otterbourne WSW will be considered INNS free and discharged to the existing foul sewer network at Chickenhall WTW. Any sludge waste from the Lamella settlers or from the washwater from Boll type strainers will be returned to the head of the works for reprocessing through the wastewater system at Otterbourne WSW. Any solid sludge arising from this process will be transferred to a suitable licensed disposal facility and any liquid waste arising from the wastewater treatment system will be sent back through the INNS Treatment plant at Otterbourne WSW.

4.1.68 The INNS Treatment would comprise repurposing an existing tank and development of an INNS Treatment plant, located in an existing redundant building, or within a new building within the existing Otterbourne WSW site.

4.1.69 The continued management and mitigation of INNS is considered to be appropriate pathogen management at this stage, as set out in the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7, section 4.3). This aligns with the EA position statement on INNS and raw water transfers [25] and the Natural England advice note for the same [27] . Should pathogen treatment become a requirement in the future, space for UV or chlorine dosing disinfection has been allowed so that it can be retro-fitted to the INNS Treatment at Otterbourne WSW plant in the future.

5 HRA Stage 2: Appropriate Assessment

5.1 Information for Stage 2: conservation objectives

5.1.1 The HRA Stage 1 Screening and MCZ Screening Assessment (Appendix A) provides details of each of the Habitats Sites which have been taken forward to Appropriate Assessment. Table 3-1 provides details of the qualifying features of each of the sites which have been assessed in the Stage 1 Screening to be subject to potential LSE.

5.1.2 As outlined in section 2, "*the integrity of a site is the coherence of its ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats or the levels of populations of the species for which it was classified*." [11]. For site integrity to be unaffected, there should be no impacts to a site's qualifying features resulting in adverse effects to the ecological structure and functioning of the site, its supporting processes or adverse effects on the site's ability to meet its conservation objectives.

5.1.3 The HRA Stage 1 Screening and MCZ Screening Assessment (Appendix A) provides details of the conservation objectives for each of the Habitats Sites. These conservation objectives are broadly similar for SPAs and SACs and their purpose is to:

1. Ensure that the integrity of the site is maintained or where appropriate restored to, and ensure that the site contributes to achieving, a favourable conservation status of its qualifying features, and in the case of SPAs that the site contributes to achieving the aims of the Wild Birds Directive [28], by maintaining or restoring:
2. The extent and distribution of qualifying natural habitats and habitats of qualifying species
3. The structure and function of the habitats of the qualifying features
4. The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
5. The population of each of the qualifying features, and
6. The distribution of the qualifying features within the site.

5.1.4 In addition to these broad conservation objectives, NE has published Supplementary Advice on Conservation Objectives (SACO) [29] for some Habitats Sites, providing a list of attributes for each qualifying feature which "*if safeguarded will enable achievement of the Conservation Objectives*". The SACO information also contains target thresholds for 'maintaining' or 'restoring' each attribute.

5.1.5 In addition to the conservation objectives, where available for a Habitats Site, the supplementary advice on conservation objectives has been used to inform the assessment of adverse effect on integrity. A summary of relevant supplementary advice on conservation objectives is outlined in Table 5-1. The full list of supplementary advice for each site was considered in the assessment and is provided on the NE website [30]. In addition, site improvement plans (SIPs) are

available for each designated site on the NE designated sites website and were referred to during the assessment.

5.1.6 Conservation advice packages for SPAs are largely relevant to Ramsar sites. The following is stated by NE regarding SPA conservation advice packages; '*the Conservation Advice packages for the overlapping European Marine Site designations to be, in most cases, sufficient to support the management of the Ramsar interests. If there are Ramsar qualifying features not covered by overlapping European Marine Sites, we will consider the best approach on addressing these (e.g. to produce advice on a feature basis) if there is an operational risk.* [30]' Therefore, information relating to SPAs is also considered relevant to the overlapping Ramsar sites.

5.1.7 A summary of relevant supplementary conservation objectives for each of the Habitat Sites assessed within the HRA are provided in Table 5-1. The River Itchen SAC conservation objectives are also considered relevant to the River Meon Compensatory SAC, as it covers the same species and habitats and no specific objectives are available for the River Meon.

5.1.8 The citations and data sheets for each of the Habitat Sites considered in the assessment, where available, are provided in Appendix C.

Table 5-1 Conservation objectives for habitat sites

Habitat Site	Conservation Objective	Description
River Itchen SAC (also considered relevant to River Meon Compensatory SAC) [31]	Extent of feature within the site	Restore the total extent of the qualifying habitat (H3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation) to that characteristic of the natural fluvial processes associated with the river type. There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored.
	Biological connectivity	The movement of characteristic biota should not be artificially constrained. Qualifying species, including fish and invertebrates, require natural freedom of movement to complete their life cycle in rivers and maximise their population size and genetic diversity.
	Biotope (Habitat Mosaic)	Restore the extent and pattern of in-channel and riparian habitats to that characteristic of natural fluvial processes.
	Fisheries	Restore fish densities at or to a level at or below the natural environmental carrying capacity of the river and below historical levels
	Invasive non-native species	Ensure non-native species categorised as 'high-impact' in the UK under the Water Framework Directive [32] are either rare or absent but if present are causing minimal damage to the feature and there is no further spread. Where possible action should be taken to reduce the distribution of such species.
	Structure and function	Maintain the abundance of the species to enable each of them to be a viable component of the Annex I habitat feature: Pond water crowfoot communities; Fish (bullhead, Atlantic salmon, brook lamprey); southern damselfly; otter.
	Restore the natural supply of coarse and fine sediment to the river	Excessive fine sediment supply can lead to the smothering of coarse substrates and the loss of flora and fauna dependent on them. Siltation is a widespread factor affecting the River Itchen.
	Riparian zone	Restore a patchy mosaic of natural woody and herbaceous (tall and short swards) riparian vegetation. The riparian zone should be sufficiently wide to act as a healthy and functional habitat zone within the river corridor.
	Supporting offsite habitats	Habitats beyond the site boundary upon which characteristic biological communities of the site depend should be maintained in a state that does not impair the full expression of the characteristic biota within the site.
	Watercourse flow	Restore the natural flow regime of the river, with daily flows as close to what would be expected in the absence of abstractions and discharges (the naturalised flow). Ensure more than 90% of

Habitat Site	Conservation Objective	Description
		the naturalised daily mean flow remains in the river all year round. Springs in aquifer-fed rivers should be maintained.
	Vegetation structure: cover of submerged macrophytes	Maintain a sufficient proportion of all aquatic macrophytes to allow them to reproduce in suitable habitat and unaffected by river management practices.
	Screening of intakes and discharges	All intakes and discharges likely to trap a significant number of individuals of characteristic species are being adequately screened.
	Air quality	Maintain or where necessary, restore the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load (CLo) or Critical Level (CLe) values given for this feature of the site on the Air Pollution Information System (APIS).
	Water chemistry	Maintain natural levels of alkalinity. Mass transfers of water can disrupt the natural alkalinity regime.
	Water quality – nutrients	Restore the natural nutrient regime of the rivers, with any anthropogenic enrichment above natural/background concentrations limited to levels at which adverse effects on the feature are unlikely.
	Water quality – acidification	Maintain levels of acidity to those which reflect unimpacted conditions.
	Water quality – other pollutants	Achieve at least 'Good' chemical status.
	Water quantity	Where the feature or its supporting habitat is dependent on surface water and/or groundwater restore water quality and quantity to a standard which provides the necessary conditions to support the feature.
Chichester and Langstone Harbours SPA (and relevant to Ramsar) [33]	Assemblage of species: abundance	Restore the overall abundance of the assemblage at a level which is above 108,811, whilst avoiding deterioration from its current level as indicated by the latest peak mean count or equivalent.
	Assemblage of species: diversity	Maintain the species diversity of the bird assemblage.
	Breeding population: abundance	Maintain (sandwich tern; common tern) or Restore (little tern) the size of the breeding population whilst avoiding deterioration from its current level as indicated by the latest mean count or equivalent.
	Connectivity with supporting habitats	Maintain safe passage of birds moving between nesting and feeding areas (breeding species) and roosting and feeding areas (non-breeding species).

Habitat Site	Conservation Objective	Description
	Disturbance caused by human activity	Reduce or restrict frequency, duration or intensity of disturbance affecting roosting, foraging, feeding, moulting or loafing birds so that they are not significantly disturbed (non-breeding species). Reduce or restrict frequency, duration or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting or loafing birds so that they are not significantly disturbed (breeding species).
	Non-breeding population abundance	Maintain (Dark-bellied brent goose; wigeon; teal; pintail; shoveler; red-breasted merganser; curlew; redshank; turnstone) or restore (shelduck; ringed plover; grey plover; sanderling; dunlin; bar-tailed godwit) the size of non-breeding populations of qualifying species, whilst avoiding deterioration from current levels as indicated by the latest mean peak count or equivalent.
	Productivity	Maintain or recover productivity so that breeding success is maximised within the constraints of the site.
	Pathogens	Restrict or reduce the introduction and spread of pathogens, including Highly Pathogenic Avian Influenza, and their impacts.
	Air quality	Maintain (Dark-bellied brent goose; wigeon; teal; pintail; shoveler; red-breasted merganser; curlew; redshank; turnstone; shelduck; ringed plover; grey plover; sanderling; dunlin; bar-tailed godwit) or restore (sandwich tern; common tern; little tern) concentrations and deposition of air pollutants at below the site-relevant CLo or CLe values given for this feature of the site on APIS.
	Supporting habitat: Non-breeding	Maintain (red-breasted merganser) or restore (dark-bellied brent goose; shelduck; wigeon; teal; pintail; shoveler; ringed plover; grey plover; sanderling; dunlin; bar-tailed godwit; curlew; redshank; turnstone) the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of the non-breeding period (moulting, roosting, loafing, feeding).
	Supporting habitat: Breeding	Maintain (little tern) or restore (sandwich tern; common tern) the extent, distribution and availability of suitable breeding habitat which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding).
	Supporting habitat: Food availability	Maintain the distribution, abundance and availability of key food and prey items at preferred sizes.
	Supporting habitat: Habitat structure	Wigeon - Maintain the availability of grasslands in close proximity (typically<50m) to open water.
	Supporting habitat: Hydrology/flow within grassland (marsh)	Hydrology/flow within grassland (marsh). Maintain water availability in feeding sites to provide shallow surface water and damp field conditions (shoveler). Maintain water availability within

Habitat Site	Conservation Objective	Description
		feeding areas to maintain moderately high-water tables that provide shallow surface water (redshank).
	Supporting habitat: Hydrology/flow within intertidal	Hydrology/flow within intertidal. Maintain the availability of fresh water on mudflats within feeding and resting areas (dark-bellied brent goose; shelduck, wigeon; pintail; ringed plover; grey plover; sanderling; dunlin; bar-tailed godwit; curlew; redshank).
	Supporting habitat: Landscape	Maintain open and unobstructed terrain and overall field sizes within at least 0.5km of roosting and feeding areas (dark-bellied brent goose). Maintain the area of open and unobstructed terrain around roosting and feeding sites, and no overall reduction in field size, where relevant (shelduck). Maintain open and unobstructed terrain and overall field sizes in and around feeding and roosting areas (wigeon; grey plover; sanderling; bar-tailed godwit; curlew; turnstone). Maintain the area of open and unobstructed terrain around nesting, roosting and feeding sites (ringed plover; dunlin; redshank).
	Supporting habitat: quality of supporting non-breeding habitat	Waterbird assemblage. Maintain the structure, function and availability of the following habitats which support the assemblage feature for all stages (moulting, roosting, loafing, feeding) of the non-breeding period: intertidal sediments, intertidal seagrass beds, intertidal rock, saltmarsh, subtidal sediments, coastal lagoons, reedbeds, grazing marsh, water column, improved grassland and arable fields.
	Supporting habitat: water quality – contaminants	Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive [32], avoiding deterioration from existing levels.
	Supporting habitat: water quality – dissolved oxygen	Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7mgL^{-1} (at 35 salinity) for 95% of year) avoiding deterioration from existing levels.
	Supporting habitat: water quality – nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.
	Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.
Solent Maritime SAC [34]	Distribution of supporting habitat	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site (Desmoulin's whorl snail).
	Distribution of the feature, including associated	Maintain or restore as per detailed targets listed on Natural England Supplementary Advice on Conservation Objectives (SACO) website.

Habitat Site	Conservation Objective	Description
	transitional habitats within the site	
	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of subtidal sandbank communities; mudflat and sandflat communities; and coastal lagoon communities.
	Distribution: presence and spatial distribution of biological communities	Restore the presence and spatial distribution of estuary communities.
	Extent and distribution	Maintain (Sandbanks which are slightly covered by sea water all the time; Mudflats and sandflats not covered by seawater at low tide; coastal lagoons) or Restore (Estuaries) the total extent and distribution, while allowing for natural change and succession (Sandbanks which are slightly covered by sea water all the time; estuaries; coastal lagoons) and cyclical change from coastal processes (coastal lagoons).
	Extend of the feature within the site	Maintain (annual vegetation of drift lines; perennial vegetation of stony banks; shifting dunes along the shoreline with *Ammophila arenaria*) or restore (salicornia and other annuals colonising mud and sand; spartina swards; Atlantic slat meadows) as per detailed targets listed on Natural England Supplementary Advice on Conservation Objectives (SACO) website.
	Extent of water	Maintain the cyclical (annual) extent of water in the lagoon (coastal lagoons).
	Connectivity	Maintain connectivity of estuarine features to surrounding rivers, freshwater, marine and coastal habitats, to ensure larval dispersal and recruitment, maintain nursery grounds for mobile species, and to allow movement of migratory species.
	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability of this habitat to re-establish itself in response to coastal processes and re-colonise after natural events (annual vegetation of drift lines).
	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability to respond to natural seasonal or longer-term changes in extent of habitat (perennial vegetation of stony banks).
	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability for colonisation each year of the annual species that comprise the habitat (Salicornia and other annuals colonising mud and sand).
	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability to achieve seasonal fluctuations in the extent of habitat and the suitability of surrounding areas for colonisation (Spartina swards).

Habitat Site	Conservation Objective	Description
	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability to achieve long-term fluctuations in the extent of habitat in response to coastal processes (Atlantic salt meadows)
	Structure and function (including its typical species): key structural, influential and distinctive species	Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature (as per detailed targets listed on Natural England Supplementary Advice on Conservation Objectives (SACO) website).
	Structure and function: functionality and sediment supply including connectivity with the wider coastal sediment system	Maintain adequate sediment supplies to and across the site from source (Perennial vegetation of stony banks).
	Structure and function: niches for seedling establishment	Maintain the availability of niches that provide the potential for seedling establishment (annual vegetation of drift lines).
	Structure and function: nutrient availability	Maintain the input of nutrients from tidally-derived organic matter and ensure these are able to break down in situ (annual vegetation of drift lines).
	Structure and function: nutrient availability	Maintain the low nutrient status of the sediment and soils that support the specialised vegetation communities (perennial vegetation of stony banks).
	Structure and function: presence and patterning of creeks and salt pans	Maintain naturally-occurring patterns of creeks and salt pans (Salicornia and other annuals colonising mud and sand; Spartina swards; Atlantic salt meadows).
	Structure and function: presence of unvegetated surfaces	Maintain the degree of patterning of patches of bare mud of varying sizes in a mosaic with saltmarsh vegetation (Salicornia and other annuals colonising mud and sand; Atlantic slat meadows).
	Structure and function: sediment size and availability	Maintain the availability and size range of those sediments typical of the feature at the site (Salicornia and other annuals colonising mud and sand; Spartina swards; Atlantic salt meadows).
	Structure and function: vegetation – undesirable species	The frequency/cover of undesirable species are maintained at acceptable levels and are not encouraged by changes in surface condition, soils, nutrient levels or changes to hydrology (annual vegetation of drift lines; perennial vegetation of stony banks; Salicornia and other annuals colonising mud and sand; Spartina swards; Atlantic salt meadows; Shifting dunes along the shoreline with *Ammophila arenaria*).

Habitat Site	Conservation Objective	Description
	Structure and function: vegetation community composition	Ensure the component vegetation communities of the feature are referable to and characterised by the National Vegetation Classification types as detailed on the SACO website for each feature (annual vegetation of drift lines; perennial vegetation of stony banks; Atlantic salt meadows; shifting dunes along the shoreline with Ammophila arenaria). Maintain the species composition of component vegetation communities and associated transitions, allowing for successional changes in response to natural processes (Salicornia and other annuals colonising mud and sand; Spartina swards).
	Structure and function: vegetation structure – zonation and transitions	Maintain the natural patterns of zonation across the drift line and between this and vegetation of more stable shingle landward that reflect the coastal processes and substrate type typical of the site (Annual vegetation of drift lines). Maintain the range of vegetation communities and transitions with other habitats such as saltmarsh, wetland, lagoons, etc. (Perennial vegetation of stony banks).
	Structure and function: vegetation structure – zonation of salt marsh vegetation	Maintain the full range of zonations (low-mid, mid, mid-upper and transitional zones) between component saltmarsh communities found in H1330 (Atlantic salt meadows). Maintain any existing zonations between H1310 (Salicornia and other annuals colonising mud and sand) habitat and other adjacent saltmarsh or intertidal communities.
	Structure: freshwater sources	Maintain the natural freshwater flow/volume into the estuary (estuaries).
	Structure: habitat zonation	Maintain the estuary zonation, which is affected by both changes in salinity gradient and tides in the estuary from river to sea (horizontally) and with shore height (vertically) from terrestrial to subtidal.
	Structure: morphology	Maintain the characteristic morphology of the estuaries within the SAC.
	Structure: non-native species and pathogens (habitat)	Reduce the introduction and spread of non-native species and pathogens, and their impacts (Sandbanks which are slightly covered by seawater all of the time; estuaries; mudflats and sandflats not covered by seawater at low tide; coastal lagoons).
	Structure: sediment composition and distribution	Maintain the distribution of sediment composition types across the feature (and each of its sub-features) compared to an established baseline, to ensure continued structural habitat integrity and connectivity (sandbanks which are slightly covered by sea water all the time; mudflats and sandflats not covered by seawater at low tide). Maintain the distribution of sediment composition across the feature (and each of its sub-features), and input of fresh sediment to maintain the lagoon regime (coastal lagoons).
	Structure: sediment movement, sources and sinks	Restore the sediment regime and budget within the estuary, including sediment sources, sinks and movement (estuaries).

Habitat Site	Conservation Objective	Description
	Structure: sediment total organic carbon content	Maintain total organic carbon (TOC) content in the sediment at existing levels (mudflats and sandflats not covered by seawater at low tide).
	Structure: species composition of component communities	Restore the species composition of component communities (sandbanks which are slightly covered by sea water all the time; estuaries).
	Structure: species composition of component communities	Restore the faunal quality of this feature to Good Status (a minimum mean IQI score of ≥ 0.64), with no sustained deterioration within the status (mudflats and sandflats not covered by seawater at low tide). Maintain the species composition of component communities (coastal lagoons).
	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its sub-features) (estuaries).
	Structure: water density	Maintain the natural water density or gradient across the feature (and each of its sub-features) (estuaries).
	Structure: water depth	Maintain the natural shallow water depth to enable photosynthesis, which allows lagoon specialist species to survive (coastal lagoons).
	Supporting processes: adaption and resilience (habitat)	Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site (Salicornia and other annuals colonising mud and sand; Spartina swards; Atlantic salt meadows; Shifting dues along the shoreline with *Ammophila arenaria*).
	Supporting processes: air quality (habitat)	Restore concentrations and deposition of air pollutants to below the site-relevant CLo or CLe values given for this feature of the site on APIS (perennial vegetation of stony banks; Salicornia and other annuals colonising mud and sand; Spartina swards; Atlantic salt meadows).
	Supporting processes: energy/exposure	Maintain the natural physical energy resulting from waves, tides and other water flows, so that the exposure does not cause alteration to the biotopes, and stability, across the habitat (sandbanks which are slightly covered by sea water all the time; mudflats and sandflats not covered by seawater at low tide). Maintain the natural physical energy resulting from waves, tides and other water flows, so that the exposure (High/Medium/Low) does not cause alteration to the biotopes, natural disturbance levels and stability, across the feature (estuaries).
	Supporting processes: eutrophication of sediments	Maintain dissolved organic nitrogen levels and phytoplankton community structure/abundance at a level that is not having an adverse impact on the species and communities of a specific lagoon and does not detract from its ability to reach favourable condition (coastal lagoons).

Habitat Site	Conservation Objective	Description
	Supporting processes: hydrology (habitat)	At a site, unit and/or catchment level (as necessary), maintain natural hydrological processes to provide the conditions necessary to sustain the feature within the site (perennial vegetation of stony banks).
	Supporting processes: physico-chemical properties (habitat)	Maintain the natural physico-chemical properties of the water. (Sandbanks which are slightly covered by sea water all the time; mudflats and sandflats not covered by seawater at low tide; coastal lagoons).
	Supporting processes: sediment contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the feature (and each of its sub-features) (sandbanks which are slightly covered by sea water all the time; estuaries; coastal lagoons).
	Supporting processes: sediment contamination	Restrict surface sediment contaminants (<1cm from the surface) to below the OSPAR Environment Assessment Criteria (EAC) or Effects Range Low (ERL) threshold. For example, mean cadmium levels should be maintained below the ERL of 1.2 mg per kg (mudflats and sandflats not covered by seawater at low tide).
	Supporting processes: sediment movement and hydrodynamic regime	Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement are not significantly altered or prevented from responding to changes in environmental conditions (sandbanks which are slightly covered by sea water all the time; mudflats and sandflats not covered by seawater at low tide).
	Supporting processes: sediment nutrient status and nutrient cycling	Maintain both the sediment nutrient status to within typical values for the habitat and the processes that sustain effective nutrient cycling by the saltmarsh feature (Salicornia and other annuals colonising mud and sand; Spartina swards; Atlantic slat meadows).
	Supporting processes: sedimentary process	Maintain the sedimentary processes (suspended sediment, sediment transfer, etc.) that sustain the elevation and topography of the marsh surface (Salicornia and other annuals colonising mud and sand; Spartina swards; Atlantic slat meadows).
	Supporting processes: water quality – contaminants (habitat)	Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels. This target was set using the Environmental Agency 2019 water body classifications data (sandbanks which are slightly covered by sea water all the time; estuaries; mudflats and sandflats not covered by seawater at low tide; coastal lagoons).
	Supporting processes: water quality – dissolved oxygen	Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95 % of year) avoiding deterioration from existing levels. This target was set using the Environmental Agency 2019 water body classifications data (sandbanks which are slightly covered by sea water all the time; estuaries; mudflats and sandflats not covered by seawater at low tide).

Habitat Site	Conservation Objective	Description
	Supporting processes: water quality – nutrients (habitat)	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features. (sandbanks which are slightly covered by sea water all the time; estuaries; mudflats and sandflats not covered by seawater at low tide; coastal lagoons).
	Supporting processes: water quality – turbidity (habitat)	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat. (sandbanks which are slightly covered by sea water all the time; estuaries; mudflats and sandflats not covered by seawater at low tide; coastal lagoons).
	Supporting processes: water quality (habitat)	Where the feature is dependent on estuarine water, ensure water quality and quantity is restored to a standard that provides the necessary conditions to support the feature (annual vegetation of drift lines; perennial vegetation of stony banks; Salicornia and other annuals colonising mud and sand; spartina swards; Atlantic salt meadows).
Portsmouth Harbour SPA and Ramsar [35]	Connectivity with supporting habitats	Maintain safe passage of birds moving between roosting and feeding areas (dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).
	Disturbance by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed (dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).
	Non-breeding population abundance	• Black-tailed godwit: Maintain the size of the non-breeding population at a level which is above 318 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. • Dark-bellied brent goose: Restore the size of the non-breeding population at a level which is above 2,290 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. • Dunlin: Restore the size of the non-breeding population at a level which is above 8,010, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. • Red-breasted merganser: Restore the size of the non-breeding population at a level which is above 100 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
	Structure: pathogens	Restrict or reduce the introduction and spread of pathogens, including Highly Pathogenic Avian Influenza, and their impacts. (Dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).
	Supporting habitat: air quality	Maintain concentrations and deposition of air pollutants at below the site-relevant CLo or CLe values given for this feature of the site on APIS (dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).

Habitat Site	Conservation Objective	Description
	Supporting habitat: extent, distribution and availability of supporting habitat for the non-breeding season	Restore the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of the non-breeding or wintering period (moulting, roosting, loafing, feeding). (dark-bellied brent goose; dunlin; black-tailed godwit).
	Supporting habitat: extent, distribution and availability of supporting habitat for the non-breeding season	Maintain the extent, distribution and availability of shallow coastal water habitat (either within or outside the site boundary) which supports the feature for all necessary stages of the non-breeding/wintering period (moulting, roosting, loafing and feeding) (red-breasted merganser).
	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items at preferred sizes (dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).
	Supporting habitat: hydrology/flow within grassland (marsh)	Maintain high water tables that provide surface water and/or damp field conditions with [20-30%] of the area soggy or flooded overall. (black-tailed godwit).
	Supporting habitat: hydrology/flow within intertidal	Maintain the availability of fresh water on mudflats within feeding and resting areas (dark-bellied brent goose; dunlin; black-tailed godwit).
	Supporting habitat: landscape	Maintain open and unobstructed terrain and overall field sizes within at least 0.5 km of roosting and feeding areas (dark-bellied brent goose). Maintain the area of open and unobstructed terrain around roosting and feeding sites, and no overall reduction in field size (black-tailed godwit).
	Supporting habitat: vegetation characteristics	Maintain a vegetation structure of key roost sites dominated by bare ground or a short sparsely-vegetated sward (dunlin; black-tailed godwit).
	Supporting habitat: water quality – contaminants	Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive [32], avoiding deterioration from existing levels (dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).
	Supporting habitat: water quality – dissolved oxygen	Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7mgL-1 (at 35 salinity) for 95 % of year) avoiding deterioration from existing levels (dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).
	Supporting habitat: water quality – nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features (dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).

Habitat Site	Conservation Objective	Description
	Supporting habitat – water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat (dark-bellied brent goose; red-breasted merganser; dunlin; black-tailed godwit).
Solent and Dorset Coast SPA [36]	Breeding population and abundance	Maintain the size of the breeding population, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent (common tern, Sandwich tern, little tern).
	Connectivity with supporting habitats	Maintain safe passage of birds moving between nesting and feeding areas (common tern, Sandwich tern, little tern).
	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed (common tern, Sandwich tern, little tern).
	Productivity	Maintain or recover productivity so that breeding success is maximised within the constraints of the site (common tern, Sandwich tern, little tern).
	Structure: pathogens	Restrict or reduce the introduction and spread of pathogens, including Highly Pathogenic Avian Influenza, and their impacts (common tern, Sandwich tern, little tern).
	Supporting habitat: air quality	Maintain concentrations and deposition of air pollutants at below the site-relevant CLo or CLe values given for this feature of the site on APIS (common tern, Sandwich tern, little tern).
	Supporting habitat: extent, distribution and availability of supporting habitat for the breeding season	Maintain the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of its breeding cycle (common tern, Sandwich tern, little tern).
	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items at preferred sizes (common tern, Sandwich tern, little tern).
	Supporting habitat: water quality – contaminants	Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive [32], avoiding deterioration from existing levels (common tern, Sandwich tern, little tern).
	Supporting habitat: water quality – dissolved oxygen	Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95 % of year) avoiding deterioration from existing levels (common tern, Sandwich tern, little tern).
	Supporting habitat: water quality – nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication do not affect the integrity of the site and features, avoiding deterioration from existing levels (common tern, Sandwich tern, little tern).

Habitat Site	Conservation Objective	Description
	Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat (common tern, Sandwich tern, little tern).
Solent & Southampton Water SPA (and relevant to Ramsar) [37]	Assemblage of species: abundance	Maintain the overall abundance of the bird assemblage at a level which is above 51,361 whilst avoiding deterioration from its current level as indicated by the latest peak mean count or equivalent (waterbird assemblage, non-breeding).
	Assemblage of species: diversity	Maintain the species diversity of the bird assemblage (waterbird assemblage, non-breeding).
	Breeding population: abundance	Maintain the size of the breeding population, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent (Mediterranean gull). Restore the size of the breeding population, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent (roseate tern, common tern, Sandwich tern, little tern).
	Connectivity with supporting habitats	Maintain safe passage of birds moving between nesting/roosting and feeding areas. (Non-breeding: black-tailed godwit, ringed plover, teal, dark-bellied brent goose. Breeding: Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Disturbance caused by human activity	Reduce the frequency, duration or intensity of disturbance affecting roosting, foraging, feeding, moulting or loafing birds so that they are not significantly disturbed (non-breeding: black-tailed godwit, ringed plover, teal, dark-bellied brent goose, Waterbird assemblage. Breeding: Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Non-breeding population: abundance	Maintain (dark-bellied brent goose, teal, black-tailed godwit) or restore (ringed plover) the size of the non-breeding population whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
	Productivity	Maintain or recover productivity so that breeding success is maximised within the constraints of the site (Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Structure: pathogens	Restrict or reduce the introduction and spread of pathogens, including Highly Pathogenic Avian Influenza, and their impacts (non-breeding: black-tailed godwit, ringed plover, teal, dark-bellied brent goose. Breeding: Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Supporting habitat: air quality	Maintain (black-tailed godwit, ringed plover, teal, dark-bellied brent goose, waterbird assemblage, Mediterranean gull) or restore (roseate tern, common tern, Sandwich tern, little tern) concentrations and deposition of air pollutants at below the site-relevant CLo or CLe values given for each feature of the site on APIS.

Habitat Site	Conservation Objective	Description
	Supporting habitat: extent, distribution and availability of supporting habitat for the non-breeding season	Restore the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of the non-breeding period (black-tailed godwit, ringed plover, teal, dark-bellied brent goose, waterbird assemblage).
	Supporting habitat: extent, distribution and availability of supporting habitat for the breeding season	Maintain (little tern) or restore (Mediterranean gull, roseate tern, common tern, Sandwich tern) the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of its breeding cycle (Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items at preferred sizes (non-breeding: black-tailed godwit, ringed plover, teal, dark-bellied brent goose. Breeding: Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Supporting habitat: hydrology/flow within grassland (marsh)	Maintain high water tables that provide surface water and/or damp field conditions with 20-30% of the area soggy or flooded overall (black-tailed godwit).
	Supporting habitat: hydrology/flow within intertidal	Maintain the availability of fresh water on mudflats within feeding and resting areas (dark-bellied brent goose; ringed plover; black-tailed godwit).
	Supporting habitat: landscape	Maintain open and unobstructed terrain and overall field sizes within at least 0.5 km of roosting and feeding areas (dark-bellied brent goose). Maintain open and unobstructed terrain around roosting and feeding sites (ringed plover). Maintain the area of open and unobstructed terrain around roosting and feeding sites, and no overall reduction in field size (black-tailed godwit).
	Supporting habitat: quality of supporting habitat	Maintain the structure, function and availability of the following habitats which support the assemblage feature for all stages (moulting, roosting, loafing, feeding) of the non-breeding period; intertidal sediment, intertidal rock, intertidal seagrass beds, subtidal seagrass beds, saltmarsh, coastal lagoons, freshwater and coastal grazing marsh, reedbeds (waterbird assemblage).
	Supporting habitat: water quality – contaminants	Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels (non-breeding: black-tailed godwit, ringed plover, teal, dark-bellied brent goose, waterbird assemblage. Breeding: Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Supporting habitat: water quality – dissolved oxygen	Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95 % of year) avoiding deterioration from existing levels (non-breeding: black-tailed godwit, ringed plover, teal, dark-bellied brent goose,

Habitat Site	Conservation Objective	Description
		waterbird assemblage. Breeding: Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Supporting habitat: water quality – nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features (non-breeding: black-tailed godwit, ringed plover, teal, dark-bellied brent goose, waterbird assemblage. Breeding: Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
	Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g., concentrations of suspended sediment, plankton and other material) across the habitat (non-breeding: black-tailed godwit, ringed plover, teal, dark-bellied brent goose, waterbird assemblage. Breeding: Mediterranean gull, roseate tern, common tern, Sandwich tern, little tern).
South Wight Maritime SAC [34]	Structure: non-native species and pathogens (habitat)	Restrict the introduction and spread of non-native species and pathogens, and their impacts (reefs; submerged or partially submerged sea caves).
	Structure: species composition of component communities	Maintain the species composition of component communities (reefs; submerged or partially submerged sea caves).
	Supporting processes: physico-chemical properties of the water	Maintain the natural physico-chemical properties of the water (reefs; submerged or partially submerged sea caves).
	Supporting processes: sediment – contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the feature (submerged or partially submerged sea caves).
	Supporting processes: sedimentation rate	Maintain the natural rate of sediment deposition (reefs; submerged or partially submerged sea caves).
	Supporting processes: water quality – contaminants	Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive [32], avoiding deterioration from existing levels (reefs; submerged or partially submerged sea caves).
	Supporting processes: water quality – dissolved oxygen	Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95 % of year) avoiding deterioration from existing levels (reefs; submerged or partially submerged sea caves).
	Supporting processes: water quality – nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels (reefs; submerged or partially submerged sea caves).

Habitat Site	Conservation Objective	Description
	Supporting processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat (reefs; submerged or partially submerged sea caves).
Solent and Isle of Wight Lagoons SAC [38]	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of coastal lagoon communities.
	Extent and distribution	Maintain the total extent of coastal lagoons at 34.53ha, and spatial distribution, to ensure no loss of integrity, allowing for natural succession and cyclical change from coastal processes.
	Extent of water	Maintain the cyclical (annual) extent of water in the lagoon.
	Structure and function: presence and abundance of key structural and influential species	Maintain, Recover or Restore the abundance of key species, to enable each of them to be a viable component of the habitat.
	Structure: non-native species and pathogens	Restrict the introduction and spread of non-native species and pathogens, and their impacts.
	Structure: sediment composition and distribution	Maintain the distribution of sediment composition across the feature (and each of its sub-features), and input of fresh sediment to maintain the lagoon regime.
	Structure: species composition of component communities	Maintain the species composition of component communities.
	Structure: structure and integrity	Maintain the presence and structure of the banks of the lagoon so that they maintain the extent and integrity of the lagoon.
	Structure: water depth	Maintain the natural shallow water depth to enable photosynthesis, which allows lagoon specialist species to survive.
	Supporting processes: eutrophication of sediments	Maintain dissolved organic nitrogen levels and phytoplankton community structure/abundance at a level that is not having an adverse impact on the species and communities of a specific lagoon and does not detract from its ability to reach favourable condition status.
	Supporting processes physico-chemical properties	Maintain the salinity regime between 15PSU and 40PSU (practical salinity units) and pH and temperature at natural levels.
	Supporting processes: sediment – contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the feature.

Habitat Site	Conservation Objective	Description
	Supporting processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive [32], avoiding deterioration from existing levels.
	Supporting processes: water quality – nutrients	Maintain water quality to nutrient levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels.
	Supporting processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.
Singleton and Cocking Tunnels SAC [39]	Population abundance	Maintain the presence of hibernating barbastelle and Bechstein's at the site.
	Supporting habitat: extent and distribution	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site. Maintain the total extent of the habitats which support S1308 barbastelle and S1323 Bechstein's feature at 2.45 ha
	Supporting habitat: structure and function	Restore the presence, structure and quality of any linear landscape features which function as flightlines. Flightlines should remain unlit, functioning as dark corridors. Restore any core areas of feeding habitat outside of the SAC boundary that are critical to barbastelles and Bechstein's during their hibernation period.
	Supporting processes: adaptation and resilience	Restore the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site.
	Supporting processes: air quality	Restore concentrations and deposition of air pollutants to at or below the site relevant CLo or CLe values given for this feature of the site on APIS.
	Supporting processes: water quantity and quality	Where the feature or its supporting habitat is dependent on surface water or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature. Important barbastelle foraging areas are often associated with wetland features, particularly streams and rivers. The structure and diversity of floodplain habitats, and consequently their invertebrate (prey) populations, depend on good water quality.

5.2 Information for Stage 2: site condition

5.2.1 Where available, information on the current conservation status and site condition has been considered within the HRA. This includes a review of information on site condition using the NE Designated sites portal [40]. Condition assessments for coastal features are available within the underlying Sites of Special Scientific Interest (SSSI) which cover part or all of the associated Habitats Site. A summary of relevant condition assessments (e.g. where SSSI units or features cover qualifying habitats or species) is provided in Table 5-2.

5.2.2 Information on the current conservation status and site condition for Habitat Sites is provided in Table 5-2.

Table 5-2 Information on conservation status and site condition for Habitat Sites

Habitat Site	Feature	Condition	Description
River Itchen SSSI Condition	Unit 107	Unfavourable, no change. Last condition assessment was in 2015.	Covers river habitat within and downstream of Project. Reason for adverse condition: invasive freshwater species, siltation, water abstraction, water pollution, discharge, inappropriate scrub control and inappropriate weed control.
	Atlantic salmon	Unfavourable, declining. Last condition assessment was in 2025.	Strong evidence that the Atlantic salmon populations in the Itchen, Test and Meon river systems are continuing to decline and that there is a very high likelihood that the species will become locally extinct within a short timeframe without significant and urgent action. Reasons for adverse condition include: barriers to migration; diffuse pollution, particularly excessive silt input, reducing availability of spawning habitat and suffocating eggs; low habitat quality and diversity as a consequence of historical river modification; insufficient water quantity, primarily due to water abstraction; sea fisheries bycatch and illegal fishing; and, poor resilience to climate change impacts.
	Otter	Favourable. Last condition assessment was in 2025.	Otter numbers have recovered over the past 20 years. From being close to extinction on the Itchen in the 1990s, otters are now widely distributed across the catchment, and the population appears healthy. This is in large part a result of increased legislative protection but also because of good availability of cover in riverside habitats such as wet woodland and reedbed.
	Brook lamprey	Unfavourable, no change. Last condition assessment was in 2025.	Reasons for adverse condition include poor water quality, over-shading, and river modification, reduced availability of suitable larval or adult egg-laying habitat. It is also thought that extremes of water flow may be having significant impacts, with periods of low flow followed by major flood events causing redistribution of silt beds, deposition of silt on gravel bed egg-laying habitat and washing out of larvae.
	White-clawed crayfish	Unfavourable, no change. Last condition assessment was in 2025.	The Itchen was formerly an important stronghold in southern England for white-clawed crayfish. Small colonies are holding on in the upper reaches despite several pressures, but they are highly vulnerable to extinction. The key threat is the presence of non-native crayfish.
	Southern damselfly	Unfavourable, declining. Last condition	None recorded.

Habitat Site	Feature	Condition	Description
		assessment was in 2009.	
	Bullhead	No condition assessment recoded.	None recorded.
	Rivers and streams	Unfavourable, no change. Last condition assessment was in 2025.	Water quality is seriously impacted in most sections of the river. Despite investment to improve phosphate levels in sewage discharges from the larger wastewater treatment works, phosphate levels remain at levels which are likely to cause impacts on river ecology. Some of this will be derived from agriculture, small sewage treatment plants and domestic discharges. Other than phosphate, the levels of other main pollutants are at levels which meet targets at all monitored sites on the Itchen except for dissolved oxygen at a single location, which appears to be a localised issue. Low flows, exacerbated by changing weather patterns, create a lot of pressure on the ecology of the river. The most significant flow failures identified are due to public water supply abstraction, but smaller abstractions cause localised impacts such as those on the Arle, where abstractions to feed watercress beds and fish farms have impacts on the river.
Chester and Langstone Harbours SPA (also considered to apply to the Ramsar site)	Non-breeding birds	Favourable. Last condition assessment was in 2024.	Curlew, redshank, pintail, turnstone and red-breasted merganser.
		Unfavourable, recovering. Last condition assessment was in 2024.	Wigeon and dark-bellied brent goose.
	Non-breeding birds and breeding birds	Unfavourable, no change. Last condition assessment was in 2024.	Non-breeding birds: sanderling and shoveler. Breeding birds: common tern, sandwich tern
		Unfavourable, declining. Last condition	Non-breeding birds: bar-tailed godwit, shelduck, teal, ringed-plover, dunlin, grey plover. Breeding birds: little tern. Water bird assemblages.

Habitat Site	Feature	Condition	Description
		assessment was in 2024.	
Langstone Harbour SSSI (covers Chichester and Langstone Harbour SPA and Ramsar, and Solent Maritime SAC)	Littoral Sediment (Units 003, 006, 007, 009, 013, 014)	Unfavourable, recovering. Last condition assessment was in 2018.	The water environment of the units is assessed as unfavourable for the interest features on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by the abundance of macroalgae but recovering on the basis of a large reduction in nutrient inputs through diversion of wastewater. There remains a significant nitrogen load input carried by tidal flow from the Solent and less so by minor rivers into the head of the harbour.
	Littoral Sediment (Units 010, 011)	Favourable. Last condition assessment was in 2018.	The water environment of the unit is assessed as borderline favourable for the interest features on the on the weight of evidence on inorganic nitrogen and no strong biological indication of eutrophication shown in this part of the harbour by phytoplankton and macroalgae.
	Littoral Sediment (Unit 015)	Unfavourable, no change. Last condition assessment was in 2022.	Coastal lagoons. The salinity of the lagoon was low (5%). No submerged vegetation was present. The faunal assemblage recorded at Shut Lake was impoverished. The benthic community (10 species in total) was sparse. Current management of the area is not conducive to improvement of lagoonal conditions as seawater ingress is restricted with the aim of protecting reed bed habitat supporting bittern.
Portsmouth Harbour SPA (also considered to apply to the Ramsar site)	Non-breeding black-tailed godwit.	Favourable, recovering. Last condition assessment was in 2024.	None provided.
	Non-breeding dark-bellied brent goose	Unfavourable, no-change. Last condition assessment was in 2024.	None provided.
	Non-breeding birds (red breasted merganser, dunlin)	Unfavourable, declining. Last condition assessment was in 2024.	None provided.

Habitat Site	Feature	Condition	Description
Lee-on-The-Solent to Itchen Estuary SSSI (Covers Solent and Southampton Water SPA and Ramsar, Solent and Dorset Coast SPA)	Littoral Sediment (Units 001, 002, 003, 004, 005, 006, 007, 008, 009, 016, 021, 023)	Favourable. Last condition assessment was in 2018.	The water environment of the unit is assessed as borderline favourable for the interest features on the on the weight of evidence on inorganic nitrogen and some, but not consistently strong, biological indication of eutrophication shown by macroalgae abundance. There is a significant nitrogen load input, both from Southampton Water and the River Itchen
	Littoral Sediment (Units 011, 012, 013, 014, 015)	Unfavourable, no change. Last condition assessment was in 2018.	The water environment of the unit is assessed as unfavourable for the interest features on the on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by macroalgae abundance. A large part of the nitrogen load input is carried by the River Hamble and by tidal flow from Southampton Water and the Solent. There is poor evidence of a reducing nutrient status adequate to substantially prevent the growth of dense macroalgae mats. There were extensive algal mats in the Hamble estuary and elsewhere in the SSSI, with *Ulva lactuca* particularly abundant. Reason for adverse condition: water pollution, agricultural runoff, discharge.
Hythe to Calshot Marshes SSSI (Covers Solent and Southampton Water SPA and Ramsar, Solent and Dorset Coast SPA)	Littoral Sediment (Units 001, 002, 003, 004, 005)	Unfavourable, recovering. Last condition assessment was in 2018.	The water environment of the unit is assessed as borderline favourable for the interest features on the on the weight of evidence on inorganic nitrogen and some, but not consistently strong, biological indication of eutrophication shown by macroalgae abundance. A large part of the nitrogen load input is carried by the inflowing rivers and by tidal flow from the Solent.
	Littoral Sediment (Unit 006).	Unfavourable, no change.	The water environment of the unit is assessed as unfavourable for the interest features on the on the weight of evidence on inorganic nitrogen and biological indication of eutrophication shown by macroalgae abundance. A large part of the nitrogen load input is carried by the inflowing rivers and by tidal flow from the Solent. There is poor evidence of a reducing nutrient status adequate to substantially prevent the growth of dense macroalgae mats. Reason for adverse condition: water pollution, agricultural runoff, discharge.
North Solent SSSI (Covers Solent and Southampton Water SPA and Ramsar, Solent and Dorset Coast SPA)	Aggregations of non-breeding birds (brent goose, teal, variety of wintering species)	Favourable. Last condition assessment was in 2022.	None provided.
	Significant number of units	Favourable or unfavourable	The water environment is assessed as favourable for the interest features on the weight of evidence on inorganic nitrogen and some, but not convincingly strong,

Habitat Site	Feature	Condition	Description
	(98) equating to 82.41% of area.	recovering. Last condition assessment was in 2018.	biological indication of eutrophication shown by macroalgae presence. There is a significant nitrogen load input carried by the wider Solent.
Solent Maritime SAC Marine Condition Assessment	Sandbanks which are slightly covered by sea water all the time	Unfavourable, no change. Last condition assessments	These subtidal sediments typically occur at depths of less than 20m below chart datum. Subtidal mud and sand is generally found in the estuaries including the Hamble.
	Mudflats and sandflats not covered by seawater at low tide	70% of area meeting unfavourable, no-change and 30% of area meeting 30% unfavourable, declining. Last condition assessment was in 2018.	The mudflats and sandflats range from low and variable salinity in the upper reaches of the estuaries to very sheltered almost fully marine mudflats in Chichester and Langstone Harbours.
	Coastal lagoons	Favourable. Last condition assessment was in 2018.	Two coastal lagoons on the Isle of Wight which are sluiced, with water flow controlled via culverts and pipes or sluices. All component attributes of this feature shave passed against targets set out in the Conservation Advice package with little or no change from baseline conditions.
	Estuaries	70% of area meeting unfavourable, no-change and 30% of area meeting 30% unfavourable, declining. Last condition assessment was in 2020.	The Solent estuaries are unique in Britain and Europe for their hydrographic regime of double tides and for the complexity of the marine and estuarine habitats present within the area.
Solent and Isle of Wight Lagoons SAC Marine Condition Assessment	Coastal lagoons	Favourable. Last condition assessment was in 2018.	Shut Lake on Farlington Marshes is an isolated lagoon in marsh pasture that, although separated from the sea by a sea-wall, receives some sea water during spring tides. However, the salinity at Shut Lake remains too low to support a saline lagoon of any significant conservation merit. Gilkicker Lagoon is a sluiced

Habitat Site	Feature	Condition	Description
			lagoon formed of two interconnected basins with marked seasonal salinity fluctuation and supports a high species diversity.
South Wight Maritime SAC Marine Condition Assessment	Reefs	Favourable. Last condition assessment was in 2019.	The reef communities of the South Wight Maritime SAC are heavily influenced by wave and tidal exposure, local geology and water turbidity.
	Submerged or partially submerged sea caves	Favourable. Last condition assessment was in 2019.	The range of biotopes present within the sea caves is influenced by a number of environmental factors including the hardness and orientation of rock strata, cave aspect, shading, humidity, wave exposure and scour.
Singleton and Cocking Tunnels SSSI (Covers Singleton and Cocking Tunnels Bat SAC)	Hibernating populations of bats - Barbastelle, Bechstein's bat, greater horseshoe bat, lesser horseshoe bat and mixed assemblages (Units 001, 002, 003, 004)	Favourable. Last condition assessment was in 2019.	Tunnels assessed three times a year in December, January and February with peak counts generally occurring in January. In the six years to 2020, bat numbers have averaged about 70 in Cocking tunnel with 110 in January 2020 and feature five or six species including regular but occasional Bechstein’s, barbastelles and greater horseshoes.
River Meon Compensatory SAC	-	None provided.	Not designated as a SSSI and so no condition assessments are available.

5.3 Assessment of Adverse Effect on integrity for sites and features subject to LSE

5.3.1 The following section provides an assessment of the potential for adverse effects on integrity of the Habitats Sites for each of the impacts where LSE could not be excluded during the Stage 1 assessment, as summarised in Table 3-1. This assessment assumes the application of the mitigation measures outlined in section 4.

River Itchen SAC

Construction phase

Habitat loss and fragmentation

Qualifying habitats and species

5.3.2 The Pipeline between the WRP site and Otterbourne WSW crosses the River Itchen via trenchless techniques from Brambridge to the west of the railway, adjacent to Otterbourne Park Wood (OPT1_WCX_M_011 and OPT1_WCX_M_010), with additional trenchless crossings of six tributaries (OPT1_WCX_M_001, OPT1_WCX_M_002, OPT1_WCX_M_009, OPT1_WCX_M_012, OPT1_WCX_M_013 and OPT1_WCX_M_014). The trenchless construction begins 200m north (or 640m east) of the River Itchen SAC, with the end of the trenchless section approximately 215m west of the River Itchen SAC. The trenchless construction at the intersection of the River Itchen would be at a depth of approximately 10m[3] below existing ground level. Whilst the trenchless crossings are embedded measures within the design of the Project, as these represent mitigation measures during the HRA Stage 1 Screening assessment direct habitat loss and fragmentation was identified as having a LSE and was brought forward into the Appropriate Assessment on a precautionary basis. With the inclusion of the trenchless crossings there will be no direct loss of habitats within the SAC and no fragmentation of habitats within the SAC.

5.3.3 The following watercourse crossings, which are hydrologically linked to the River Itchen SAC, will be crossed using trenched open-cut construction. The watercourse crossings are shown in ES Figure 8.51 Watercourses and watercourse crossings, Volume III [Document reference 6.3, DCO Volume 6). There is, therefore, the potential for this to result in the loss and fragmentation of qualifying habitats and species of the SAC outside of the SAC boundary. Detailed survey results for freshwater ecology of watercourses crossed by the Project are provided within ES Appendix 8.9 Freshwater ecology, Volume II (Document reference 6.2, DCO Volume 6). Detailed survey results for otter are provided within ES Appendix 8.7 Riparian

[3] The Applicant cannot commit to this depth not changing during detailed design, but it is very unlikely to get shallower. The River Itchen crossing is least likely to get any shallower due to the railway crossing and Network Rail's acceptance criteria for settlement.

mammals, Volume II (Document reference 6.2, DCO Volume 6). A summary of relevant results is provided in Table 5-3.

Table 5-3 Relevant survey results for River Itchen SAC

Watercourse crossing ID	Description	Results
OPT1_WCX_L_007	Ditch upstream (north) of Bow Lake	• Located approximately 2km upstream of SAC. • Hedgerow with ditch along field boundary which flows into Bow Lake. • No SAC qualifying habitats present. • Fish surveys undertaken in August 2022 recorded just one species, three spined stickleback, which is not a qualifying species. • No suitable southern damselfly habitat present. • Otter spraints recorded downstream on Bow Lake. No potential holt sites recorded within 200m of crossing point. • Surveys and desk study have identified the likely absence of white-clawed crayfish *Austropotamobius pallipes* from all waterbodies along the corridor of the Project. Surveys downstream on Bow Lake in September 2022 identified suitable habitat present but eDNA surveys confirmed likely absence.
OPT1_WCX_L_006	Ditch upstream (north) of Bow Lake	• Located approximately 2.15km upstream of SAC. • Hedgerow with ditch along field boundary which flows into Bow Lake. • No SAC qualifying habitats present. • Fish surveys undertaken in August 2022 recorded just one species, three spined stickleback, which is not a qualifying species. • No suitable southern damselfly habitat present. • Otter spraints recorded downstream on Bow Lake. No potential holt sites recorded within 200m of crossing point. • Surveys and desk study has identified the likely absence of white-clawed crayfish from all waterbodies along the corridor of the Project. Surveys downstream on Bow Lake in September 2022 identified suitable habitat present but eDNA surveys confirmed likely absence.
OPT1_WCX_L_003	Drain upstream of Bow Lake north of Park Hills Wood (Store House Gully)	• Located approximately 3.66km upstream of SAC. • An aquatic habitat walkover survey in summer 2022 found the ditch to be dry. A ditch condition assessment survey on 21 May 2024 found the ditch to be in poor condition. A macroinvertebrate survey on 5 September 2024 found the site to be dry. The watercourse is a small field drain or drainage ditch, forming an ephemeral river channel. • No SAC qualifying habitats present. • Fish surveys undertaken downstream on Bow Lake in August 2022 recorded just one species, three spined stickleback, which is not a qualifying species.

Watercourse crossing ID	Description	Results
		• No suitable southern damselfly habitat present. • Otter spraints recorded downstream on Bow Lake. No potential holt sites recorded within 200m of crossing point. • Surveys and desk study has identified the likely absence of white-clawed crayfish from all waterbodies along the corridor of the Project. Surveys downstream on Bow Lake in September 2022 identified suitable habitat present but eDNA surveys confirmed likely absence.
OPT1_WCX_M_008	Drain upstream of the Itchen Navigation	• Located approximately 1.5km upstream of SAC. • Ditch condition assessment survey on 21 May 2024 found the site to be completely dry with no evidence of a ditch and no obvious channel. • No SAC qualifying habitats present. • No fish surveys undertaken as habitats not suitable. • No suitable southern damselfly habitat. • No otter signs or potential holt sites within 200m. Otter spraints recorded along ditch north of Kiln Lane 486m north but no direct connectivity. • Surveys and desk study has identified the likely absence of white-clawed crayfish from all waterbodies along the corridor of the Project.
OPT1_WCX_M_006	Drain upstream of Itchen Navigation south of Kiln Lane	• Located approximately 590m upstream of SAC. • A ditch condition assessment survey on 21 May 2024 found site to be largely dry with a minor amount of ponded water in a section and was overall assessed to be in poor condition. A macroinvertebrate survey on the same date found the water too low to undertake a survey. • A native species-rich hedgerow runs along the ditch, shading the ditch. • No SAC qualifying habitats present. • No fish surveys undertaken as habitats not suitable. • No suitable southern damselfly habitat. • Otter spraints recorded along ditch north of Kiln Lane approximately 200m west with connectivity to drain. No potential holt sites within 200m. • Surveys and desk study has identified the likely absence of white-clawed crayfish from all waterbodies along the corridor of the Project.
OPT1_WCX_M_004	Drain upstream of Itchen Navigation north of Kiln Lane	• Located approximately 600m upstream of SAC. • Ditch condition assessment survey on 21 May 2024 found site to be covered with dense bramble scrub and the ditch was assessed to be in poor condition. An attempted macroinvertebrate survey on the same date found the ditch to be covered with scrub and not accessible to undertake a survey.

Watercourse crossing ID	Description	Results
		• No qualifying habitats present. • No fish surveys undertaken as habitats not suitable. • No suitable southern damselfly habitat. • Otter spraints recorded along ditch north of Kiln Lane approximately 185m west with connectivity to drain. No potential holt sites within 200m. • Surveys and desk study has identified the likely absence of white-clawed crayfish from all waterbodies along the corridor of the Project.

Qualifying habitats (Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation)

5.3.4 As summarised in section 5.3.2, none of the open-cut crossings currently support qualifying habitats and therefore the open-cut crossings will not result in direct loss or fragmentation of qualifying habitats. There will therefore be no adverse effects on integrity as a result of habitat loss or fragmentation for the Project alone and due to a lack of impacts, no potential for in-combination effects.

Qualifying fish species (bullhead; brook lamprey; Atlantic salmon)

5.3.5 Within watercourses connected to the River Itchen SAC that are subject to trenched open-cut construction, habitat was unsuitable for supporting qualifying fish species (Atlantic salmon, brook lamprey, bullhead). Surveys of the adjacent downstream habitat within Bow Lake did not record any qualifying fish species although it is noted that habitat is suitable for qualifying fish species and in 2009 EA surveys identified bullhead within Bow Lake Fish Farm, downstream of the proposed Bow Lake crossing.

5.3.6 Habitat within the River Itchen SAC downstream of the trenched open-cut crossings is suitable and known to support qualifying fish species with Atlantic Salmon, bullhead and lamprey species recorded during surveys for the Project in 2022-2023 and from the most recent EA monitoring data. A range of habitat types were identified in the main river, predominantly run and glide, but also pools and eddies. Notably, several key areas of sub-optimal salmonid spawning habitat and juvenile salmonid habitat were recorded. In addition, several key areas of optimal and sub-optimal juvenile lamprey habitat were identified. Tributaries were generally dry or with little perceptible flow at the time of survey and choked with vegetation. The Otterbourne Stream tributary was observed to be heavily modified, with areas of low or no perceptible flow inhibiting fish movement.

5.3.7 There will be no direct temporary or permanent habitat loss or fragmentation of habitat confirmed to support qualifying fish associated with the River Itchen SAC either within or outside of the SAC boundary as a result of open-cut watercourse crossings.

5.3.8 Trenchless techniques are being used where the pipeline crosses qualifying habitats within the River Itchen SAC and under suitable connected habitat outside of the SAC boundary (including Bow Lake where surveys for the Project have identified the likely absence of qualifying fish species but there is historical data for the presence of bullhead; and, OPT1_WCX_M_002 where suitable habitat is present but surveys have not identified any qualifying fish species). This will ensure that the construction works do not result in any direct loss or fragmentation of suitable fish habitat both within and outside of the SAC boundary.

5.3.9 Overall, there will be no adverse effect on the integrity of the site for qualifying fish species as a result of direct habitat loss and fragmentation from the Project alone. Due to a lack of impacts, there is also no potential for in-combination effects.

Otter

5.3.10 The 2025 River Itchen SSSI condition assessment found otters to be widely distributed across the Itchen catchment and that otter are in favourable condition. The trenchless construction will ensure that there is no habitat loss or fragmentation of otter habitat within the SAC.

5.3.11 Surveys have confirmed the presence of otter on Bow Lake and along a wet ditch north of Kiln Lane. It is probable that otter will use all suitable habitat along the corridor of the Project. No potential holt sites have been identified within 200m of the construction works within the River Itchen catchment either within the SAC or connected watercourses and riparian habitats and there will be no loss of otter holt sites, couches or lying up sites. A single potential holt site was identified during surveys of other watercourses crossed by the Project. This potential holt site was located along with otter spraints during a survey of the Wallington River. Whilst otters will move between catchments, the Hamble and Meon catchments are located between the Wallington and the Itchen, and it is unlikely that any impacts to the population of otters along the Wallington would affect the River Itchen SAC population due to the distance between the Wallington and the Itchen and the presence of two other catchments between these two catchments.

5.3.12 During construction there will be fragmentation of watercourses which are crossed by open trench construction including crossings OPT1_WCX_L_007, OPT1_WCX_L_006 and OPT1_WCX_L_003 which are connected to Bow Lake and crossings OPT1_WCX_M_006 and OPT1_WCX_M_004. This would result in potential impacts on an up to 20m working width where the construction works cross the watercourses.

5.3.13 Otter would be able to cross the sections of watercourses which are subject to trenched open-cut construction during the works due to the relatively narrow working width (20m). The trenched open-cut crossings of watercourses with potential to be used by otter, including the River Itchen SAC population, will therefore not result in any significant fragmentation.

5.3.14 Following construction, the trenched open-cut watercourse crossings will be allowed to naturally regenerate and there will be no long-term fragmentation of otter habitat as a result of the proposals.

5.3.15 With the implementation of mitigation there will be no adverse effect on integrity of the SAC as a result of otter habitat loss or fragmentation from the Project alone. Due to a lack of impacts, there is also no potential for in-combination effects.

White-clawed crayfish

5.3.16 White-clawed crayfish are a qualifying species of the SAC and are known to be present in the Itchen including within the headwaters. No historic records of white-clawed crayfish (1995-2021) were found within the study area for the River Itchen catchment in the desk study data. However, historic data from the Hampshire Biodiversity Information Centre (HBIC) returned records from 2014 of the invasive non-native signal crayfish immediately downstream of the road bridge at Kiln Lane. In addition, there are two further records of signal crayfish from 2011 and 2014, circa 2km downstream of the proposed watercourse crossings near the confluence with Bow Lake. Desk study data and surveys have confirmed the likely absence of white-clawed crayfish from the Project, refer to ES Appendix 8.9 Freshwater ecology, Volume II (Document reference 6.2, DCO Volume 6), and therefore this qualifying species will not be affected by habitat loss or fragmentation and there will be no adverse effect on integrity as a result of impacts to white-clawed crayfish. Due to a lack of impacts, there is also no potential for in-combination effects.

Southern damselfly

5.3.17 Suitable southern damselfly habitat is present and there are records of southern damselfly at OPT1_WCX_M_002. Surveys have confirmed either a lack of suitable habitat or a likely absence of southern damselfly at other trenched open-cut watercourse crossings. Following confirmation of the presence of southern damselfly at watercourse OPT1_WCX_M_002 the construction method was changed from a trenched open-cut construction to trenchless to avoid any direct habitat loss or habitat fragmentation during construction. The launch and reception pits of the trenchless construction will be set back at least 8m from the bank tops either side of the crossing to ensure no habitat loss. This will result in no direct habitat loss for off-site southern damselfly habitat associated with the River Itchen SAC and therefore no adverse effect on integrity of the SAC as a result of southern damselfly habitat loss or fragmentation. Due to a lack of impacts, there is also no potential for in-combination effects.

Disturbance

5.3.18 As outlined in section 5.3.2, the Pipeline crosses the River Itchen via trenchless techniques from Brambridge to the west of the railway, adjacent to Otterbourne Park Wood (OPT1_WCX_M_011), with additional trenchless crossings of six tributaries ((OPT1_WCX_M_001, OPT1_WCX_M_002, OPT1_WCX_M_009, OPT1_WCX_M_012, OPT1_WCX_M_013 and

OPT1_WCX_M_014)4There will also be trenched open-cut crossings of six waterbodies which are hydrologically linked to the River Itchen SAC (OPT1_WCX_M_004, OPT1_WCX_M_006, OPT1_WCX_M_008, OPT1_WCX_L_003, OPT1_WCX_L_006, OPT1_WCX_L_007). A summary of survey results relating to these crossing points is outlined in Table 5-3. The potential for disturbance of qualifying habitats and species is discussed in sections 5.3.20 to 5.3.32.

Qualifying fish species (bullhead; brook lamprey; Atlantic salmon)

5.3.19 Qualifying fish species are known to be present within the River Itchen SAC. Atlantic salmon and brook lamprey were recorded present by the EA at three sites on the River Itchen in 2022-2023 including: 34565 Shawford Park, 71443 Shawford upstream of Norris's Bridge and 30230 Caravan Pool Highbridge. Bullhead were recorded present at 34565 Shawford Park but absent from the other survey sites. Surveys and desk study data did not identify qualifying fish species within any of the other watercourses connected to the Itchen which would be crossed by the Project.

5.3.20 Due to the presence of qualifying fish species, there is the potential that noise and vibration during the trenchless construction beneath the River Itchen SAC could disturb spawning fish if undertaken during the spawning season. Noise and vibration from trenchless construction propagating into the water column could potentially cause a barrier to migration, disturb spawning or damage fish eggs. Surveys have not identified qualifying fish species within connected watercourses outside of the SAC boundary and therefore impacts to qualifying fish species associated with the River Itchen SAC are primarily restricted to the trenchless crossings under the SAC. However, there is a potential for qualifying species outside of the SAC to be present in the future including within Bow Lake, which would be impacted by noise and vibration during trenchless construction.

Underwater noise

5.3.21 Thresholds for the effects of underwater noise on fish and fish eggs are not well defined, but Popper et al [41] suggests that potential effects of continuous underwater noise on fish are defined in terms of near, far and intermediate distance from the sound rather than providing a definitive threshold value. The only exception to this are fish with a swim bladder involved in hearing such as salmon [41]. It should be noted that no thresholds exist for potential effects of continuous underwater noise on fish eggs and larvae.

5.3.22 The hearing threshold for Atlantic salmon is approximately 105dB re 1µPa at the most sensitive frequency band of 100Hz to 200Hz. As the frequency increases so does the hearing threshold and the sound needs to be louder to be detected. For lamprey, hearing seems to be limited to frequencies below 300Hz and between 144 and 155dB re 1µPa [41] and European eel hearing appears most sensitive at approximately 80Hz frequency and 95dB re 1µPa. As the frequency increases, the threshold for detection also increases, such

that at approximately 300Hz the threshold of detection is over 140db re 1µPa [42].

5.3.23 The trenchless Pipelines would be constructed using microtunnelling that utilises microtunnel boring machine (MTBM), as outlined in ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6). Few studies of noise and vibration from drilling under watercourses exist and those that do are for tunnel boring machine (TBM) or from horizontal directional drilling (HDD). For TBM, the Lower Thames Crossing project has modelled and predicted underwater noise at the worst case location above the TBM with a peak of 130dB re 1µPa at 100Hz one third octave band which would diminish with increasing distance [43]. For HDD, existing studies[4] have recorded an underwater sound peak of 100dB re 1µPa at 600Hz one third octave band.

5.3.24 The MTBM used for the Pipelines emits lower levels of noise compared to TBM especially when using remote controlled equipment from the surface, and sound from microtunnelling would be continuous rather than impulsive. As such it can be assumed that any noise from the construction of the Pipelines using MTBM could be similar as that has been measured in other studies of HDD and lower than that of TBM and therefore lower than the thresholds for harm.

Underwater vibration

5.3.25 In considering the potential impact of vibration from MTBM on fish, the industry standard guidance developed by Popper *et al.* (2014) [44] suggests a suitable criterion for risk to fish eggs and larvae is 13mm/s Peak Particle Velocity (PPV). Thresholds for potential mortality or mortal injury from impulsive vibration on fish eggs and larvae have also been stated as 1.3cm/s from Canadian standards [41, 45], or two inches/s (5.08cm/s) from Alaskan standards [46]. Continuous vibration thresholds have not been determined to date.

5.3.26 A Transport Research Laboratory (TRL) paper from 2000 [47] suggests that vibration from tunnelling is dependent on the geology through which the tunnel is being bored; excavation of softer materials (e.g. clay and sand) causes lower vibration than stronger or harder rock. For the Project, the trenchless tunnels are proposed to be driven with an absolute minimum cover of 2.5m, but likely to be at a much greater depth. As outlined in section 4.1.4, the indicative design has a depth of 10m[5] for the trenchless crossing of the River Itchen. The tunnels would be driven through London Clay, which overlies chalk under the River Itchen and the River Meon. Vibration data extrapolated from similar tunnelling project examples in the TRL paper indicated PPV values significantly less than the 13mm/s threshold where harm to fish or fish eggs would be expected. For the Lower Thames Crossing TBM example the project modelled the worst case vibration (in terms of particle velocity) at 0.01mm/s [43]. For the HDD confidential study, an

[4] Data has been informed by a confidential report prepared by Mott MacDonald for National Grid, which includes proprietary survey results not available in the public domain [48].

[5] The Applicant cannot commit to this depth not changing during detailed design, but it is very unlikely to get shallower due to the railway crossing and Network Rail's acceptance criteria for settlement.

underwater vibration of 1.4mm/s was recorded [48]. All the available literature suggests that underwater vibration from tunnelling is significantly below the 13mm/s threshold where harm to fish or fish eggs would be expected.

5.3.27 Noise and vibration from trenchless construction is not expected to cause any significant effects on freshwater biodiversity receptors, including any detrimental effects of vibration from construction on fish, fish eggs or larvae, or barriers to fish migration, as the levels of vibration and underwater noise are predicted to be extremely low.

5.3.28 As per the assessment of fish and noise and vibration arising from trenchless construction given in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6), the noise modelling case studies for Lower Thames Crossing project and other existing studies for HDD shows that the noise and vibration coming from TBM and HDD respectively is below the published thresholds for both salmonids and lamprey species. As the levels of underwater noise and vibration from MTBM are predicted to be much lower than TBM and HDD, noise and vibration from trenchless construction is not expected to cause any significant effects on freshwater biodiversity receptors as a result of the Project. This includes any detrimental effects of vibration from the construction on fish, fish eggs or larvae, or barriers to fish migration, as the levels of vibration and underwater noise are predicted to be extremely low. It is therefore assessed that there will be no adverse effect on the integrity of the site as a result of noise and vibration disturbance and harm to qualifying species. There are no identified other developments which could result in-combination increases in noise and vibration during the construction works and therefore there are no adverse effects on the integrity as a result of in-combination impacts.

Otter

5.3.29 Otter are known to be present on the River Itchen and evidence of otter has also been recorded on Bow Lake and along a ditch north of Kiln Lane which are both hydrologically linked to the River Itchen. It is probable that otter will use all suitable habitat along the corridor of the Project.

5.3.30 The ditch north of Kiln Lane will be crossed by the Pipeline through trenched open-cut construction. This ditch is a seasonally dry distant tributary considered to be a surface water runoff ditch for Kiln Lane. The tributary is short, shallow and terminates at Otterbourne village to the west with suitability for potential passage of otter only. For a short period, otter may be deterred from moving through this section as a result of disturbance whilst construction works are ongoing. However, this would be temporary up to medium-term and would be reversed on completion of the construction works. Additionally, the construction lighting design (as secured within the Outline CEMP (Document reference 7.1, DCO Volume 7)) follows good practice to reduce direct illumination of ecologically sensitive habitats, including areas of the Kiln Lane ditch and Bow Lake that are not within the construction working width, which would avoid disruption to otter utilising these features.

5.3.31 Temporary construction compounds L-5, L-6, L-7 and L-8 are located approximately 16m south of Bow Lake. No night works, when otter are most active, will take place at temporary construction compounds L-7 and L-8 and there is sufficient corridor width between these compounds along the watercourse for undisturbed passage. Temporary construction compounds L-5 and L-6 are likely to be in use over a short duration of consecutive nights for the trenchless crossing of the B3354 Winchester Road. Although no resting sites were located along this watercourse, spraints and prints were identified. Otter is a mobile species and there is suitable habitat for resting sites along Bow Lake, introducing a risk of resting sites being created prior to or during construction. Pre-works surveys will be undertaken to confirm that no new holt sites are present which could be subject to significant disturbance. Mitigation measures will limit disturbance effects from lighting, noise and vibration. These measures, in combination with existing natural screening present on the Bow Lake north of the temporary construction compounds L-5 and L-6, will avoid disturbance to otter utilising Bow Lake for foraging or commuting.

5.3.32 There is a potential that significant disturbance of otter could occur up to 200m from the construction works where the construction works involve significant noise and vibration levels and a natal holt is present. Significant disturbance of non-natal holts may occur up to 30m from the construction works. Surveys to date have not identified any potential holt sites within 200m of the construction works within the River Itchen catchment or hydrologically linked watercourses and therefore there is not considered to be any significant disturbance of otter. Based on the current surveys there will be no significant disturbance of otter and no AEoI. Pre-works surveys will be undertaken to confirm that no new holt sites are present which could be subject to significant disturbance. Due to a lack of identified holts which could be disturbed by the Project, there is no potential for an in-combination effect. Therefore, there are no adverse effects on the integrity of the site as a result of disturbance of otters either alone or in-combination with other plans or projects.

Hydrological change (impacts to all qualifying habitats and species)

5.3.33 As outlined in the HRA Stage 1 Screening and MCZ Screening Assessment, there is potential that hydrological changes as a result of the construction of the Project could result in indirect effects on the SAC and its qualifying species and habitats. There is a risk that if perched groundwater was disturbed during the construction of the pipeline, that this could increase turbidity within the aquifer which is linked to the River Itchen SAC. As outlined in the mitigation section (section 4), all tunnels and trenchless crossings of watercourses and other barriers will use a methodology that excludes groundwater, minimising direct disturbance of groundwater.

5.3.34 Any activities that disturb the ground, such as excavation, tunnelling or piling, could mobilise contaminants within soils or groundwater and potentially adversely affect groundwater quality or locally alter the hydraulic properties of the aquifer which supplies the River Itchen. Additionally, if pipe jacking is

used for the construction of the trenchless crossing this may also require the application of boring fluid, which would increase the risk of adding turbidity to the aquifer if groundwater was to be encountered. The Outline CEMP (Document reference 7.1, DCO Volume 7) includes specific pollution prevention measures and this will minimise and control the risk of release of contaminants into the environment to avoid any significant effects.

5.3.35 The trenchless crossing of the River Itchen and Itchen Navigation (OPT1_WCX_M_011 and OPT1_WCX_M_010) is anticipated to be within London Clay deposits, which would reduce the risk of the crossing and associated construction works, on the overlying sensitive chalk stream. South-west of Otterbourne WSW a trenchless crossing of a tributary of the River Itchen (Poles Lane Stream OPT1_WCX_M_002) would be required, which would be partly within the Principal chalk aquifer.

5.3.36 The pipeline would be installed at least 2.5m below the hard bed of all main rivers and 1.2m below the hard bed of ordinary watercourses crossed via trenchless techniques (dependent on local geology and geomorphological risks); this will avoid interaction with active bed sediments and reduce the chances of exposure and interference with the natural geomorphology of watercourses.

5.3.37 In the unlikely event that groundwater turbidity levels were affected, due to the existing fine grained alluvial and bed sediments beneath the Itchen and the deep-seated flow lines, there is unlikely to be a mechanism where turbid waters could be pulled upward into the root zones of plants or into the open waters of the River Itchen.

5.3.38 The construction of the underground pipeline and associated infrastructure may result in a change in quantity or quality of flows between the aquifer and the SAC if flow paths are crossed by the pipeline. Groundwater flows and levels may also be affected by temporary physical modifications (e.g., excavations or trenchless construction), which could interrupt the natural groundwater flow pathways. The other potential risks to groundwater associated with excavations and/or trenchless construction include temporary dewatering, if required, for the trenchless construction or shafts, diverting water away from the river, or bypassing part of the system, leading to reduced groundwater flow.

5.3.39 Construction of trenchless construction sections and partially buried structures below the maximum groundwater level in the chalk could create a permanent barrier to groundwater flow. This could lead to a rise in groundwater levels on the upstream side, which could cause additional groundwater flooding, and a reduction of groundwater levels on the downstream side. This could potentially permanently affect the River Itchen as a groundwater-dependent watercourse.

5.3.40 The installation of the trenchless construction at Poles Lane Stream OPT1_WCX_M_002 could also result in the creation of a permanent connection between the Chalk aquifer and the Otterbourne SPZ1. This could affect groundwater flows and consequently the River Itchen. The shafts and

main drilling works associated with the main River Itchen trenchless crossing would be located outside of the SPZ1 or Principal aquifer.

5.3.41 As well as potentially affecting groundwater flows, construction activities associated with the above and below-ground infrastructure have the potential to alter surface water flows and drainage patterns by:

1. Temporarily altering existing flow paths and changing the distribution of surface drainage across development sites (e.g. through raising or lowering the existing land surface and creating new discharge locations from temporary site drainage systems).
2. Temporarily reducing infiltration and increasing surface runoff resulting from soil compaction by construction vehicles.
3. Installing structures (e.g. temporary watercourse crossings) across existing surface drainage features that temporarily constrain their capacity to convey flows downstream and increase localised flood risk.

5.3.42 The construction of the Project has the potential to increase surface water runoff, which could adversely affect the hydrology and geomorphology of the surface drainage network (e.g. as a result of increased discharge resulting in bed and bank scour), and the in wash of greater volumes of fine sediment due to increased surface runoff. However, a temporary construction-stage drainage system will be established, designed according to the good practice principles set out in the Outline CEMP (Document reference 7.1, DCO Volume 7) and will be agreed with the EA and the lead local flood authority prior to implementation. This will incorporate measures to capture and attenuate surface runoff and minimise changes to off-site runoff rates and flood risk and minimise the risk of changes to flows within the River Itchen.

5.3.43 The crossing of Bow Lake (OPT1_WCX_L_005) and an upstream tributary of the River Itchen (OPT1_WCX_M_002) would be undertaken using a trenchless method. These construction works are unlikely to encounter chalk aquifer and are likely to be undertaken in the lower permeability bedrock (non-aquifer) that confines the chalk below. Should dewatering be required, it could impact groundwater receptors within the Zol albeit it is anticipated to be limited due to the low permeability of the bedrock. Due to size of the shafts and trenchless construction relative to the groundwater body at the Bow Lake trenchless crossing, the likelihood of intercepting a significant flow path that could alter groundwater flows outside the immediate vicinity of the structures is low. This risk is further reduced due to the hydrogeological properties of the Secondary aquifers being intercepted. Monitoring would be implemented as per the Water Monitoring Plan to verify impacts on groundwater levels and flows and at dependent receptors.

5.3.44 The shafts and main trenchless construction works associated with the main Itchen River crossing (OPT1_WCX_M_011) would be located outside of the groundwater Source Protection Zone (SPZ) and Principal aquifer. These construction works are unlikely to encounter chalk aquifer and are likely to be undertaken in the lower permeability bedrock (non-aquifer) that confines the chalk below and would therefore be unlikely to impact groundwater flows.

Should dewatering be required, it could impact groundwater receptors within the Zol albeit it is anticipated to be limited due to the low permeability of the bedrock.

5.3.45 The minor crossing of the Itchen tributary (OPT1_WCX_M_002) would, however, be partially within the Principal aquifer and SPZ1 where impacts to groundwater flows could occur if a significant flow pathway is intercepted. Due to size of the shafts and trenchless construction relative to the groundwater body and limited evidence of significant karstic features south of Otterbourne, the likelihood of intercepting a significant flow path that could alter groundwater flows sufficient to impact receptors is low. To manage this risk, monitoring will be implemented when working within the Chalk. Monitoring would be implemented as per the Water Monitoring Plan presented within ES Appendix 19.9 Outline Water Monitoring Plan, Volume II (Document reference 6.2, DCO Volume 6) to verify impacts on groundwater levels or flows and at dependent receptors.

5.3.46 Impacts to surface water and groundwater are quantified in ES Appendix 19.3 Hydrogeological Impact Assessment, Volume II (Document reference 6.2, DCO Volume 6) and assessed in the ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6). With the application of primary and tertiary mitigation, direct disturbance of surface water and groundwater are assessed as having a negligible impact on the River Itchen SAC. The only potential significant effects identified within the Water Environment Chapter are associated with impacts on groundwater quality as a result of trenchless construction works within the underlying chalk aquifer in the area of the Otterbourne Public Water Supply. This was assessed as a minor impact on a high value receptor resulting in a moderate adverse effect. With mitigation the significant of effect was reduced to minor adverse. The potential significant impact is due to potential minor changes in turbidity to the Public Water Supply, and these minor changes would not have any effect on the River Itchen SAC or its qualifying species and habitats as the changes to groundwater turbidity are likely to be very minor and negligible compared to natural variations in fine sediment loads due to natural surface runoff during rainfall events.

5.3.47 The River Itchen is phosphorous sensitive and changes to nutrient levels during construction could have an adverse effect on the SAC and its qualifying habitats and species. A Nutrient Assessment has been undertaken in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6) to assess the changes in nutrients as a result of the Project. This assessment calculated baseline Total Nitrogen (TN) load (kg/yr) and Total Phosphorus (TP) load (kg/yr) and changes to TN and TP during construction based on discharges to Chickenhall WTW, changes to land use, and nutrient loads from commissioning washouts. As reported in the Nutrient Assessment, the total baseline nutrient load constitutes of 291,208 kg/yr of TN and 23.23 kg/yr of TP. More than 96% of the baseline nitrogen load is sourced from the Eastney LSO final effluent outputs. The annual nutrient load for the construction scenario as assessed within the Nutrient Assessment, is shown in Table 5-13.

Table 5-4 Annual nutrient load for the construction scenario (kg/yr)

Nutrient source	TN load (kg/yr)	TP (kg/yr)
Eastney LSO final effluent	278,207	N/A[6]
Otterbourne WSW waste stream	4,297	10.23
Havant Thicket Reservoir compensation flows	4,920	N/A
Land use	2,951	9.39
Total	**290,375**	**19.62**

5.3.48 With regard to nutrient changes as a result of commissioning washouts, source water for the pressure testing for the Pipeline between Bedhampton Springs and Otterbourne WSW will be potable water from Otterbourne WSW and the full system testing will use water sourced from the following locations:

1. The Pipelines between Budds Farm WTW and the WRP site would use treated wastewater from Budds Farm WTW.
2. The Pipelines between the WRP site and Bedhampton Springs would use source water from Havant Thicket Reservoir.
3. The Pipeline between the WRP site and Otterbourne WSW would use source water from Havant Thicket Reservoir.

5.3.49 Once the testing has been completed, the water would be disposed of at a licensed disposal facility located inside the Solent catchment (excluding the River Itchen catchment to avoid risks associated with the introduction of INNS, refer to Document reference 7.10, DCO Volume 7). The water from Otterbourne WSW, Budds Farm WTW and the WRP site will have originated from within the Solent catchment representing a circular process resulting in no changes to nutrient load.

5.3.50 In terms of nutrient changes during construction, land use changes are prominent, owing to the impact of new development on surface runoff within the Project area. The land within the above-ground construction footprint of the Project would be taken out of its current agricultural use and would therefore no longer receive nutrient inputs such as fertiliser or animal waste for the duration of construction. There would be a suite of measures in place to manage runoff and the mobilisation of soils and nutrients during the construction activities. Baseline land use nutrient load for the Itchen catchment is calculated to be 379kg/yr TN and 13kg/yr TP. These reduce to 306kg/yr TN and 9.39kg/yr TP during construction. There would therefore be reductions in TN and TP during construction as a result of land use changes.

[6] TP was not calculated as Havant Thicket Reservoir and the LSO are situated in the Solent Nutrient neutrality catchment, which is nitrogen-vulnerable.

5.3.51 During construction, the existing waste stream from Otterbourne WSW to Chickenhall WTW will be consistent with the baseline scenario. As such, the load discharged to Chickenhall is 4,297 kg/yr TN and 10.23 kg/yr TP during baseline and construction scenarios.

5.3.52 Due to the reductions in nutrient loads during construction, as a result of changes to land use, there will be no adverse effects on qualifying habitats or species as a result of changes in nutrient loads during construction.

5.3.53 With the implementation of mitigation there will be no adverse effect on the integrity of the site and its qualifying habitats and species as a result of hydrological change during construction as a result of the Project alone. No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species in-combination with other plans and projects.

Waterborne pollution during construction (impacts to all qualifying habitats and species)

5.3.54 The operation of construction machinery in the vicinity of the River Itchen and hydrologically linked habitats has the potential for accidental release of pollutants on to the ground, where they could migrate into underlying groundwater. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or trenchless construction. Such pollutants could enter the river and adversely affect its physical and chemical properties.

5.3.55 Trenched open-cut crossings of watercourses which are upstream of the River Itchen SAC (including crossing points OPT1_WCX_L_003, OPT1_WCX_M_009, OPT1_WCX_M_006, OPT1_WCX_M_004, OPT1_WCX_L_007 and OPT1_WCX_L_006) have a risk of polluting water which flows into the SAC. Where qualifying species are present outside of the SAC there is also a risk of waterborne pollution resulting in adverse effects to qualifying species outside of the SAC, including impacts to Southern Damselfly habitat at OPT1_WCX_M_002.

5.3.56 The construction of the Project will involve earthworks, excavation and the tracking of large construction machinery. This will create areas of bare ground by removing vegetation cover and topsoil and will increase the potential for the erosion of soil particulates. This could result in an increase in the supply of fine sediment (e.g. clays, silts and fine sands) to surface water bodies (including land drainage channels) through surface runoff and the erosion of exposed soils. Increased sediment supply can affect geomorphology of watercourses by increasing the turbidity of the water column and, where energy is sufficiently low, encouraging increased deposition of fine sediment on the bed of the channel. Further, sediment loads could smother existing bed habitats, reduce light penetration and reduce dissolved oxygen concentrations, adversely affecting the biota including macrophytes, aquatic

invertebrates and fish. This has the overall effect of reducing the quality of in-channel habitats. Any impacts of increased sediment supply would be particularly pronounced in chalk river catchments such as the River Itchen, which naturally has low suspended sediment loads and coarse bed substrates (i.e. gravels and cobbles) with a low proportion of fine sediment. This could affect the conservation objective of '*Restore the natural supply of coarse and fine sediment to the river'* [31].

5.3.57 Mitigation measures outlined in section 4 will ensure controls are implemented to manage and minimise the risk of water pollution during construction and ensure that any incidents are quickly responded to and resolved. This will ensure that there are no LSE as a result of construction of the Project and there will be no adverse effect on the integrity of the Habitats site. No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species as a result of waterborne pollution in-combination with other plans and projects.

Airborne pollution during construction

5.3.58 The Stage 1 assessment identified that construction dust may result in LSE up to 250m from construction works (in accordance with Institute of Air Quality Management (IAQM), 2024 [17]).

5.3.59 Therefore, there is potential for effects to occur within the SAC. In addition, the potential effects of construction traffic (due to temporary traffic management measures and/or additional vehicles travelling to and from the construction) and NRMM emissions on air quality within 200m of the construction works boundary or a road affected by changes in traffic may affect the SAC (Natural England, 2018).

5.3.60 In order to assess the potential effects of airborne pollution during construction, traffic modelling and modelling of associated emissions from vehicles has been undertaken along the affected road network where this is within 200m of the River Itchen SAC. For full details refer to ES Appendix 6.5 Construction road vehicle exhaust emissions assessment – ecological features transect results – nitrogen oxides, Volume II (Document reference 6.2, DCO Volume 6). Detailed results and methods are provided within ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6) and ES Appendix 6.5 Ecological Transect Results, Volume II (Document reference 6.2, DCO Volume 6). A summary of methods and key findings relevant to the River Itchen SAC are discussed in sections 5.3.61 to 5.3.85.

5.3.61 Guidance from NE on the assessment of road traffic impacts on designated ecological sites [49] references the screening criteria contained in the Design Manual for Roads and Bridges LA105 air quality guidance [50]. As such, these criteria have been used to screen the potential air quality impacts at ecological receptor locations.

5.3.62 The screening criteria for ecological receptors are considered by NE to equate to a 1% change in the Critical Level (CLe) or Critical Load (CLo) which is regarded as a threshold of being not significant. A change less than this magnitude is likely to be within the natural range of fluctuation in deposition and is unlikely to be perceptible. Ecological receptors were screened using data for traffic introduced by the Project alone and also inclusive of relevant committed developments and live projects/plans within the study area as well as traffic growth from the base year (2023) to the future base year (2031) (the difference between the 'Do Something' and 'Do Nothing' traffic flows along each road link for which traffic data is available).

5.3.63 The committed developments include any changes which are committed or otherwise reasonably expected to take place to existing conditions by the future design years. Committed development, plans and projects road traffic have been considered based on the following:

1. Plans or projects identified in the cumulative long list within the 3km buffer from the Order Limits (Zone of Influence) used by Traffic and Transport, as agreed with Hampshire County Council
2. EIA projects and development plan allocations of >150 dwellings
3. Plans or projects specifically put forward for inclusion in the short-list by the local planning authorities during the engagement process

5.3.64 It should be noted that the 1% threshold is intended to screen out changes which are so low as to be unequivocally 'inconsequential' or effectively 'imperceptible'; it does not follow that changes exceeding 1% are necessarily significant. However, any development-generated or cumulative values above 1% of the CLe or CLo requires additional assessment by an ecologist to determine whether any LSE may be experienced at the affected habitats.

5.3.65 The Air Pollution Information System (APIS) provides CLo for air pollution for Habitats Sites, which define a level below which adverse impacts to a particular qualifying habitat or species (or the habitat which the species relies on) would not occur. For the River Itchen SAC there is no nutrient nitrogen or acid CLo for the SAC's qualifying habitat (Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation) or for most of its qualifying species. This is because they rely on freshwater habitats. Freshwater systems are generally phosphorus-limited and this is the case with the River Itchen. This means that, in an unpolluted water body, phosphorus is the scarcest of the primary macronutrients. It is availability of phosphorus which dictates the growth response of freshwater vegetation and thus eutrophication. While the presence of nitrogen is not irrelevant, in most freshwater systems it is more important to control phosphorus inputs than nitrogen inputs, in order to preserve or restore habitat health and diversity [51].

Nitrogen deposition – alone

5.3.66 The only qualifying species with an identified CLo for nitrogen deposition is southern damselfly. For this species, APIS use 'dwarf shrub heath' as the

habitat on which to base CLo, due to this species' preference for this habitat in key locations such as the New Forest. However, the populations of southern damselfly found within and around the River Itchen SAC are associated with habitats best described as the EUNIS habitat classification Rich Fens (EUNIS D4.1). According to APIS, Rich Fen habitats have a CLo for nutrient nitrogen of 15-30kgN/ha-year and are not sensitive to acid deposition. Air Quality modelling used the lower, most precautionary, CLo for southern damselfly based on the dwarf shrub heath habitat listed on APIS (5-15kgN/ha-year). However, following interrogation of the habitats present within the areas subject to potential change in air quality, the interpretation of this data and an assessment of the potential for adverse effects is based on the slightly higher CLo of rich fen habitat as this is representative of the habitats present.

5.3.67 The air quality modelling of the Project and the affected road network identified two key areas where the affected road network crosses the River Itchen SAC, namely the M3 near Hockley Link, and Bishopstoke Road near Eastleigh. At both these locations the affected road network crosses over the River Itchen SAC and so the closest modelled points are 0m from the SAC. Table 5-5 provides a summary of nitrogen deposition alone including the Process Contribution (PC) – the contribution of the Project alone, and the Predicted Environmental Contribution (PEC) – the Project alone plus baseline deposition.

Table 5-5 Nitrogen deposition from Project alone

Receptors	Site Name	Minimum Critical Load kgN/ha/yr	PC Project Alone kgN/ha/yr	% of Minimum Critical Load	PEC Project Alone kgN/ha/yr	% PEC/Min CLe
SAC SU475240_1_0m	River Itchen	15	0.339183	2.26	26.369183	175.79
SAC SU475240_1_10m			0.185091	1.23	26.215091	174.77
SAC SU475240_1_20m			0.140562	0.94	26.170562	174.47
SAC SU475240_1_40m			0.092220	0.61	26.122220	174.15
SAC SU475240_1_50m			0.072348	0.48	26.102348	174.02
SAC SU475240_1_60m			0.063394	0.42	26.093394	173.96
SAC SU475240_1_70m			0.056865	0.38	26.086865	173.91

Receptors	Site Name	Minimum Critical Load kgN/ha/yr	PC Project Alone kgN/ha/yr	% of Minimum Critical Load	PEC Project Alone kgN/ha/yr	% PEC/Min CLe
SAC UK0012599_1_0m			0.067269	0.45	24.307269	162.05
SAC UK0012599_1_10m			0.026931	0.18	24.266931	161.78
SAC UK0012599_1_20m			0.016730	0.11	24.256730	161.71
SAC UK0012599_1_30m			0.013415	0.09	24.253415	161.69
SAC UK0012599_1_40m			0.014404	0.10	24.254404	161.70
SAC UK0012599_1_50m			0.010279	0.07	24.250279	161.67
SAC UK0012599_1_60m			0.009398	0.06	24.249398	161.66
SAC UK0012599_1_70m			0.008758	0.06	24.248758	161.66
SAC UK0012599_1_80m			0.008243	0.05	24.248243	161.65
SAC UK0012599_1_90m			0.004969	0.03	24.244969	161.63
SAC UK0012599_1_100m			0.007518	0.05	24.247518	161.65
SAC UK0012599_1_110m			0.007253	0.05	24.247253	161.65
SAC UK0012599_1_120m			0.004150	0.03	24.244150	161.63
SAC UK0012599_1_130m			0.006832	0.05	24.246832	161.65
SAC UK0012599_1_140m			0.003791	0.03	24.243791	161.63
SAC SU475240_2_0m			0.451017	3.01	26.481017	176.54
SAC SU475240_2_10m			0.249579	1.66	26.279579	175.20
SAC SU475240_2_20m			0.181737	1.21	26.211737	174.74

Receptors	Site Name	Minimum Critical Load kgN/ha/yr	PC Project Alone kgN/ha/yr	% of Minimum Critical Load	PEC Project Alone kgN/ha/yr	% PEC/Min CLe
SAC SU475240_2_30m			0.146178	0.97	26.176178	174.51
SAC SU475240_2_40m			0.125820	0.84	26.155820	174.37
SAC SU475240_2_50m			0.105870	0.71	26.135870	174.24
SAC SU475240_2_60m			0.095574	0.64	26.125574	174.17

5.3.68 With an adjusted minimum CLo for southern damselfly of 15kgN/ha-year (Rich Fen Habitat), the process contribution (the additional pollutant loading to a receptor as a result of the Project alone) is at most 3.01% of the minimum CLo, at the modelled point 0m from the affected road network at the M3 Hockley Link (at this location the process contribution from the Project alone is 0.451kgN/ha-year). The model shows that the amount of NO_2 decreases with distance from the affected road network, with levels from the Project alone dropping to 1.21% of the minimum CLo 20m from the affected road network at the M3 Hockley Link and falling below 1% of minimum CLo at 30m from the affected road network.

5.3.69 Potential adverse effects from the Project alone are therefore restricted to within 20m of the affected road network at the M3 Hockley Link approximately 0.03ha upstream and 0.04ha downstream. At Bishopstoke Road, the highest process contribution is 0.067kgN/ha-year, equating to 0.45% of the minimum Clo where the affected road network crosses the River Itchen SAC and therefore the Project alone in this location will not exceed 1% of minimum CLo and therefore will not have any adverse effects alone.

5.3.70 In all modelled locations along the River Itchen SAC air quality transects, background nitrogen deposition is already in excess of minimum CLo for rich fen habitat, with a background of 26.03kgN/ha-year at the M3 Hockley Link, which is 173.53% of the minimum CLo. The Predicted Environmental Concentration (the baseline plus the Project alone) results in a maximum of 26.48kgN/ha-year 0m from the affected road network where the road crosses the SAC, which is 176.54% of the minimum CLo. The Project will therefore result in temporary increases in nitrogen deposition in locations already in excess of minimum CLo. The NE guidance [52] indicates that habitats that have already been subject to high background nitrogen deposition can develop an effective tolerance to the effects of further deposition. However, this is not to say that increases in nitrogen deposition in areas already exceeding CLo will not have any adverse effects. However, it is likely that

due to the high levels of exceedances due to the proximity of the M3 motorway, that vegetation within the River Itchen SAC within 30m (and further) of the M3 is already being impacted by nitrogen deposition that is significantly over minimum CLo.

5.3.71 The Project will result in a short-term increase in nitrogen deposition which will be over 1% of minimum CLo for a short distance from the affected road network of up to 20m downstream of the M3 River Itchen Bridge and 20m upstream of the M3 River Itchen Bridge at Hockley Link. The banks of the River Itchen along the short distances either side of the motorway bridge are artificial and therefore do not support dense marginal vegetation with potential to be used by southern damselfly. Considering the increases occur over a short duration during the construction phase of the Project, which affect habitat unlikely to support southern damselfly, no adverse effects on this qualifying species, or the structure and function of their supporting habitat, are likely as a result of the Project alone.

5.3.72 The supplementary advice on conservation objectives for the SAC include in relation to air quality to 'maintain or where necessary, restore the concentrations and deposition of air pollutants to at or below the site-relevant CLo or CLe values given for this feature of the site on APIS [31]. Where the CLo already exceeds the minimum CLo, there is a potential that any increases could hinder this conservation objective. However, due to the short duration of the increases during the construction phase of the works, the impacts will be short-term and affect a small area of the SAC. The APIS website includes pollutant trends which show that for the SAC the total Nitrogen deposition grid average has reduced from 15.99kgN/ha/yr in 2003 to 12.89kgN/ha/yr in 2021. The short-term impacts of the construction works will not impede this downward trend or hinder the achievement of this conservation objective.

Nitrogen deposition – in-combination

5.3.73 Table 5-6 provides a summary of nitrogen deposition of the Project in combination with other developments. This includes in-combination process contribution and in-combination predicted environmental contribution.

Table 5-6 Nitrogen deposition from Project in-combination

Receptors	Site Name	Minimum Critical Load kgN/ha/yr	PC Project in-combination kgN/ha/yr	% of Minimum Critical Load	PEC Project in-combination kgN/ha/yr	% PEC/Min CLe
SAC SU475240_1_0m	River Itchen	15	1.43	9.51	27.46	183.04
SAC SU475240_1_10m			1.12	7.46	27.15	180.99

Receptors	Site Name	Minimum Critical Load kgN/ha/yr	PC Project in-combination kgN/ha/yr	% of Minimum Critical Load	PEC Project in-combination kgN/ha/yr	% PEC/Min CLe
SAC SU475240_1_20m			1.4	9.31	27.43	182.85
SAC SU475240_1_40m			0.98	6.54	27.01	180.07
SAC SU475240_1_50m			0.61	4.10	26.64	177.63
SAC SU475240_1_60m			0.46	3.09	26.49	176.63
SAC SU475240_1_70m			0.37	2.49	26.40	176.02
SAC UK0012599_1_0m			3.36	22.42	27.60	184.02
SAC UK0012599_1_10m			1.35	9.00	25.59	170.60
SAC UK0012599_1_20m			0.85	5.66	25.09	167.26
SAC UK0012599_1_30m			0.62	4.11	24.86	165.71
SAC UK0012599_1_40m			0.49	3.24	24.73	164.84
SAC UK0012599_1_50m			0.4	2.64	24.64	164.24
SAC UK0012599_1_60m			0.33	2.22	24.57	163.82
SAC UK0012599_1_70m			0.29	1.90	24.53	163.50
SAC UK0012599_1_80m			0.25	1.68	24.49	163.28
SAC UK0012599_1_90m			0.22	1.47	24.46	163.07
SAC UK0012599_1_100m			0.2	1.32	24.44	162.92
SAC UK0012599_1_110m			0.18	1.19	24.42	162.79
SAC UK0012599_1_120m			0.16	1.06	24.40	162.66

Receptors	Site Name	Minimum Critical Load kgN/ha/yr	PC Project in-combination kgN/ha/yr	% of Minimum Critical Load	PEC Project in-combination kgN/ha/yr	% PEC/Min CLe
SAC UK0012599_1_130m			0.15	0.99	24.39	162.59
SAC UK0012599_1_140m			0.13	0.90	24.37	162.50
SAC SU475240_2_0m			1.6	10.66	27.63	184.20
SAC SU475240_2_10m			0.97	6.45	27.00	179.98
SAC SU475240_2_20m			0.74	4.96	26.77	178.49
SAC SU475240_2_30m			0.62	4.16	26.65	177.70
SAC SU475240_2_40m			0.54	3.62	26.57	177.15
SAC SU475240_2_50m			0.48	3.21	26.51	176.74
SAC SU475240_2_60m			0.44	2.92	26.47	176.45

5.3.74 Taken in combination with other projects, the highest level of nitrogen deposition increases from 26.48kgN/ha-year (background plus Project) to 27.63kgN/ha-year (in-combination). The process contribution of other Projects, excluding the Project, exceeds 1% of minimum CLo at all modelled points for the M3 Hockley Link location (up to 70m from the M3) and up to 140m from the modelled points for Bishopstoke Road. With the inclusion of the contributions from the Project, there is no increase in the number of locations where Process Contribution exceeds 1% of minimum CLo.

5.3.75 The CLo for nitrogen deposition are based on an assumption of exposure to those nitrogen loadings for periods of 20-30 years. As the Project will only result in impacts to traffic during construction, approximately a five-year period in total, there is a reduced likelihood of a negative effect, because it is less likely to result in a material change in the annual average value and, by definition, will not contribute to long-term exposure.

5.3.76 Overall, based on the increases over a short duration and over short distances within areas which are unlikely to support qualifying features, the Project will not undermine the conservation objective of maintaining deposition of air pollutants to at or below the site-relevant CLo [31] and will

not have an adverse effect on the integrity of the site as a result of nitrogen deposition.

Atmospheric nitrogen NOX – alone

5.3.77 The APIS website identifies CLe for atmospheric nitrogen of 30µg/m³ for the qualifying habitat Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. Table 5-7 provides a summary of atmospheric nitrogen alone including the PC and the PEC – the Project alone plus baseline deposition.

Table 5-7 Atmospheric nitrogen from Project alone

Receptors	Site Name	Critical Level ug/m3	PC Project Alone ug/m3	% of Critical Level	PEC Project Alone ug/m3	% PEC/ Critical Level
SAC SU475240_1_0m	River Itchen	30	0.55	1.8%	9.70	32.3%
SAC SU475240_1_10m			0.30	1.0%	9.45	31.5%
SAC SU475240_1_20m			0.23	0.8%	9.38	31.3%
SAC SU475240_1_40m			0.15	0.5%	9.29	31.0%
SAC SU475240_1_50m			0.12	0.4%	9.26	30.9%
SAC SU475240_1_60m			0.10	0.3%	9.25	30.8%
SAC SU475240_1_70m			0.09	0.3%	9.23	30.8%
SAC UK0012599_1_0m			0.16	0.5%	12.63	42.1%
SAC UK0012599_1_10m			0.06	0.2%	12.53	41.8%
SAC UK0012599_1_20m			0.04	0.1%	12.50	41.7%
SAC UK0012599_1_30m			0.03	0.1%	12.49	41.6%
SAC UK0012599_1_40m			0.02	0.1%	12.49	41.6%
SAC UK0012599_1_50m			0.02	0.1%	12.48	41.6%

Receptors	Site Name	Critical Level ug/m3	PC Project Alone ug/m3	% of Critical Level	PEC Project Alone ug/m3	% PEC/ Critical Level
SAC UK0012599_1_60m			0.02	0.1%	12.48	41.6%
SAC UK0012599_1_70m			0.02	0.1%	12.48	41.6%
SAC UK0012599_1_80m			0.01	0.0%	12.48	41.6%
SAC UK0012599_1_90m			0.01	0.0%	12.48	41.6%
SAC UK0012599_1_100m			0.01	0.0%	12.48	41.6%
SAC UK0012599_1_110m			0.01	0.0%	12.48	41.6%
SAC UK0012599_1_120m			0.01	0.0%	12.47	41.6%
SAC UK0012599_1_130m			0.01	0.0%	12.47	41.6%
SAC UK0012599_1_140m			0.01	0.0%	12.47	41.6%
SAC SU475240_2_0m			0.74	2.5%	9.88	32.9%
SAC SU475240_2_10m			0.40	1.3%	9.54	31.8%
SAC SU475240_2_20m			0.29	1.0%	9.43	31.4%
SAC SU475240_2_30m			0.23	0.8%	9.37	31.2%
SAC SU475240_2_40m			0.19	0.6%	9.34	31.1%
SAC SU475240_2_50m			0.16	0.5%	9.31	31.0%
SAC SU475240_2_60m			0.15	0.5%	9.29	31.0%

5.3.78 For the River Itchen SAC the air quality transects identified process contribution levels in excess of 1% of the CLe from the Project at the 0m modelling point for both the upstream and downstream transects at the M3 Hockley Link bridge location, with 0.55µg/m³ (1.8%) upstream and 0.74µg/m³

(2.5%) downstream. Levels reduced to below 1% at the 10m transect point upstream but remain at 1% at the 10m downstream point (1.3%) before falling below 1% at 20m.

5.3.79 Together with NOx background the predicted values are all below the CLe, with a maximum of 12.63µg/m³ (42.1% of CLe) at the Bishopstoke transect, and lower at the M3 transects. Due to the short duration of the construction works and the fact that the CLe is not exceeded, the Project alone is not likely to result in any adverse effects which could damage the qualifying habitat or undermine the conservation objective.

Atmospheric nitrogen NOX – in-combination

5.3.80 Table 5-8 provides a summary of atmospheric nitrogen of the Project in combination with other developments. This includes in combination process contribution and in combination predicted environmental contribution.

Table 5-8 Atmospheric nitrogen from Project in-combination

Receptors	Site Name	Critical Level ug/m3	PC Project in-combination ug/m3	% of Critical Level	PEC Project in-combination ug/m3	% PEC/ Critical Level
SAC SU475240_1_0m	River Itchen	30	3.51	11.7%	12.65	42.2%
SAC SU475240_1_10m			2.55	8.5%	11.70	39.0%
SAC SU475240_1_20m			3.07	10.2%	12.22	40.7%
SAC SU475240_1_40m			2.08	6.9%	11.23	37.4%
SAC SU475240_1_50m			1.30	4.3%	10.45	34.8%
SAC SU475240_1_60m			0.97	3.2%	10.12	33.7%
SAC SU475240_1_70m			0.78	2.6%	9.93	33.1%
SAC UK0012599_1_0m			8.54	28.5%	21.00	70.0%
SAC UK0012599_1_10m			3.19	10.6%	15.65	52.2%
SAC UK0012599_1_20m			1.96	6.5%	14.42	48.1%
SAC UK0012599_1_30m			1.40	4.7%	13.87	46.2%

Receptors	Site Name	Critical Level ug/m3	PC Project in-combination ug/m3	% of Critical Level	PEC Project in-combination ug/m3	% PEC/ Critical Level
SAC UK0012599_1_40m			1.09	3.6%	13.55	45.2%
SAC UK0012599_1_50m			0.88	2.9%	13.34	44.5%
SAC UK0012599_1_60m			0.74	2.5%	13.20	44.0%
SAC UK0012599_1_70m			0.63	2.1%	13.09	43.6%
SAC UK0012599_1_80m			0.55	1.8%	13.01	43.4%
SAC UK0012599_1_90m			0.48	1.6%	12.94	43.1%
SAC UK0012599_1_100m			0.43	1.4%	12.89	43.0%
SAC UK0012599_1_110m			0.38	1.3%	12.85	42.8%
SAC UK0012599_1_120m			0.35	1.2%	12.81	42.7%
SAC UK0012599_1_130m			0.32	1.1%	12.78	42.6%
SAC UK0012599_1_140m			0.29	1.0%	12.75	42.5%
SAC SU475240_2_0m			4.07	13.6%	13.21	44.0%
SAC SU475240_2_10m			2.32	7.7%	11.47	38.2%
SAC SU475240_2_20m			1.73	5.8%	10.87	36.2%
SAC SU475240_2_30m			1.41	4.7%	10.55	35.2%
SAC SU475240_2_40m			1.20	4.0%	10.35	34.5%
SAC SU475240_2_50m			1.05	3.5%	10.20	34.0%
SAC SU475240_2_60m			0.95	3.2%	10.10	33.7%

5.3.81 The results show that the predicted contributions from other projects are larger and in all modelled locations the process contribution is in excess of

1% of CLe. However, the predicted environmental contribution is below the CLe in all locations. Due to the short duration of the construction works and the fact that the CLe is not exceeded, the Project in combination is not likely to result in any adverse effects which could damage the qualifying habitat or undermine the conservation objective.

Ammonia - alone

5.3.82 The APIS website identifies that qualifying habitats are sensitive to atmospheric ammonia and a CLe is set at 1 or 3µg/m³ for all qualifying habitats. The CLe of 1 is set for highly sensitive lower plant species such as lichens and bryophytes. For higher plants the threshold is set at 3. As the species which make up the qualifying habitat (Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation) are higher plants such as water-crowfoot species and water-starwort species, the higher CLe is considered appropriate.

5.3.83 Table 5-9 provides a summary of ammonia alone including the PC and the PEC – the Project alone plus baseline levels. For the River Itchen SAC, the air quality transects identified levels in excess of 1% of the higher CLe from the Project at the 0m modelling point for both the upstream and downstream transects at the M3 Hockley Link bridge location, with 0.04µg/m³ (1.3%) upstream and 0.05µg/m³ (1.7%) downstream. Atmospheric ammonia levels reduced to below 1% at the 10m transect points upstream and downstream. The PEC is well below the CLe at both the locations where the Project contribution is over 1% of the CLe, with a maximum of 1.44µg/m³. Due to the short duration of the construction works and lack of increases over the CLe, the Project alone is not likely to result in any adverse effects which could damage the qualifying habitat.

Table 5-9 Ammonia from Project alone

Receptors	Site Name	Critical Level ug/m3	PC Project Alone ug/m3	% of Critical Level	PEC Project Alone ug/m3	% PEC/ Critical Level
SAC SU475240_1_0m	River Itchen	3	0.04	1.3%	1.43	47.6%
SAC SU475240_1_10m			0.02	0.7%	1.41	47.0%
SAC SU475240_1_20m			0.02	0.5%	1.41	46.8%
SAC SU475240_1_40m			0.01	0.3%	1.40	46.7%
SAC SU475240_1_50m			0.01	0.3%	1.40	46.6%

Receptors	Site Name	Critical Level ug/m3	PC Project Alone ug/m3	% of Critical Level	PEC Project Alone ug/m3	% PEC/ Critical Level
SAC SU475240_1_60m			0.01	0.2%	1.40	46.6%
SAC SU475240_1_70m			0.01	0.2%	1.40	46.5%
SAC UK0012599_1_0m			0.01	0.2%	1.14	37.9%
SAC UK0012599_1_10m			0.00	0.1%	1.13	37.8%
SAC UK0012599_1_20m			0.00	0.1%	1.13	37.7%
SAC UK0012599_1_30m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_40m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_50m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_60m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_70m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_80m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_90m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_100m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_110m			0.00	0.0%	1.13	37.7%

Receptors	Site Name	Critical Level ug/m3	PC Project Alone ug/m3	% of Critical Level	PEC Project Alone ug/m3	% PEC/ Critical Level
SAC UK0012599_1_120m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_130m			0.00	0.0%	1.13	37.7%
SAC UK0012599_1_140m			0.00	0.0%	1.13	37.7%
SAC SU475240_2_0m			0.05	1.7%	1.44	48.1%
SAC SU475240_2_10m			0.03	0.9%	1.42	47.3%
SAC SU475240_2_20m			0.02	0.7%	1.41	47.0%
SAC SU475240_2_30m			0.02	0.5%	1.41	46.9%
SAC SU475240_2_40m			0.01	0.4%	1.40	46.8%
SAC SU475240_2_50m			0.01	0.4%	1.40	46.7%
SAC SU475240_2_60m			0.01	0.3%	1.40	46.7%

Ammonia – in-combination

5.3.84 Table 5-10 provides a summary of ammonia levels of the Project in combination with other developments. This includes in-combination process contribution and in-combination predicted environmental contribution. With the inclusion of other developments all modelled locations have a PC over 1% of the CLe. However, with a maximum PEC of 1.56ug/m3, all locations are below CLe and therefore no adverse impacts to habitats are likely. There will therefore be no adverse effect on the integrity of the River Itchen SAC as a result of ammonia in-combination with other developments.

Table 5-10 Ammonia from Project in-combination

Receptors	Site Name	Critical Level ug/m3	PC Project in-combination ug/m3	% of Critical Level	PEC Project in-combination ug/m3	% PEC/ Critical Level
SAC SU475240_1_0m	River Itchen	3	0.15	5.1%	1.54	51.4%
SAC SU475240_1_10m			0.11	3.8%	1.50	50.1%
SAC SU475240_1_20m			0.14	4.7%	1.53	51.1%
SAC SU475240_1_40m			0.10	3.2%	1.49	49.5%
SAC SU475240_1_50m			0.06	2.0%	1.45	48.3%
SAC SU475240_1_60m			0.04	1.5%	1.43	47.8%
SAC SU475240_1_70m			0.04	1.2%	1.43	47.5%
SAC UK0012599_1_0m			0.32	10.8%	1.45	48.4%
SAC UK0012599_1_10m			0.12	4.1%	1.25	41.7%
SAC UK0012599_1_20m			0.08	2.5%	1.21	40.2%
SAC UK0012599_1_30m			0.06	1.8%	1.19	39.5%
SAC UK0012599_1_40m			0.04	1.4%	1.17	39.1%
SAC UK0012599_1_50m			0.04	1.2%	1.17	38.8%
SAC UK0012599_1_60m			0.03	1.0%	1.16	38.7%
SAC UK0012599_1_70m			0.03	0.9%	1.16	38.5%
SAC UK0012599_1_80m			0.02	0.7%	1.15	38.4%
SAC UK0012599_1_90m			0.02	0.7%	1.15	38.3%
SAC UK0012599_1_100m			0.02	0.6%	1.15	38.3%

Receptors	Site Name	Critical Level ug/m3	PC Project in-combination ug/m3	% of Critical Level	PEC Project in-combination ug/m3	% PEC/ Critical Level
SAC UK0012599_1_110 m			0.02	0.5%	1.15	38.2%
SAC UK0012599_1_120 m			0.01	0.5%	1.14	38.1%
SAC UK0012599_1_130 m			0.01	0.4%	1.14	38.1%
SAC UK0012599_1_140 m			0.01	0.4%	1.14	38.1%
SAC SU475240_2_0m			0.17	5.8%	1.56	52.1%
SAC SU475240_2_10m			0.10	3.3%	1.49	49.7%
SAC SU475240_2_20m			0.07	2.5%	1.46	48.8%
SAC SU475240_2_30m			0.06	2.0%	1.45	48.4%
SAC SU475240_2_40m			0.05	1.8%	1.44	48.1%
SAC SU475240_2_50m			0.05	1.6%	1.44	47.9%
SAC SU475240_2_60m			0.04	1.4%	1.43	47.7%

5.3.85 The assessment in Table 5-10 has taken a conservative approach to the assessment of air quality impacts as a result of construction impacts to traffic on the M3, a major strategic trunk road. Guidance from the Joint Nature Conservation Committee (JNCC) [53] is that when undertaking a project level HRA to consider the effects of an individual development proposal on traffic related emissions on the existing road network, strategic 'trunk roads' should be excluded from the scope of the assessment. The trunk road network forms the core of the national transport system. Trunk roads are central to long distance travel and connectivity across the UK and traffic patterns on trunk roads are a consequence of predicted growth across the UK generally. The effects of development on traffic flows on trunk roads are more appropriately taken into account as part of national and regional strategic plan level HRAs.

For completeness, this assessment has considered the short-term temporary effects of increases in traffic on the affected road network as a result of the construction of the Project; however, this guidance supports the finding of negligible effects from the Project alone.

Construction dust (Impacts to all qualifying habitats and species)

5.3.86 The air quality assessment, ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6), includes an assessment of construction dust and fine particulate matter using a likely worst case scenario, whereby the maximum amount of anticipated construction works is assumed to be undertaken in proximity to the greatest number of ecological receptors. Three different construction activities are considered in this construction dust risk assessment: earthworks, construction and trackout (trackout is defined as the transport of dust and dirt from the construction site(s) onto the public road network).

5.3.87 The assessment of construction dust and fine particulate matter considered four areas in relation to the locations of the expected worst case construction works to ensure a reasonable worst case scenario is adopted for the assessment.

5.3.88 The assessment identifies a high risk of impacts as a result of dust as a result of trackout' where construction traffic joins the public road network. The air quality assessment identifies one high sensitivity receptor associated with trackout with potential impacts to the River Itchen SAC, at the temporary access from Highbridge Road (B3335) for construction compound L-10.

5.3.89 The assessment also identifies a medium risk for open-cut pipeline installation. However, there are no trenched open-cut works within 250m of the River Itchen and therefore no risk associated with construction approach. A low risk is identified for the WRP (not near the River Itchen SAC) and for AGP, of which there are none within 250m of the River Itchen SAC. Construction compounds are assessed as low risk (based on a worst case scenario of compounds E-1 and E2 where the most significant activity will occur). Compound L-10 is located at its closest point 167m from the River Itchen SAC and all of the compound is located within 250m of the SAC. Impacts from dust are therefore restricted to trackout associated with the temporary access to construction compound L-10 and works associated with construction compound L-10.

5.3.90 With implementation of standard mitigation measures, generation of airborne dust and particulate matter will be reduced, such that the overall effect of residual impacts can be considered to be 'not significant', in accordance with guidance provided by the IAQM [54]. Impacts to qualifying species and habitats as a result of construction dust are therefore likely to be minor and will be short-term and will not undermine conservation objectives or result in an adverse effect on integrity.

Invasive non-native species (impacts to all qualifying habitats and species)

5.3.91 There are 950 records of INNS within the Order Limits plus a 2km buffer consisting of 74 different plant species. There are 52 records of invasive plant species listed under Schedule 9 of the WCA, consisting of 23 different species and 14 listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019. A total of 11 species listed under Schedule 9 of the WCA fall within a grid square that intersects the Order Limits. Notable species included montbretia *Crocosmia* × *crocosmiiflora*, Japanese knotweed *Reynoutria japonica*, Himalayan balsam *Impatiens glandulifera*, wall cotoneaster *Cotoneaster horizontalis* agg., three cornered garlic *Allium triquetrum*, water fern *Azolla filiculoides*, Nuttall's waterweed *Elodea nuttallii*, New Zealand pigmyweed *Crassula helmsii* and parrot's feather *Myriophyllum aquaticum*.

5.3.92 Four INNS were found in the River Itchen field survey area during surveys in 2022 and 2023: Himalayan balsam, orange balsam *Impatiens capensis*, American skunk cabbage *Lysichiton americanus*, and monkey flower *Mimulus guttatus*. Two INNS were found in the Bow Lake field survey area; Himalayan balsam and orange balsam.

5.3.93 HBIC returned one record from 2020 of two American mink (*Mustela vison*) in Shawford, and records from 2014 of the invasive non-native signal crayfish immediately downstream of the road bridge at Kiln Lane. In addition, there are two further records of signal crayfish from 2011 and 2014, circa 2km downstream of the proposed watercourse crossings near the confluence with Bow Lake.

5.3.94 Construction activities associated with the Project are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential runoff) may lead to their spread. Trenched open-cut crossings of waterbodies which are hydrologically linked to the River Itchen SAC also have a potential to spread INNS which could flow downstream and into the River Itchen SAC either through disturbance of INNS during construction or from contaminated equipment and machinery. This includes trenched open-cut crossings OPT1_WCX_L_003, OPT1_WCX_M_009, OPT1_WCX_M_006, OPT1_WCX_M_004, OPT1_WCX_L_007 and OPT1_WCX_L_006. The crossing of the River Itchen will be via trenchless techniques and therefore would be highly unlikely to result in any release of INNS into the River Itchen SAC. Standard good practice biosecurity measures will be implemented during all construction works including enabling to minimise the risk of spreading INNS, in accordance with the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7).

5.3.95 Mitigation measures outlined in section 4 will ensure that the Project does not result in the spread of any INNS into the SAC or habitats which could support qualifying species. This will ensure the Project does not hinder any conservation objectives or result in any adverse effect on the integrity of the Habitats Site as a result of INNS. With mitigation there will be no impact as a

result of INNS during construction and therefore no potential for in-combination effects. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing, commissioning or operation.

Operational phase

Hydrological change and waterborne pollution (impacts to all qualifying habitats and species)

5.3.96 Once operational, the Project will reduce the requirements for water abstractions from the River Itchen. This reduction in abstractions will help maintain natural watercourse flow and contribute to the conservation objective of maintaining or restoring the structure and function of habitats and species [31]. Public water supply abstraction is identified as a significant factor in affecting the current condition of the SAC in the recent condition assessments outlined in section 5.2.

5.3.97 However, as outlined in the HRA Stage 1 report there is a risk of adverse effects due to accidental release of pollutants to surface water or groundwater during operational maintenance. There could also be spillage and accidents associated with the above-ground infrastructure of the Project.

5.3.98 Additionally, there is a risk of impacts to water quality during the operational use of washouts. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7). This will avoid the risk of adverse effects to downstream features and will therefore not hinder the conservation objectives for the SAC and will therefore avoid any adverse effects on the integrity of the SAC.

5.3.99 A Nutrient Assessment has been undertaken in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6) to assess the changes in nutrients as a result of the Project. This assessment calculated baseline Total Nitrogen (TN) load (kg/yr) and Total Phosphorus (TP) load (kg/yr) and changes to TN and TP during operation. Potential impacts to the River Itchen SAC are based on changes in the Otterbourne WSW waste stream and discharges to Chickenhall WTW. During operation TN from the Otterbourne WSW waste stream will reduce from the baseline value of 4,297kg/yr to 446kg/yr. During operation TP will reduce from the baseline value of 10.23kg/yr to 3.96kg/yr. These reductions are due to a reduction the concentrations in the waste stream at Otterbourne WSW during the operational phase. Due to a reduction in both TP and TN there will be no adverse effects on the integrity of the SAC as a result of changes in nutrients during operation.

5.3.100 The HRA Stage 1 assessment also screened in potential for operational LSE on Atlantic salmon as they may be impacted by discharges from the Eastney LSO as a result of the Project. This qualifying species may pass the Eastney LSO. Atlantic salmon are migratory between their adult phase in marine waters and swim upstream to spawn (anadromous) therefore they may pass

the Eastney LSO which is fully marine. Atlantic salmon are highly mobile, so they are likely to have a limited duration of exposure to any discharged compounds before they move away from the LSO to areas where the discharge is sufficiently diluted by the Solent to below thresholds of effect. Additionally, Atlantic salmon returning to spawning grounds from marine waters are known not to feed while transiting, reducing the risk that any bioaccumulating compounds from the LSO discharge are assimilated. Consequently, discharges from the LSO are not considered to result in a significant ecological effect to the species as a qualifying feature of the SAC.

5.3.101 Dispersion modelling of the discharge from Eastney LSO currently consented water quality parameters and salinity was undertaken in January 2024 (refer to ES Appendix 19.5 Eastney Long Sea Outfall Solent dispersion modelling, Volume II (Document reference 6.2, DCO Volume 6). The model outputs show that the differences in the currently consented water quality parameters and salinity are insignificant when the existing Budds Farm WTW discharge and the future discharge from Budds Farm WTW (once the WRP is in place and reject water is combined) are compared. Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO and changes would not extend into connected water bodies.

5.3.102 Further modelling of potential for chemical parameters to be within the WRP reject water release combined with the Budds Farm WTW discharge from Eastney LSO was also undertaken in July 2025. Following EA's guidance for surface water pollution risk assessment, three chemical parameters including copper, triphenyltin and diflubenzuron were screened in for modelling using the Cornell Mixing Zone Expert System (CORMIX). The outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to required dilution factors (RDF) for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality are not predicted. Given the negligible changes in concentrations between the existing and future scenarios in the seven parameters screened in for further assessment, there is not considered to be any LSE on water quality in the Solent. As such, there will be no risk of hindering the conservation objectives relevant to Atlantic salmon during operation of the Project and no adverse effect on integrity. No other developments have been identified which could result in significant in-combination effects on water quality within the vicinity of the Eastney LSO which could affect Atlantic Salmon and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species as a result of waterborne pollution in-combination with other plans and projects.

Invasive non-native species (impacts to all qualifying habitats and species)

5.3.103 The HRA Stage 1 Screening assessment identified potential for LSE as a result of INNS during operation from a number of potential sources. The transfer of recycled water from the WRP to Havant Thicket Reservoir will be highly treated by processes including micro-filtration, reverse osmosis and advanced oxidation at the WRP and therefore poses a negligible INNS risk. The transfer of water from Havant Thicket Reservoir to Otterbourne WSW is considered a source water transfer and therefore has the potential to introduce INNS to the SAC.

5.3.104 The use of Havant Thicket Reservoir and the Portsmouth Water Pipeline between Bedhampton Springs and Havant Thicket Reservoir creates a connection between the East Hampshire Rivers WFD surface water management catchment and the Test and Itchen WFD surface water management catchment; catchments which would be otherwise isolated from each other in the absence of the Project. This connection poses a new risk of INNS from outside the catchment being introduced or spread to the River Itchen should source water from Havant Thicket Reservoir be released. The INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7) identifies the release of untreated source water to the River Itchen as a potential new INNS pathway. This could occur through the process waste stream from Otterbourne WSW which is released to the sewer network around Chickenhall WTW. Overflows from the inlet balancing tank or washout from the inlet pipeline at Otterbourne WSW when operating in run to waste mode would also result in source water bypassing treatment and being discharged to the sewer.

5.3.105 The wastewater treatment process at Chickenhall WTW is unlikely to remove all INNS functional groups and the final effluent from the treatment process is discharged directly to the River Itchen. Storm tank overflows from Chickenhall WTW are also discharged to the River Itchen. Although the storm overflow will have some level of screening (inlet screens and Copa trawls), it is not sufficient to remove all INNS functional groups and therefore increases the risk of INNS from an outside catchment entering the River Itchen. The disposal of sludge waste from Chickenhall WSW which is currently sent to Budds Farm WTW also poses a potential new INNS pathway, due to the potential presence of INNS from the untreated source water being present in the sludge waste.

5.3.106 The INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7) sets out the measures to reduce INNS risk for the Project during operation and maintenance. A layered approach to INNS management has been applied, to ensure that there will be no operational discharge of source water into the natural environment (land or watercourse). The following measures are included in the design of the Project which will reduce the potential introduction or spread of INNS:

1. Ensuring treatment of raw water to full potable standards at Otterbourne WSW thus ensuring INNS are fully removed at the terminus of the raw water transfer.

2. Inclusion of INNS Treatment at Otterbourne WSW to treat the waste flows before they enter the sewer network. Once flows have passed through Otterbourne WSW, the waste stream will be subject to the following process to remove INNS: Lamella settlers to help settle the high solid loading from centrate, and two stages of filtering to remove any INNS or particles containing INNS. The first filtering process will use coarse 1mm Boll type pressure strainers and the second filtering process will use fine 25µm Boll type pressure strainers. Any liquid waste from the INNS Treatment at Otterbourne WSW will be considered INNS free and discharged to the existing foul sewer network at Chickenhall WTW. Any sludge waste from the Lamella settlers or from the washwater from Boll type strainers will be returned to the head of the works for reprocessing through the wastewater system at Otterbourne WSW. Any solid sludge arising from this process will be transferred to a suitable licensed disposal facility and any liquid waste arising from the wastewater treatment system will be sent back through the INNS Treatment plant at Otterbourne WSW.

5.3.107 The following measures are included as primary mitigation secured by the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7), thus removing all INNS risks to the receiving catchment during operation of the Project:

1. Inclusion of leak detection measures on the pipeline transfer, whether via flow and pressure monitoring or active acoustic monitoring. This will be designed to automatically shut the pipeline system down in the event a leak starts, therefore no long-term leakages of raw source water are likely to occur.

2. No operational discharge of source water into the natural environment (land or watercourse) during operation. This will be achieved firstly by the inclusion of minimum operation, which reduces the need for regular maintenance. On top of this, a capture and dispose process will be applied ensuring any releases of source water through the washout valves during testing, commissioning and routine maintenance will be collected directly by a tanker and disposed of in a suitably licensed disposal facility. This could require the installation of temporary pumping and flexible pipework to connect the tanker to the washout valve. Testing of a washout valve would result in the release of approximately 4.5m^3 of source water from the Pipelines, requiring only one tanker and would be required approximately once every six months, or in accordance with the relevant operating regime. There would be no discharges to surface or groundwater during operation and maintenance (see ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6)).

5.3.108 Washouts pose a risk of introducing or spreading INNS to the natural environment, between WFD waterbody catchments and potentially from otherwise isolated WFD management catchments. However, as outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP

(Document reference 7.7, DCO Volume 7) and therefore there will be no risk of spreading INNS.

5.3.109 No adverse effects on integrity are therefore likely as a result of operational release of INNS either alone or in-combination with other pans or projects.

Chichester and Langstone Harbours SPA and Ramsar

Construction phase

Habitat loss and fragmentation (impacts to all qualifying habitats and species)

5.3.110 The Pipelines between Budds Farm WTW and the WRP site crosses under the Chichester and Langstone Harbours SPA and Ramsar, and the WRP site is 180m north of the SPA and Ramsar at its closest point. There will be no direct or indirect loss of habitat within the Habitats Site. The trenchless construction commences 46m north east of the SPA and Ramsar at Budds Farm WTW and 220m north of the SPA and Ramsar in the WRP site. The trenchless crossing of Hermitage Stream where the pipeline crosses under the SPA and Ramsar is an embedded measure within the design of the Project; however, as the trenchless crossings represent mitigation measures, during the HRA Stage 1 Screening assessment direct habitat loss and fragmentation was identified as having an LSE and was brought forward into the Appropriate Assessment on a precautionary basis. With the inclusion of the trenchless crossing at a minimum depth of 2.5m below the lowest point of the Hermitage Stream there will be no direct loss of habitats within the SPA and Ramsar and no fragmentation of habitats within the SPA and Ramsar for breeding or non-breeding birds.

5.3.111 However, during the construction of trenchless crossings it is noted that there is a risk of a potential blow-out occurring under the Hermitage Stream. There are two trenchless crossings of Hermitage Stream, the Pipelines between Budds Farm WTW and the WRP which is located beneath the SPA and Ramsar, and the Pipelines between the WRP site and Bedhampton Springs which crosses beneath an upstream tributary of Hermitage Stream 800m north of the SPA and Ramsar boundary. A blow-out is where the pressure of a tunnel unintentionally causes it to push the soils or sediment towards the river or seabed and may potentially result in waters entering the tunnel causing a possible collapse due to sudden depressurisation. This could lead to pollutants and/or sediments travelling downstream into Langstone Harbour and result in temporary habitat degradation in the harbour for both breeding and non-breeding qualifying species through water quality degradation and/or smothering. The duration of the trenchless construction between the Budds Farm WTW and the WRP site is anticipated to be around seven weeks. The duration of the trenchless construction between the Mill Lane East and Mill Lane West is anticipated to be around eight weeks. Mitigation measures outlined in Section 4 will manage the risk of blow-out and any associated pollution risks. In the event of a blow-out occurring any impacts to habitats would be minor, localised and temporary (with a recovery period of days to weeks) due to the outlined mitigation measures and would therefore

not result in any long-term habitat loss or fragmentation and therefore not result in any adverse effects on the integrity of the Habitats Site.

5.3.112 Since the Stage 1 Screening was undertaken, a new SuDS outfall is proposed within the tidal section of Hermitage Stream, 297m upstream of the SPA and Ramsar site. An intertidal walkover survey was undertaken on 4 September 2024 covering the tidal section of the Hermitage Stream between the A27 Havant bypass and the Harts Farm Way bridge. This survey focussed on any notable habitats and species occurring at and adjacent to the proposed SuDS outfall location. The intertidal survey found that for this tidal section of the Hermitage Stream, habitats present were artificial hard structures and littoral mud. Revetment consisting of concrete blocks went from the upper to mid shore. The lower shore consisted of littoral mud habitat with some boulders and pebbles. An abundant species recorded was estuary wrack *Fucus ceranoides*, a common species in brackish water. Surface water runoff and litter were noted with presence of a rotten egg smell, indicating anaerobic decomposition of organic matter and presence of Hydrogen sulphide. There were no notable or protected species, or INNS observed from the field survey. The construction of the SuDS outfall will not result in significant loss of key supporting habitat for qualifying breeding or non-breeding species. No direct impacts on the estuarine basin feature of the Ramsar site have been identified as the construction of the SuDS outfall will be upstream of the Ramsar site. The littoral mud identified along Hermitage Stream may be representative of qualifying Criterion 1 habitats, intertidal mudflats, outside of the Ramsar boundary, however, it is not mapped as priority mudflat habitat on the NE Priority Habitats Inventory [55]. As outlined in the mitigation in section 4, the design of the SuDS (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)) will avoid the existing transitional habitats at the foot of the artificial banks of Hermitage stream which would avoid any direct loss of qualifying habitats outside of the Ramsar site. Mitigation measures outlined in Section 4 would also manage the risk of indirect impacts to habitats within Hermitage stream and the downstream SPA and Ramsar site via pollution or sediment runoff during construction. These measures will also avoid the loss of littoral mud within functionally linked land which could be used for foraging by qualifying bird species. There will be minor impacts to the existing reinforced banks, however, due to the habitat impacted and small area of impact this is not anticipated to cause significant loss of supporting habitat.

5.3.113 Direct impacts to functionally linked land supporting non-breeding qualifying species outside of the SPA and Ramsar were identified in the Stage 1 Screening report as resulting in the potential for LSE. This is due to direct impact to SWBGS Sites. No suitable habitat for breeding common tern, Sandwich tern or little tern was identified within the Order Limits during breeding bird habitat suitability surveys. The closest identified area of functionally linked land outside of the SPA and Ramsar, as identified on the SWBGS is the WRP site itself (H08), part of which is classified as a low use site within the SWBGS (approximately 5ha). In addition, there are SWBGS sites within 15m of the WRP, across Harts Farm Way, classified as a core site (H07A), a secondary support area (H07B) and a low use site (H07C),

along with a candidate site adjacent to the WRP, along Hermitage Stream (H130) and a second candidate site across Hermitage Stream (H09). There is also a primary support area (H90) covering the southern part of Budds Farm WTW, and a candidate site (H29) immediately south of this.

5.3.114 Table 5-11 provides a summary of the SWBGS sites within the Order Limits. These sites are also shown spatially in ES Figure 8.1 Statutory designated sites within the Order Limits plus a 2km buffer, Volume III (Document reference 6.3, DCO Volume 6).

Table 5-11 Solent Waders and Brent Goose strategy sites within the Order Limits

Site code	Designation	Area (ha)	Description
H07A	Core Area	5.8	Partially within the Order Limits, lies above Section D: The WRP site to Portsdown Hill (Section D). Adjacent to the WRP. Associated with Chichester and Langstone Harbours SPA. Largely consists of modified grassland with broadleaved woodland and dense scrub present.
H90	Primary Support Area	3.9	Partially within the Order Limits. Partially within the footprint of Budds Farm WTW and Section C: pipelines between Budds Farm WTW and the WRP site (Section C). Associated with Chichester and Langstone Harbours SPA. Largely consists of non-operational settlement lagoons with other neutral grassland and mixed scrub present.
H07B	Secondary Support Area	3.6	Partially within the Order Limits, lies above Section C. Adjacent to the WRP site. Associated with Chichester and Langstone Harbours SPA. Largely consists of modified grassland with broadleaved woodland and dense scrub present.
H07C	Low Use Site	5.2	Mostly within the Order Limits, lies above Section C. Adjacent to the WRP site. Associated with Chichester and Langstone Harbours SPA. Largely consists of other neutral grassland and mixed woodland.
H08	Low Use Site	5.2	Within the Order Limits, within the footprint of the WRP site. Associated with Chichester and Langstone Harbours SPA. Largely consists of open mosaic habitats on previously developed land, with mixed scrub and broadleaved woodland.
H04C	Low Use Site	9.9	Partially within the Order Limits, lies above Section D. Associated with Chichester and Langstone Harbours SPA. Largely consists of modified grassland with small areas of broadleaved woodland.
H130	Candidate Site	2.7	Mostly within the Order limits, lies above Section C. Adjacent to the WRP site and Budds Farm WTW and within the construction footprint of the WRP SuDS Outfall. Associated with Chichester and Langstone Harbours SPA. Consists of littoral mud and estuary channel.

Site code	Designation	Area (ha)	Description
H03	Candidate Site	8.0	Partially within the Order Limits, lies above Section D. Associated with Chichester and Langstone Harbours SPA. Consists of modified grassland.
W03G	Candidate Site	23.2	Partially within the Order Limits. Partially within the footprint of the Pipeline between the WRP site and Otterbourne WSW, Section E: Portsdown Hill to Boarhunt (Section E). Associated with Portsmouth Harbours SPA. Largely consists of modified grassland with small areas of dense scrub and developed land.

5.3.115 In addition, a total of 180ha of SWBGS sites are located outside the Order Limits but within the ZoI (500m). These comprise 5.1ha of Core Area, 5.7ha of Primary Support Area, 23.7ha of Secondary Support Area, 19.5ha of Low Use Site and 40.5ha of Candidate Site.

5.3.116 Non-breeding bird surveys were completed from October to March inclusive in 2021/22, 2022/23 and 2023/24. These included the following: high tide and low tide Wetland Bird Surveys (WeBS) at Langstone Harbour, covering the intertidal habitat within 500 of the WRP site (six monthly surveys) and walkover surveys at a SWBGS Candidate site in Southwick Section E: Portsdown Hill to Boarhunt (Section E) (W03G; four monthly surveys) and at Section M: Brambridge to Otterbourne WSW (Section M) (four monthly surveys). Detailed survey results are provided within the Ornithology Technical Appendix ES Appendix 8.5 Ornithology CONFIDENTIAL, Volume II (Document reference 6.2, DCO Volume 6).

5.3.117 During high tide surveys, a total of 42 wetland bird species or subspecies were recorded within the study area, including 12 of the 16 qualifying species of Chichester and Langstone Harbours SPA and Ramsar. During low tide surveys, total of 46 wetland bird species or subspecies were recorded within the study area, including 15 of the 16 qualifying species of Chichester and Langstone Harbours SPA and Ramsar. Two species (herring gull and black-headed gull) were recorded in low numbers in Section E (in the footprint of SWBGS site W03G) and 28 species were recorded at Section M.

5.3.118 Table 5-12 summarises the SWBGS sites associated with Chichester and Langstone Harbours SPA which are within the Order Limits which will be subject to habitat loss. Paragraphs 5.3.120 to 5.3.124 provides further details including the mitigation strategy for the impacts to the SWBGS sites.

Table 5-12 Solent Waders and Brent Goose strategy sites within the Order Limits associated with Chichester and Langstone Harbours SPA which will be subject to habitat loss

Site code	Designation	Habitat Loss	Mitigation
H90	Primary Support Area	Temporary	Habitat reinstatement
H130	Candidate Site	Permanent at WRP SuDS outfall	Habitat creation
H08	Low Use Site	Permanent	Habitat creation

5.3.119 Direct habitat loss will occur during the construction of the WRP. More than 98% of SWBGS site H08, functionally linked habitat to Chichester and Langstone Harbours SPA and Ramsar, is located within the Order Limits at the WRP site. The site was categorised as low use due to eight records: six which pertain to brent geese and two for oystercatcher. The highest counts were for 69 brent geese and 15 oystercatcher in 2008. Vegetation removal will be required to facilitate the construction of the WRP site. This would result in the permanent loss of dense scrub and grassland which currently forms open mosaic habitat. Some of the SWBGS site covers the adjacent road network and an area of mature trees adjacent to the A27 slip road, which have never been suitable for wintering waders or brent geese. As a result, the area of functionally linked habitat that will be lost is approximately 4.6ha (rather than the total area of the SWBGS site, which is 5.2ha). Based on non-breeding bird surveys undertaken at H08 from October to March inclusive in 2021/22, 2022/23 and 2023/24, qualifying bird species did not regularly use this habitat. This could be due to the undulating nature of the site and a reduction in suitability of supporting vegetation for foraging and roosting by qualifying species. However, there will be permanent loss to the area of functionally linked habitat loss at H08.

5.3.120 Candidate site H130 is also partially located within the Order Limits at the WRP site with approximately 0.52 ha of the candidate site within the Order Limits. Site H130 comprises littoral mud within the tidal stretch of the Hermitage Stream. The footprint of the SuDS outfall for the WRP site is partially within the site boundary of H130. The footprint of the outfall will be within the existing artificial concrete banks and existing transitional habitats (including gravel bars and mudflats that are exposed during low tide) which could be used by foraging waders at the foot of the banks will be retained. There will however be permanent loss of a small area of concrete bank from the construction of the SuDS outfall.

5.3.121 SWBGS site H90 is located partially within the Order Limits, south of Budds Farm WTW. Temporary vegetation removal will be required within the north-western section of the site to facilitate the trenched open-cut construction to allow for connection of the Pipelines between Budds Farm WTW and the WRP site into Budds Farm WTW. Approximately 0.48ha of site H90 is within the Order Limits and the footprint of construction compound C-1 within site H90 which will be cleared is 0.21ha. At this location the dominant habitats are developed land, other neutral grassland and mixed scrub. Neutral grassland can provide feeding and roosting habitat for qualifying bird species, and

developed land can provide roosting opportunities. Both the open water habitat of the lagoon and the north-western lagoon wall was used as a regular feeding and roosting site by redshank, pintail, shoveler, teal and wigeon during non-breeding bird surveys undertaken from 2021/22 to 2023/24. The survey results are presented in ES Appendix 8.5 Ornithology CONFIDENTIAL, Volume II (Document reference 6.2, DCO Volume 6) and shown spatially in ES Figures 8.37 to 8.42, Volume III (Document reference 6.3, DCO Volume 6).

5.3.122 Based on the non-breeding bird survey data, the open water habitat of the lagoon and north-western lagoon wall is deemed as key supporting habitat for qualifying species. The neutral grassland habitat within the boundary of SWBGS site H90 was used infrequently by low numbers of qualifying species during non-breeding bird surveys completed from December 2021 to March 2022. No qualifying species were recorded using the neutral grassland habitat during non-breeding bird surveys from 2022/23 and 2023/24. Enabling and construction works at Budds Farm WTW are anticipated to take one year, which will result in the temporary loss of the neutral grassland habitat at SWBGS site H90 for one non-breeding bird period. Neutral grassland within the footprint of construction compound C-1 will be reinstated post construction and therefore, no long-term habitat loss anticipated. Mixed scrub does not provide suitable habitat for qualifying species of the SPA.

5.3.123 The direct impact to identified functional land outside of the SPA and Ramsar will result in a reduction in availability of feeding and roosting habitat used by qualifying species and assemblages. Unmitigated, this would affect the conservation objective of maintaining or restoring the extent, distribution and availability of suitable supporting habitat (either within or outside the site boundary) [33] and potentially have an adverse effect on the integrity of the site.

5.3.124 A specific mitigation strategy for the impacts to the SWBGS sites, namely the permanent loss of H08 at the WRP site and temporary losses at H90, H130 and W03G, has been developed. Details of this mitigation are set out in section 4. This mitigation strategy will ensure that there are no adverse impacts on qualifying birds and waterbird assemblages from permanent loss of functionally linked land as a result of the Project and therefore no adverse effects on the integrity of the site as a result of impacts to qualifying species both within the SPA and within functionally linked land outside of the SPA.

Disturbance (impacts to all qualifying species)

5.3.125 Due to the proximity of both the SPA and Ramsar site itself and functionally linked land (in the form of SWBGS sites) there is potential for both visual and aural stimuli during construction of the Project to disturb qualifying breeding and non-breeding birds. Potential disturbance of breeding and non-breeding qualifying bird species has been identified while feeding, roosting and commuting within the ZoI. No impacts from disturbance have been identified on suitable breeding habitat for qualifying tern species due to the distance between identified breeding sites and the Project.

5.3.126 Mitigation measures (as outlined in Section 4) include the requirement for a watching brief during construction works, including enabling works, for the WRP SuDS outfall and connection if works are undertaken during the non-breeding period. If sheet piling construction works are required within H130, these will be undertaken outside of the non-breeding period. This will ensure that disturbance of any qualifying bird species within this functionally linked land is avoided and therefore will not result in an adverse effect on the integrity of the Habitats Site. There are no identified other developments which could result in impacts to site H130 and therefore there are no adverse effects on integrity as a result of in-combination impacts.

5.3.127 Studies show a range of disturbance tolerance thresholds for the qualifying species of the SPA and Ramsar, ranging from 50m to 650m depending on the species, time of year (breeding or non-breeding), source of disturbance and frequency of disturbance [56, 57].

5.3.128 Construction activities likely to result in novel disturbance events include excessive vehicle revving, reversing alarms, power tools and loud, percussive noises (e.g., via concrete breaking, piling). Research on the effects of construction noise has focussed on birds and particularly on coastal or freshwater bird species and has shown that noise levels approaching 70 decibels A-weighted (dB (A)) at the receptor location result in the most profound responses from bird species (i.e., site abandonment), whereas general background construction noise below c.55dB (A) is not considered to result in disturbance [20] [58]. Irregular yet frequent loud noise exceeding 70dB (A) is the most likely to result in effects. Construction noise levels greater than or equal to 50dB (A) at the sensitive feature or 20dB (A) or more above baseline are considered to have potential to cause disturbance to qualifying species. During baseline noise monitoring undertaken by NE at Farlington Marshes Local Nature Reserve (LNR), overall average day-time background noise was 69.0 dB(A) [59]. Farlington Marshes LNR is approximately 930m west of the Project. Noise monitoring outcomes highlighted that baseline noise levels in Farlington Marshes LNR, which partially overlaps with Chichester and Langstone Harbour SPA were higher than other areas monitored in the Solent such as Lymington, Hythe and the River Itchen. It is therefore appropriate to assess when construction works are estimated to be 20dB (A) or more above baseline when considering potential disturbance to qualifying species.

5.3.129 The SPA and Ramsar site is located partially within the Order Limits (trenchless crossing under Hermitage Stream) with the next closest construction works being the trenchless crossing compound (compound C-1) at Budds Farm WTW which is located 15m from the SPA and Ramsar at its closest point. The WRP site is located 170m north of the SPA and Ramsar. There is therefore the potential for noise, vibration and visual disturbance of qualifying birds and assemblages within the SPA, Ramsar and SWBGS sites identified as functionally linked land within and adjacent to the Project construction footprint. This disturbance could result in a temporary reduction in the availability of functional habitat used for foraging, roosting and loafing both within and outside of the SPA and Ramsar. This would temporarily

impact the conservation objective to '*Reduce or restrict frequency, duration or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting or loafing birds so that they are not significantly disturbed'* [33].

5.3.130 A quantitative assessment of construction noise and vibration effects has been undertaken, based on estimates of reasonable worst case construction noise levels at the closest identified potentially sensitive features to the Project. Four acoustic receivers were deployed either within (ER4), along the northern boundary of (ER2 and ER3) or adjacent to (ER1) Chichester and Langstone Harbour SPA and Ramsar. The majority of estimated noise levels within the SPA during construction works at the WRP site were below 50 equivalent continuous sound pressure level (LAeq). However, at ER3, noise levels are estimated to be 50LAeq during pilling works and 51LAeq during pile caps and civil works. There is therefore potential for minor noise disturbance within the SPA during the WRP construction. During construction of the Pipelines between Budds Farm WTW and the WRP site, based on noise model outputs, construction noise levels at the south of Budds Farm WTW monitoring location adjacent to the SPA (ER1) are estimated to be greater than or equal to ≥ 50 equivalent continuous sound pressure level (LAeq) during compound construction (65LAeq, moderate disturbance), trenchless crossing pipe installation (69LAeq, moderate disturbance) and shaft construction (75LAeq, moderate to high disturbance). These construction works could therefore cause temporary noise disturbance of qualifying birds within the SPA and temporarily impact the conservation objective to '*Reduce or restrict frequency, duration or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting or loafing birds so that they are not significantly disturbed*' [33]. Specifically, during compound construction noise levels are anticipated to be above 55LAeq across approximately 91% of SWBGS site H90, 23% during trenchless crossing pipe installation, 58% during shaft construction and 37% during AGP construction. The highest noise levels will occur from the north-western corner of the SWBGS H90 site. Although the construction disturbance will be temporary, if completed during the non-breeding season (September to March inclusive) construction works will cause disturbance of a high tide roost site of qualifying species and therefore, mitigation is required to prevent adverse effects on site integrity. It is noted that noise levels within the boundary of Chichester and Langstone Harbour SPA and Ramsar site do not exceed 55LAeq during construction works.

5.3.131 Mitigation outlined within section 4 will minimise the risk of temporary disturbance of qualifying birds both within the SPA and within functionally linked land (SWBGS sites) to avoid any significant disturbance of qualifying birds and assemblages which could otherwise undermine the conservation objective to '*Reduce or restrict frequency, duration or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting or loafing birds so that they are not significantly disturbed*' [33]. These mitigation measures, together with the temporary nature of the impact, would ensure that the construction does not result in an adverse effect on the integrity of the Habitats Site. There are no other identified developments which could result in cumulative or in-combination increases in noise and vibration during the construction works

and therefore there are no adverse effects on integrity as a result of in-combination impacts.

5.3.132 The Stage 1 screening assessment identified potential LSE as a result of vibration during construction of the trenchless crossing beneath the Hermitage Stream resulting in the disturbance of sediments within the mudflat habitats which provide foraging habitats for qualifying birds of the SPA. The trenchless construction would be located at a minimum of 2.5m below the bed of the Hermitage Stream and the construction vibrations are not considered to result in any significant release of sediments from the mudflat habitats. Given the tidal nature of the Hermitage Stream above the trenchless section, the effect of any minor release of sediment as a result of construction vibration would be minimal and very short-term and would not result in any long-term loss or degradation of habitats which could support qualifying birds and would therefore not result in any adverse effect on the integrity of the Habitats site. There are no identified other developments which could result in sediment release into Hermitage Stream and therefore there are no adverse effects on integrity as a result of in-combination impacts.

5.3.133 The HRA for Havant Thicket Reservoir [60] identified a potential for disturbance of qualifying birds within SWBGS Sites H05a and H11 during proposed construction works at Bedhampton and Havant Springs Pumping Station. However, it was assessed that the noise levels generated would not result in disturbance. Construction activities would not be concurrent and would not result in increased noise levels which could result in disturbance of qualifying species within these sites. There are no identified other developments which could result in in-combination increases in noise and vibration during the construction works and therefore there are no adverse effects on integrity as a result of in-combination impacts.

Hydrological change (impacts to all qualifying species)

5.3.134 Impacts to surface water and groundwater are quantified in ES Appendix 19.3 Hydrogeological Impact Assessment, Volume II (Document reference 6.2, DCO Volume 6) and assessed in the ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6).

5.3.135 The Pipelines between Budds Farm WTW and the WRP site crosses under Hermitage Stream which flows into the SPA and Ramsar site. The WRP site is adjacent to the tidally influenced lower course of Hermitage Stream, which is constrained by artificial banks and other urban infrastructure. The Pipelines between Budds Farm WTW and the WRP site would be constructed under the seabed, ensuring no hydrological changes to surface water. The trenchless construction would require excavation of launch/reception shafts within the WRP site and Budds Farm WTW. These will penetrate the underlying secondary aquifers as well as the principal chalk aquifer. Excavations for shafts are likely to encounter groundwater and require groundwater control measures. Without appropriate control measures, this could impact groundwater-dependent receptors within the zone of influence, including indirect impacts on the surface water receptor (Hermitage Stream).

Any potential impact on the Langstone Harbour would be muted by its connectivity with the sea. The tidal prism (total volume of water that enters and leaves the harbour between mean high water and mean low water during a typical tidal cycle) of the Langstone Harbour is 50,400,000m^3 [61]. A highly conservative abstraction rate of 500 lit/sec equates to a volume of 22,356m^3 over one tide. This is less than 0.05% of the tidal prism, and as such it is considered that any change in baseflow as a result of construction dewatering will have a negligible impact on the Langstone Harbour.

5.3.136 The Pipelines between the WRP site and Bedhampton Springs comprises two sections of trenchless construction which crosses Bedhampton Stream, a Main River which drains directly into Hermitage Stream which flows into the SPA and Ramsar. The use of trenchless techniques would avoid direct disturbance of this watercourse. Part of this section of pipeline would be constructed above-ground to reduce excavation within the SPZ1 which protects groundwater within Bedhampton Springs. Trenchless construction for the Pipelines between the WRP site and Bedhampton Springs would require excavation of shafts. The proposed shafts would penetrate the underlying chalk aquifer and Secondary aquifers. The area around Bedhampton and Havant is particularly sensitive to impacts due to the karstic chalk in the area. The excavations for shafts are likely to encounter groundwater and require groundwater control measures. This could impact groundwater-dependent receptors within the zone of influence particularly the Bedhampton PS Springs and associated SPZ1/SPZ1c. These construction works may also indirectly impact the surface water receptor (the Hermitage Stream) if the water table is locally lowered. However, any potential groundwater quantity impacts on Langstone Harbour would be temporary and muted due to its connectivity with the sea, which will dominate, as described in section 5.3.135. The Pipeline between the WRP site and Otterbourne WSW would also require a shaft within the WRP site which is likely to directly interact with the underlying Secondary aquifer or indirectly impact the surface water receptor (the Hermitage stream). However, again, any potential groundwater quantity impacts on Langstone Harbour would be temporary and muted due to its connectivity with the sea.

5.3.137 Excavations on the WRP site below the water table will require temporary dewatering to maintain the water table below excavation. Any drawdown could have an impact on baseflow to the adjacent Hermitage Stream or Langstone Harbour, although the magnitude of this impact is likely to be negligible due to the Harbour's connectivity to the Solent and the impact will be temporary during the construction phase only.

5.3.138 The construction of the Pipelines between Budds Farm WTW and the WRP site is likely to be in the chalk aquifer and the proposed shafts may extend into the chalk, which may result in blocked preferential flow paths within the chalk aquifer. The Pipelines would comprise two relatively small diameter pipes therefore unlikely to completely block significant flow paths, resulting in a potential negligible reduction in groundwater flows. Flows within secondary superficial aquifers are driven by primary porosity (intragranular flows). Therefore, the introduction of the Pipeline would have negligible impact on

groundwater flows within the aquifer. The shafts may locally impact groundwater flow paths, although the probability of the presence of significant flow paths associated with the Bedhampton Springs are substantially lower due to the tunnelling being located outside the SPZ and main karst zone, however there may be some flow paths associated with baseflow to the Langstone Harbour. However, groundwater quantity impacts on the Langstone Harbour as a result of the shafts construction and impacts to flow paths are considered to be negligible, due to the scale of the Langstone Harbour and relatively small area of the shafts.

5.3.139 A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and the River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). The assessment of construction changes in nutrients includes a combined assessment of changes in nutrient loads from Eastney LSO; changes in compensation flows into Riders Lane Stream from Havant Thicket Reservoir; changes in nutrient loads from land use changes as a result of the Project; changes in water released from Otterbourne WSW waste stream; and water from commissioning washouts testing. The construction nutrient load was compared to the baseline nutrient load to identify the changes in nutrient loads as a result of the Project.

5.3.140 Under the construction scenario, no changes would occur to the final effluent discharge from Eastney LSO. Discharge load would match the baseline concentration of an averaged 6.39 mg/l. The TN load therefore matches the baseline Eastney LSO final effluent load of 278,207 kg/yr.

5.3.141 No changes would occur to the compensation flows into Riders Lane Stream from Havant Thicket Reservoir during the construction scenario. It was therefore assigned the baseline modelled maximum TN concentration of 13.47 mg/l according to the compensatory flows modelling (ES Appendix 19.6 Havant Thicket Reservoir Compensatory Flows water quality modelling, Volume II (Document reference 6.2, DCO Volume 6)). The volume was assumed to be the same as the baseline (1 Ml/d), producing the TN load of 4,920 kg/yr. TP was not calculated as the Riders Lane Stream lies within the Solent nutrient neutrality catchment, making it nitrogen-vulnerable.

5.3.142 Source water for the pressure testing for the Pipeline between Bedhampton Springs and Otterbourne WSW will be potable water from Otterbourne WSW and the full system testing will use treated wastewater from Budds Farm WTW or source water from Havant Thicket Reservoir.

5.3.143 Once the testing has been completed, the water would be disposed of at a licensed disposal facility located inside the Solent catchment (excluding the River Itchen catchment to avoid risks associated with the introduction of INNS, refer to Document reference 7.10, DCO Volume 7). The water from Otterbourne WSW, Budds Farm WTW and the WRP site will have originated from within the Solent catchment representing a circular process resulting in no changes to nutrient load.

5.3.144 Land use changes are prominent under the construction scenario owing to the impact of new development on surface runoff within the Project area. The land within the above-ground construction footprint of the Project would be taken out of its current agricultural use and would therefore no longer receive nutrient inputs such as fertiliser or animal waste for the duration of construction. Baseline land use nutrient load is calculated to be 3,784kg/yr TN and 13kg/yr TP reducing to 2,951kg/yr TN and 9.39kg/yr TP during construction. Due to the reductions in nutrient loads during construction, as a result of changes to land use, there will be no adverse effects on qualifying habitats or species as a result of changes in nutrient loads during construction.

5.3.145 Mitigation set out in section 4 would be implemented to manage groundwater quantity impacts and avoid any significant impacts. The predicted negligible impacts would not undermine any conservation objectives of the Habitats Site or result in an adverse effect on the integrity of the site. No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Waterborne pollution (impacts to all qualifying species)

5.3.146 Construction machinery at the proposed WRP site including the SuDS outfall has the potential for accidental release of pollutants on to the ground, where pollutants could migrate into underlying groundwater or Hermitage Stream. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter Chichester and Langstone Harbours SPA and Ramsar either directly or via Hermitage Stream and adversely affect its physical and chemical properties. The risk of blow-out during the trenchless crossing of the Hermitage Stream could also lead to pollutants or sediments travelling downstream into Langstone Harbour. Changes in water quality could result in habitat loss or degradation potentially impacting on food availability for qualifying birds and assemblages.

5.3.147 Information presented in ES Appendix 11.2 Geotechnical and geo-environmental reports, Volume II (Document reference 6.2, DCO Volume 6) indicates that the historical Harts Farm Way landfill within the WRP site was operational up until the 1980s. Surface water samples collected during the ground investigations, as discussed in ES Chapter 11, Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6) indicate that surface water features continue to be impacted by on and off-site historical ‘dilute and disperse’ landfills.

5.3.148 Any intrusive works within the WRP historical landfill site has the potential to mobilise contamination, create preferential flow paths, leading to an impact on groundwater quality. The assessment of effects on groundwater quality

associated with existing land contamination is presented in ES Chapter 11, Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6), ES Appendix 11.1 Response to Havant Borough Council Environmental Control Officer, Volume II (Document reference 6.2, DCO Volume 6) and ES Appendix 11.2 Geotechnical and geo-environmental reports, Volume II (Document reference 6.2, DCO Volume 6). As discussed in ES Appendix 11.2 Geotechnical and geo-environmental reports, Volume II (Document reference 6.2, DCO Volume 6), exceedances of metals, ammoniacal nitrogen, ammonia and PAH have been recorded within groundwater samples collected from within the landfill waste, superficial deposits and chalk bedrock.

5.3.149 The earthworks and piled foundations required to enable the construction of the WRP site have the potential to disturb pre-existing contamination which could migrate and be released into surface water via the following pathways:

1. Mobilisation and migration of soil contaminants or dissolved phase contaminants in groundwater by construction activities with subsequent release into surface waters.
2. Surface water runoff from contaminated Made Ground soils brought to the surface during construction.
3. Runoff from storage of potentially contaminated soils.
4. Migration of soil or groundwater contaminants into surface water drains during construction activities which then enter surface water.
5. Accidental spillage whilst handling, storing or treating contaminated water, fuel or other chemicals used during construction.
6. Alteration of the hydraulic regime of the local area as a result of the construction works.

5.3.150 Any migration and discharge of contamination into surface waters could lead to a reduction in surface water quality within the Hermitage Stream and within the downstream SPA and Ramsar which could result in habitat loss or degradation potentially impacting on food availability for qualifying birds and assemblages.

5.3.151 Construction of the WRP site would require excavation to create a level surface, due to technical and regulatory challenges with recovering material from landfill sites, it has been assumed that all landfill material required to be excavated to create a level surface will be removed from site for appropriate disposal. A piling mat would then be formed on the levelled site from which the foundations of the WRP site would be piled). Reinforced concrete slabs (cast in situ) would be laid onto the piled foundations. Piled foundations would be cast in situ to reduce the risk associated with landfill leachate, and continuous flight auger piles would be used to reduce the potential for the creation of contamination pathways. These are both recognised appropriate methodologies for sites such as this (see Outline Foundation Works Risk Assessment (Document reference 7.4, DCO Volume 7). for further details).

5.3.152 Construction of the piles at the WRP site and specifically injection of concrete (used for cast in situ piles), could result in concrete bleeding and migration via groundwater towards hydraulically connected receptors, including the SPA and Ramsar. This could result in contamination and degradation of habitats within the SPA and Ramsar and within functionally linked land outside of the SPA and Ramsar (such as within SWBGS site H130 within Hermitage Stream) potentially impacting on food availability for qualifying birds and assemblages. Any concrete escape would be localised. As the WRP is located within the site of a historic landfill and in a flood risk area, there is the potential that chemical or cement spill could transfer additional contaminants when entering the water environment if unmitigated. An assessment of the impact of piling has been undertaken in ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6). The magnitude of impact would be dependent on the piling method and permeability of the surrounding soils or rock together with measures implemented through the detailed FWRA. These measures are considered to reduce and mitigate the risks associated with any concrete escape. These construction works are likely to result in temporary, possibly discernible change, particularly in the chalk matrix, but this would not result in a material change in water quality due to their localised extent. A series of Outline FWRAs for below-ground structures, including piling works and shafts, have been undertaken and are included within the DCO application (Document reference 7.15, DCO Volume 7). With the implementation of mitigation outlined in section 4 the magnitude of impact on groundwater in Langstone Harbour is assessed to be negligible and temporary. These negligible and temporary impacts are highly unlikely to have any adverse impact on habitats used as a foraging resource for qualifying birds both within the SPA and Ramsar and within adjacent functionally linked land within Hermitage Stream.

5.3.153 With the implementation of mitigation measures outlined in section 4, including the undertaking of remediation works, the magnitude of construction impacts on water quality and the ecological habitats they support from contamination is considered to be negligible. The mitigation measures include the selection of piling and shaft/trenchless crossing construction methodology to protect controlled waters and ecologically sensitive sites, which includes the Habitats Sites, from hazards such as metals and ammonia.

5.3.154 With temporary negligible impacts on groundwater and surface water from contamination, the proposals would not result in the undermining of conservation objectives and therefore will not result in an adverse effect on the integrity of the Habitats Site. No other developments have been identified which could result in significant in-combination effects on groundwater and surface water and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects. During testing and commissioning of the pipeline, washout valves will be used to test the integrity of sections of pipeline. The water used during pressure testing and full system testing would be sourced to ensure that the risk of introduction of INNS is negligible. Water from pressure testing of the pipeline between the WRP site and Otterbourne WSW

would be retained in temporary lagoons and then collected in a tanker for de-chlorination and disposal at a suitably licenced facility. There would be no discharges to surface or groundwater and therefore no impact associated with testing and commissioning.

Airborne pollution (impacts to all qualifying species)

5.3.155 The screening assessment identified that construction dust may have LSE up to 250m from the Project (in accordance with IAQM, 2024 [17]). Therefore, there is potential for effects to occur within the SPA, including smothering qualifying habitats. This could result in habitat degradation potentially impacting on food availability for qualifying birds and assemblages. In addition, the potential effects of construction traffic (due to temporary traffic management measures and/or additional vehicles travelling to and from the construction) and NRMM emissions on air quality within 200m of the WRP or a road affected by changes in traffic may affect the SPA and Ramsar.

5.3.156 The supplementary advice on conservation objectives for the SPA includes an objective to '*maintain concentrations and deposition of air pollutants at below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System'* [33].

5.3.157 To assess the potential effects of airborne pollution during construction, traffic modelling and modelling of associated emissions from vehicles has been undertaken along the affected road network where this is within 200m of the Chichester and Langstone Harbours SPA and Ramsar site. For full details refer to ES Appendix 6.5 Construction road vehicle exhaust emissions assessment – ecological features transect results – nitrogen oxides, Volume II (Document reference 6.2, DCO Volume 6). Detailed results and methods are provided within ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6) and ES Appendix 6.5 Ecological Transect Results, Volume II (Document reference 6.2, DCO Volume 6). A summary of key findings relevant to Chichester and Langstone Harbours SPA and Ramsar are discussed in sections 5.3.158 to 5.3.170.

5.3.158 The database APIS provides CLo for air pollution for Habitats Sites which defines a level below which adverse impacts to a particular qualifying habitat or species (or the habitat which the species relies on) would not occur. The Air Quality Modelling undertaken for Chichester and Langstone Harbours SPA and Ramsar is based on the most sensitive qualifying species (terns) which have a CLo for nutrient nitrogen of 5-15kgN/ha/yr. All other qualifying birds have CLo of 10-20kgN/ha/yr. The Process Contribution of the Project alone is 0.01gN/ha/yr. This is less than 1% of the minimum CLo for the most sensitive species (<0.19% of minimum critical load). In-combination with other developments the process contribution increases to 0.2kgN/ha/yr, which is still well below 1% of minimum CLo (<0.43%). The increases in nitrogen deposition as a result of the Project alone and in-combination are therefore very minor.

5.3.159 In all modelled locations along the Chichester and Langstone Harbours SPA air quality transects, background nitrogen deposition is already in excess of

minimum CLo for qualifying birds (both for the more sensitive tern species and for other qualifying birds with higher minimum CLo), with a background of 11.04kgN/ha-year, which is 220.8% of the minimum CLo for the most sensitive species and 110.04% of minimum CLo for other qualifying birds. The PEC results in a maximum of 11.05kgN/ha-year, which is 220.99% of the minimum CLo for the most sensitive qualifying species and habitats. In-combination with other developments, this increases to a maximum of 11.06kgN/ha-year, which is 221.23% of the minimum CLo. The Project will therefore result in very minor temporary increases in nitrogen deposition in locations that are already in excess of minimum CLo, both alone and in-combination with other developments.

5.3.160 Marine systems are nitrogen-limited. As such, nitrogen inputs are more likely to affect marine systems than freshwater systems. However, consideration should also be given to the relative scale of nitrogen inputs from air into marine habitats compared to those from other sources. In most cases, nitrogen inputs from the atmosphere are likely to be miniscule compared to inputs from marine and riverine sources [51].

5.3.161 In addition, marine and intertidal systems will be subject to tidal flushing. The Solent has a high tidal range and the regular inundation is considered to have a much greater influence on botanical composition than atmospheric nitrogen inputs and remove a large proportion of any nitrogen that does deposit from atmosphere, thus preventing it from accumulating to the same extent as in terrestrial habitats [51].

5.3.162 Overall, based on the very minor increases over a short duration within areas where background deposition is already in excess of CLo, together with the effect of tidal flushing removing nitrogen deposited from the atmosphere and the minor contribution of atmospheric nitrogen inputs compared to marine and riverine sources, the Project will not undermine the conservation objective of maintaining deposition of air pollutants to at or below the site-relevant CLo and will not have an adverse effect on the integrity of the site as a result of nitrogen deposition.

5.3.163 The APIS website [62] identifies that the qualifying species of the SPA are not sensitive to atmospheric nitrogen or ammonia and there are therefore no relevant CLe and no impacts associated with atmospheric nitrogen or ammonia.

5.3.164 The APIS website [62] identifies that all the criterion 1 qualifying habitats of the Ramsar site[7] are sensitive to atmospheric nitrogen with a CLe of 30 ug/m^3. The air quality modelling identifies that the Project alone will contribute a maximum of 0.029 ug/m^3 at the closest modelled point within the Ramsar site, which together with predicted 2028 background levels of 17.75 ug/m3 is well below the CLe. The Project contributions alone are 0.1% of the CLe and therefore also well below 1% of the CLe. In combination with other projects the process contribution rises to a maximum of 0.07 ug/m3 (0.2% of CLe) which together with background levels is 17.81 ug/m3 and therefore

[7] Based on corresponding Solent Maritime SAC habitats

remaining well below the CLe. Due to the short-term nature of the Project's contribution together with the very low levels, no adverse effects are likely either alone or in combination with other development.

5.3.165 The APIS website identifies that qualifying habitats of the Ramsar site are sensitive to atmospheric ammonia and a CLe is set at 1 or 3µg/m³ for all qualifying habitats. The CLe of 1 is set for highly sensitive lower plant species such as lichens and bryophytes. For higher plants the threshold is set at 3. For the majority of habitats, the higher level of 3 is considered most appropriate. The air quality modelling is based on the lower level and therefore represents the worst case. Atmospheric ammonia as a result of the Project is 0.001µg/m³ at the closest modelled point within the Ramsar site, which is 0.1% of the minimum CLe. Together with background levels, the level is 0.811µg/m³ which is 81.1% of the minimum CLe. In combination with other development, the contribution raises to 0.813µg/m³, which is 81.3% of the minimum CLe. Due to the short-term nature of the Project's contribution together with the very low levels, no adverse effects are likely either alone or in combination with other development as a result of atmospheric ammonia.

5.3.166 Qualifying species are sensitive to acid deposition with the most stringent CLo for acid deposition set at 1.071 keq/ha/yr. The only habitat listed on APIS as sensitive to acid deposition is Fixed coastal dunes, which are not present within the area affected by the Project. The Project alone will result in 0.001 keq/ha/yr which is well below the 1% of CLo threshold (0.06%). Together with background deposition this increases to 0.86 keq/ha/yr which is 79.96% of the minimum CLo. In-combination with other developments this increases slightly to 80.04% of minimum CLo. Therefore, acid deposition both alone and in-combination remain below the minimum CLo, will have no adverse impacts and will not result in an adverse effect on integrity.

5.3.167 The air quality assessment, ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6), includes an assessment of construction dust and fine particulate matter using a likely worst case scenario, whereby the maximum amount of anticipated construction works is assumed to be undertaken in proximity to the greatest number of ecological receptors. A risk assessment was undertaken based on this likely worst case scenario, the results of which are shown in Table 5-1.

5.3.168 The WRP site is located within 200m of the Chichester and Langstone Harbours SPA and Ramsar. The dust risk assessment has identified a low risk for ecological receptors during earthworks and construction activities at the WRP Site. No impacts resulting from trackout from the WRP Site are anticipated as access points are over 200m from the SPA and Ramsar. Therefore, unmitigated there are anticipated to be minor impacts to the SPA and Ramsar habitats as a result of dust. The standard mitigation measures outlined in section 4.1 will ensure that the potential adverse impacts associated with dust during construction are adequately mitigated to prevent any adverse effects on habitats within the SPA and Ramsar site and ensure that there will be no adverse effect on the integrity of the site.

5.3.169 The air quality assessment, ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6), also includes an assessment of Construction NRMM emissions. Intensive construction activities are expected associated with the construction of the WRP and tunnel launch shaft (tunnel between the WRP site and Portsdown Hill in Section D). It is assumed that as construction works for each activity would be undertaken in stages, the NRMM associated with each activity would not all be operational simultaneously. NRMM emissions associated with the construction of the WRP would be intermittent in nature and would only occur during working hours set out in the Outline CEMP (Document reference 7.1, DCO Volume 7) (up to a maximum of 70 hours per week). The air quality assessment takes into account:

1. The working hours to be employed and the duration of construction works
2. Existing air quality conditions in the area (based on Defra background pollutant concentration maps)
3. Prevailing meteorological conditions
4. The numbers and type of plant to be used
5. Distances from NRMM activity to the nearest receptors

5.3.170 Due to the distance of the SPA and Ramsar from the WRP site (approximately 170m south) and due to the prevailing south-west winds, emissions from NRMM would be dispersed away from the Habitats Site for the majority of the time. It is noted that there is the possibility that emissions could be dispersed towards the Habitats Site under conditions when the wind has a northerly component (i.e. not from the prevailing direction). Whilst this may occur, winds with a northerly component are not the most predominant or most common wind direction. At times of low wind dispersal, the mitigation outlined in section 4.1, together with the short-term nature of any minor effects, would avoid any impacts which could degrade habitats and impact on foraging habitats for qualifying birds and therefore this will not undermine conservation objectives or result in an adverse effect on the integrity of the site.

Invasive non-native species (impacts to all qualifying species)

5.3.171 Construction activities associated with the Project are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential runoff) may lead to the spread of INNS. No INNS have been recorded within the site of the WRP. However, the use of plant and equipment could transfer INNS within and between catchments. Although the potential for INNS to reach and establish in the SPA and Ramsar site is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent where the SPA and Ramsar resides.

5.3.172 Mitigation measures outlined in section 4 and in accordance with the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7), will ensure that the construction works including enabling do not result in the spread of any INNS into the SPA and Ramsar or into functionally linked habitats which could support qualifying species, this will ensure construction works do not result in any adverse effect on the integrity of the Habitats Site as a result of INNS. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing, commissioning or operation. With mitigation there will be no impact as a result of INNS during construction and therefore no potential for in-combination effects.

Operational phase

Hydrological change, waterborne pollution and INNS (impacts to all qualifying species)

5.3.173 Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be spillage and accidents associated with the above-ground infrastructure of the Project. This in turn could degrade habitats within the SPA and Ramsar and within functionally linked land within Hermitage Stream and therefore impact foraging habitats for qualifying species.

5.3.174 Operational mitigation measures will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents. This will ensure that during operation there will be no adverse effects on the integrity of the Habitats Site as a result of pollution incidents during planned and unplanned maintenance activities.

5.3.175 Additionally, there is a risk of hydrological change, waterborne pollution and introduction of INNS through the use of washouts for routine maintenance and testing during operation. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the Operational Environmental Management Plan (Document reference 7.7, DCO Volume 7). This will avoid the risk of adverse effects to downstream features and ensure that there is no adverse impact on the SPA and Ramsar and therefore avoid any adverse effects on the integrity of the SPA and Ramsar as a result of hydrological change, waterborne pollution and INNS during the operational use of washouts.

Impacts associated with discharges into and from Havant Thicket Reservoir

5.3.176 During the operational phase of the Project, recycled water from the WRP would be transferred into Havant Thicket Reservoir for storage. There is therefore a potential for the Project to result in water quality changes within the reservoir. Havant Thicket Reservoir is located a significant distance from the SPA and Ramsar and does not provide functionally linked land to the SPA

and Ramsar. However, changes in water quality are considered due to the potential for these to be discharged into the SPA and Ramsar itself or functionally linked land within Hermitage Stream (SWBGS H130) as a result of compensatory flows which flow from the reservoir into Riders Lane Stream, which flows into Hermitage Stream, which flows into Langstone Harbour. Changes in water quality could degrade habitats used by qualifying species including impacting on foraging habitat quality.

5.3.177 The results of the water quality modelling for Havant Thicket Reservoir presented in ES Appendix 19.11 Havant Thicket Reservoir water quality modelling, Volume II (Document reference 6.2, DCO Volume 6) indicate that a negligible change is predicted to occur in the Havant Thicket Reservoir between the 'classic' phase (i.e., the period of reservoir operation prior to introduction of recycled water from the WRP) and 'post-WRP' phase (i.e., the period of reservoir operation following introduction of recycled water from the WRP).

5.3.178 Within the reservoir, alkalinity and dissolved inorganic carbon (DIC) are predicted to increase very slightly from 212.2 mg/l to 212.9 mg/l, and from 51.6 mg/l to 51.8 mg/l between the 'classic' and 'post-WRP' operation phases respectively. Conversely, the modelling predicts small reductions in pH (from 8.28 to 8.13), dissolved organic carbon (DOC) (from 1.860 mg/l to 1.173 mg/l) and nitrate concentrations (from 4.8 mg/l to 4.1 mg/l). Annual mean concentrations of total phosphorus and mean dissolved oxygen (DO) are predicted to reduce from 0.029 mg/l to 0.028 mg/l and 11.01 mg/l to 9.71 mg/l between the 'classic' and 'post-WRP' operation phases, respectively.

5.3.179 The Havant Thicket Reservoir water quality modelling exercise included a prediction of the water quality profile of compensatory flows. This was used to define the input parameters for further downstream dispersion modelling to investigate the mixing and dispersion of compensatory flows into downstream waterbodies (Riders Lane Stream and Hermitage Stream) and into Langstone Harbour [63]. The results of the water quality modelling exercise are present in detail in ES Appendix 16.9 Havant Thicket Reservoir Compensatory Flows water quality modelling, Volume II (Document reference, DCO Volume 6) and summarised in ES Chapter 19 Water environment, Volume I (Document reference 6.1, DCO Volume 6).

5.3.180 The compensation flows modelling shows that concentrations of parameters in Hermitage Stream are predicted to be subject to changes over the current baseline as a result of Havant Thicket Reservoir being operational. Once the reservoir is operational (i.e. during the 'classic' phase), the compensatory flows are predicted to result in an increase in median ammonia (+80%), DOC (+31%) and DIC (+233%) in Hermitage Stream. Conversely, pH (-2%), BOD (-20%) and orthophosphate (-7%) are all predicted to decrease, whilst DO, nitrate and alkalinity would remain unchanged.

5.3.181 The introduction of recycled water from the WRP into the reservoir (i.e. during the 'post-WRP' phase) compared with the 'classic' phase, is predicted to result in a decrease in median orthophosphate (-8%) and DOC (-5%) in

Hermitage Stream. All other parameters would remain at very similar concentrations to those predicted in the 'classic' phase. This means that the introduction of recycled water from the WRP is not predicted to result in any significant changes in water quality in Hermitage Stream.

5.3.182 An additional operational scenario was tested to represent circumstances in which the 'classic' phase does not occur, for example due to an extended construction period for Havant Thicket Reservoir, with initial reservoir filling achieved through a combination of spring water and recycled water inputs. This scenario is referred to as the 'alternative reservoir fill' scenario. To determine whether this scenario is likely to result in any change to compensatory flow water quality, predictions were compared for a corresponding time period between the 'alternative reservoir fill' scenario and the 'post-WRP' phase of the original operational scenario. The differences in predicted concentrations for all water quality parameters were very small, well within the range of observed and predicted concentrations, and smaller than the minor differences identified between the 'classic' and 'post-WRP' phases described above. Consequently, compensatory flows released under the 'alternative reservoir fill' scenario are not predicted to result in any substantial changes to water quality in Hermitage Stream when compared with either the current baseline or the original operational scenario.

5.3.183 The modelling also predicted that there would be very little change in Langstone Harbour between the 'classic' and 'post-WRP' phases, with the majority of modelled parameters remaining unchanged between the two phases. A very small decrease in nitrate (from 2.27mg/l under the 'classic' scenario to 2.23mg/l under the 'post-WRP' scenario) was predicted in the northern end of the harbour, close to the outlet from Hermitage Stream. This represents a small and spatially-constrained improvement in water quality under the 'post-WRP' phase. No changes to water quality were predicted in the lower harbour or in Chichester Harbour or The Solent.

5.3.184 Overall, the extent of the water quality changes in the Hermitage Stream and Langstone Harbour are expected to be extremely minor and are not considered to result in effects on freshwater or marine and estuarine biodiversity receptors. Modelled changes do not extend into the Solent, which could be used by qualifying birds, therefore no impacts to marine biodiversity in the Solent is anticipated.

5.3.185 Water quality objectives within the supplementary information on Conservation Objectives for Chichester and Langstone Harbours SPA and Ramsar include: Nutrients - "Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features."; and, Dissolved Oxygen - "Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7mgL-1 (at 35 salinity) for 95% of year) avoiding deterioration from existing levels" [33]. The modelling predicted a small decrease in nitrates between the 'classic' and 'post WRP' phases (Hermitage Stream decreases from 3.9mg/l to 3.8mg/l and Langstone Harbour

decreases from 2.27mg/l to 2.23mg/l) and the modelling predicts no change in DO between 'classic' and ''post WRP' phases. The Project will therefore not result in any impacts to these conservation objectives and will not result in an adverse effect on the integrity of the SPA and Ramsar sites and their qualifying habitats and species.

5.3.186 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Impacts associated with release of reject water at Eastney LSO

5.3.187 The release point of reject water at Eastney LSO is approximately 6km from the SPA and Ramsar and therefore it is within the 10km marine ecology hydrological connectivity ZoI. This distance is considered to cover the maximum dispersion potential of any deleterious substances that may enter the water. Changes in water quality around the LSO could also affect foraging habitat outside of the SPA which support key prey items for qualifying species, such as sand eel *Ammodytes* (a key prey for terns), resulting in an adverse effect on qualifying species. Dispersion modelling of the discharge from Eastney LSO on currently consented water quality parameters and salinity was undertaken to predict the calculated difference (change) in water quality parameters between the existing Budds Farm WTW flow and the future single phase peak output of recycled water scenario and inform the assessment of potential impacts on marine ecology and any significant risk of hindering the conservation objectives stated for the SPA (refer to section 3.6 of ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6) for the maximum flows and output of the Project). At other times, flows through the WRP are likely to be lower and wastewater discharge higher, thus bringing the effect of the 'future' scenario release closer to the 'existing' scenario release. To determine the potential effect on the existing release associated with removal of wastewater for recycling and addition of the reject stream from the WRP, mass balance calculations were undertaken and the output modelled. The full report is presented in the ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6).

5.3.188 The model outputs show that the differences in the water quality parameters are very small when the existing Budds Farm WTW discharge and the future discharge from Budds Farm (once the WRP is in place) are compared. Where a comparison to baseline data in the receiving waters can be made, predicted parameter changes are within baseline variations experienced within the receiving water. Where baseline receiving water data is not available, such as for the parameter Chemical Oxygen Demand (COD) for example, comparison of the predicted change against wastewater variability demonstrates the changes are minor: salinity changes in the region of 0.01–0.05PSU considered to be within baseline variation; decreases in total

nitrogen in the region of 0.001–0.006mg/l; decreases in iron in the region of 0.012–0.05µg/l; increase in suspended solids in the region of 0.0008–0.002mg/l; increase in BOD in a region of 0.0005–0.0012mg/l; decrease in COD in a region of 0.005–0.015mg/l; with the larger changes modelled to be in close proximity to the LSO, and only the lower end of the concentrations would interact directly with Chichester and Langstone Harbours SPA and Ramsar, if at all (see dispersal model figures in ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6). The minor changes are likely to be outweighed by baseline variations experienced within the Solent, whilst the marine environment within which the LSO discharges is well mixed. The modelling demonstrates that the hydrological changes to the existing Eastney LSO discharge with the WRP in place are very minor and therefore the WRP operation is not expected to impact habitats within Chichester and Langstone Harbours SPA and Ramsar or impact habitats used by qualifying birds outside of the SPA such as supporting foraging habitats and key prey items such as sand eel. The WRP operation is therefore not expected to hinder the conservation objectives stated for the SPA and Ramsar site and therefore will not result in an adverse effect on the integrity of Chichester and Langstone Harbours SPA and Ramsar.

5.3.189 In addition to the dispersion modelling, the surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to RDF for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality at Chichester and Langstone Harbours SPA and Ramsar are not predicted.

5.3.190 No new INNS pathways have been identified as a result of the release of reject water at Eastney LSO.

5.3.191 Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO. Therefore, the release of reject water would not impact qualifying habitats supporting qualifying birds within Chichester and Langstone Harbours SPA and Ramsar or functional habitat outside of the SPA and Ramsar within Hermitage Stream. The Project would therefore not result in any hindering of conservation objectives for the Habitats Site or result in an adverse effect on the integrity of the site.

5.3.192 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Nutrient neutrality

5.3.193 A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and the River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). The assessment of operational changes in nutrients includes a combined assessment of: changes in nutrient loads from Eastney LSO; changes in compensation flows into Riders Lane Stream from Havant Thicket Reservoir; changes in nutrient loads from land use changes as a result of the Project; changes in water released from Otterbourne WSW waste stream; and water from operational washout testing which will be collected in tankers and sent to a suitably licenced disposal facility. The operational nutrient load was compared to the baseline nutrient load to identify the changes in nutrient loads as a result of the Project.

5.3.194 The baseline nutrient load constitutes of 291,208 kg/yr of TN and 23.23 kg/yr of TP. More than 96% of the baseline nitrogen load is sourced from the Eastney LSO final effluent outputs (Table 5-13).

Table 5-13 Total baseline nutrient load (kg/yr)

Nutrient source	TN load (kg/yr)	TP (kg/yr)
Eastney LSO final effluent	278,207	N/A[8]
Otterbourne WSW waste stream	4,297	10.23
Havant Thicket Reservoir compensation flows	4,920	N/A
Land use	3,784	13
Total	**291,208**	**23.23**

5.3.195 Total nutrient load in the operational phase is presented in Table 5-14. The operational load constitutes 282,466 kg/yr of TN and 16.96 kg/yr of TP. This equates to a reduction in TN during operation of 8,742 kg/yr which is primarily as a result of the reduction in final effluent discharge from Eastney pumping station due to the WRP. This reduction in TN will contribute towards the conservation objective of *Water Quality – Nutrients. Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features* [33].

[8] TP was not calculated as Havant Thicket Reservoir and the LSO are situated in the Solent Nutrient neutrality catchment, which is nitrogen-vulnerable.

5.3.196 The nutrient calculations also identified a decrease in TP of 6.26 kg/yr during operation. Marine systems are nitrogen-limited and the estuarine habitats within the Solent are vulnerable to Nitrogen and not Phosphorus. The small reduction in TP would therefore not have any effect on Chichester and Langstone Harbour SPA and Ramsar site.

Table 5-14 Total nutrient load for the operation scenario

Nutrient source	TN load (kg/yr)	TP load (kg/yr)
Eastney LSO final effluent	275,800	N/A
Otterbourne WSW waste stream	446	3.96
Havant Thicket Reservoir compensation flows	2,488	N/A
Washouts	2	N/A
Land use	3,730	13
Total	**282,466**	**16.96**

Impacts associated with proposed WRP SuDS

5.3.197 The SuDS design will include control measures suitable for the pollution hazard index (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)). As such, no further consideration is therefore required, in terms of dispersion modelling, to assess the potential release of pollutants from the SuDS outfall. Implementation of the SuDS outfall does however have the potential to reduce salinity within the Hermitage Stream. The SuDS will be designed to capture rainfall that already falls on the site, but the development at the WRP site would result in an increase in impermeable area and would concentrate surface water flows to a single point release. The proposed SuDS release would be at a lower salinity than that in the receiving brackish water in the Hermitage Stream given that it would largely be made up of rainfall.

5.3.198 Water quality modelling has been undertaken to assess the potential water quality effects of the proposed discharge of treated surface runoff from the WRP SuDS outfall into the Hermitage Stream due to the potential for changes in salinity within Hermitage Stream. Full details of the SuDS modelling in relation to the marine environment and designated sites are within ES Chapter 9 Marine biodiversity, Volume I (Document reference 6.1, DCO Volume 6). The SuDS design (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)) includes a dedicated surface water collection system which would discharge to the Hermitage Stream via a new outfall (297m upstream of the SPA). The modelling indicates that these releases would result in highly localised minor changes in salinity (typically less than 1 Practical Salinity Unit (PSU)) in Hermitage Stream close to the outfall and would not extend further into Langstone Harbour or into Chichester Harbour. The change in salinity due to the SuDS outfall discharge, when compared with the natural fluctuations in ambient salinity levels throughout the tidal cycle, is considered minor. Changes in salinity within Chichester and Langstone Harbours SPA and

Ramsar site are therefore not anticipated and changes within functionally linked land which is used by qualifying birds within Hermitage Stream will be very minor and would not degrade habitats and impact foraging habitat of qualifying species outside of the SPA and Ramsar. Adverse effects to water quality and on biodiversity in the tidal reach of the Hermitage Stream and Chichester and Langstone Harbours are therefore not anticipated from discharges from the SuDS outfall and there will be no impacts to conservation objectives of the Habitats Sites and no adverse effect on integrity.

5.3.199 The new SuDS outfall releasing water from the WRP site into the tidal section of Hermitage Stream creates a new pathway for INNS to enter tidal water and therefore enter the Habitats Site. Mitigation measures as set out in section 4 include measures for avoiding the introduction of INNS, as set out in the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7). The mitigation measures will minimise the risk of INNS entering Hermitage Stream during the operation of the SuDS outfall and therefore impacts on habitat used by qualifying species are highly unlikely and there will be no adverse effect on integrity as a result of INNS during operation. No other developments have been identified which could result in significant in-combination effects on water quality or INNS and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Solent Maritime SAC

Construction phase

Habitat loss and fragmentation (impacts to all qualifying habitats and species)

5.3.200 The Pipeline between Budds Farm WTW and the WRP crosses under the Solent Maritime SAC, and the WRP is 180m north of the site at its closest point. The trenchless construction commences 46m north-east of the SAC at Budds Farm WTW and 220m north of the SAC in the WRP site. With the inclusion of the trenchless construction methods including the trenchless section beneath the Hermitage Stream, there will be no direct or indirect loss of habitats within the SAC. There will also be no loss of qualifying habitats outside of the SAC. There will therefore be no adverse effect on integrity as a result of habitat loss or fragmentation.

5.3.201 However, during the construction of the trenchless crossings it is noted that there is a risk of a potential blow-out (see Section 5.3.88) occurring under the Hermitage Stream. There are two trenchless crossings of Hermitage Stream, the Pipelines between Budds Farm WTW and WRP which is located beneath the SAC, and the Pipelines between the WRP and Bedhampton Springs which crosses beneath an upstream tributary of Hermitage Stream 800m north of the SAC boundary. The duration of the trenchless construction between the WRP and Budds Farm WTW is anticipated to be around seven weeks. The duration of the trenchless construction between the Mill Lane East and Mill Lane West is anticipated to be around eight weeks. Mitigation measures outlined in section 4 will manage the risk of blow-out and any associated pollution risks. In the event of a blow-out occurring any impacts to

habitats would be minor, localised and temporary in nature (with a recovery period of days to weeks) and would therefore not result in any long-term habitat loss or fragmentation and therefore not result in any adverse effects on the integrity of the Habitats Site.

5.3.202 Since the Stage 1 Screening was undertaken, a new SuDS outfall is proposed within the tidal section of Hermitage Stream, 297m upstream of the SAC. An intertidal walkover survey was undertaken on 4 September 2024 covering the tidal section of the Hermitage Stream between the A27 Havant bypass and the Harts Farm Way bridge. This survey focussed on any notable habitats and species occurring at and adjacent to the proposed SuDS outfall location. The intertidal survey found that for this tidal section of the Hermitage Stream, habitats present were artificial hard structures and littoral mud. Revetment consisting of concrete blocks went from the upper to mid shore. The lower shore consisted of littoral mud habitat with some boulders and pebbles. An abundant species recorded was estuary wrack, a common species in brackish water. Surface water runoff and litter were noted with presence of a rotten egg smell, indicating anaerobic decomposition of organic matter and presence of hydrogen sulphide. There was no notable or protected species, or INNS observed from the field survey. The littoral mud may be representative of qualifying habitats outside of the SAC boundary under mudflats and sandflats not covered by seawater at low tide, however, it is not mapped as priority mudflat habitat on the NE Priority Habitats Inventory [55]. As outlined in the mitigation in section 4, the design of the SuDS (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)), will avoid the existing transitional habitats at the foot of the artificial banks of Hermitage stream which would avoid any direct loss of qualifying habitats outside of the SAC. The construction of the SuDS outfall will not result in significant loss of key supporting habitat for qualifying species and mitigation measures outlined in Section 4 would manage the risk of pollution or sediment runoff during construction and avoid any impacts to the downstream SAC.

5.3.203 Seagrass extent (presented in the National Seagrass Layer (England) published by NE, updated on 21st August 2025) within Langstone Harbour were compared with seagrass extent mapped by the Project from the seagrass survey conducted in summer 2022 to check for any additional area of seagrass, particularly at the northern end of Langstone Harbour where the downstream of the Hermitage Stream converges with the harbour (as presented in ES Figure 9.3 Seagrass beds in Langstone Harbour, Volume III (Document reference 6.3, DCO Volume 6). There were no seagrass beds mapped along the northern part of Langstone Harbour or around Long Island or North Binness Island. Details of the location of identified seagrass beds are shown within ES Appendix 9.3 Intertidal seagrass survey report, Volume II (Document reference 6.2, DCO Volume 6). The closest area of seagrass is associated with records near Baker's Island in Langstone Harbour which is approximately 1.875km from the Order Limits (excluding the existing LSO pipe). There are no proposed construction works within or adjacent to any areas of seagrass habitat and there will be no direct loss of seagrass beds.

Disturbance (impacts to all qualifying habitats and species)

5.3.204 The Stage 1 screening assessment identified LSE as a result of vibration during construction of the trenchless crossing beneath the Hermitage Stream resulting in the disturbance of sediments within the qualifying mudflat habitats. The trenchless construction would be located at a minimum of 2.5m below the lowest point of the Hermitage Stream and the construction vibrations are not considered to result in any significant release of sediments from the mudflat habitats. As outlined in section 5.3.203, seagrass habitats which are sensitive to impacts from sediment are not located in close proximity to the trenchless crossing (closest location 1.875km from Order Limits). Given the tidal nature of the Hermitage Stream above the trenchless section, the effect of any minor release of sediment as a result of construction vibration during the trenchless construction would be minimal and very short-term and would not result in any long-term loss or degradation of qualifying habitats and would therefore not result in any adverse effect on the integrity of the Habitats site. There are no identified other developments which could result in sediment release into Hermitage Stream and therefore there are no adverse effects on integrity as a result of in-combination impacts.

Hydrological change (impacts to all qualifying habitats and species)

5.3.205 Impacts to surface water and groundwater are quantified in ES Appendix 19.3 Hydrogeological Impact Assessment, Volume II (Document reference 6.2, DCO Volume 6) and assessed in the ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6).

5.3.206 The Pipelines between Budds Farm WTW and the WRP site crosses under Hermitage Stream which flows into the SAC. The WRP site is adjacent to the tidally influenced lower course of Hermitage Stream, which is constrained by artificial banks and other urban infrastructure. The Pipeline would be constructed under the seabed, ensuring no hydrological changes to surface water. The trenchless construction would require excavation of launch/reception shafts within the WRP site and Budds Farm WTW. These will penetrate the underlying secondary aquifers as well as the principal chalk aquifer. Excavations for shafts are likely to encounter groundwater and require groundwater control measures. Without appropriate control measures, this could impact groundwater-dependent receptors within the zone of influence, including indirect impacts on the surface water receptor (Hermitage Stream). Any potential impact on the Langstone Harbour would be muted by its connectivity with the sea: The tidal prism (total volume of water that enters and leaves the harbour between mean high water and mean low water during a typical tidal cycle) of the Langstone Harbour is 50,400,000m^3 [61]. A highly conservative abstraction rate of 500 lit/sec equates to a volume of 22,356m^3 over one tide. This is less than 0.05% of the tidal prism, and as such it is considered that any change in baseflow as a result of construction dewatering will have a negligible impact on the Langstone Harbour.

5.3.207 The Pipelines between the WRP site and Bedhampton Springs comprises two sections of trenchless construction which crosses Bedhampton Stream, a Main River which drains directly into Hermitage Stream which flows into the SAC. The use of trenchless techniques would avoid direct disturbance of this watercourse. Part of this section of pipeline would be constructed above-ground to reduce excavation within the SPZ1 which protects groundwater within Bedhampton Springs. Trenchless construction for the Pipelines between the WRP site and Bedhampton Springs would require excavation of shafts. The proposed shafts would penetrate the underlying chalk aquifer and Secondary aquifers. The area around Bedhampton and Havant is particularly sensitive to impacts due to the karstic chalk in the area. The excavations for shafts are likely to encounter groundwater and require groundwater control measures. This could impact groundwater-dependent receptors within the zone of influence particularly the Bedhampton PS Springs and associated SPZ1/SPZ1c. These construction works may also indirectly impact the surface water receptor (the Hermitage Stream) if the water table is locally lowered. However, any potential groundwater quantity impacts on Langstone Harbour would be muted due to its connectivity with the sea, which will dominate. The tidal prism (total volume of water that enters and leaves the harbour between mean high water and mean low water during a typical tidal cycle) of the Langstone Harbour is 50,400,000m^3. A highly conservative abstraction rate of 500 lit/sec equates to a volume of 22,356m3 over one tide. This is less than 0.05% of the tidal prism, and as such it is considered that any change in baseflow as a result of construction dewatering will have a negligible impact on the Langstone Harbour. The pipeline between the WRP site and Otterbourne WSW would also require a shaft within the WRP site which is likely to directly interact with the underlying Secondary aquifer or indirectly impact the surface water receptor (the Hermitage stream). However, any potential groundwater quantity impacts on Langstone Harbour would similarly be muted due to its connectivity with the sea.

5.3.208 Excavations on the WRP site below the water table will require temporary dewatering to maintain the water table below excavation. Any drawdown could have an impact on baseflow to the adjacent Hermitage Stream or Langstone Harbour, although the magnitude of this impact is likely to be negligible due to the Harbour's connectivity to the Solent and the impact will be temporary during the construction phase only.

5.3.209 The construction of the Pipelines between Budds Farm WTW and the WRP site is likely to be in the chalk aquifer and the proposed shafts may extend into the chalk, which may result blocked preferential flow paths within the chalk aquifer. The Pipelines would comprise two relatively small diameter pipes therefore unlikely to completely block significant flow paths resulting in a potential negligible reduction in groundwater flows. Flows within secondary superficial aquifers are driven by primary porosity (intragranular flows). Therefore, the introduction of a pipeline would have negligible impact on groundwater flows within the aquifer. The shafts may locally impact groundwater flow paths, although the probability of the presence of significant flow paths associated with the Bedhampton Springs are substantially lower due to the tunnelling being located outside the SPZ and main karst zone,

however there may be some flow paths associated with baseflow to the Langstone Harbour. However, groundwater quantity impacts on the Langstone Harbour as a result of the shafts construction are considered to be negligible, due to the scale of the Langstone Harbour and relatively small area of the shafts.

5.3.210 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.139 to 5.3.144. The baseline land use nutrient load is calculated to be 3,784kg/yr TN and 13kg/yr TP reducing to 2,951kg/yr TN and 9.39kg/yr TP during construction. Due to the reductions in nutrient loads during construction, as a result of changes to land use, there will be no adverse effects on qualifying habitats or species as a result of changes in nutrient loads during construction.

5.3.211 Mitigation set out in section 4 would be implemented to manage groundwater quantity impacts and avoid any significant impacts. The predicted negligible impacts would not undermine any conservation objectives of the SAC or result in an adverse effect on the integrity of the Habitats Site or result in an adverse effect on the integrity of the site. No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species in-combination with other plans and projects.

Waterborne pollution (impacts to all qualifying habitats and species)

5.3.212 Construction machinery at the WRP site including the SuDS outfall has the potential for accidental release of pollutants on to the ground, where pollutants could migrate into underlying groundwater or Hermitage Stream. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter the SAC either directly or via Hermitage Stream and adversely affect its physical and chemical properties. The risk of blow-out during the trenchless crossing of the Hermitage Stream could also lead to pollutants and/or sediments travelling downstream into Langstone Harbours. Changes in water quality could result in habitat loss or degradation potentially impacting on qualifying habitats. Habitats sensitive to impacts from sediments include seagrass beds. Details of the location of identified seagrass beds are shown within ES Appendix 9.3 Intertidal seagrass survey report, Volume II (Document reference 6.2, DCO Volume 6). The closest area of seagrass is associated with records near Baker's Island in Langstone Harbour which is approximately 1.875km from the Order Limits (excluding the existing LSO pipe) and due to the distance from the Project would be unlikely to be impacted by any short-term impacts during construction activities.

5.3.213 Information presented in ES Appendix 11.2 Geotechnical and geo-environmental reports, Volume II (Document reference 6.2, DCO Volume 6)

indicates that the historical Harts Farm Way landfill within the WRP site was operational up until the 1980s. Surface water samples collected during the ground investigations, as discussed in ES Chapter 11, Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6), indicate that surface water features continue to be impacted by on and off-site historical 'dilute and disperse' landfills.

5.3.214 Any intrusive works within the WRP historical landfill sites have a potential to mobilise contamination, create preferential flow paths, leading to an impact on groundwater quality. The assessment of effects on groundwater quality associated with existing land contamination is presented in ES Chapter 11 Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6), ES Appendix 11.1 Response to Havant Borough Council Environmental Control Officer, Volume II (Document reference 6.2, DCO Volume 6) and ES Appendix 11.2 Geotechnical and geo-environmental reports, Volume II (Document reference 6.2, DCO Volume 6). As discussed in ES Appendix 11.2 Geotechnical and geo-environmental reports, Volume II (Document reference 6.2, DCO Volume 6) exceedances of metals, ammoniacal nitrogen, ammonia and Polycyclic Aromatic Hydrocarbons (PAH) have been recorded within groundwater samples collected from within the landfill waste, superficial deposits and chalk bedrock.

5.3.215 The earthworks and piled foundations required to enable the construction of the WRP site have the potential to disturb pre-existing contamination which could migrate and be released into surface water via the following pathways:

1. Mobilisation and migration of soil contaminants or dissolved phase contaminants in groundwater by construction activities with subsequent release into surface waters
2. Surface water runoff from contaminated Made Ground soils brought to the surface during construction
3. Runoff from storage of potentially contaminated soils
4. Migration of soil or groundwater contaminants into surface water drains during construction activities which then enter surface water
5. Accidental spillage whilst handling, storing or treating contaminated water, fuel or other chemicals used during construction
6. Alteration of the hydraulic regime of the local area as a result of the construction works

5.3.216 Any migration and discharge of contamination into surface waters could lead to a reduction in surface water quality within the Hermitage Stream and within the downstream Habitats Site which could result in habitat loss or degradation of qualifying habitats.

5.3.217 Construction of the WRP site would require excavation to create a level surface, due to technical and regulatory challenges with recovering material from landfill sites, it has been conservatively assumed that all landfill matter will be removed from site for appropriate disposal. A piling mat would then be formed on the levelled site from which the foundations of the WRP site would

be piled. Reinforced concrete slabs (cast in situ) would be laid onto the piled foundations. Piled foundations would be cast in situ to reduce the risk associated with landfill leachate, and continuous flight auger piles would be used to reduce the potential for the creation of contamination pathways. These are both recognised appropriate methodologies for sites such as this (see section 4 and Outline Foundation Works Risk Assessments (Document reference 7.15, DCO Volume 7)).

5.3.218 The transfer pipeline is laid within tunnels to and from the WRP site. The tunnels themselves are constructed in natural ground and not in landfill. The shafts to the tunnels will need to pass through the layer of landfill material, which prior to their construction, cut off walls will be formed around the shaft perimeter using soil mixing to prevent release of contamination.

5.3.219 A number of piles will be required within the WRP site. Depending on the piling technique used, construction of the piles and specifically injection of concrete (used for cast in situ piles), could result in concrete bleeding and migration via groundwater towards hydraulically connected receptors, including the SAC. Concrete escape would be localised. As the WRP is located within a contaminated (i.e. historic landfill) flood risk area, there is the potential that chemical or cement spill could transfer additional contaminants when entering the water environment if unmitigated. An assessment of the impact of piling has been undertaken in ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6). The magnitude of impact would be dependent on the piling method and permeability of the surrounding soils or rock and measures implemented through the detailed FWRA that will be produced by the Contractor, in line with the Outline FWRA (Document reference 7.15, DCO Volume 7). These measures are considered to reduce and mitigate the risks associated with any concrete escape. These construction works are likely to result in temporary, possibly discernible, change, particularly in the chalk matrix, but this would not result in material change in water quality due to their localised extent. A series of Outline FWRAs for below-ground structures, including piling works and shafts, have been undertaken and are included within the DCO application (Document reference 7.15, DCO Volume 7), as outlined in ES Chapter 11, Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6). The magnitude of impact on groundwater on the SAC is assessed to be negligible and temporary. These negligible and temporary impacts are highly unlikely to have any adverse impact on qualifying habitats either within the SAC or within Hermitage Stream.

5.3.220 With the implementation of mitigation measures outlined in section 4, including the undertaking of remediation works, the magnitude of construction impacts on water quality and the ecological habitats they support from contamination is considered to be negligible. The remediation works relating to ecologically sensitive sites, including the Habitats Site, include the selection of piling and shaft/tunnel construction methodology (as discussed within the Outline CEMP (Document reference 7.1, DCO Volume 7)) to protect controlled waters and ecologically sensitive sites from hazards including metals and ammonia.

5.3.221 With temporary negligible impacts on groundwater and surface water from contamination, the proposals would not result in the undermining of conservation objectives and therefore will not result in an adverse effect on the integrity of the Habitats Site. No other developments have been identified which could result in significant in-combination effects on groundwater and surface water and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

5.3.222 The water storage lagoons would store potable water used for commissioning of the Pipeline between the WRP site and Otterbourne WSW. Once pressure testing has been completed, and the water within the water storage lagoons is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced facility. Treated wastewater used for pressure testing of the of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO. There would be no discharges to surface or groundwater and therefore no impact associated with testing and commissioning.

Airborne pollution (impacts to all qualifying habitats and species)

5.3.223 The screening assessment identified that construction dust may have LSE up to 250m from the Project (in accordance with IAQM, 2024 [17]). Therefore, there is potential for effects to occur within the SAC, including smothering qualifying habitats. In addition, the potential effects of construction traffic (due to temporary traffic management measures and/or additional vehicles travelling to and from the construction) and NRMM emissions on air quality within 200m of the WRP or a road affected by changes in traffic may affect the SAC.

5.3.224 To assess the potential effects of airborne pollution during construction, traffic modelling and modelling of associated emissions from vehicles has been undertaken along the affected road network where this is within 200m of the Solent Maritime SAC site. For full details refer to ES Appendix 6.5 Construction road vehicle exhaust emissions assessment – ecological features transect results – nitrogen oxides, Volume II (Document reference 6.2, DCO Volume 6). Detailed results and methods are provided within ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6) and ES Appendix 6.5 Ecological Transect Results, Volume II (Document reference 6.2, DCO Volume 6). A summary of key findings relevant to Solent Maritime SAC are discussed in sections 5.3.225 to 5.3.236.

5.3.225 The database APIS provides CLo for air pollution for Habitats Sites which defines a level below which adverse impacts to a particular qualifying habitat or species (or the habitat which the species relies on) would not occur. The Air Quality Modelling for Solent Maritime SAC is based on the most sensitive qualifying habitats (fixed coastal dunes and perennial vegetation of stony banks) which have a CLo for nutrient nitrogen of 5-15kgN/ha/yr. All other qualifying habitats have CLo of 10-20kgN/ha/yr except H1310 ‘Salicornia and other annuals colonising mud and sand’ which has higher CLo of 20-

30kgN/ha/yr. The Process Contribution of the Project alone is 0.01kgN/ha/yr. This is much less than 1% of the minimum CLo for the most sensitive habitat (<0.19% of minimum CLo). In-combination with other developments the process contribution increases to 0.2kgN/ha/yr, which is still well below 1% of minimum CLo (<0.43%). The increases in nitrogen deposition as a result of the Project alone and in-combination are therefore very minor.

5.3.226 In all modelled locations along the Solent Maritime SAC air quality transects, background nitrogen deposition is already in excess of minimum CLo for qualifying habitats (both for the more sensitive habitats, and for other qualifying habitats with higher minimum CLo with the exception of H1310 'Salicornia' habitat which has a higher minimum CLo), with a background of 11.04kgN/ha-year, which is 220.8% of the minimum CLo for the most sensitive habitats and 110.04% of minimum CLo for other qualifying habitats (except H1310 Salicornia). The Predicted Environmental Concentration - the baseline plus the Project alone results in a maximum of 11.05kgN/ha-year, which is 220.99% of the minimum CLo for the most sensitive qualifying species. In-combination with other developments, this increases to a maximum of 11.06kgN/ha-year, which is 221.23% of the minimum CLo. The Project will therefore result in imperceptible temporary increases in nitrogen deposition in locations that are already in excess of minimum CLo, both alone and in-combination with other developments.

5.3.227 Marine systems are nitrogen-limited. As such, nitrogen inputs are more likely to affect marine systems than freshwater systems. However, consideration should also be given to the relative scale of nitrogen inputs from air into marine habitats compared to those from other sources. In most cases, nitrogen inputs from the atmosphere are likely to be miniscule compared to inputs from marine and riverine sources [51].

5.3.228 In addition, marine and intertidal systems will be subject to tidal flushing. The Solent has a high tidal range and the regular inundation is likely both to have a much greater influence on botanical composition than atmospheric nitrogen inputs and remove a large proportion of any nitrogen that does deposit from atmosphere, thus preventing it from accumulating to the same extent as in terrestrial habitats [51].

5.3.229 Overall, based on the very minor increases over a short duration within areas where background deposition is already in excess of CLo, together with the effect of tidal flushing removing nitrogen deposited from the atmosphere and the minor contribution of atmospheric nitrogen inputs compared to marine and riverine sources, the Project will not undermine the conservation objective of maintaining deposition of air pollutants to at or below the site-relevant CLo [64] and will not have an adverse effect on the integrity of the site as a result of nitrogen deposition.

5.3.230 The APIS website [62] identifies that the majority of qualifying habitats of the SAC are sensitive to atmospheric nitrogen with a CLe of 30 ug/m^3. The air quality modelling identifies that the Project alone will contribute a maximum of 0.029 ug/m^3 at the closest modelled point within the SAC, which together

with predicted 2028 background levels of 17.75 ug/m3 is well below the CLe. The Project contributions alone are 0.1% of the CLe and therefore also well below 1% of the CLe. In combination with other developments the process contribution rises to a maximum of 0.07 ug/m3 (0.2% of CLe) which together with background levels is 17.81 ug/m3 and therefore remaining well below the CLe. Due to the short-term nature of the Project's contribution together with the very low levels, no adverse effects are likely either alone or in combination with other developments.

5.3.231 The APIS website identifies that qualifying habitats are sensitive to atmospheric ammonia and a CLe is set at 1 or 3µg/m³ for all qualifying habitats. The CLe of 1 is set for highly sensitive lower plant species such as lichens and bryophytes. For higher plants the threshold is set at 3. For the majority of habitats, the higher level of 3 is considered most appropriate. The air quality modelling is based on the lower level and therefore represents the worst case. Atmospheric ammonia as a result of the Project is 0.001µg/m³ at the closest modelled point within the Habitats Site, which is 0.1% of the minimum CLe. Together with background levels, the level is 0.811µg/m³ which is 81.1% of the minimum CLe. In combination with other development, the contribution raises to 0.813µg/m³, which is 81.3% of the minimum CLe. Due to the short-term nature of the Project's contribution together with the very low levels, no adverse effects are likely either alone or in combination with other developments as a result of atmospheric ammonia.

5.3.232 The only habitat listed on APIS as sensitive to acid deposition is H2130 Fixed coastal dunes, which are not present within the area affected by the Project. Therefore, acid deposition will have no adverse effect and will not result in an adverse effect on integrity.

5.3.233 The air quality assessment, ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6) includes an assessment of construction dust and fine particulate matter using a likely worst case scenario, whereby the maximum amount of anticipated construction works is assumed to be undertaken in proximity to the greatest number of ecological receptors. A risk assessment was undertaken based on this likely worst case scenario, the results of which are shown in Table 5-1.

5.3.234 The WRP site is located within 200m of Solent Maritime SAC. The dust risk assessment has identified a low risk for ecological receptors (including the SAC) during earthworks and construction activities at the WRP and no impact associated with trackout from the WRP as access points are over 200m from the SAC. Therefore, unmitigated there are anticipated to be minor impacts to the qualifying habitats as a result of dust. The standard mitigation measures outlined in section 4 will ensure that the potential adverse impacts associated with dust during construction are adequately mitigated to prevent any adverse effects on habitats within the SAC and ensure that there will be no adverse effect on the integrity of the site.

5.3.235 The air quality assessment, ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6), also includes an assessment of

Construction NRMM emissions. Intensive construction activities are expected associated with the construction of the WRP and tunnel launch shaft (tunnel between the WRP site and Portsdown Hill in Section D). It is assumed that as construction works for each activity would be undertaken in stages, the NRMM associated with each activity would not be operational simultaneously. NRMM emissions associated with the construction of the WRP would be intermittent in nature and would only occur during working hours (07:00 to 19:00 in the summer and 07:00 to 17:30 in the winter Monday to Friday and 07:00 to 17:00 on Saturday - a maximum of 70 hours per week). The air quality assessment takes into account:

1. The working hours to be employed and the duration of construction works
2. Existing air quality conditions in the area (based on Defra background pollutant concentration maps)
3. Prevailing meteorological conditions
4. The numbers and type of plant to be used
5. Distances from NRMM activity to the nearest receptors

5.3.236 Due to the distance of the SAC from the WRP site (approximately 170m south) and due to the prevailing south-west winds, emissions from NRMM would be dispersed away from the Habitats Site for the majority of the time. There would therefore be sufficient dilution and dispersion of pollutant emissions from NRMM to avoid any significant effects. With mitigation outlined in section 4 and due to the short-term nature of any minor effects, this will not undermine conservation objectives or result in an adverse effect on the integrity of the site.

Invasive non-native species

5.3.237 Construction activities associated with the Project are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential runoff) may lead to the spread of INNS. No INNS have been recorded within the site of the WRP. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach and establish in the SAC is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent. However, it is known that several species of INNS that are tolerant to a wide range of salinities are found in the Solent and therefore it cannot be assumed that the salinity of the Solent would hinder the spread of INNS should they reach the SAC.

5.3.238 Mitigation measures outlined in section 4 and in accordance with the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7), will ensure that the construction works including enabling do not result in the spread of any INNS into the SAC or into functionally linked habitats which could support qualifying species. There would be no requirement for discharges to surface

or groundwater during testing, commissioning or operation and therefore no impact associated with accidental INNS release. This will ensure the construction works do not result in any adverse effect on the integrity of the Habitats Site as a result of INNS. With mitigation there will be no impact as a result of INNS during construction and therefore no potential for in-combination effects.

Operational phase

Hydrological change, waterborne pollution and INNS (all qualifying habitats and species)

5.3.239 Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be spillage and accidents associated with the above-ground infrastructure of the Project. This in turn could affect the qualifying features of the SAC.

5.3.240 Operational mitigation measures will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents. This will ensure that during operation there will be no adverse effects on the integrity of the Habitats Site as a result of pollution incidents during planned and unplanned maintenance activities.

5.3.241 Additionally, there is a risk of hydrological change, waterborne pollution and accidental release of INNS from the use of washouts for routine testing and maintenance during operation. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of in accordance with the OEMP (Document reference 7.7, DCO Volume 7). This will avoid the risk of adverse effects to downstream features and ensure that there is no adverse impact on the SAC or qualifying habitats and therefore avoid any adverse effects on the integrity of the SAC as a result of hydrological change, waterborne pollution and INNS during the operational use of washouts.

Impacts associated with discharges into Havant Thicket Reservoir

5.3.242 Havant Thicket Reservoir is located a significant distance from the SAC and does not provide functionally linked land to the SAC site or support qualifying habitats. However, changes in water quality are considered due to the potential for these to be discharged into the SAC itself or Hermitage Stream, which may support qualifying habitats outside of the SAC, as a result of compensatory flows. Changes in water quality could degrade qualifying habitats.

5.3.243 The results of the water quality modelling for Havant Thicket Reservoir presented in ES Appendix 19.11 Havant Thicket Reservoir water quality modelling, Volume II (Document reference 6.2, DCO Volume 6) indicate that a negligible change is predicted to occur in the Havant Thicket Reservoir

between the 'classic' (i.e., the period of reservoir operation prior to introduction of recycled water from the WRP) and 'post-WRP' (i.e., the period of reservoir operation following introduction of recycled water from the WRP) operation phases. A summary of water quality modelling results is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.176 to 5.3.182.

5.3.244 The modelling indicates that the introduction of recycled water from the WRP to Havant Thicket Reservoir and the associated compensatory flows is not predicted to result in any significant changes in water quality in Hermitage Stream. The modelling also predicted that there would be very little change in Langstone Harbour between the 'classic' and 'post-WRP' operation phases, with the majority of modelled parameters remaining unchanged between the two operation phases. No changes to water quality were predicted in the lower harbour or in the connecting water body, The Solent.

5.3.245 Overall, the extent of the water quality changes in the Hermitage Stream and Langstone Harbour are expected to be extremely minor and are not considered to result in effects on freshwater or marine and estuarine biodiversity receptors. Modelled changes do not extend into the Solent, therefore no impacts to marine biodiversity in the Solent are anticipated.

5.3.246 Water quality objectives within the supplementary information on Conservation Objectives for Solent Maritime SAC include Nutrients - "Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features." [64]; and, Dissolved Oxygen - "Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7mgL-1 (at 35 salinity) for 95% of year) avoiding deterioration from existing levels". The modelling predicted a small decrease in nitrates between the 'classic' and 'post WRP' scenarios (Hermitage Stream decreases from 3.9mg/l to 3.8mg/l and Langstone Harbour decreases from 2.27mg/l to 2.23mg/l) and the modelling predicts no change in DO between 'classic' and ''post WRP' scenarios. The Project will therefore not result in any impacts to these conservation objectives. Therefore, the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species.

5.3.247 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species in-combination with other plans and projects.

Impacts associated with release of reject water at Eastney LSO

5.3.248 The release point of reject water at Eastney LSO is approximately 6km from the SAC and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Dispersion modelling of the discharge from Eastney LSO on currently consented water quality parameters and salinity was undertaken to

predict the calculated difference in water quality parameters between the existing Budds Farm WTW flow and the future single phase peak output of recycled water scenario and inform the assessment of potential impact on marine ecology and any significant risk of hindering the conservation objectives stated for the SAC (refer to section 3.6 of ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6) for the maximum flows and output of the Project). The future single phase peak output of recycled water scenario reflects the maximum change which would only occur during a drought. At other times, flows through the WRP are likely to be lower and wastewater discharge higher, thus bringing the effect of the 'future' scenario release closer to the 'existing' scenario release. To determine the potential effect on the existing release associated with removal of wastewater for recycling and addition of the reject stream from the WRP, mass balance calculations were undertaken and the output modelled. The full report is presented in the ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6).

5.3.249 The model outputs show that the differences in the water quality parameters are very small when the existing Budds Farm WTW discharge and the future discharge from Budds Farm (once the WRP is in place) are compared. Where a comparison to baseline data in the receiving waters can be made, predicted parameter changes are within baseline variations experienced within the receiving water. Where baseline receiving water data is not available, such as for the parameter Chemical Oxygen Demand (COD) for example, comparison of the predicted change against wastewater variability demonstrates the changes are very small (see Chichester and Langstone Harbours SPA and Ramsar section for results). The larger changes modelled are in close proximity to the LSO, and only the lower end of the concentrations would interact directly with the SAC, if at all (see dispersal model figures in ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6). The minor changes are likely to be outweighed by baseline variations experienced within the Solent, whilst the marine environment within which the LSO discharges is well mixed. The modelling demonstrates that the hydrological changes to the existing Eastney LSO discharge with the WRP in place are very minor and there will be no significant risk of the WRP operation hindering the conservation objectives stated for the SAC and therefore will not result in an adverse effect on the integrity of the Habitats Site.

5.3.250 In addition to the dispersal modelling, the surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling

results indicate that the distance to RDF for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality are not predicted.

5.3.251 No new INNS pathways have been identified as a result of the release of reject water at Eastney LSO during operation.

5.3.252 Given the scale of the predicted changes discussed in this section, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO and changes would not extend into connected water bodies such as Langstone Harbour or the tidally influenced Hermitage Stream and therefore would not result in impacts to qualifying habitats within the SAC or within Hermitage Stream. The Project would therefore not result in any hindering of conservation objectives for the Habitats Site or result in an adverse effect on the integrity of the site.

5.3.253 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Impacts associated with proposed WRP SuDS

5.3.254 The SuDS design will include control measures suitable for the pollution hazard index (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)). As such, no further consideration is therefore required, in terms of dispersion modelling, to assess the potential release of pollutants from the SuDS outfall. Implementation of the SuDS outfall does however have the potential to reduce salinity within the Hermitage Stream. The SuDS will be designed to capture rainfall that already falls on the site, but the development at the WRP site would result in an increase in impermeable area and would concentrate surface water flows to a single point release. The proposed SuDS release would be at a lower salinity than that in the receiving brackish water in the Hermitage Stream given that it would largely be made up of rainfall.

5.3.255 Water quality modelling has been undertaken to assess the potential water quality effects of the proposed discharge of treated surface runoff from the WRP SuDS outfall into the Hermitage Stream due to the potential for changes in salinity within Hermitage Stream. Full details of the SuDS modelling in relation to the marine environment and designated sites are within ES Chapter 9 Marine biodiversity, Volume I (Document reference 6.1, DCO Volume 6). The water quality modelling focuses on salinity changes as the SuDS design would include control measures suitable for the pollution hazard index (as set out in the DPD (Document reference 5.11, DCO Volume 5). The SuDS design (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)) includes a dedicated surface water collection system which would discharge to the Hermitage Stream via

a new outfall (297m upstream of the SAC). The modelling indicates that these releases would result in highly localised minor changes in salinity (typically less than 1 Practical Salinity Unit (PSU)) in Hermitage Stream close to the outfall and would not extend further into Langstone Harbour. The change in salinity due to the SuDS outfall discharge, when compared with the natural fluctuations in ambient salinity levels throughout the tidal cycle, is considered minor. Changes in salinity within the SAC site are therefore not anticipated and changes within Hermitage Stream which could support qualifying mudflat habitats will be very small and would not degrade habitats outside of the SAC. Adverse effects to water quality and on biodiversity in the tidal reach of the Hermitage Stream and Langstone Harbour are therefore not anticipated from discharges from the SuDS outfall and there will be no impacts to conservation objectives of the Habitats Sites and no adverse effect on integrity.

5.3.256 The new SuDS outfall releasing water from the WRP site into the tidal section of Hermitage Stream creates a new pathway for INNS to enter tidal water and therefore enter the Habitats Site. Mitigation measures as set out in section 4 include measures for avoiding the introduction of INNS, as set out in the INNS Biosecurity Plan (Document reference 7.10, DCO Volume 7). The mitigation measures will minimise the risk of INNS entering Hermitage Stream during the operation of the SuDS outfall and therefore impacts on qualifying habitat are highly unlikely. The conservation objectives include '*Reduce the introduction and spread of non-native species and pathogens, and their impacts'* [64]. With mitigation there will be no hinderance of this conservation objective and there will be no adverse effect on integrity as a result of INNS during operation. No other developments have been identified which could result in significant in-combination effects on water quality or INNS and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Nutrient neutrality

5.3.257 A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and the River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). The assessment of operational changes in nutrients includes a combined assessment of: changes in nutrient loads from Eastney LSO; changes in compensation flows into Riders Lane Stream from Havant Thicket Reservoir; changes in nutrient loads from land use changes as a result of the Project; changes in water released from Otterbourne WSW waste stream; and water from operational washout testing which will be collected in tankers and sent to a suitably licenced disposal facility. The operational nutrient load was compared to the baseline nutrient load to identify the changes in nutrient loads as a result of the Project.

5.3.258 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.193 to 5.3.196. The calculations show a reduction in TN during operation of 8,742 kg/yr which is primarily as a result of the reduction in final effluent discharge

from Eastney pumping station due to the WRP. This reduction in TN will contribute towards the conservation objective of *Water Quality – Nutrients. Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features* [64].

5.3.259 The nutrient calculations also identified a decrease in TP of 6.26 kg/yr during operation. Marine systems are nitrogen-limited and the estuarine habitats within the Solent are vulnerable to Nitrogen and not Phosphorus. The small reduction in TP would therefore not have any effect on Solent Maritime SAC.

5.3.260 Overall, there are no adverse effects on the integrity of the site as a result of changes to nutrients during construction and operation.

Portsmouth Harbour SPA and Ramsar

Construction phase

Habitat loss and fragmentation (impacts to all qualifying habitats and species)

5.3.261 Habitat loss and fragmentation is restricted to impact to functional land outside of the SPA and Ramsar site as the Project is located 1.6km from the SPA and Ramsar site at the closest point. Table 5-15 summarises the SWBGS sites associated with Portsmouth Harbour SPA which are within the Order Limits which will be subject to habitat loss.

Table 5-15 Solent Waders and Brent Goose strategy sites within the Order Limits associated with Portsmouth Harbour SPA which will be subject to habitat loss

Site code	Designation	Habitat Loss	Mitigation
W03G	Candidate Site	Temporary	Habitat reinstatement

5.3.262 Direct impacts to functional land outside of the SPA and Ramsar were identified in the Stage 1 Screening report as resulting in LSE. This is due to direct impact to Solent Wader and Brent Goose Strategy Sites. The closest identified area of functional land associated with Portsmouth Harbour SPA outside of the Habitats Site, as identified on the SWBGS is located within the construction footprint, along the Pipeline on Portsdown Hill (W03G), a candidate site associated with Portsmouth Harbour SPA and Ramsar.

5.3.263 SWBGS site W03G is located partially within the Order Limits, within the construction footprint of the open-cut pipeline (Section E) which provides feeding habitat for qualifying bird species. Approximately 2ha of the site is within the Order Limits, resulting in temporary loss of modified grassland. The construction works including enabling at this location will be undertaken outside of the wintering bird season, when brent geese might be present (September to March) and will be reinstated upon completion. There is also potential for a small area (up to 5m^2) of permanent loss of modified grassland

if a washout and air valve was to be located within this field; however, this is not expected to deter geese from utilising this field in the future or reduce the availability of foraging or roosting habitat. Therefore, no loss of function is anticipated at this site

5.3.264 Non-breeding bird surveys were completed from October to March inclusive in 2021/22, and 2022/23 and 2023/24. These included walkover surveys at W03G (four monthly surveys). Detailed survey results are provided within the Ornithology Technical Appendix ES Appendix 8.5 Ornithology CONFIDENTIAL, Volume II (Document reference 6.2, DCO Volume 6). Two species were recorded within SWBGS site W03G. These were herring gull (Section 41 species, BoCC red listed, IUCN Red List Endangered species) and black-headed gull (BoCC Amber List species, IUCN Red List Vulnerable species). No dark-bellied brent goose or wading bird species considered by the SWBGS were recorded during these non-breeding bird walkover surveys.

5.3.265 The direct impact to identified functional land outside of the SPA and Ramsar will result in the temporary short-term reduction in availability of feeding and roosting habitat used by qualifying species and assemblages within SWBGS site W03G, although the majority of the site will remain available. Unmitigated this could affect the conservation objective of maintaining or restoring the extent, distribution and availability of suitable supporting habitat (either within or outside the site boundary) [35]. Construction of the trenched-open cut section of the pipeline within the SWBGS site W03G will be undertaken outside of September to March; habitats will be reinstated and the existing management regime will recommence. Following this reinstatement of the site after the installation of the Pipeline, there will be no loss of habitat within SWBGS sites associated with Portsmouth Harbour SPA and Ramsar and therefore any impacts will be short-term and reversable and not result in an adverse effect on the integrity of the site. There are no identified other developments which could result in impacts to site W03G and therefore there are no adverse effects on integrity as a result of in-combination impacts.

Disturbance (impacts to all qualifying species)

5.3.266 The SWBGS site W03G is located within the Order Limits at Portsdown Hill; The SPA and Ramsar is 1.6km from Portsdown Hill and SWBGS site W03G, which is functionally linked land to Portsmouth Harbour SPA and Ramsar. Due to the high mobility of birds, there is potential that qualifying bird species of the SPA and Ramsar may occupy land within the Order Limits, namely SWBGS site W03G. Therefore, there is potential for both visual and noise stimuli during trenched open-cut construction which could cause disturbance to these species.

5.3.267 Mitigation measures (as outlined in Section 4) include the provision of carrying out construction works within W03G outside of the non-breeding period. This will ensure that disturbance of any qualifying bird species within this functionally linked land is avoided and therefore will not result in an adverse effect on the integrity of the Habitats Site. There are no identified

other developments which could result in impacts to site W03G and therefore there are no adverse effects on integrity as a result of in-combination impacts.

Hydrological change (impacts to all qualifying habitats and species)

5.3.268 Impacts to surface water and groundwater are quantified in ES Appendix 19.3 Hydrogeological Impact Assessment, Volume II (Document reference 6.2, DCO Volume 6) and assessed in the ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6).

5.3.269 As identified in the Stage 1 assessment, potential impacts as a result of hydrological change during construction on the SPA and Ramsar included the potential impacts of the trenchless crossing of the River Wallington, 2.5km upstream of the SPA. Potential disturbance to groundwater flows into the River Wallington were identified as having a potential adverse impact. In order to avoid direct impact on the River Wallington, the Pipeline construction between the WRP site and Otterbourne WSW would be undertaken using a trenchless method under the main river (Watercourse crossing reference: OPT1_WCX_F_004). Trenchless construction would require excavation of two shafts/pits, depth of which will be driven by the depth of the tunnel, which would be a minimum of 2.5m below the bed of the river. Excavations for shafts are likely to encounter groundwater and to require groundwater control measures and will be undertaken in accordance with the mitigation set out in section 4. The impact on the River Wallington is assessed as negligible. With a negligible impact on groundwater flows into the River Wallington, there would also be a negligible impact on water quality within the Habitats Site and it is highly unlikely that there would be any impact to habitats used by qualifying birds and there would be no adverse effect on integrity as a result of impacts to groundwater. No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

5.3.270 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.139 to 5.3.144. The baseline land use nutrient load is calculated to be 3,784kg/yr TN and 13kg/yr TP reducing to 2,951kg/yr TN and 9.39kg/yr TP during construction. Due to the reductions in nutrient loads during construction, as a result of changes to land use, there will be no adverse effects on qualifying habitats or species as a result of changes in nutrient loads during construction.

Waterborne pollution (impacts to all qualifying species)

5.3.271 Pollution during construction entering groundwater and surface water runoff which could enter the River Wallington and eventually flow into the SPA and Ramsar was identified as having a potential for LSE in the Stage 1 screening assessment. Due to the distance between the SPA and Ramsar site (2.5km downstream from the crossing of the River Wallington), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the SPA and Ramsar. With the implementation of pollution prevention

measures outlined in section 4.1, the risk of an adverse impact on the SPA and Ramsar is negligible and there would be no adverse effects on the integrity of the Habitats Site as a result of waterborne pollution during construction. No other developments have been identified which could result in significant in-combination effects on waterborne pollution and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

5.3.272 The water storage lagoons would store potable water used for commissioning of the Pipeline between the WRP site and Otterbourne WSW. Once pressure testing has been completed, and the water within the water storage lagoons is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced facility. Treated wastewater used for pressure testing of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO. There would be no discharges to surface or groundwater.

Invasive non-native species (impacts to all qualifying species)

5.3.273 As identified in the Stage 1 assessment, the use of plant and equipment during construction could transfer INNS between catchments, although the potential for INNS to reach and establish within the SPA and Ramsar is very low given the distance of the SPA and Ramsar and that the majority of INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species and the salinity of the habitats within the SPA and Ramsar would hinder the spread of INNS within the Habitat Site. With the inclusion of mitigation measures to manage and control the risk of INNS during construction there will be a negligible risk of spreading INNS into the SPA and Ramsar or any supporting habitats. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing, commissioning or operation. There will therefore be no adverse effect on the integrity of the SPA and Ramsar as a result of INNS during construction. No other developments have been identified which could result in significant in-combination effects from the spread of INNS and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Operational phase

Hydrological change, waterborne pollution and INNS (all qualifying habitats and species)

5.3.274 Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. There could also be spillage and accidents associated with the above-ground infrastructure of the Project. This in turn could affect the qualifying SPA and Ramsar species.

5.3.275 Operational mitigation measures will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents. This will ensure that during operation there will be

no adverse effects on the integrity of the Habitats Site as a result of pollution incidents during planned and unplanned maintenance activities.

5.3.276 Additionally, there is a risk of hydrological change, waterborne pollution and accidental release of INNS from the use of washouts for routine testing and maintenance during operation. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of in accordance with the OEMP (Document reference 7.7, DCO Volume 7). This will avoid the risk of adverse effects to downstream features and ensure that there is no adverse impact on the SPA and Ramsar and therefore avoid any adverse effects on the integrity of the SPA and Ramsar as a result of hydrological change, waterborne pollution and INNS during the operational use of washouts.

Impacts associated with release of reject water at Eastney LSO

5.3.277 The release point of reject water at Eastney LSO is approximately 7km from the SPA and Ramsar and therefore it is within the 10km marine ecology hydrological connectivity ZoI (this distance is considered to cover the maximum dispersion potential of any deleterious substances that may enter the water). Dispersion modelling of the discharge from Eastney LSO on currently consented water quality parameters and salinity was undertaken to predict the calculated difference in water quality parameters between the existing Budds Farm WTW flow and the future single phase peak output of recycled water scenario and inform the assessment of potential impact on marine ecology and any significant risk of hindering the conservation objectives stated for the SPA and Ramsar (refer to section 3.6 of ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6) for the maximum flows and output of the Project). The future single phase peak output of recycled water scenario reflects the maximum change which would only occur during a drought. At other times, flows through the WRP are likely to be lower and wastewater discharge higher, thus bringing the effect of the 'future' scenario release closer to the 'existing' scenario release. To determine the potential effect on the existing release associated with removal of wastewater for recycling and addition of the reject stream from the WRP, mass balance calculations were undertaken and the output modelled. The full report is presented in the ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6).

5.3.278 The model outputs show that the differences in the water quality parameters are very minor when the existing Budds Farm WTW discharge and the future discharge from Budds Farm (once the WRP is in place) are compared. Where a comparison to baseline data in the receiving waters can be made, predicted parameter changes are within baseline variations experienced within the receiving water. Where baseline receiving water data is not available, such as for the parameter Chemical Oxygen Demand (COD) for example, comparison of the predicted change against wastewater variability

demonstrates the changes are very small (see Chichester and Langstone Harbours SPA and Ramsar section for results). The larger changes modelled to be in close proximity to the LSO, and only the lower end of the concentrations would interact directly with the SPA, if at all (see dispersal model figures in ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6). The minor changes are likely to be outweighed by baseline variations experienced within the Solent, whilst the marine environment within which the LSO discharges is well mixed. The modelling demonstrates that the hydrological changes to the existing Eastney LSO discharge with the WRP in place are very minor and there will be no significant risk of the WRP operation hindering the conservation objectives stated for the SPA and applied for the Ramsar and therefore will not result in an adverse effect on the integrity of the Habitats Site.

5.3.279 In addition to the dispersal modelling, the surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to RDF for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality are not predicted.

5.3.280 No new INNS pathways have been identified as a result of the release of reject water at Eastney LSO during operation.

5.3.281 Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO and changes would not extend into connected water bodies such as Portsmouth Harbour and therefore would not result in impacts to habitats supporting qualifying birds within the SPA and Ramsar or within functional habitat outside of the SPA and Ramsar. The Project would therefore not result in any hindering of conservation objectives for the Habitats Sites or result in an adverse effect on the integrity of the site.

5.3.282 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Nutrient neutrality

5.3.283 A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). The assessment of operational changes in nutrients includes a combined assessment of: changes in nutrient loads from Eastney LSO; changes in compensation flows into Riders Lane Stream from Havant Thicket Reservoir; changes in nutrient loads from land use changes as a result of the Project; changes in water released from Otterbourne WSW waste stream; and water from operational washout testing which will be collected in tankers and sent to a suitably licenced disposal facility. The operational nutrient load was compared to the baseline nutrient load to identify the changes in nutrient loads as a result of the Project.

5.3.284 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar section 5.3.193 to 5.3.196. The calculations show a reduction in TN during operation of 8,742 kg/yr which is primarily as a result of the reduction in final effluent discharge from Eastney pumping station due to the WRP. This reduction in TN will contribute towards the conservation objective of *Water Quality – Nutrients. Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features* [35].

5.3.285 The nutrient calculations also identified a decrease in TP of 6.26 kg/yr during operation. Marine systems are nitrogen-limited and the estuarine habitats within the Solent are vulnerable to Nitrogen and not Phosphorus. The small reduction in TP would therefore not have any effect on Portsmouth Harbour SPA and Ramsar site.

5.3.286 Overall, there are no adverse effects on the integrity of the site as a result of changes to nutrients during construction and operation.

Solent and Dorset Coast SPA

Construction phase

Hydrological change (impacts to all qualifying species)

5.3.287 Impacts to surface water and groundwater are quantified in ES Appendix 19.3 Hydrogeological Impact Assessment, Volume II (Document reference 6.2, DCO Volume 6) and assessed in the ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6).

5.3.288 Construction related impacts to groundwater were identified in the Stage 1 screening assessment as having potential for LSE on the SPA. This included the mobilisation of sediments or contaminants within the groundwater which could flow into the SPA via rivers, such as the River Itchen and River Wallington, which flow into the SPA. Construction will be undertaken in

accordance with the good practice principles set out in the Outline CEMP (Document reference 7.1, DCO Volume 7) and the mitigation within section 4. This will include measures to limit and control the mobilisation of potential sediment and contaminants beyond the working areas and ensure that any accidental releases are managed appropriately and do not enter rivers or flow downstream into the SPA.

5.3.289 Groundwater flows and levels may also be affected by temporary physical modifications (e.g., excavations or trenchless construction), which could interrupt the natural groundwater flow pathways or may be affected by temporary dewatering during construction. Trenchless construction beneath the Rivers Itchen and Wallington and associated tributaries would require excavation of shafts/pits, the depth of which will be driven by the depth of the trenchless construction, which would be a minimum of 2.5m below the bed of the river. Excavations for shafts are likely to encounter groundwater and to require groundwater control measures and will be undertaken in accordance with the mitigation set out in section 4. The impact on the River Wallington and River Itchen are assessed as negligible. With a negligible impact on groundwater flows into the River Wallington, there would also be a negligible impact on water quality within the Habitats Site and it is highly unlikely that there would be any impact to habitats used by qualifying birds and there would be no adverse effect on integrity as a result of impacts to groundwater. No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species in-combination with other plans and projects.

Waterborne pollution (impacts to all qualifying species)

5.3.290 Pollution during construction entering groundwater and surface water runoff which could enter watercourses which flow into the SPA including the River Itchen and River Wallington and eventually flow into the SPA was identified as having a potential for LSE in the Stage 1 screening assessment. Due to the distance between the SPA site (2.5km downstream from the crossing of the River Wallington at its closest point), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the SPA. With the implementation of pollution prevention measures outlined in section 4.1, the risk of an adverse impact on the SPA and its qualifying species is negligible and there would be no adverse effects on the integrity of the Habitats Site as a result of waterborne pollution during construction. No other developments have been identified which could result in significant in-combination effects on waterborne pollution and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

5.3.291 The water storage lagoons would store potable water used for commissioning of the Pipeline between the WRP site and Otterbourne WSW. Once pressure testing has been completed, and the water within the water storage lagoons is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced facility. Treated wastewater used for

pressure testing of the of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO. There would be no discharges to surface or groundwater and therefore no impact associated with testing and commissioning.

5.3.292 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.139 to 5.3.144. The baseline land use nutrient load is calculated to be 3,784kg/yr TN and 13kg/yr TP reducing to 2,951kg/yr TN and 9.39kg/yr TP during construction. Due to the reductions in nutrient loads during construction, as a result of changes to land use, there will be no adverse effects on qualifying habitats or species as a result of changes in nutrient loads during construction.

Invasive non-native species (impacts to all qualifying species)

5.3.293 As identified in the Stage 1 assessment, the use of plant and equipment during construction could transfer INNS within and between catchments, although the potential for INNS to reach and establish within the SPA is very low given INNS that could be introduced are likely terrestrial riparian or freshwater species, the majority of which are low salinity tolerant species and therefore unlikely to persist within the salinity of the habitats within the SPA site. With the inclusion of mitigation measures to manage and control the risk of INNS during construction there will be a negligible risk of spreading INNS into the SPA or any supporting habitats. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing, commissioning and operation. There will therefore be no adverse effect on the integrity of the SPA as a result of INNS during construction. No other developments have been identified which could result in significant in-combination effects from the spread of INNS and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Operational phase

Hydrological change, waterborne pollution and INNS (impacts to all qualifying species)

5.3.294 Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be spillage and accidents associated with the above-ground infrastructure of the Project. This in turn could affect the qualifying species.

5.3.295 Operational mitigation measures will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents. This will ensure that during operation there will be no adverse effects on the integrity of the Habitats Site as a result of pollution incidents during planned and unplanned maintenance activities.

5.3.296 Additionally, there is a risk of hydrological change, waterborne pollution and accidental release of INNS from the use of washouts for routine testing and maintenance during operation. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7). This will avoid the risk of adverse effects to downstream features and ensure that there is no adverse impact on the SPA and therefore avoid any adverse effects on the integrity of the SPA as a result of hydrological change, waterborne pollution and INNS during the operational use of washouts.

Impacts associated with release of reject water at Eastney LSO

5.3.297 The release point of reject water at Eastney LSO is located within the SPA. Changes in water quality around the LSO could affect foraging habitat within the SPA which support key prey items for qualifying species, such as sand eel (a key prey for terns), resulting in an adverse effect on qualifying species. Dispersion modelling of the discharge from Eastney LSO on currently consented water quality parameters and salinity was undertaken to predict the calculated difference in water quality parameters between the existing Budds Farm WTW flow and the future single phase peak output of recycled water scenario and inform the assessment of potential impact on marine ecology and any significant risk of hindering the conservation objectives stated for the SPA (refer to section 3.6 of ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6) for the maximum flows and output of the Project). The future single phase peak output of recycled water scenario reflects the maximum change which would only occur during a drought. At other times, flows through the WRP are likely to be lower and wastewater discharge higher, thus bringing the effect of the 'future' scenario release closer to the 'existing' scenario release. To determine the potential effect on the existing release associated with removal of wastewater for recycling and addition of the reject stream from the WRP, mass balance calculations were undertaken and the output modelled. The full report is presented in the ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6).

5.3.298 The model outputs show that the differences in the water quality parameters are very minor when the existing Budds Farm WTW discharge and the future discharge from Budds Farm (once the WRP is in place) are compared. Where a comparison to baseline data in the receiving waters can be made, predicted parameter changes are within baseline variations experienced within the receiving water. Where baseline receiving water data is not available, such as for the parameter Chemical Oxygen Demand (COD) for example, comparison of the predicted change against wastewater variability demonstrates the changes are negligible (see Chichester and Langstone Harbours SPA and Ramsar section for results). The larger changes modelled are in close proximity to the LSO (see dispersal model figures in ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document

reference 6.2, DCO Volume 6). The minor changes are likely to be outweighed by baseline variations experienced within the Solent, whilst the marine environment within which the LSO discharges is well mixed. The modelling demonstrates that the hydrological changes to the existing Eastney LSO discharge with the WRP in place are negligible and the WRP operation is not anticipated to result in impacts to foraging habitats supporting key prey items for qualifying species such as sand eel, used by qualifying birds, and is not anticipated to hinder the conservation objectives stated for the SPA and therefore will not result in an adverse effect on the integrity of the Habitats Sites.

5.3.299 In addition to the dispersal modelling, the surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to RDF for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality are not predicted.

5.3.300 No new INNS pathways have been identified as a result of the release of reject water at Eastney LSO during operation.

5.3.301 Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO. These changes are not therefore expected to result in significant adverse effects on water quality or impacts to habitats used by qualifying species for foraging. The Project would therefore not result in any hindering of conservation objectives for the Habitats Site or result in an adverse effect on the integrity of the site.

5.3.302 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Invasive non-native species

5.3.303 The use of Havant Thicket Reservoir and the Portsmouth Water Pipeline between Bedhampton Springs and Havant Thicket Reservoir creates a connection between the East Hampshire Rivers WFD surface water management catchment and the Test and Itchen WFD surface water management catchment; catchments which would be otherwise isolated from each other in the absence of the Project. This connection may increase the

magnitude of the risk of INNS from outside the catchment being introduced or spread to the River Itchen should source water from Havant Thicket Reservoir be released through the following processes:

1. Overflows from the inlet balancing tank at Otterbourne WSW or washout from the inlet pipeline operating in run to waste mode resulting in source water bypassing treatment at Otterbourne WSW and discharging directly to the sewer network.
2. Treated wastewater discharge or storm tank overflow from Chickenhall WTW to the River Itchen. The wastewater process is unlikely to remove all INNS functional groups resulting in the potential for the introduction of INNS from an outside catchment to the River Itchen.
3. Processing of sludge waste from Chickenhall WSW. There is a risk of source water INNS being present in the sludge, thus the destination of the cake remains a potential INNS pathway.

5.3.304 As the Itchen flows into the Solent and Dorset Coast SPA there is therefore a new pathway for INNS to reach the SPA during operation.

5.3.305 To eliminate the impacts of potential operational processes resulting in raw water entering the Solent and Dorset Coast SPA (via the River Itchen) from overflows and run to waste mode activation at Otterbourne WSW, and from storm spill procedures and sludge waste disposal at Chickenhall WTW, additional INNS treatment is proposed at Otterbourne WSW. The INNS Treatment would treat the waste flows produced by the existing treatment process, once all flows have passed through Otterbourne WSW. Following treatment, these flows would be released to the environment via the Applicant's existing network. The INNS Treatment would produce sludge, which would be disposed of via a suitably licensed disposal facility, and would be considered to be free of INNS.

5.3.306 Washouts pose a risk of introducing or spreading INNS to the natural environment, between WFD water body catchments and potentially from otherwise isolated WFD management catchments. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7).

5.3.307 No adverse effects on integrity are therefore likely as a result of operational release of INNS either alone or in-combination with other pans or projects.

Nutrient neutrality

5.3.308 A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). The assessment of operational changes in nutrients includes a combined assessment of: changes in nutrient loads from Eastney LSO; changes in compensation flows into Riders Lane Stream from Havant Thicket Reservoir;

changes in nutrient loads from land use changes as a result of the Project; changes in water released from Otterbourne WSW waste stream; and water from operational washout testing which will be collected in tankers and sent to a suitably licenced disposal facility. The operational nutrient load was compared to the baseline nutrient load to identify the changes in nutrient loads as a result of the Project.

5.3.309 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.193 to 5.3.196. The calculations show a reduction in TN during operation of 8,742 kg/yr which is primarily as a result of the reduction in final effluent discharge from Eastney pumping station due to the WRP. This reduction in TN will contribute towards the SPA conservation objective of *Water Quality – Nutrients. Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels* [36].

5.3.310 The nutrient calculations also identified a decrease in TP of 6.26 kg/yr during operation. Marine systems are nitrogen-limited and the estuarine habitats within the Solent are vulnerable to Nitrogen and not Phosphorus. The small reduction in TP would therefore not have any effect on Solent and Dorset Coast SPA.

5.3.311 Overall, there are no adverse effects on the integrity of the site as a result of changes to nutrients during construction and operation.

Solent and Southampton Water SPA and Ramsar

Construction phase

Hydrological change (impacts to all qualifying habitats and species)

5.3.312 Impacts to surface water and groundwater are quantified in ES Appendix 19.3 Hydrogeological Impact Assessment (HIA), Volume II (Document reference 6.2, DCO Volume 6) and assessed in the ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6).

5.3.313 Construction related impacts to groundwater were identified in the Stage 1 screening assessment as having potential for LSE on the SPA. This included the mobilisation of sediments or contaminants within the groundwater which could flow into the SPA via rivers, such as the River Hamble, River Meon and River Itchen, which flow into the SPA and Ramsar site. Construction will be undertaken in accordance with the good practice principles set out in the Outline CEMP (Document reference 7.1, DCO Volume 7) and the mitigation within section 4. This will include measures to limit and control the mobilisation of potential sediment and contaminants beyond the working areas and ensure that any accidental releases are managed appropriately and do not enter rivers or flow downstream into the SPA and Ramsar site.

5.3.314 Groundwater flows and levels may also be affected by temporary physical modifications (e.g., excavations or trenchless construction), which could interrupt the natural groundwater flow pathways or may be affected by temporary dewatering during construction. Trenchless construction beneath the Rivers Hamble, Meon and Itchen and associated tributaries would require excavation of shafts/pits, the depth of which will be driven by the depth of the trenchless construction, which would be a minimum of 2.5m below the bed of the river. Excavations for shafts are likely to encounter groundwater and to require groundwater control measures and will be undertaken in accordance with the mitigation set out in section 4. With the application of mitigation, the impact on the River Hamble, River Meon and River Itchen are assessed as negligible. With the negligible impact on groundwater flows into the River Hamble, River Meon and River Itchen, there would also be a negligible impact on water quality within the Habitats Site and it is highly unlikely that there would be any impact to habitats used by qualifying birds and there would be no adverse effect on integrity as a result of impacts to groundwater. No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

5.3.315 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.139 to 5.3.144. The baseline land use nutrient load is calculated to be 3,784kg/yr TN and 13kg/yr TP reducing to 2,951kg/yr TN and 9.39kg/yr TP during construction. Due to the reductions in nutrient loads during construction, as a result of changes to land use, there will be no adverse effects on qualifying habitats or species as a result of changes in nutrient loads during construction.

Waterborne pollution (impacts to all qualifying habitats and species)

5.3.316 Pollution during construction entering groundwater and surface water runoff which could enter watercourses which flow into the SPA including the River Itchen, River Hamble and River Meon and eventually flow into the SPA and Ramsar was identified as having a potential for LSE in the Stage 1 screening assessment. Due to the distance between the SPA and Ramsar site and the upstream watercourses, and the tidal nature of the Habitat Site, any construction pollution would be significantly diluted by the time it reaches the SPA and Ramsar site. With the implementation of pollution prevention measures outlined in section 4.1, the risk of an adverse impact on the SPA and Ramsar Site and its qualifying species is negligible and there would be no adverse effects on the integrity of the Habitats Site as a result of waterborne pollution during construction. No other developments have been identified which could result in significant in-combination effects on waterborne pollution and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

5.3.317 The water storage lagoons would store potable water used for commissioning of the Pipeline between the WRP site and Otterbourne WSW. Once pressure testing has been completed, and the water within the water storage lagoons is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced disposal facility. Treated wastewater used for pressure testing of the of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO. There would be no discharges to surface or groundwater and therefore no impact associated with testing and commissioning.

Invasive non-native species (impacts to all qualifying species)

5.3.318 As identified in the Stage 1 assessment, the use of plant and equipment during construction could transfer INNS within or between catchments, although the potential for INNS to reach and establish within the SPA and Ramsar site is very low given INNS that could be introduced are likely terrestrial, riparian or freshwater species, the majority of which are low salinity tolerant species and therefore unlikely to persist in the salinity of the habitats within the SPA and Ramsar site. With the inclusion of mitigation measures to manage and control the risk of INNS during construction there will be a negligible risk of spreading INNS into the SPA and Ramsar or any supporting habitats. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing, commissioning and operation. There will therefore be no adverse effect on the integrity of the SPA and Ramsar site as a result of INNS during construction. No other developments have been identified which could result in significant in-combination effects from the spread of INNS and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

Operational phase

Hydrological change, waterborne pollution and INNS (all qualifying habitats and species)

5.3.319 Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be spillage and accidents associated with the above-ground infrastructure of the Project. This in turn could affect the qualifying species.

5.3.320 Operational mitigation measures will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents. This will ensure that during operation there will be no adverse effects on the integrity of the Habitats Site as a result of pollution incidents during planned and unplanned maintenance activities.

5.3.321 Additionally, there is a risk of hydrological change, waterborne pollution and accidental release of INNS from the use of washouts for routine testing and

maintenance during operation. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7). This will avoid the risk of adverse effects to downstream features and ensure that there is no adverse impact on the SPA and therefore avoid any adverse effects on the integrity of the SPA as a result of hydrological change, waterborne pollution and INNS during the operational use of washouts.

Impacts associated with release of reject water at Eastney LSO

5.3.322 The release point of reject water at Eastney LSO is approximately 4km from the SPA and Ramsar site and therefore it is within the 10km marine ecology hydrological connectivity ZoI. As well as potentially affecting water quality within the SPA, changes in water quality around the LSO could also affect foraging habitat outside of the SPA which support key prey items for qualifying species, such as sand eel (a key prey for terns), resulting in an adverse effect on qualifying species. Dispersion modelling of the discharge from Eastney LSO on currently consented water quality parameters and salinity was undertaken to predict the calculated difference in water quality parameters between the existing Budds Farm WTW flow and the future single phase peak output of recycled water scenario and inform the assessment of potential impact on marine ecology and any significant risk of hindering the conservation objectives stated for the SPA and Ramsar (refer to section 3.6 of ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6) for the maximum flows and output of the Project). To determine the potential effect on the existing release associated with removal of wastewater for recycling and addition of the reject stream from the WRP, mass balance calculations were undertaken and the output modelled. The full report is presented in the ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6).

5.3.323 The model outputs show that the differences in the water quality parameters are very minor when the existing Budds Farm WTW discharge and the future discharge from Budds Farm (once the WRP is in place) are compared. Where a comparison to baseline data in the receiving waters can be made, predicted parameter changes are within baseline variations experienced within the receiving water. Where baseline receiving water data is not available, such as for the parameter Chemical Oxygen Demand (COD) for example, comparison of the predicted change against wastewater variability demonstrates the changes are very negligible (see Chichester and Langstone Harbours SPA and Ramsar section for results). The larger changes modelled are in close proximity to the LSO, and only the lower end of the concentrations would interact directly with the SPA and Ramsar, if at all. The minor changes are likely to be outweighed by baseline variations experienced within the Solent, whilst the marine environment within which the LSO discharges is well mixed. The modelling demonstrates that the

hydrological changes to the existing Eastney LSO discharge with the WRP in place are very minor and therefore the WRP operation is not expected to impact habitats within the SPA and Ramsar or impact habitats used by qualifying birds outside of the SPA and Ramsar such as supporting foraging habitats and key prey items such as sand eel. The WRP operation is therefore not expected to hinder the conservation objectives stated for the SPA and Ramsar and therefore will not result in an adverse effect on the integrity of the Habitats Sites.

5.3.324 In addition to the dispersal modelling, the surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to RDF for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality are not predicted.

5.3.325 No new INNS pathways have been identified as a result of the release of reject water at Eastney LSO during operation.

5.3.326 Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO. The Project would therefore not result in any hindering of conservation objectives for the Habitats Sites or result in an adverse effect on the integrity of the site.

5.3.327 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the SPA and Ramsar and its qualifying species and habitats in-combination with other plans and projects.

Invasive non-native species

5.3.328 The use of Havant Thicket Reservoir and the Portsmouth Water Pipeline between Bedhampton Springs and Havant Thicket Reservoir creates a connection between the East Hampshire Rivers WFD surface water management catchment and the Test and Itchen WFD surface water management catchment; catchments which would be otherwise isolated from each other in the absence of the Project. This connection may increase the magnitude of the risk of INNS from outside the catchment being introduced

or spread to the River Itchen should raw water from Havant Thicket Reservoir be released through the following processes:

1. Overflows from the inlet balancing tank at Otterbourne WSW or washout from the inlet pipeline operating in run to waste mode resulting in source water bypassing treatment at Otterbourne WSW and discharging directly to the sewer network.
2. Treated wastewater discharge or storm tank overflow from Chickenhall WTW to the River Itchen. The wastewater process is unlikely to remove all INNS functional groups resulting in the potential for the introduction of INNS from an outside catchment to the River Itchen.
3. Processing of sludge waste from Chickenhall WSW. There is a risk of source water INNS being present in the sludge, thus the destination of the cake remains a potential INNS pathway.

5.3.329 As the Itchen flows into the Solent and Southampton Water SPA and Ramsar there is therefore a new pathway for INNS to reach the SPA during operation.

5.3.330 To eliminate the impacts of potential operational processes resulting in raw water entering the Solent and Southampton Water SPA and Ramsar (via the River Itchen) from overflows and run to waste mode activation at Otterbourne WSW, and from storm spill procedures and sludge waste disposal at Chickenhall WTW, additional INNS treatment is proposed at Otterbourne WSW. The INNS Treatment would treat the waste flows produced by the existing treatment process, once all flows have passed through Otterbourne WSW. Following treatment, these flows would be released to the environment via the Applicant's existing network. The INNS Treatment would produce sludge, which would be disposed of via a suitably licensed disposal facility, and would be considered to be free of INNS.

5.3.331 Washouts pose a risk of introducing or spreading INNS to the natural environment, between WFD water body catchments and potentially from otherwise isolated WFD management catchments. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7).

5.3.332 No adverse effects on integrity are therefore likely as a result of operational release of INNS either alone or in-combination with other pans or projects.

Nutrient neutrality

5.3.333 A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). The assessment of operational changes in nutrients includes a combined assessment of: changes in nutrient loads from Eastney LSO; changes in compensation flows into Riders Lane Stream from Havant Thicket Reservoir; changes in nutrient loads from land use changes as a result of the Project;

changes in water released from Otterbourne WSW waste stream; and water from operational washout testing which will be collected in tankers and sent to a suitably licenced disposal facility. The operational nutrient load was compared to the baseline nutrient load to identify the changes in nutrient loads as a result of the Project.

5.3.334 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.193 to 5.3.196. The calculations show a reduction in TN during operation of 8,742 kg/yr which is primarily as a result of the reduction in final effluent discharge from Eastney pumping station due to the WRP. This reduction in TN will contribute towards the conservation objective of *Water Quality – Nutrients. Restore water quality to mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features* [37].

5.3.335 The nutrient calculations also identified a decrease in TP of 6.26 kg/yr during operation. Marine systems are nitrogen-limited and the estuarine habitats within the Solent are vulnerable to Nitrogen and not Phosphorus. The small reduction in TP would therefore not have any effect on Solent and Southampton Water SPA and Ramsar site.

5.3.336 Changes in TN and TP were also calculated during the construction phase. During the construction phase, nutrient loads remained broadly consistent with baseline levels for TN (285,107 kg/year), while TP decreased to 6.51 kg/year due to temporary land use changes.

5.3.337 Overall, there are no adverse effects on the integrity of the site as a result of changes to nutrients during construction and operation.

South Wight Maritime SAC

Construction phase

Hydrological change, waterborne pollution and INNS (impacts to all qualifying habitats)

5.3.338 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.139 to 5.3.144. The baseline land use nutrient load is calculated to be 3,784kg/yr TN and 13kg/yr TP reducing to 2,951kg/yr TN and 9.39kg/yr TP during construction. Due to the reductions in nutrient loads during construction, as a result of changes to land use, there will be no adverse effects on qualifying habitats or species as a result of changes in nutrient loads during construction.

Waterborne pollution (impacts to all qualifying habitats)

5.3.339 The water storage lagoons would store potable water used for commissioning of the Pipeline between the WRP site and Otterbourne WSW. Once pressure testing has been completed, and the water within the water storage lagoons

is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced facility. Treated wastewater used for pressure testing of the of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO. There would be no discharges to surface or groundwater and therefore no potential impacts on the Habitats Site or its qualifying habitats and therefore no adverse effect on integrity either alone or in-combination with other plans and projects.

Invasive non-native species (impacts to all qualifying habitats)

5.3.340 As identified in the Stage 1 assessment, the use of plant and equipment during construction could transfer INNS within and between catchments, although the potential for INNS to reach and establish within the SAC site is very low given INNS that could be introduced are likely terrestrial, riparian or freshwater species, the majority of which are low salinity tolerant species and therefore unlikely to persist the salinity of the habitats within the SAC site. Given the distance of the SAC from the Project (2.9km from the Eastney LSO) and the tidal nature of the Solent, it is also highly unlikely that any INNS would spread into the SAC. With the inclusion of mitigation measures to manage and control the risk of INNS during construction there will be a negligible risk of spreading INNS into the SAC site or any qualifying habitats. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing, commissioning and operation. There will therefore be no adverse effect on the integrity of the SAC site as a result of INNS during construction. No other developments have been identified which could result in significant in-combination effects from the spread of INNS and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats in-combination with other plans and projects.

Operational phase

Hydrological change, waterborne pollution and INNS (impacts to all qualifying habitats)

Impacts associated with release of reject water at Eastney LSO

5.3.341 The release point of reject water at Eastney LSO is approximately 2.8km from the SAC and therefore it is within the 10km marine ecology hydrological connectivity ZoI (this distance is considered to cover the maximum dispersion potential of any deleterious substances that may enter the water). Dispersion modelling of the discharge from Eastney LSO on currently consented water quality parameters and salinity was undertaken to predict the calculated difference (change) in water quality parameters between the existing Budds Farm WTW flow and the future single phase peak output of recycled water scenario and inform the assessment of potential impact on marine ecology and any significant risk of hindering the conservation objectives stated for the SAC (refer to section 3.6 of ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6) for the maximum flows and output

of the Project). The future single phase peak output of recycled water scenario reflects the maximum change which would only occur during a drought. At other times, flows through the WRP are likely to be lower and wastewater discharge higher, thus bringing the effect of the 'future' scenario release closer to the 'existing' scenario release. To determine the potential effect on the existing release associated with removal of wastewater for recycling and addition of the reject stream from the WRP, mass balance calculations were undertaken and the output modelled. The full report is presented in the ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6).

5.3.342 The model outputs show that the differences in the water quality parameters are very minor when the existing Budds Farm WTW discharge and the future discharge from Budds Farm (once the WRP is in place) are compared. Where a comparison to baseline data in the receiving waters can be made, predicted parameter changes are within baseline variations experienced within the receiving water. Where baseline receiving water data is not available, such as for the parameter Chemical Oxygen Demand (COD) for example, comparison of the predicted change against wastewater variability demonstrates the changes are very negligible (see Chichester and Langstone Harbours SPA and Ramsar section for results). The larger changes are modelled to be in close proximity to the LSO, and only the lower end of the concentrations would interact directly with the SAC, if at all (see dispersal model figures in ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6). The minor changes are likely to be outweighed by baseline variations experienced within the Solent, whilst the marine environment within which the LSO discharges is well mixed. The modelling demonstrates that the hydrological changes to the existing Eastney LSO discharge with the WRP in place are very minor and there will be no significant risk of the WRP operation hindering the conservation objectives stated for the SAC and therefore will not result in an adverse effect on the integrity of the Habitats Site.

5.3.343 In addition to the dispersal modelling, the surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to RDF for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality are not predicted.

5.3.344 No new INNS pathways have been identified as a result of the release of reject water at Eastney LSO during operation.

5.3.345 Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO and changes would not extend into connected water bodies. The Project would therefore not result in any hindering of conservation objectives for the Habitats Site or result in an adverse effect on the integrity of the site. In addition, there are also none of the qualifying habitats (1170 Reefs; 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts; 8330 Submerged or partially submerged sea caves) within close proximity to the LSO and therefore no likely impacts to qualifying habitats outside of the SAC.

5.3.346 As such, there will be no significant risk of hindering the conservation objectives stated for the SAC during operation of the Project.

5.3.347 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats in-combination with other plans and projects.

Nutrient neutrality

5.3.348 A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). The assessment of operational changes in nutrients includes a combined assessment of: changes in nutrient loads from Eastney LSO; changes in compensation flows into Riders Lane Stream from Havant Thicket Reservoir; changes in nutrient loads from land use changes as a result of the Project; changes in water released from Otterbourne WSW waste stream; and water from operational washout testing which will be collected in tankers and sent to a suitably licenced disposal facility. The operational nutrient load was compared to the baseline nutrient load to identify the changes in nutrient loads as a result of the Project.

5.3.349 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar section 5.3.193 to 5.3.196. The calculations show a reduction in TN during operation of 8,742 kg/yr which is primarily as a result of the reduction in final effluent discharge from Eastney pumping station due to the WRP. This reduction in TN will contribute towards the SAC conservation objective of *Water Quality – Nutrients. Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels* [34].

5.3.350 The nutrient calculations also identified a decrease in TP of 6.26 kg/yr during operation. Marine systems are nitrogen-limited and the estuarine habitats within the Solent are vulnerable to Nitrogen and not Phosphorus. The small

reduction in TP would therefore not have any effect on South Wight Maritime SAC.

5.3.351 Overall, there are no adverse effects on the integrity of the site as a result of changes to nutrients during construction and operation.

Invasive non-native species

5.3.352 The Stage 1 screening identified a potential LSE during operation as a result of the potential spread of INNS. However, new INNS pathways during operation are restricted to the risk of INNS being released into the River Itchen associated with the transfer of source water between Havant Thicket Reservoir and Otterbourne WSW (see River Itchen SAC assessment), and the risk of release of INNS at the new WRP SuDS outfall into Hermitage Stream (see Chichester and Langstone Harbour SPA assessment). Both these locations are a significant distance from the SAC with the closest point being between the SuDS outfall and the SAC which is 14.8km. There will therefore be no impact on the SAC as a result of INNS during operation and therefore no adverse effect on integrity either alone or in-combination with other plans and projects.

Solent and Isle of Wight Lagoons SAC

Construction phase

Waterborne pollution (Coastal Lagoons)

5.3.353 The water storage lagoons would store potable water used for commissioning of the Pipeline between the WRP site and Otterbourne WSW. Once pressure testing has been completed, and the water within the water storage lagoons is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced facility. Treated wastewater used for pressure testing of the of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO. There would be no discharges to surface or groundwater and therefore no potential impacts on the Habitats Site or its qualifying habitats and therefore no adverse effect on integrity either alone or in-combination with other plans and projects.

Invasive non-native species (Coastal Lagoons)

5.3.354 As identified in the Stage 1 assessment, the use of plant and equipment during construction could transfer INNS within or between catchments, although the potential for INNS to reach and establish within the SAC site is very low given INNS that could be introduced are likely terrestrial, riparian or freshwater species, the majority of which are low salinity tolerant species and therefore unlikely to persist within the saline habitats of the Solent. Whilst the SAC supports habitats such as marsh pasture at Farlington Marshes which could be impacted by terrestrial and freshwater INNS, the pathway to the Habitats Site is via the Solent and high tides overtopping the sea wall around Farlington Marshes. The salinity of the Solent would likely prevent any INNS

reaching the terrestrial habitat within the marshes. With the inclusion of mitigation measures to manage and control the risk of INNS during construction there will be a negligible risk of spreading INNS into the SAC site or any qualifying habitats. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing, commissioning and operation. There will therefore be no adverse effect on the integrity of the SAC site as a result of INNS during construction. No other developments have been identified which could result in significant in-combination effects from the spread of INNS and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats in-combination with other plans and projects.

Operational phase

Hydrological change, waterborne pollution and INNS (Coastal Lagoons)

5.3.355 Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be spillage and accidents associated with the above-ground infrastructure of the Project. This in turn could degrade coastal lagoon habitats within the areas of the SAC in Langstone Harbour.

5.3.356 Operational mitigation measures will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents. This will ensure that during operation there will be no adverse effects on the integrity of the Habitats Site as a result of pollution incidents during planned and unplanned maintenance activities.

5.3.357 Additionally, there is a risk of hydrological change, waterborne pollution and introduction of INNS through the use of washouts for routine maintenance and testing during operation. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7). This will avoid the risk of adverse effects to downstream features and ensure that there is no adverse impact on the SAC and therefore avoid any adverse effects on the integrity of the SAC as a result of hydrological change, waterborne pollution and INNS during the operational use of washouts.

Impacts associated with release of reject water at Eastney LSO

5.3.358 The release point of reject water at Eastney LSO is approximately 5.5km from the SAC and therefore it is within the 10km marine ecology hydrological connectivity ZoI (this distance is considered to cover the maximum dispersion potential of any deleterious substances that may enter the water). Dispersion modelling of the discharge from Eastney LSO on currently consented water quality parameters and salinity was undertaken to predict the calculated difference (change) in water quality parameters between the existing Budds

Farm WTW flow and the future single phase peak output of recycled water scenario and inform the assessment of potential impact on marine ecology and any significant risk of hindering the conservation objectives stated for the SAC (refer to section 3.6 of ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6) for the maximum flows and output of the Project). The future single phase peak output of recycled water scenario reflects the maximum change which would only occur during a drought. At other times, flows through the WRP are likely to be lower and wastewater discharge higher, thus bringing the effect of the 'future' scenario release closer to the 'existing' scenario release. To determine the potential effect on the existing release associated with removal of wastewater for recycling and addition of the reject stream from the WRP, mass balance calculations were undertaken and the output modelled. The full report is presented in the ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6).

5.3.359 The model outputs show that the differences in the water quality parameters are very minor when the existing Budds Farm WTW discharge and the future discharge from Budds Farm (once the WRP is in place) are compared. Where a comparison to baseline data in the receiving waters can be made, predicted parameter changes are within baseline variations experienced within the receiving water. Where baseline receiving water data is not available, such as for the parameter Chemical Oxygen Demand (COD) for example, comparison of the predicted change against wastewater variability demonstrates the changes are very negligible (see Chichester and Langstone Harbours SPA and Ramsar section for results). The larger changes are modelled to be in close proximity to the LSO, and only the lower end of the concentrations would interact directly with the SAC, if at all (see dispersal model figures in ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6). The minor changes are likely to be outweighed by baseline variations experienced within the Solent, whilst the marine environment within which the LSO discharges is well mixed. The modelling demonstrates that the hydrological changes to the existing Eastney LSO discharge with the WRP in place are very minor and there will be no significant risk of the WRP operation hindering the conservation objectives stated for the SAC and therefore will not result in an adverse effect on the integrity of the Habitats Site.

5.3.360 In addition to the dispersal modelling, the surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to RDF for these chemical parameters range

from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality are not predicted.

5.3.361 Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO and changes would not extend into connected water bodies. The Project would therefore not result in any hindering of conservation objectives for the Habitats Site or result in an adverse effect on the integrity of the site. There are also none of the qualifying habitats (1150 Coastal lagoons) within close proximity (closest lagoon site is 5.4km) to the LSO. Due to the minor changes predicted which will not undermine conservation objectives and due to the distance of the SAC from the outfall and lack of qualifying habitats near the outfall, there are no likely impacts to qualifying habitats either within or outside of the SAC and therefore no adverse effect on the integrity of the site.

5.3.362 No other developments have been identified which could result in significant in-combination effects on water quality and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats in-combination with other plans and projects.

Nutrient neutrality

5.3.363 A Nutrient Neutrality assessment has been undertaken to assess the changes in nutrients released into the Solent and River Itchen as a result of the Project. Full details of this assessment are in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6). The assessment of operational changes in nutrients includes a combined assessment of: changes in nutrient loads from Eastney LSO; changes in compensation flows into Riders Lane Stream from Havant Thicket Reservoir; changes in nutrient loads from land use changes as a result of the Project; changes in water released from Otterbourne WSW; and water from operational washout testing which will be collected in tankers and sent to a suitably licenced disposal facility. The operational nutrient load was compared to the baseline nutrient load to identify the changes in nutrient loads as a result of the Project.

5.3.364 A summary of the results of the nutrient calculations is provided within the Chichester and Langstone Harbours SPA and Ramsar sections 5.3.193 to 5.3.196. The calculations show a reduction in TN during operation of 8,742 kg/yr which is primarily as a result of the reduction in final effluent discharge from Eastney pumping station due to the WRP. This reduction in TN will contribute towards the SAC conservation objective of *Water Quality – Nutrients. Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels* [38].

5.3.365 The nutrient calculations also identified a decrease in TP of 6.26 kg/yr during operation. Marine systems are nitrogen-limited and the estuarine habitats within the Solent are vulnerable to Nitrogen and not Phosphorus. The small reduction in TP would therefore not have any effect on Solent and Isle of Wight Lagoons SAC.

5.3.366 Overall, there are no adverse effects on the integrity of the site as a result of changes to nutrients during construction and operation.

Impacts associated with proposed WRP SuDS

5.3.367 The SuDS design will include control measures suitable for the pollution hazard index (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)). As such, no further consideration is therefore required, in terms of dispersion modelling, to assess the potential release of pollutants from the SuDS outfall. Implementation of the SuDS outfall does however have the potential to reduce salinity within the Hermitage Stream. The SuDS will be designed to capture rainfall that already falls on the site, but the development at the WRP site would result in an increase in impermeable area and would concentrate surface water flows to a single point release. The proposed SuDS release would be at a lower salinity than that in the receiving brackish water in the Hermitage Stream given that it would largely be made up of rainfall.

5.3.368 Water quality modelling has been undertaken to assess the potential water quality effects of the proposed discharge of treated surface runoff from the WRP SuDS outfall into the Hermitage Stream due to the potential for changes in salinity within Hermitage Stream. Full details of the SuDS modelling in relation to the marine environment and designated sites are within ES Chapter 9 Marine biodiversity, Volume I (Document reference 6.1, DCO Volume 6). The SuDS design (refer to ES Appendix 19.1 Flood Risk Assessment, Volume II, (Document reference 6.2, DCO Volume 6)) includes a dedicated surface water collection system which would discharge to the Hermitage Stream via a new outfall (2,960m upstream of the SAC). The modelling indicates that these releases would result in highly localised minor changes in salinity (typically less than 1 Practical Salinity Unit (PSU)) in Hermitage Stream close to the outfall and would not extend further into Langstone Harbour. The change in salinity due to the SuDS outfall discharge, when compared with the natural fluctuations in ambient salinity levels throughout the tidal cycle, is considered minor. Changes in salinity within the SAC site are therefore highly unlikely. Adverse effects to water quality and on biodiversity in the tidal reach of the Hermitage Stream and Langstone Harbour are therefore not anticipated from discharges from the SuDS outfall and there will be no impacts to conservation objectives of the Habitats Sites and no adverse effect on integrity.

5.3.369 The new SuDS outfall releasing water from the WRP site into the tidal section of Hermitage Stream creates a new pathway for INNS to enter tidal water and therefore enter the Habitats Site. Mitigation measures as set out in section 4 include measures for avoiding the introduction of INNS, as set out in the INNS

Biosecurity Plan (Document reference 7.10, DCO Volume 7). The mitigation measures will minimise the risk of INNS entering Hermitage Stream during the operation of the SuDS outfall and therefore impacts on qualifying coastal lagoon habitats are highly unlikely and there will be no adverse effect on integrity as a result of INNS during operation. No other developments have been identified which could result in significant in-combination effects on water quality or INNS and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats in-combination with other plans and projects.

River Meon Compensatory SAC

Construction phase

Habitat loss and fragmentation (impacts to all qualifying habitats and species)

5.3.370 The pipeline crosses the River Meon Compensatory SAC at OPT1_WCX_G_003 or OPT1_WCX_G_010 as optionality for the route of the trenchless crossing under the River Meon remains within the design. Both crossings will be undertaken via trenchless techniques, thus avoiding any direct habitat loss and habitat fragmentation. The River Condition Assessment (RCA) assigned a final condition class of Moderate for the River Meon crossings. The trenchless construction at the intersection of the River Meon would be at a depth of approximately 4.5m below existing ground level[9]. Whilst the trenchless crossings are embedded measures within the design of the Project, as these represent mitigation measures during the HRA Stage 1 Screening assessment direct habitat loss and fragmentation was identified as having a LSE and was brought forward into the Appropriate Assessment on a precautionary basis. With the inclusion of the trenchless crossings there will be no direct loss of habitats within the Compensatory SAC and no fragmentation of habitats within the Compensatory SAC.

5.3.371 Four other trenchless watercourse crossings are proposed in the Meon catchment, at smaller watercourses outside the boundary of the River Meon Compensatory SAC: crossing COMA_WCX_G_001 relates to temporary construction access and is located on a field drain that was not subjected to aquatic ecology surveys, therefore was assumed to be in Good condition using the RCA precautionary approach to condition assessment. Crossings OPT1_WCX_G_004, OPT1_WCX_G_005 and OPT1_WCX_G_011 are located on a tributary channel that is in direct hydrological continuity with the River Meon. This watercourse was classified in Poor condition. A combination of these crossings will be required depending which pipeline route over the River Meon is ultimately chosen as part of the detailed design to be completed post-Consent.

5.3.372 Two other watercourse crossings in the Meon catchment, but outside the boundary of the River Meon Compensatory SAC are proposed for open-cut

[9] The Applicant cannot commit to these depths not changing during detailed design, but they are very unlikely to get shallower. The River Meon and Hamble current depths are the minimum cover based on the diameter of the pipe jack required for the crossings, which is dictated by the length of drive, geology etc.

construction, OPT1_WCX_G_008 and ALTE_WCX_G_006, both located on a linear drainage ditch which runs along the entrance driveway to Wickam WTW and is hydrologically connected to the River Meon. This linear drainage ditch would be crossed if the southern route for the trenchless crossing of the River Meon (OPT1_WCX_G_003) is used. It exhibits low flows and is potentially dry for summer and autumn. The watercourse was indicated in Poor condition in the condition assessment survey in May 2024; no macrophytes or aquatic vegetation were present. Although currently unsuitable for significant fish presence, given its direct connectivity to the River Meon Compensatory SAC, the possibility of this ditch being used by the fish species of the Habitats Site needs to be considered, if hydrological conditions were to change. Macroinvertebrate surveys in 2024 indicated a common invertebrate assemblage of low importance only, with no sensitive or rare aquatic or semi-aquatic species found. Habitat suitability assessments which targeted the other qualifying features of the Compensatory SAC in 2024 indicated that this watercourse was unsuitable for southern damselfly and white-clawed crayfish. eDNA sampling and habitat suitability assessments in all catchments in 2022-2024 resulted in the assumed absence of white-clawed crayfish across the Order Limits.

5.3.373 Trenched open-cut construction at watercourses will be temporary (i.e. confined to the duration of construction for the crossing to which they relate) and will be reversed once the temporary impounding structures were removed. Vegetation will not be removed from the banks unless necessary to undertake the construction works including enabling, in which case removal will be restricted to the smallest practicable footprint and will be allowed to naturally regenerate, as set out in the Outline CEMP (Document reference 7.1, DCO Volume 7). This will ensure that habitat loss or degradation at open-cut crossings is temporary only.

5.3.374 With the implementation of mitigation measures and considering that the working corridors are small in relation to available aquatic and riparian habitat, no adverse effects for the identified impacts are anticipated. This, together with the trenchless crossing of the River Meon itself, will ensure that the construction works including enabling do not result in any loss or fragmentation of suitable fish habitat both within and outside of the SAC boundary. Overall, there will be no adverse effect on the integrity of the site as a result of direct habitat loss and fragmentation. There are no identified other developments which could result in cumulative or in-combination increases in noise and vibration during the construction works and therefore there are no adverse effects on integrity as a result of in-combination impacts.

Atlantic salmon

5.3.375 Atlantic salmon are a qualifying species of the associated River Itchen SAC and are a key target of the River Meon Compensatory SAC. As summarised in section 5.3.5, within watercourses connected to the River Meon that are subject to trenched open-cut construction, habitat was unsuitable for supporting Atlantic salmon; however, the linear drainage ditch (OPT1_WCX_G_008 and ALTE_WCX_G_006) could provide functional

habitat to Atlantic salmon if hydrological conditions were to change and it remained wet. Therefore, there is a potential that the trenched open-cut construction of this ditch crossing could result in habitat fragmentation for Atlantic salmon outside of the Compensatory SAC boundary.

5.3.376 Mitigation measures set out in the Outline CEMP (Document reference 7.1, DCO Volume 7) manage environmental risks at trenched open-cut watercourse crossings to ensure that good practice guidance in relation to working near water would be adhered to and thus water quality is controlled. Measures are also set out so that flows are maintained through the use of diversion channels around the crossing and that sediment transport is reduced.

5.3.377 Trenchless techniques are being used where the pipeline crosses the River Meon Compensatory SAC to ensure there is no adverse effect on the integrity of the site as a result of habitat loss and fragmentation impacts

5.3.378 With the implementation of mitigation there will be no impacts to Atlantic salmon as a result of habitat loss or fragmentation. Overall, there will be no adverse effect on the integrity of the site for qualifying fish species as a result of direct habitat loss and fragmentation. Due to a lack of impacts alone, there is no potential for an in-combination adverse effect on integrity as a result of habitat loss or fragmentation.

Disturbance (Atlantic salmon)

5.3.379 Whilst the trenchless techniques will avoid any physical fragmentation of habitats within the main River Meon, there is a potential that noise and vibration during the trenchless construction beneath the River Meon could disturb spawning fish or form a barrier to movement if undertaken during the spawning season. Fish surveys undertaken for the Project on the River Meon have not identified Atlantic salmon (survey results are detailed in ES Appendix 8.9 Freshwater ecology, Volume II (Document reference 6.2, DCO Volume 6). Surveys in 2022 recorded five fish species, namely brown/sea trout, bullhead, chub, European eel and minnow. However, a review of the EA Fish Data Explorer tool confirms the presence of Atlantic salmon within the River Meon. This includes recent records of Atlantic salmon from 'Upstream of Silver Springs' from August 2023 and records of Atlantic salmon from 'Titchfield Mill Old River' in July 2023. The 'Upstream of Silver Springs' location is approximately 3.8km downstream of the River Meon trenchless crossing (OPT1_WCX_G_003 and OPT1_WCX_G_010) and the 'Titchfield Mill Old River' is located approximately 5.07km downstream of OPT1_WCX_G_003 and OPT1_WCX_G_010. Data from 'Wickham Gardens' in 2011, located approximately 740m upstream of the River Meon crossings, also identified the presence of Atlantic salmon. Therefore, while not identified during the Project surveys, Atlantic salmon are known to be present in the River Meon catchment. A habitat walkover survey of the River Meon in 2022 identified that instream habitat was diverse and comprised predominantly run and glide throughout the reach, with the occasional riffle, considered to be suitable salmonid fry habitat.

5.3.380 There is a potential that noise and vibration during the trenchless construction beneath the River Meon could disturb spawning fish if undertaken during the spawning season. Due to the potential presence of qualifying fish species, there is the possibility that noise and vibration during the trenchless construction beneath the River Meon could disturb spawning fish if undertaken during the spawning season. Noise and vibration from trenchless construction propagating into the water column could potentially cause a barrier to migration, disturb spawning or damage fish eggs.

5.3.381 The risk of disturbance and harm to qualifying fish species from underwater noise and vibration during trenchless construction is discussed in the River Itchen SAC sections 5.3.20 to 5.3.28. The assessment of risk is also relevant to the River Meon Compensatory SAC due to the same qualifying species and construction methods.

5.3.382 As per the assessment of fish and noise and vibration arising from trenchless construction given in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6), the noise modelling case studies for Lower Thames Crossing project and other existing studies for HDD[10] shows that the noise and vibration coming from TBM and HDD respectively is below the published thresholds for both salmonids and lamprey species. As the levels of underwater noise and vibration from MTBM are predicted to be much lower than TBM and HDD, noise and vibration from trenchless construction is not expected to cause any significant effects on freshwater biodiversity receptors as a result of the Project. This includes any detrimental effects of vibration from the construction on fish, fish eggs or larvae, or barriers to fish migration, as the levels of vibration and underwater noise are predicted to be extremely low. It is therefore assessed that there will be no adverse effect on the integrity of the site as a result of noise and vibration disturbance and harm to qualifying fish species. There are no identified other developments which could result in in-combination increases in noise and vibration during the construction works and therefore there are no adverse effects on integrity as a result of in-combination impacts.

Hydrological change (impacts to all qualifying habitats and species)

5.3.383 To avoid impact on the River Meon, the Pipeline construction would be undertaken using a trenchless method; this includes six of eight watercourse crossings within the Meon Catchment, as described in section 5.3.371. Therefore, there would be no direct disturbance of these watercourses.

5.3.384 As outlined in the HRA Stage 1 Screening and MCZ Screening Assessment, there is potential that hydrological changes as a result of the construction of the Project could result in indirect effects on the Compensatory SAC and its qualifying species and habitats. There is a risk that if perched groundwater was disturbed during the construction of the pipeline, that this could increase turbidity within the aquifer which is linked to the River Meon Compensatory SAC. As outlined in the mitigation section (section 4), all tunnels and

[10] Data has been informed by a confidential report prepared by Mott MacDonald for National Grid, which includes proprietary survey results not available in the public domain [48].

trenchless crossings of watercourses and other barriers will use a methodology that excludes groundwater, minimising direct disturbance of groundwater.

5.3.385 Any activities that disturb the ground, such as excavation, tunnelling or piling, could mobilise contaminants within soils or groundwater and potentially adversely affect groundwater quality or locally alter the hydraulic properties of the aquifer which supplies the River Meon. Additionally, if pipe jacking is used for the construction of the trenchless crossing this may also require the application of boring fluid, which would increase the risk of adding turbidity to the aquifer if groundwater was to be encountered. The Outline CEMP (Document reference 7.1, DCO Volume 7) includes specific pollution prevention measures and this will minimise and control the risk of release of contaminants into the environment to avoid any significant effects.

5.3.386 The trenchless crossing of the River Meon (OPT1_WCX_G_003 and OPT1_WCX_G_010) is anticipated to be within London Clay deposits, which would reduce the risk of the crossing and associated construction works on the overlying sensitive chalk stream.

5.3.387 The pipeline would be installed at least 2.5m below the hard bed of all main rivers crossed by trenchless methods, including the River Meon (dependent on local geology and geomorphological risks), this will avoid interaction with active bed sediments and reduce the chances of exposure and interference with the natural geomorphology of watercourses.

5.3.388 In the unlikely event that groundwater turbidity levels were affected, due to the existing fine grained alluvial and bed sediments beneath the River Meon and the deep-seated flow lines, there is unlikely to be a mechanism where turbid waters could be pulled upward into the root zones of plants or into the open waters of the River Meon.

5.3.389 There may be a requirement to cross a single Ordinary Watercourse, the linear drainage ditch OPT1_WCX_G_008 and ALTE_WCX_G_006, a tributary of the River Meon, using a trenched open-cut technique. This could result in direct impacts on the hydrology and geomorphology of the linear drainage ditch. However, the Outline CEMP (Document reference 7.1, DCO Volume 7) sets out a series of measures to reduce the impacts of temporary watercourse crossings. This will include measures to maintain flows, reduce changes on downstream sediment transport, and ensure that the channel is reinstated appropriately. The mitigation measures included in the Outline CEMP will ensure that the effects of watercourse crossing construction are localised and temporary and will not result in any impacts on the hydrologically connected River Meon.

5.3.390 Impacts to surface water and groundwater are quantified in ES Appendix 19.3 Hydrogeological Impact Assessment (HIA), Volume II (Document reference 6.2, DCO Volume 6) and assessed in the ES Chapter 19, Water Environment, Volume I (Document reference 6.1, DCO Volume 6). With the application of primary and tertiary mitigation, direct disturbance of surface water and

groundwater are assessed as having a negligible impact on the River Meon and would not have an adverse effect on the site or its qualifying species.

5.3.391 There is a potential for changes in nutrients within the River Meon during construction. A Nutrient Assessment has been undertaken in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6) to assess the changes in nutrients as a result of the Project. Changes in nutrients affecting the River Meon are restricted to changes in land use during construction. The River Meon is within the East Hampshire Rivers Catchment. The baseline nutrient load for the East Hampshire Rivers catchment was calculated to be 3,404kg/yr TN. Due to land use changes during construction, TN reduces to 2,644kg/yr. There will therefore be a reduction in nutrient load on the River Meon during construction and no adverse effects on qualifying habitats or species as a result of changes in nutrients.

5.3.392 No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species in-combination with other plans and projects.

Waterborne pollution (impacts to all qualifying habitats and species)

5.3.393 The operation of construction machinery in the vicinity of the River Meon and hydrologically linked habitats has the potential for accidental release pollutants on to the ground, where pollutants could migrate into underlying groundwater. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings or washouts. Such pollutants could enter the river and adversely affect its physical and chemical properties. The crossing of the River Meon will be trenchless with the construction areas for the trenchless crossings 105m south-east and 120m north-west of the river. This buffer between the construction areas and the river reduces the risk of impacts to the River Meon Compensatory SAC. However, unmitigated there remains a risk of adverse effect on integrity.

5.3.394 Trenched open-cut crossings of watercourses which are upstream of the River Meon have a risk of polluting water which flows into the Compensatory SAC. A single crossing of a watercourse linked to the River Meon is proposed. Watercourse Crossing OPT1_WCX_G_008 / ALTE_WCX_G_006 ‘Drain upstream of the River Meon at Tanfield Lane’ is located approximately 200m from the River Meon and will be trenched open-cut construction.

5.3.395 The construction of the Project will involve earthworks, excavation and the tracking of large construction machinery. This will create areas of bare ground by removing vegetation cover and topsoil and will increase the potential for the erosion of soil particulates. This could result in an increase in the supply of fine sediment (e.g. clays, silts and fine sands) to surface water bodies (including land drainage channels) through surface runoff and the erosion of exposed soils. Increased sediment supply can affect geomorphology of

watercourses by increasing the turbidity of the water column and, where energy is sufficiently low, encouraging increased deposition of fine sediment on the bed of the channel. Further, sediment loads could smother existing bed habitats, reduce light penetration and reduce dissolved oxygen concentrations, adversely affecting the biota including macrophytes, aquatic invertebrates and fish. This has the overall effect of reducing the quality of in-channel habitats, particularly in sensitive chalk river catchments such as the River Meon. Any impacts of increased sediment supply would be particularly pronounced in chalk river catchments such as the River Meon, which naturally has low suspended sediment loads and coarse bed substrates (i.e. gravels and cobbles) with a low proportion of fine sediment. This could affect the conservation objective of '*Restore the natural supply of coarse and fine sediment to the river'* [31].

5.3.396 Mitigation measures outlined in section 4 will ensure controls are implemented to manage and minimise the risk of water pollution during construction and ensure that any incidents are quickly responded to and resolved. This will ensure that there are no LSE as a result of construction of the Project and there will be no adverse effect on the integrity of the Habitats site. No other developments have been identified which could result in significant in-combination effects and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species as a result of waterborne pollution in-combination with other plans and projects.

5.3.397 Mitigation measures outlined in section 4 will ensure measures are implemented to manage and minimise the risk of water pollution during construction and ensure that any incidents are quickly responded to and resolved. This will ensure that there are no adverse impacts as a result of construction of the Project and there will be no adverse effect on the integrity of the River Meon Compensatory SAC as a result of waterborne pollution.

5.3.398 The water storage lagoons would store potable water used for commissioning of the Pipeline between the WRP site and Otterbourne WSW. Once pressure testing has been completed, and the water within the water storage lagoons is no longer required, it would be transferred to tankers for de-chlorination and then disposal at a suitably licenced disposal facility. Treated wastewater used for pressure testing of the of the Pipelines between Budds Farm WTW and the WRP site would be returned to Budds Farm WTW for release from the Eastney LSO. There would be no discharges to surface or groundwater and therefore no impact associated with testing and commissioning.

Airborne pollution (impacts to watercourses of plain to montane levels with Ranunculion fluitantis and Callitricho-Batrachion vegetation)

5.3.399 The Stage 1 assessment identified that construction dust may have LSE up to 250m from works (in accordance with IAQM, 2024 [17]). Therefore, there is potential for effects to occur within the Compensatory SAC. In addition, the potential effects of construction traffic (due to temporary traffic management measures and/or additional vehicles travelling to and from the construction)

and NRMM emissions on air quality within 200m of the construction works boundary or a road affected by changes in traffic may affect the SAC Compensatory Habitat (Natural England, 2018).

5.3.400 In order to assess the potential effects of airborne pollution during construction, traffic modelling and modelling of associated emissions from vehicles has been undertaken along the affected road network where this is within 200m of sensitive ecological receptors. For full details refer to ES Appendix 6.5 Construction road vehicle exhaust emissions assessment – ecological features transect results – nitrogen oxides, Volume II (Document reference 6.2, DCO Volume 6). Peak traffic flows have been screened against the thresholds set by Highways England in their Design Manual for Roads and Bridges [65], which is 1,000 annual average daily traffic (AADT) in light-duty vehicles (LDV) and 200 AADT in heavy duty vehicles (HDV); below this level increases in traffic flows associated with development are considered to be imperceptible. Results for air quality change have not been modelled for the River Meon Compensatory SAC because anticipated traffic levels within the affected road network within 200m of the Compensatory SAC do not exceed the AADT. Therefore, no adverse effects on the River Meon Compensatory SAC are expected as a result of emissions during construction.

5.3.401 The air quality assessment, refer to ES Appendix 6.5 Construction road vehicle exhaust emissions assessment – ecological features transect results – nitrogen oxides, Volume II (Document reference 6.2, DCO Volume 6), includes an assessment of construction dust and fine particulate matter using a likely worst case scenario, whereby the maximum amount of anticipated construction works is assumed to be undertaken in proximity to the greatest number of ecological receptors. Three different construction activities are considered in this construction dust risk assessment: earthworks, construction and trackout.

5.3.402 The air quality assessment identified likely worst case scenario risks on ecological receptors as a result of construction dust. The assessment identifies a high risk of impacts as a result of dust during trackout works associated with open-cut pipeline installation. The assessment also identifies a medium risk for open-cut pipeline installation. The closest trenched open-cut construction to the River Meon is 100m north-west. A low risk is identified for the WRP (not near the River Meon Compensatory SAC) and for AGP, of which there are none within 250m of the River Meon Compensatory SAC. Construction compounds are assessed as low risk (based on a worst case scenario of compounds E-1 and E2 where the most significant activity will occur). Compound G-5 is located at its closest point 50m from the River Meon Compensatory SAC and all of the compound is located within 250m of the SAC. Impacts from dust are therefore restricted to trackout works and trenched open-cut construction works within 250m of the River Meon compensatory SAC and works associated with construction compound G-5.

5.3.403 With implementation of standard mitigation measures, generation of airborne dust and particulate matter would be reduced, such that the overall effect of

residual impacts can be considered to be 'not significant', in accordance with guidance provided by the IAQM. Impacts to qualifying species and habitats as a result of construction dust are therefore likely to be minor and will be short-term and will not undermine conservation objectives or result in an adverse effect on integrity.

Invasive non-native species (impacts to all qualifying habitats and species)

5.3.404 There are 950 records of INNS within 2km of the Order Limits consisting of 74 different plant species. There are 52 records of invasive plant species listed under Schedule 9 of the WCA, consisting of 23 different species and 14 listed under the Invasive Alien Species (Enforcement and Permitting) Order 2019. A total of 11 species listed under Schedule 9 of the WCA fall within a grid square that intersects the Order Limits. The River Meon has several records of Canadian pondweed *Elodea canadensis*, New Zealand pigmyweed, and Himalayan balsam. Macrophyte surveys of the River Meon crossings in 2022 identified that Himalayan balsam was the only INNS identified within the field survey area.

5.3.405 Construction activities associated with the Project are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential runoff) may lead to the spread of INNS. The crossing of the River Meon will be via trenchless techniques and therefore the potential for the spread of INNS into the watercourse or within functionally linked land is extremely remote. Trenched open-cut crossings of waterbodies which are hydrologically linked to the River Meon have the potential to spread INNS which could flow downstream and into the River Meon Compensatory SAC habitat either through disturbance of INNS during construction or from contaminated equipment and machinery. A single trenched open-cut crossing of a watercourse linked to the River Meon is proposed: OPT1_WCX_G_008 / ALTE_WCX_G_006. There is therefore a risk of spreading INNS downstream into the River Meon during the trenched open-cut crossing works.

5.3.406 Standard good practice biosecurity measures will be implemented during all construction works including enabling to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans as required.

5.3.407 Mitigation measures outlined in section 4 will ensure that the construction works including enabling do not result in the spread of any INNS into the Compensatory SAC, or habitats which could support qualifying species. There would be no discharges to surface or groundwater and therefore no impact associated with INNS release during testing, commissioning and operation. This will ensure the construction works including enabling do not result in any adverse effect on the integrity of the River Meon as a result of INNS. With mitigation there will be no impact as a result of INNS during construction and therefore no potential for in-combination effects.

Operational phase

Hydrological change, waterborne pollution and INNS (impacts to all qualifying habitats and species)

5.3.408 During operation, there is a risk of hydrological change, waterborne pollution and accidental release of INNS from the use of washouts for routine testing and maintenance during operation. There could also be spillage and accidents associated with the above-ground infrastructure of the Project.

5.3.409 Operational mitigation measures will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents. Operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7). This will ensure that during operation there will be no adverse effects on the integrity of the Habitats Site as a result of pollution incidents during planned and unplanned maintenance activities.

Impacts associated with release of reject water at Eastney LSO

5.3.410 The HRA Stage 1 assessment also screened in potential for LSE on Atlantic Salmon as they may be impacted by discharges from the Eastney LSO as a result of the Project. This qualifying species may pass the Eastney LSO. Atlantic salmon are migratory, between their adult phase in marine waters and swim upstream to spawn (anadromous) therefore they may pass the Eastney LSO which is fully marine. Atlantic salmon are highly mobile so they are likely to have a limited duration of exposure to any discharged compounds before they move away from the LSO to areas where the discharge is sufficiently diluted by the Solent to below thresholds of effect. Consequently, discharges from the LSO are not considered to result in significant ecological effect to the species as a qualifying feature of the Compensatory SAC.

5.3.411 The surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to RDF for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality are not predicted. Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO and changes would not extend into connected water bodies. As such, there will be no risk of hindering the conservation objectives relevant to Atlantic salmon during

operation of the Project and no adverse effect on integrity. No other developments have been identified which could result in significant in-combination effects on water quality within the vicinity of the Eastney LSO which could affect Atlantic salmon and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying habitats and species as a result of waterborne pollution in-combination with other plans and projects.

Nutrient neutrality

5.3.412 There is a potential for changes in nutrients within the River Meon during operation. A Nutrient Assessment has been undertaken in ES Appendix 19.7 Nutrient Assessment, Volume II (Document Reference 6.2, DCO Volume 6) to assess the changes in nutrients as a result of the Project. Changes in nutrients affecting the River Meon are restricted to changes in land use during operation. The River Meon is within the East Hampshire Rivers Catchment. The baseline nutrient load for the East Hampshire Rivers catchment was calculated to be 3,404kg/yr TN. Permanent land use changes are restricted to small areas permanent infrastructure for AGP. Due to minor land use changes during operation, TN from land use within the East Hapshire Rivers catchment reduces to 3,350kg/yr. There will therefore be a slight reduction in nutrient load on the River Meon during operation and no adverse effects on qualifying habitats or species as a result of changes in nutrients.

Singleton and Cocking Tunnels Bat SAC

Construction phase

Habitat loss and fragmentation

Bechstein's bat

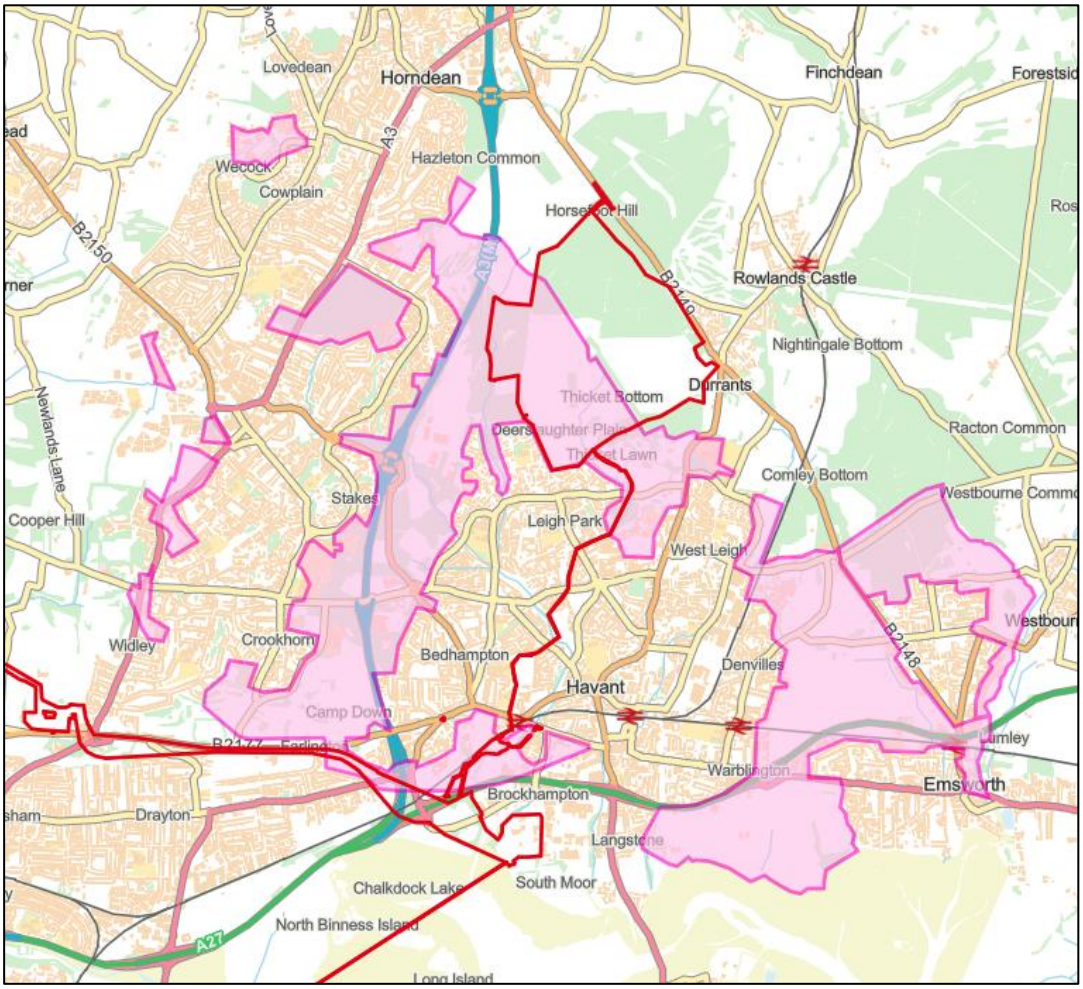
5.3.413 Habitats within the Order Limits provide suitability for roosting, foraging and commuting bats, including ancient woodland, broadleaved woodland, lines of trees, hedgerows, grassland, scrub and waterbodies.

5.3.414 Singleton and Cocking Tunnels SAC is located 15.2km north-east of the Order Limits at Havant Thickett Reservoir (existing infrastructure) and approximately 18.4km north-east of Bedhampton Spring (Pipelines between the WRP site and Bedhampton Springs). The Core Sustenance Zone (CSZ) for Bechstein's is 3km reflecting this species tendency to forage in and around the woodlands where they roost with limited outward travel. The draft Sussex Bat SAC Planning and Landscape Enhancement Protocol [66] cites a 12km buffer referred to as a wider conservation area for Singleton and Cocking Tunnels SAC. As the Project is located a further 3km outside this wider buffer at its closest point, the risk of adverse effects on the population of Bechstein's bats associated with Singleton and Cocking Tunnels Bat SAC is low.

5.3.415 However, a population of Bechstein's is known within the Havant area which has been assessed to be of at least national significance by Havant Borough

Council [67]; they have also identified the 'Havant Bechstein's bat Area'. Whilst there is no direct evidence of a functional link between the Havant Borough population and Singleton and Cocking Tunnels SAC, it is the view of both the Havant Borough Council and NE that habitat within the Borough is highly likely to be functionally linked to the SAC. The Pipelines between the WRP site and Bedhampton Springs are partially located within the Havant Bechstein's bat Area. Intersections between this area and the Project are shown in Graphic 5-1. Havant Bechstein's bat Area is indicated by the pink polygons. The main interaction between the Order Limits and the Havant Bechstein's bat Area is around Havant Thicket Reservoir where there are no proposed construction works and no impacts to habitats.

Graphic 5-1 Havant Bechstein's bat area



5.3.416 Thirty-three Bechstein's bat records were returned within the Order Limits, all of which were associated with Staunton Country Park and adjacent land parcels. A total of 173 records of Bechstein's were returned within 7km of the Order Limits, including records associated with the Havant Bechstein's bat Area and occasional records in the middle of the route near Bishop's Waltham and Wickham. The closest Bechstein's record along the Pipeline between the WRP site and Otterbourne WSW was located in Fiddler's Green,

approximately 470m south of the Order Limits. Only one record was returned west of the Project; in Crabb Wood SSSI, near Sparsholt.

5.3.417 There is potential for Bechstein's bats associated with the populations around Havant to hibernate within the SAC. As such, any adverse effects on Bechstein's bats associated with the Project could impact the numbers of bats within the SAC.

5.3.418 The HSM reported in ES Appendix 8.4 Bats, Volume II (Document reference 6.2, DCO Volume 6) and ES Figure 8.24 Habitat suitability modelling output for Bechstein's bat, Volume III (Document reference 6.3, DCO Volume 6) identified that there are no areas of high habitat suitability across the Project for Bechstein's bat. Due to the CSZ of Bechstein's bat and the known absence of Bechstein's bats the output shows very low connectivity to known suitable habitat west of Staunton Country Park.

Barbastelle

5.3.419 The CSZ for barbastelle is 7km; however, barbastelle can forage 10-15km from their roosting sites. The draft Sussex Bat SAC Planning and Landscape Enhancement Protocol [66] cites a 12km buffer referred to as a wider conservation area for Singleton and Cocking Tunnels SAC. As the Project is located a further 3km outside this wider buffer, the risk of adverse effects on the population of barbastelle associated with Singleton and Cocking Tunnels Bat SAC is low.

5.3.420 Suitable habitat for barbastelle has been identified within and adjacent to the Order Limits. Due to the likely functional connectivity between Havant and Singleton and Cocking Tunnels SAC, and as movements between summer and winter roosts are not well known, there is potential for populations of bats associated with the SAC to be present within the Order Limits and, similarly, for bats within the Order limits to hibernate within the SAC. As such, any adverse effects on barbastelle bats associated with the Project could impact the numbers of bats within the SAC.

5.3.421 Seventeen barbastelle records were returned within the Order Limits, all of which were associated with Staunton Country Park and adjacent land parcels, around Havant Thicket Reservoir where there are no proposed construction works and no impacts to habitats. One hundred and fifty-three (153) records were returned within 7km of the Order Limits with the most frequent records around Staunton Country Park and to the east of the Order Limits, with occasional records scattered throughout the 7km buffer along the Order Limits between Havant and Otterbourne.

5.3.422 The HSM reported in ES Appendix 8.4 Bats, Volume II (Document reference 6.2, DCO Volume 6) and ES Figure 8.29 Habitat suitability modelling output for barbastelle, Volume III (Document reference 6.3, DCO Volume 6) identified high suitability around the known barbastelle bat population at Staunton Country Park with high connectivity predominantly eastwards to large areas of woodland near Westbourne and towards Singleton and

Cocking Tunnels SAC. There is also high connectivity southwards towards Portsmouth Golf Course.

5.3.423 The HSM output highlights likely coastal movement of barbastelle via the saltwater inlets and connected water courses like Brockhampton Mill Lake and Hermitage Stream which were identified as key connective locations.

5.3.424 Areas of high suitability habitat due to the mosaic of broadleaved woodland and hedgerows in the landscape were also identified within the northern part of the survey area with multiple key connective locations across the Project between Wallington River and Otterbourne.

5.3.425 The output highlights the woodland at Otterbourne as high habitat suitability, but the connectivity is predominantly westwards. There is moderate connectivity across the Project at Otterbourne with a key connective location at Kiln Lane and at the River Itchen.

Loss of roosting habitat and roosting resource (impacts to Bechstein's bat and barbastelle)

5.3.426 In addition to the desk study records, bat surveys have been undertaken in 2023 and 2024 including ground level tree assessments, aerial inspections and emergence surveys to assess PRF. Surveys have identified a large number of trees which support PRFs within the Order Limits and a 10m buffer. To date, one confirmed roost site has been identified; an individual common pipistrelle *Pipistrellus pipistrellus* was seen emerging from a roost in a tree at Staunton Country Park. This identified roost site is located approximately 27 metres from the Order Limits. There are no construction works proposed within Staunton Country Park and no impacts to this identified roost. Given the frequent roost switching behaviour of tree roosting bats including Bechstein's and barbastelle, there is a potential that additional trees supporting PRFs which are directly or indirectly impacted could be used in the future across the Project footprint by roosting barbastelle and Bechstein's bats.

5.3.427 As outlined in section 4, mitigation has been designed to ensure the Project does not result in a significant adverse impact on roosting bats. This includes pre-felling surveys to assess presence of bats immediately prior to felling, provision of short to medium term replacement PRF through erection of bat boxes and provision of medium to long-term replacement roosting resource through new native tree planting.

5.3.428 With the implementation of mitigation, this would ensure there is no loss of roosting resource and would ensure there was no adverse effect on the integrity of the SAC as a result of impacts to roost sites outside of the SAC. As there will be no impact with mitigation, there is no potential for an in-combination adverse effect.

Loss and fragmentation of commuting and foraging habitat (impacts to Bechstein's bat and barbastelle)

5.3.429 Night-time bat walkover surveys, static surveys and HSM have been undertaken to assess potential impacts to commuting and foraging habitat.

5.3.430 Surveys and HSM have identified a number of key connective locations which are important corridors for foraging and commuting bats including Bechstein's and barbastelle. This includes two treelines within the Havant Bechstein's bat area within Staunton Country Park where barbastelle and Bechstein's are present. These two corridors are located in the Order Limits of the Project but will be retained and unaffected by the Project, as will all vegetation within Staunton Country Park. The Pipelines between the WRP site and Bedhampton Springs will be constructed using trenched open–cut construction. The temporary vegetation removal required for construction of the Project will not result in the loss of ecological connectivity as habitats to the south that provide connectivity with the SAC will not be impacted. The Project will result in the loss of a discrete area of foraging and commuting habitat within Bedhampton Springs; however, the impacts will be temporary and alternative, suitable habitat is available within and connected to the wider landscape.

5.3.431 The wider Project will result in further temporary losses of vegetation suitable for commuting and foraging bats, including Bechstein's and barbastelle (as identified by records, surveys and modelling). However, these are located outside of the Havant Bechstein's bat area and well outside of the SAC 12km buffer and will therefore not have an adverse effect on the populations associated with the SAC or have an adverse effect on the integrity of the SAC.

5.3.432 As detailed in section 4, mitigation will be implemented to maintain connectivity in the short and long-term to ensure that there are no adverse effects as a result of fragmentation of linear features. This will include the use of temporary fencing and habitat reinstatement as soon as possible, with temporary measures maintained until any replacement planting is sufficiently established.

5.3.433 As well as temporary habitat loss and fragmentation, there would also be a potential for permanent habitat loss where permanent above-ground works are proposed at the WRP site and the section of above-ground pipeline between the WRP site and Bedhampton Springs. However, the extent of the proposed above-ground pipeline is limited to a small area which will not result in severance of linear vegetation features and the WRP site will also not result in any permanent fragmentation of linear habitat. The WRP site falls outside of the Havant Bechstein's bat Area and is isolated from other suitable foraging and commuting areas by the A27. The site offers limited suitable roosting and or foraging habitat for barbastelle and Bechstein's bat as the wooded areas are immature and isolated from areas of ancient woodland and established broadleaved woodland that are favoured by these species.

5.3.434 Other permanent above-ground infrastructure will include isolation valves, air valves and washout valves; discrete areas of permanent habitat loss will be required at these locations. The location of these assets is currently unknown and will be finalised at detailed design. Therefore, at worst small areas of vegetation clearance would be needed, but this would not result in significant habitat fragmentation. They will not require permanent loss of linear vegetation and would be outside the Havant Bechstein's bat Area.

5.3.435 With the implementation of mitigation, the proposals will not result in any significant fragmentation or isolation of habitat and therefore are not considered to have any impact on the SAC and associated populations of barbastelle and Bechstein's and therefore will not result in an adverse effect on the integrity of the SAC as a result of habitat loss or fragmentation.

5.3.436 Other developments, including Havant Thicket Reservoir will result in impacts to habitats within the Havant Bechstein's Bat Area and have potential for significant in-combination effects. However, the Havant Thicket Reservoir scheme is implementing extensive mitigation to compensate for the impacts to barbastelle and Bechstein's habitat. Other developments included on the list of 'other developments' – longlist and shortlist, Volume II (Document reference 6.2, DCO Volume 6) include housing developments which could result in impacts to barbastelle and Bechstein's bat habitat which could affect the SAC, including Land East of Horndean (EHDP ALL001) and Long Copse Lane (HBC_EALL002) which both affect land used by Bechstein's bats. These developments would be required to fully mitigate and compensate for any adverse effects to ensure no loss of foraging or commuting habitat. The identified sites are also located remotely from any habitats affected by the Project and so there would not be any loss of habitats which could result in in-combination impacts from loss of connectivity and fragmentation. There are therefore no in-combination impacts which could result in significant impacts or adverse effects on the integrity of the SAC.

Disturbance (impacts to Bechstein's bat and barbastelle)

5.3.437 Noise and vibration disturbance has the potential to disturb roosting bats during construction activities. If this resulted in disturbance of roosting barbastelle or Bechstein's then there is the potential that this could adversely affect bats associated with the Singleton and Cocking Tunnels SAC. Surveys of trees within the Order Limits and within a 10m buffer have been undertaken to identify PRF which could be directly or indirectly impacted. To date, one confirmed roost site has been identified; an individual common pipistrelle from a roost in a tree at Staunton Country Park. There are no construction works in the vicinity of this tree and therefore no risk of disturbance. However, given the roost switching behaviour of tree roosting bats there is a potential that additional roost features which may be disturbed by the construction of the Project may be used in the future by bats, including barbastelle and Bechstein's.

5.3.438 Even if roosts were present in nearby trees, the duration of construction works including enabling in proximity to any one area which may support a

bat roost will be short-term. For trenched open-cut construction, each section of pipeline would require three separate visits to account for disturbance due to enabling works, pipe laying works and reinstatement works. For each, the duration of works within close proximity to a sensitive receptor such as a confirmed roost would be minimal. Noise and vibration levels associated with the majority of construction works will also be similar to agricultural machinery which is currently regularly used across much of the rural pipeline route. It is highly unlikely that disturbance would be at a sufficient level or duration to result in disturbance which could affect the ability of any bat species to survive, breed or nurture their young. Pre-construction surveys, undertaken post-consent, would ensure that any significant roosts (such as maternity roosts) that could be indirectly impacted by noise and vibration disturbance, are identified and additional mitigation (for example, timing of works, working methods, screening) implemented to avoid any significant disturbance.

5.3.439 Temporary artificial lighting during construction also has the potential for disturbance of roosting bats and disturbance of commuting routes and foraging habitat. Detailed lighting plans will be produced post-consent. However, required lighting will be strictly controlled, ensuring any PRF are not illuminated and maintaining dark corridors along key commuting routes and key foraging habitat. Where artificial lighting is essential, its use will be minimised as far as practical, and the specification of luminaires will be in accordance with good practice (as outlined in the Bat Conservation Trust and Institution of Lighting Professionals Guidance Note 8 Bats and Artificial Lighting at Night 2023 [68]. This will minimise the impact of artificial lighting and avoid any significant impacts on bats along the corridor of the Project and avoid any impacts to the populations of bats associated with the SAC.

5.3.440 With the implementation of mitigation, there will be no adverse effects on the integrity of the SAC as a result of temporary disturbance during construction. No other developments have been identified which could result in concurrent disturbance activities which could result in increased levels of disturbance and lead to significant impacts. Therefore, no adverse effects on the integrity of the SAC are anticipated as a result of disturbance during construction.

Hydrological change

5.3.441 During construction there is a risk of changes to groundwater which could impact groundwater dependent ecosystems which provide high value bat foraging habitat. If habitats become degraded through changes in water quality or quantity, then the value of bat foraging could decrease which could lead to increased pressure on local bat populations. Groundwater flows and levels may be affected by temporary physical modifications (e.g., excavations or tunnelling), which would interrupt the natural groundwater flow pathways. The other potential risks to groundwater associated with excavations and/or tunnel construction include temporary dewatering, if required, for the tunnel or shafts, diverting water away from the waterbodies, or bypassing part of the system, leading to reduced groundwater flow.

5.3.442 Barbastelle prefer to forage in wet meadows and riparian habitats and these habitats would also provide suitable habitat for foraging Bechstein's and therefore these species have potential to be adversely affected if the Project results in degradation of groundwater dependent ecosystems. Within and adjacent to the Order Limits of the Project in the Havant Bechstein's Area, habitat surveys have identified wet meadows in Staunton Country Park which are likely to be an important component of bat foraging habitat. Due to a lack of construction works within this location, there is no risk of habitat degradation during construction as a result of hydrological change and no adverse effect on integrity as a result of hydrological change during construction. Due to a lack of impact, there is no potential for in-combination adverse effects.

Operational phase

Hydrological change and waterborne pollution

5.3.443 Operational impacts to water quality and quantity have potential for the same types of impacts to bat foraging habitat as construction impacts. If habitats became degraded through changes in water quality or quantity, then the value of bat foraging habitat could decrease which could lead to increased pressure on local bat populations. Identified wet meadow habitats in Staunton Country Park are located outside of components delivered by the Project and therefore habitats will not be affected.

5.3.444 During the operational phase there is a risk of adverse effects due to accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. There could also be spillage and accidents associated with the above-ground infrastructure of the Project. Operational mitigation measures will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents.

5.3.445 Additionally, there is a risk of impacts to water quality during the use of washouts in routine maintenance and testing. As outlined in section 4, operational discharges from the proposed washout valves will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7). This will avoid the risk of adverse effects on downstream features and therefore minimise the risk of degradation of bat foraging habitat.

5.3.446 With the implementation of mitigation it is unlikely that hydrological change and waterborne pollution during operation will result in any significant habitat changes which could degrade bat foraging habitat. Therefore, there would be no adverse effects on the integrity of the SAC as a result of operational hydrological impacts.

5.3.447 No other developments have been identified which could result in impacts to supporting habitats as a result of hydrological change and pollution and therefore the Project will not result in an adverse effect on the integrity of the site and its qualifying species in-combination with other plans and projects.

6 Marine Conservation Zone Stage 1 Assessment

6.1 Information for Stage 1: conservation objective

Bembridge MCZ

6.1.1 The conservation objective of the Zone [69] (refers to the Bembridge MCZ) is that the protected features:

1. so far as already in favourable condition, remain in such condition
2. so far as not already in favourable condition, be brought into such condition, and remain in such condition

6.1.2 The term, “favourable condition” with respect to a habitat within the Zone, means that:

1. its extent is stable or increasing
2. its structure and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it remains in a condition which is healthy and not deteriorating

6.1.3 “Favourable condition” with respect to a species of marine fauna or flora within the Zone, means that the quality and quantity of its habitat and the composition of its population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive.

6.1.4 The reference to the composition of the characteristic biological communities of a habitat includes a reference to the diversity and abundance of species forming part of, or inhabiting, that habitat.

6.1.5 Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

6.1.6 Any temporary reduction of numbers is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery.

6.1.7 For the purpose of determining whether a protected feature is in favourable condition, any alteration to that feature brought about entirely by natural processes is to be disregarded.

6.1.8 In addition to these conservation objectives, NE has published Supplementary Advice on Conservation Objectives for Bembridge MCZ [70] in which the listed attributes are considered to be those which best describe the site’s ecological integrity and which if safeguarded will enable achievement of the Conservation Objectives [70]. These attributes have a target, which is either quantified or qualified depending on the available evidence, identifies as far as possible the desired state to be achieved for the

attribute. In many cases, the attribute targets show if the current objective is to either 'maintain' or 'recover' the attribute. A summary of relevant supplementary advice on conservation objectives for Bembridge MCZ is outlined in section 6.1.9.

6.1.9 For the qualifying features of Bembridge MCZ, targets [70] include:

1. Maintain the presence and spatial distribution of sheltered muddy gravels, subtidal coarse sediment, subtidal mixed sediment, and subtidal sand communities
2. Recover the presence and spatial distribution of intertidal seagrass bed, maerl bed, sea pens and burrowing megafauna, and subtidal mud communities
3. Maintain the total extent and spatial distribution of sheltered muddy gravels, subtidal coarse sediment and subtidal sand
4. Recover the total extent and spatial distribution of subtidal mud with sea pens and burrowing megafauna, maerl beds, seagrass beds, subtidal mixed sediment and subtidal mud
5. Recover the abundance of peacock's tail
6. Maintain the population size of stalked jellyfish and short snouted seahorse within the site
7. Recover the population size of native oyster within the site
8. Reduce the introduction and spread of non-native species and pathogens, and their impacts
9. Maintain the natural physico-chemical properties of the water
10. Water quality – turbidity: Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat
11. Water quality – dissolved oxygen: Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg L^{-1} (at 35 salinity) for 95% of year) avoiding deterioration from existing levels
12. Water quality – nutrients: Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels
13. Water quality – contaminants: Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels

6.2 Information for Stage 1: site condition

Bembridge MCZ

6.2.1 The following protected features are reported as being in favourable condition in May 2019 [71]:

1. Sheltered muddy gravels
2. Short-snouted seahorse *Hippocampus hippocampus*
3. Stalked jellyfish Calvadosia campanulata
4. Stalked jellyfish *Haliclystus* species
5. Subtidal coarse sediment
6. Subtidal sand
7. Maerl beds

6.2.2 The remaining protected features are not in favourable condition, and are reported under the management approach of recover to favourable condition [71]:

1. Native oyster
2. Peacock's tail (*Padina pavonica*)
3. Sea-pens and burrowing megafauna
4. Seagrass beds
5. Subtidal mixed sediments
6. Subtidal mud

6.3 Assessment of significant risk on the conservation objectives stated for the MCZ

Bembridge MCZ

Construction phase

Waterborne pollution

6.3.1 Bembridge MCZ is approximately 2km from the Eastney LSO and 14km away from the WRP site. None of the construction associated drainage would be connected to the Budds Farm WTW, the existing Eastney TT or Eastney PS that lead to discharge straight down the Eastney LSO, therefore water pollution associated with construction activities are not anticipated from the LSO.

6.3.2 Considering the far distance (approximately 14km) from Bembridge MCZ to the WRP site, it is not likely for potential water pollution or risk of transferring INNS arising from construction activities (such as accidental spillage from construction machinery and storage areas and other examples discussed

within section 5) to enter or affect the MCZ. With the implementation of good practice measures set out in the Outline CEMP (Document reference 7.1, DCO Volume 7) (as described in section 4.1) the risk of water pollution will be managed and minimised during construction, and any incidents will be quickly responded to and resolved. Therefore, no adverse impacts are anticipated as a result of construction of the Project. Taking the good practice measures and far distance between the WRP site and Bembridge MCZ into account, there will be no significant risk of construction activity hindering the achievement of the conservation objectives stated for the MCZ.

6.3.3 During testing and commissioning washout valves will be used to test the integrity of sections of pipeline. Washout water generated from pipelines would be collected directly in a tanker, with no source water to be released to the land, watercourse or marine environment, in accordance with the Outline CEMP (Document reference 7.1, DCO Volume 7). Therefore, washout releases from pipelines are not considered to interact with the marine environment. No adverse impacts are anticipated on the marine environment and thus there will be no significant risk of hindering the achievement of the conservation objectives stated for the MCZ.

Operational phase

Hydrological change – Impacts Associated with Release of Reject Water at Eastney LSO

6.3.4 The release point of reject water at Eastney LSO is approximately 2km from the Bembridge MCZ and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Dispersion modelling of the discharge from Eastney LSO on currently consented water quality parameters and salinity was undertaken to predict the calculated difference in water quality parameters between the existing Budds Farm WTW flow and the future single phase peak output of recycled water scenario and inform the assessment of potential impact on marine ecology and any significant risk of hindering the conservation objectives stated for the MCZ (refer to section 3.6 of ES Chapter 3 Description of Project, Volume I (Document reference 6.1, DCO Volume 6) for the maximum flows and output of the Project). To determine the potential effect on the existing release associated with removal of wastewater for recycling and addition of the reject stream from the WRP, mass balance calculations were undertaken and the output modelled. The full report is presented in the ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6).

6.3.5 Predicted changes in selected water quality parameters modelled were reported to be negligible: salinity changes in the region of 0.01–0.05PSU considered to be within baseline variation; decreases in total nitrogen in the region of 0.001–0.006mg/l; decreases in iron in the region of 0.012–0.05µg/l; increase in suspended solids in the region of 0.0008–0.002mg/l; increase in BOD in a region of 0.0005–0.0012mg/l; decrease in COD in a region of 0.005–0.015mg/l; with the larger changes in concentrations to be in close

proximity to the LSO, and only the lower end of the changes in concentrations would interact directly with the MCZ, if at all (see dispersion model figures in ES Appendix 19.5 Eastney Long Sea Outfall Dispersion Modelling, Volume II (Document reference 6.2, DCO Volume 6). The modelling has considered that the marine environment within which the LSO discharges is well mixed, implying that changes in concentrations due to WRP operation are likely to be outweighed by baseline variations experienced within the Solent. The modelling demonstrates that the hydrological changes to the existing Eastney LSO discharge with the WRP in place are negligible.

6.3.6 The subtidal habitat survey around the Eastney LSO (refer to ES Chapter 9 Marine biodiversity, Volume I (Document reference 6.1, DCO Volume 6), and ES Appendix 9.10 Eastney Long Sea Outfall benthic ecology survey, Volume II (Document reference 6.2, DCO Volume 6) indicated that some features of conservation interest of Bembridge MCZ including subtidal sand, subtidal mud and subtidal mixed sediments were observed. However, given the negligible changes, there is likely a lack of effects on these habitat features or potentially connected habitats in the Bembridge MCZ. As a result, there will be no significant risk of the WRP operation hindering the conservation objectives stated for the MCZ.

6.3.7 In additional to the dispersion modelling, the surface water pollution risk assessment screened in three parameters (copper, triphenyltin and diflubenzuron) for further assessment. CORMIX modelling of these chemical parameters discharge from Eastney LSO was undertaken in July 2025 and the outcome is presented in ES Appendix 19.8 Hampshire Water Transfer and Water Recycling Project Eastney Long Sea Outfall - CORMIX Modelling for Chemicals Screened in via the Surface Water Risk Assessment Process, Volume II (Document reference 6.2, DCO Volume 6). The CORMIX modelling results indicate that the distance to RDF for these chemical parameters range from 0.17m to 1.03m, meaning that the mixing zone for chemical parameters is spatially limited to the immediate area of the outfall discharge point, implying dilution of the chemicals to Environmental Quality Standards in the immediate vicinity of the Eastney LSO, and therefore, impacts on water quality at Bembridge MCZ are not predicted.

6.3.8 Given the scale of the predicted changes, the addition of the reject water to the existing discharge would not result in any changes to water quality at Eastney LSO and changes would not extend into connected water bodies, therefore, there are not considered to be any LSE on water quality in the Solent. As such, there will be no significant risk of hindering the conservation objectives stated for the MCZ during operation of the Project.

6.3.9 Additionally, there would be use of washouts and associated releases from routine testing and maintenance during operation. As described, washout releases will be captured and disposed of by the operator in accordance with the OEMP (Document reference 7.7, DCO Volume 7) with no source water to be discharged to the land, watercourse or marine environment. This will avoid the risk of adverse effects on downstream features and ensure that

there is no adverse impact on the MCZ and therefore there will be no significant risk of hindering the conservation objectives stated for the MCZ.

Waterborne pollution

6.3.10 There is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be spillage and accidents associated with the above-ground infrastructure of the Project. This in turn could affect the protected features of the MCZ.

6.3.11 Tertiary mitigation measures as set out in the OEMP (Document reference 7.7, DCO Volume 7) will be implemented to manage the risk of pollution incidents during operation in order to minimise risk and ensure rapid response to any incidents. This will ensure that during operation there will be no significant risk of pollution incidents during planned and unplanned maintenance activities hindering the conservation objectives stated for the MCZ.

6.4 Summary of Stage 1 MCZ Assessment

6.4.1 As outlined in section 6.3, potential impacts associated with the Project are waterborne pollution and hydrological change. Potential effects on the protected features of the Bembridge MCZ were not ruled out during MCZ screening due to its hydrological connectivity to the Project. However, it is possible to suitably mitigate for these impacts. Tertiary mitigation and good practice measures are outlined in section 4.1 and secured through the Outline CEMP (Document reference 7.1, DCO Volume 7) and OEMP (Document reference 7.7, DCO Volume 7).

6.4.2 With the implementation of the Outline CEMP (Document reference 7.1, DCO Volume 7) and OEMP (Document reference 7.7, DCO Volume 7), any adverse impacts on the MCZ or the protected features will be avoided, and the Project will not hinder the conservation objectives stated for the MCZ.

6.4.3 As a result, no MCZ Stage 2 Assessment is required to be undertaken for the Project.

7 Conclusions

7.1.1 This report presents the information required for the HRA Stage 2 Appropriate Assessment and MCZ Stage 1 Assessment for the Project.

7.1.2 The Screening report concluded that LSE could not be ruled out for the below sites:

1. River Itchen SAC
2. Chichester and Langstone Harbours SPA
3. Chichester and Langstone Harbours Ramsar
4. Solent Maritime SAC
5. Portsmouth Harbour SPA
6. Portsmouth Harbour Ramsar
7. Solent and Dorset Coast SPA
8. Solent and Southampton Water SPA
9. Solent and Southampton Water Ramsar
10. South Wight Maritime SAC
11. Solent and Isle of Wight Lagoons SAC
12. River Meon Compensatory SAC

7.1.3 In addition, Singleton and Cocking Tunnels SAC has been included within the Appropriate Assessment despite being screened out during the Stage 1 Screening report. Following completion of the Stage 1 Screening Report, in response to stakeholder comments from Havant Borough Council, it was considered that the SAC should be assessed within the Stage 2 HRA due to the potential for impacts on functionally linked land within Havant Borough.

7.1.4 The potential impact pathways identified were:

1. Habitat loss and fragmentation
2. Disturbance
3. Hydrological change and waterborne pollution
4. Airborne Pollution
5. Spread or introduction of INNS

7.1.5 This report examined the potential for changes in the baseline conditions as a result of the Project against the Conservation Objectives of each site, including the consideration of mitigation measures and good practice measures proposed to avoid or reduce the potential for adverse effect on integrity.

7.1.6 In conclusion, it is considered that with the consideration of further design details and with the application of mitigation measures, there will be no

impacts which undermine conservation objectives or result in an adverse effect on the integrity of the Habitats Sites taken through to HRA Stage 2 Appropriate Assessment either alone or in-combination with other plans or projects. A summary table showing the conclusions of the adverse effect on integrity assessment is provided in Table 7-1.

7.1.7 It is also considered from the MCZ Stage 1 Assessment that with tertiary mitigation and good practice measures recommended and implemented through the Outline CEMP (Document reference 7.1, DCO Volume 7) and OEMP (Document reference 7.7, DCO Volume 7), the Project will avoid any adverse impacts on Bembridge MCZ or the protected features and will not hinder the conservation objectives stated for the MCZ. As a result, no MCZ Stage 2 Assessment is required to be undertaken for the Project

Table 7-1 Summary table of conclusions of adverse effect on integrity assessment

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
River Itchen Special Area of Conservation (SAC)	Habitat loss and fragmentation during construction	• 3260 Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1044 Southern damselfly *Coenagrion mercurial* • 1355 Otter *Lutra lutra* • 1163 Bullhead *Cottus gobio* • 1096 Brook lamprey *Lampetra planeri* • 1106 Atlantic salmon *Salmo salar*	✕	✕	✕	✕
	Disturbance during construction	• 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon • 1355 Otter	✕	✕	✕	✕
	Hydrological change during construction	• 3260 Watercourses of plain to montane levels with *Ranunculion*	✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	Waterborne pollution during construction including runoff, turbidity and sedimentation	*fluitantis* and *Callitricho-Batrachion* vegetation • 1044 Southern damselfly • 1355 Otter • 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon	✕	✕	✕	✕
	Airborne pollution during construction	• 3260 Watercourses of plain to montane levels with Ranunculion fluitantis and Callitricho-Batrachion vegetation • 1044 Southern damselfly • 1355 Otter • 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon	✕	✕	✕	✕
	Invasive non-native Species (INNS) during construction		✕	✕	✕	✕
	Hydrological change and waterborne	• 3260 Watercourses of plain to montane levels with Ranunculion	✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	pollution during operation	fluitantis and Callitricho-Batrachion vegetation • 1044 Southern damselfly • 1355 Otter • 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon				
	INNS during operation	• 3260 Watercourses of plain to montane levels with Ranunculion fluitantis and Callitricho-Batrachion vegetation • 1044 Southern damselfly • 1355 Otter • 1163 Bullhead • 1096 Brook lamprey • 1106 Atlantic salmon	✕	✕	✕	✕
Chichester and Langstone Harbours SPA	Habitat loss and fragmentation during construction	Qualifying breeding bird species:	✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	Disturbance during construction	• A191 *Sterna sandvicensis*; Sandwich tern • A193 *Sterna hirundo*; Common tern • A195 *Sterna albifrons*; Little tern Qualifying migratory bird and wintering bird species: • A675 Dark-bellied brent goose *Branta bernicla bernicla* • A048 Common shelduck *Tadorna tadorna* • A050 Eurasian wigeon *Anas penelope* • A052 Eurasian teal *Anas crecca*; • A054 Northern pintail *Anas acuta* • A056 Northern shoveler *Anas clypeata* • A069 Red-breasted merganser *Mergus serrator* • A137; Ringed plover *Charadrius hiaticula*	✕	✕	✕	✕
	Hydrological change during construction		✕	✕	✕	✕
	Waterborne pollution during construction including runoff, turbidity and sedimentation		✕	✕	✕	✕
	Airborne pollution during construction		✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
		• A141 Grey plover Pluvialis squatarola • A144 Sanderling *Calidris alba* • A149 Dunlin Calidris alpina alpina • A157 Bar-tailed godwit *Limosa lapponica* • A160 Eurasian curlew *Numenius arquata* • A162 Common Tringa totanus • A169 Ruddy turnstone *Arenaria interpres* Qualifying internationally important assemblage of birds: 93239 Over winter the area regularly supports: 93,230 waterfowl (5-year peak mean 1991/92-1995/96)				
Chichester and Langstone Harbours Ramsar	Habitat loss and fragmentation during construction	Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.	✕	✕	✕	✕
	Disturbance during construction		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	Hydrological change during construction	Assemblages of international importance with species with peak counts over winter (76,480 waterfowl – 5 peak mean 1998/99-2002/2003) Species/populations occurring at levels of international importance with peak counts in spring/autumn: • Ringed plover • Black-tailed godwit Limosa limosa islandica • Common redshank Species/populations occurring at levels of international importance with peak counts in winter: • Dark-bellied brent goose • Common shelduck • Grey plover • Dunlin • Species/populations regularly supported during the breeding season that have been identified for possible future consideration:	✕	✕	✕	✕
	Waterborne pollution during construction including runoff, turbidity and sedimentation		✕	✕	✕	✕
	Airborne pollution during construction		✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
		• Little tern				
Solent Maritime SAC	Habitat loss and fragmentation during construction	• Annex I habitats that are a primary reason for selection of this site: • 1130 Estuaries • 1320 Spartina swards Spartinion maritimae • 1330 Atlantic salt meadows Glauco-Puccinellietalia maritimae Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • 1110 Sandbanks which are slightly covered by sea water all the time • 1140 Mudflats and sandflats not covered by seawater at low tide • 1150 Coastal lagoons, Priority feature • 1210 Annual vegetation of drift lines • 1220 Perennial vegetation of stony banks	✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
		• 1310 Salicornia and other annuals colonizing mud and sand • 2120 Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") • Annex II species present as a qualifying feature, but not a primary reason for site selection: • 1016 Desmoulin's whorl snail Vertigo moulinsiana				
	Disturbance during construction	• 1140 Mudflats and sandflats not covered by seawater at low tide	✕	✕	✕	✕
	Hydrological change during construction	All qualifying features	✕	✕	✕	✕
	Waterborne pollution during construction including runoff, turbidity and sedimentation		✕	✕	✕	✕
	Airborne pollution during construction		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	INNS during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕
Portsmouth Harbour SPA	Habitat loss and fragmentation during construction	Internationally important numbers of the following migratory bird and wintering bird species: • A675 Dark-bellied brent goose • A069 Red-breasted merganser • A149 Dunlin • A616 Black-tailed godwit	✕	✕	✕	✕
	Disturbance (to functionally linked land only) during construction		✕	✕	✕	✕
	Hydrological change during construction		✕	✕	✕	✕
	Waterborne pollution during construction including runoff,		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	turbidity and sedimentation					
	INNS during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕
Portsmouth Harbour Ramsar	Habitat loss and fragmentation (of functionally linked land only) during construction	Dark-bellied brent goose populations occurring at levels of international importance	✕	✕	✕	✕
	Disturbance (of functionally linked land only) during construction		✕	✕	✕	✕
	Hydrological change during construction	Intertidal mudflat areas possessing extensive beds of eelgrass *Zostera*	✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	Waterborne pollution during construction including runoff, turbidity and sedimentation	*marina* and *Zostera noltei* which support grazing dark-bellied brent geese populations. The mud-snail *Hydrobia ulvae* is found at extremely high densities, which helps to support the wading bird interest of the site. Common cord-grass *Spartina anglica* dominates large areas of the saltmarsh and there are also extensive areas of green algae *Enteromorpha* spp and sea lettuce *Ulva lactuca.* More locally the saltmarsh is dominated by sea purslane *Halimione portulacoides* which gradates to more varied communities at the higher shore levels. The site also includes a number of saline lagoons hosting nationally important species. Dark-bellied brent goose populations occurring at levels of international importance	✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕
	Hydrological change during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕
Solent and Dorset Coast SPA	Hydrological change and waterborne pollution during construction	Internationally important population of breeding birds: • A191 Sandwich tern • A193 Common tern • A195 Little tern	✕	✕	✕	✕
			✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕
Solent and Southampton Water SPA	Hydrological change during construction	Qualifying breeding bird species: • A176 Mediterranean Gull Larus melanocephalus • A191 Sandwich tern • A192 Roseate tern Sterna dougalli • A193 Common tern • A195 Little tern Qualifying migratory bird and wintering bird species: • A052 Eurasian teal • A137 Ringed plover • A616 Black-tailed godwit • A675 Dark-bellied brent goose	✕	✕	✕	✕
	Waterborne pollution during construction including runoff, turbidity and sedimentation		✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
		Internationally important wintering waterbird assemblage of 51,361 individuals (5-year peak mean 1991/92-1995/96).				
Solent and Southampton Water Ramsar	Hydrological change during construction	Wetland habitats characteristic of the biogeographic region including saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs. Important assemblage of rare plants and invertebrates. At least 33 invertebrates and at least eight plants included in the British Red Data Book are represented on site. Waterfowl assemblages of international importance. Peak count of 51,343 waterfowl in winter. Species occurring at levels of international importance: • Dark-bellied brent goose • Black-tailed godwit • Eurasian teal	✕	✕	✕	✕
	Waterborne pollution during construction including runoff, turbidity and sedimentation		✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
South Wight Maritime SAC	Waterborne pollution during construction including runoff, turbidity and sedimentation	• 1170 Reefs • 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts • 8330 Submerged or partially submerged sea caves	✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕
Solent and Isle of Wight Lagoons SAC	Hydrological change and waterborne pollution during construction including runoff, turbidity and sedimentation	• 1150 Coastal lagoons	✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	Waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕
Singleton and Cocking Tunnels Bat SAC	Habitat loss and fragmentation during construction	• 1308 Barbastelle Barbastella barbastellus • 1323 Bechstein's bat *Myotis bechsteinii*	✕	✕	✕	✕
	Disturbance during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
River Meon Compensatory SAC	Habitat loss and fragmentation during construction	• 3260 Watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1106 Atlantic salmon	✕	✕	✕	✕
	Disturbance during construction		✕	✕	✕	✕

Habitats site	Impact Pathway	Qualifying features	Adverse Effect on Integrity Assessment ✓ = Adverse effect on site integrity cannot be excluded ✕ = Adverse effect on site integrity can be excluded			
			Construction (alone)	Construction (in-combination)	Operation (alone)	Operation (in-combination)
	Hydrological change during construction		✕	✕	✕	✕
	Waterborne pollution during construction including runoff, turbidity and sedimentation		✕	✕	✕	✕
	Airborne pollution during construction		✕	✕	✕	✕
	INNS during construction		✕	✕	✕	✕
	Hydrological change and waterborne pollution during operation		✕	✕	✕	✕
	INNS during operation		✕	✕	✕	✕

Glossary

Table 8-1 Glossary

Term	Definition
Above Ground Plant (AGP)	This collectively refers to the Intermediate Pumping Stations and Break Pressure Tanks.
Advanced treatment process	This is the recognised term to describe the multi-barrier water recycling treatment process within the Water Recycling Plant to turn highly treated wastewater into purified recycled water. For the Proposed Development, the main stages are: • Microfiltration/Ultrafiltration membrane process: Treated wastewater is pumped through a set of Microfiltration/Ultrafiltration membranes that act as a physical barrier that removes suspended solids, bacteria, some viruses, and protozoa from treated wastewater and this process is seen as a high-efficiency pre-treatment for reverse osmosis. • Reverse osmosis: a semi-permeable membrane is used to remove dissolved ions, phosphorus and impurities (such as smaller viruses and pharmaceuticals). • Ultraviolet with advanced oxidation process: Ultraviolet light and a small dose of hydrogen peroxide are applied to break down persistent chemicals and ensure safety through disinfection of the water. • Granular Activated Carbon: Carbon contactors have been designed to adsorb any residual peroxide, and other compounds formed during oxidation. • Treated water conditioning: Minerals (such as calcium and magnesium salts) are added back to stabilise the purified recycled water ready for transfer to Havant Thicket Reservoir.
Adverse effect on integrity	If the Proposed Development would result in the habitat site failing to achieve its conservation objective.
Affected road network	All roads and junctions that trigger the relevant traffic screening criteria and adjoining roads within 200m.
Air valves	Air valves are located mainly at high points along the pipeline route. These are required to automatically release any build-up of air in the

	pipeline and prevent air locking or cavitation of the pumps.
As Low As Reasonably Practicable (ALARP)	Involves weighing a risk against the trouble, time and money needed to control it. Thus, ALARP describes the level to which we expect to see risks controlled.
Ancient woodland	Woodland that has existed continuously since 1600 in England, Wales and Northern Ireland and is defined as an irreplaceable habitat.
Anthropogenic	Caused by humans or their activities.
Applicant	Southern Water Services Limited.
Appropriate Assessment	If Stage 1 Screening of the Habitats Regulations Assessment finds that likely significant effects on a protected habitats site (either individually or in combination with other plans or projects) may occur as a result of a proposed project then a Habitats Regulations Stage 2 assessment must be undertaken. The Stage 2: Appropriate Assessment is an assessment of the implications of likely significant effects for the site(s), in view of the site's conservation objectives, and may take into account mitigation measures intended to avoid or reduce the harmful effects of the proposed project. The Appropriate Assessment must show whether an adverse effect on the integrity of the site from the project can be ruled out or not.
A-weighting L_A or L_{pA}, L_{WA}, similar – C-weighting L_C *or* L_{pC}, L_{WC}	Is an electronic filter which is equal to the frequency sensitivity of the human ear. Human hearing sensitivity is at a maximum at around 2 kilohertz and steadily decreases above and below. Below 20 hertz and above about 20 kilohertz humans cannot hear at all. Within its operating limits a precision measurement microphone measures all frequencies the same so the output it produces does not reflect what humans would hear. When considering impacts on humans, it is therefore often necessary to apply an A-weighting to the measured sound frequency spectrum. When A-weighted, the Sound Pressure Level L_p becomes L_{pA} (or L_A) and the Sound Power Level L_W becomes L_{WA}. The response of the human ear varies depending on how loud the sound is. A-weighting matches the response of a Sound Level Meter to human hearing at low levels (~ 40-90 decibels). For higher levels there are other weightings, the most common of which is the C-weighting.
Baseline	The current environmental and social conditions within the Order Limits or within a study area. This provides a benchmark against which changes arising from the Proposed Development are assessed for each relevant assessment.
Bedhampton Springs	Refers to the abstraction point, operated by Portsmouth Water, for the Bedhampton Springs which provide a major source of drinking water for Portsmouth Water's customers.

Biodiversity	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.
Break Pressure Tank (BPT)	BPT are anticipated to be required at high points along the pipeline route. Water is pumped to BPTs, where it then flows onwards using gravity from the tank. This reduces the amount of energy required to transfer water. BPTs reduce the overall maximum pressure in the pipeline system associated with changes in flow rate as a result of topography.
Budds Farm Wastewater Treatment Works (WTW)	An existing Southern Water site that treats wastewater from the Applicant's customers prior to release into the Solent from the Eastney Long Sea Outfall. The Proposed Development would utilise highly treated wastewater from the Budds Farm WTW to produce recycled water at the Water Recycling Plant site. Reject water would be transferred from the Water Recycling Plant back to Budds Farm WTW where a connection would be made for onwards transfer to the existing Eastney Transfer Tunnel, Eastney Pumping Station and Eastney Long Sea Outfall for release into the Solent. Chemical filter washing at the Water Recycling Plant site would generate process waste that would be discharged via the foul sewer network to Budds Farm WTW for treatment.
Capacity	The maximum traffic flow that a road or junction can accommodate without causing unreasonable delay.
'Classic' operation scenario	This scenario refers to the maintenance of water levels in Havant Thicket Reservoir, in accordance with Portsmouth Water's existing planning permission, through the use of spring water inputs from Bedhampton and Havant Springs only.
Climate	The general weather conditions prevailing over a long period of time. Climate change will see trends in the climate conditions changing (seasonal averages and extremes).
Commissioning	A process undertaken prior to operation to verify that components of a project are installed correctly and are functioning. For the Proposed Development, commissioning comprises: • Dry commissioning: verifying that all electrical, mechanical, instrumentation, and control components are installed correctly and functioning without the introduction of water. This includes checking electrical connections, running motors and mechanical equipment without water, confirming sensor operation, and testing automation logic, interlocks, and alarms. • Wet commissioning: introducing water into the treatment process units and verifying that valves, pumps, and

	equipment operate correctly under flow conditions. This stage includes leak checks, calibration of flow/level/pressure instruments, and gradual ramp up to design flows. The process plant is tested to ensure that all unit operations and the control system function as intended, including alarms, shutdowns, and automatic sequences. • Pipeline commissioning: includes hydrostatic pressure testing of pipe sections using water to fully charge the pipe. This confirms the pipeline's structural integrity and ability to withstand design pressure, as well as identifies any leaks. Pressure testing is carried out in accordance with the relevant water industry standards.
Commitments Register (Environmental Statement Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6))	The Commitments Register, presented in Environmental Statement Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6), is provided in accordance with the Planning Inspectorate (2025) Nationally Significant Infrastructure Projects: Commitments Register advice note and it sets out the environmental commitments made in the Environmental Statement and identifies the means by which each are secured.
Construction compounds	Temporary areas required to facilitate the construction of the Proposed Development.
Contractor	The Applicant or a person appointed by the Applicant or by anyone else having the benefit of part or all of the Development Consent Order to carry out any construction element of the Proposed Development or to operate the Proposed Development.
Core Sustenance Zones (CSZ)	A CSZ refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost.
Critical Level	Concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as plants and ecosystems, may occur according to present knowledge. Usually measured in units of micrograms per cubic metre.
Critical Load	A quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge. Usually measured in units of kilograms per hectare per year (nitrogen deposition) or kilogram equivalent per hectare per year (acid deposition).

Cumulative effects	Effects from the interrelationship between the Proposed Development with other committed developments.
Decibels (dB)	A logarithmic ratio of two values of a variable. The decibel is not a true measurement unit nor is it exclusive to noise assessments. Decibels are used because they can represent very wide ranges of ratios (from trillionths and billionths to billions and trillions) with a small range of decibel values. Decibels can be used to represent measured values by using a known reference value in the ratio. When using decibels to measure something it is therefore important to specify what variable is being measured and what reference level has been used. This is done by adding a reference value statement in the form dB re x units, where the units indicate the variable being measured and x is the reference value. Decibels are used in noise assessments because the human ear responds to sound pressure in a logarithmic way and the quantities measured in acoustics vary over wide ranges. As the decibel is used in acoustics to represent a range of sound level parameters, there is a standardised notation system. This takes the form of an italic capital letter '*L*' (referring to 'level') and subscript characters which give specific details of what is being represented. Because decibels are logarithmic, they must be added, subtracted, multiplied, divided and averaged using different techniques from normal, linear, quantities.
Design principles	Design principles which reflect the design approach adopted for the Proposed Development and as set out in the Design Principles Document (Document reference 5.11, DCO Volume 5) and will control the detailed design post-consent in accordance with Schedule 2 of the draft Development Consent Order (Document reference 3.1, DCO Volume 3).
Development Consent Order (DCO)	A statutory order which provides consent for a project and means that a range of other consents, such as planning permission and listed building consent, will not be required. A DCO can also include powers authorising the compulsory acquisition and temporary possession of land and rights over land which is the subject of an application. A draft DCO (Document reference 3.1, DCO Volume 3) is submitted by the applicant as part of its application.
'Do nothing' (air quality)	The scenario that represents the future baseline (2031) traffic without the addition of committed development, plans and projects and without the Proposed Development to disaggregate cumulative effects on designated ecological features. It includes projected traffic growth from the baseline year (2023) to the future baseline year

	(2031). Emissions factors for 2023 have been used in the baseline and verification year assessment.
'Do Something' (air quality)	The scenario represents the peak year forecast traffic demand along each road link on the highway network (i.e. future baseline (2031) traffic) with the addition of construction traffic generated by the Proposed Development). It includes projected traffic growth from the baseline year (2023) to the future baseline year (2031) and includes committed development, plans and projects. Traffic data for the year of peak traffic demand along each road link is used to represent the highest traffic flows over the period. This is in order to assess the highest potential traffic emissions from the Proposed Development impacting upon air quality. To provide a conservative assessment, the peak construction flows have been assumed to occur during the earliest year of construction (2028) across all future year scenarios.
Drinking water	Water that has been treated to strict regulatory standards, ready for supply to domestic and non-domestic customers as drinking water.
Drought conditions	Droughts are naturally occurring events and are typically characterised by a prolonged period of abnormally low rainfall, leading to a shortage of water.
Eastney Long Sea Outfall (LSO)	An existing Southern Water infrastructure component used to release treated wastewater from Budds Farm Wastewater Treatment Works. No works to the Eastney LSO are proposed as part of the Proposed Development; however, reject water produced from the Water Recycling Plant will be released from the Eastney LSO using the Eastney Transfer Tunnel and Eastney Pumping Station.
Eastney Pumping Station (PS)	An existing Southern Water infrastructure component. No works are proposed to it as part of the Proposed Development. The Eastney PS receives treated wastewater flows, via gravity, from Budds Farm Wastewater Treatment Works and pumps it out via the Eastney Long Sea Outfall. This pumping station also receives storm flows from the Eastney catchment area. Reject water from the proposed Water Recycling Plant will be released from the Eastney Long Sea Outfall using the Eastney PS and Eastney Transfer Tunnel.
Eastney Transfer Tunnel (TT)	An existing Southern Water infrastructure component. The Eastney TT connects the Budds Farm Wastewater Treatment Works final effluent channel via a shaft located at Budds Farm Wastewater Treatment Works to the Eastney Pumping Station to release treated wastewater. Reject water from the Water Recycling Plant will be released from the Eastney Long Sea Outfall using the Eastney Pumping Station and Eastney TT.

	A new connection point to the Eastney TT, located at Budds Farm Wastewater Treatment Works, is required. No additional works to the Eastney TT are proposed as part of the Proposed Development.
Ecological Clerk of Works	Oversees the management of the risks on construction sites associated with managing biodiversity and can help to ensure a smooth and cost-efficient construction process.
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	EIA is a process for identifying the likely significant environmental effects (beneficial and adverse) of a Proposed Development to inform the decision-making process by the Secretary of State when determining an application for a Development Consent Order.
Environmental Impact Assessment (EIA) Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017; the Regulations which this Environmental Statement has been prepared in accordance with.
Emission	The release of a substance into the environment. For example, air emissions may be discharged from a stack, vent, vehicle exhaust or from diffuse sources.
Enabling and pre-construction works	The preparation of a site in readiness for the first stage of development, including: site clearance and preparation, crossing of major utilities, temporary construction compounds and trenchless compounds.
Enhancement	Measures taken to achieve a benefit, which are unrelated to an adverse impact or which go beyond that required to mitigate/compensate for an impact. For example, restoration of a degraded habitat to leave it in a measurably better state than it was before the Proposed Development or other interventions to leave a positive legacy for the community.
Environmental Permit	A legal requirement under the Environmental Permitting (England and Wales) Regulations 2016 that allows certain activities which could impact the environment or human health to be carried out, subject to conditions that control and reduce those impacts.
Environmental Statement (ES) (DCO Volume 6)	A document reporting the findings of the Environmental Impact Assessment which describes the likely significant effects arising from the Proposed Development on the environment and measures proposed to mitigate likely significant effects.
Extreme drought	A drought event that occurs every 1-in-500 years, or a 0.2% chance of occurring in any given year.

Flood Risk Assessment (FRA) (Environmental Statement Appendix 19.1 Flood Risk Assessment, Volume II (Document reference 6.2, DCO Volume 6))	A technical report that evaluates the potential for flooding from all sources (e.g. fluvial, coastal, surface water, groundwater, reservoir and sewers) on a development site and proposes measures to manage and mitigate those risks. It is a crucial part of the planning process, ensuring that new developments are located and designed in a way that minimises the potential for flood damage and protects people and property both on the site and in the wider area. A FRA (Environmental Statement Appendix 19.1 Flood Risk Assessment, Volume II (Document reference 6.2, DCO Volume 6)) is submitted by the Applicant as part of the Development Consent Order application.
Future baseline	The anticipated environmental conditions at a defined point in the future, assuming the Proposed Development does occur.
Functionally Linked Land	Land or sea beyond the boundary of a National Site Network site which can ecologically support the populations for which the site was designated or classified and fulfil its functions.
Ground-level tree assessment (GLTA)	The first assessment undertaken on a tree to determine if bats and their roosts are 'reasonably likely' to be impacted by a Proposed Development.
The Habitats Directive (Council Directive 92/43/EEC)	The Habitats Directive (Council Directive 92/43/EEC) adopted in 1992 with the objective to ensure species and habitats are maintained, or restored, to a favourable conservation status within the European Union.
Habitat Suitability Modelling (HSM)	A statistical method for predicting the suitability of habitat for a given species.
Habitats of Principal Importance (HPI)	A list of habitats of principal importance in England, first identified as priority habitats in the United Kingdom Biodiversity Action Plan.
Habitats Regulations Assessment (HRA)	A process that determines whether or not a project or a plan could risk having a likely significant effect on a designated National Site Network site and to consider ways to avoid or reduce (mitigate) any potential for an adverse effect on the integrity of the site in accordance with The Conservation of Habitats and Species Regulations 2017.
Hampshire Water Transfer and Water Recycling Project	This is the name of the Proposed Development, that is the Strategic Resource Option being delivered as part of the Water For Life Hampshire programme. A water supply scheme comprising a combination of both water transfer and water recycling technology that would play a major role in making up the shortfall in water supply across the Hampshire supply area, especially in a drought.
Haul roads	Temporary tracks or roads set aside to facilitate transport access to sections of Order Limits to facilitate the construction of the Proposed Development.
Havant Thicket Reservoir	The Havant Thicket Reservoir is a development under construction by Portsmouth Water that has planning permission granted by the relevant local planning authorities. Following the transfer of

	recycled water from the Water Recycling Plant site, the recycled water would be combined with water contained within the Havant Thicket Reservoir. The Proposed Development would use the Havant Thicket Reservoir for the storage of recycled water, before transfer to Otterbourne Water Supply Works.
Hazardous waste	Waste, or the material or substances it contains, which is harmful to humans or the environment, and is classified as hazardous in The Hazardous Waste (England and Wales) Regulations 2005 (SI 2005/894).
Impact	A change that is caused by an action/activity associated with the Proposed Development.
Imperative Reasons of Overriding Public Interest	Legal test under Article 6(4) of the Habitats Directive that allows a project to proceed even if it will have an adverse effect on the integrity of a habitat site.
In-combination effects	Effects from the interaction between individual effects of the Proposed Development, i.e. the interrelationship between different environmental topics.
Index	A value based on the mathematical processing of raw data.
Invasive Non-Native Species (INNS)	The Great British Non-Native Species Secretariat defines INNS as *"any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live".*
Invasive Non-Native Species (INNS) Biosecurity Plan (Document reference 7.10, DCO Volume 7)	Sets out an outline approach to the management of INNS for the Proposed Development and provides the measures required to reduce or remove the risk of introducing or spreading INNS during construction and operation phases.
Invasive Non-Native Species (INNS) Treatment at Otterbourne Water Supply Works	Infrastructure to be located at Otterbourne Water Supply Works to ensure the addition of source water transferred from Havant Thicket Reservoir would not introduce pathways for the spread of INNS.
Isolation valves	Required to stop the flow of water through the pipeline to facilitate repair or maintenance. They may be co-located with washouts and air valves and designed with an integral bypass for the balancing of upstream and downstream pressure to facilitate operation of the isolation valve.
Key Connective Location	Represent linear features such as hedgerows, lines of trees and watercourses which contribute to the predicted movement of bat species between areas of suitable habitat in the landscape.
Level (Sound)	Values measured in decibels.
$L_{eq,T}$ $L_{Aeq,T}$ $_T$ = measurement time e.g. $L_{Aeq,5min}$	The equivalent continuous sound pressure level over period T ($L_{eq,T}$). The A-weighted equivalent continuous sound pressure level over period T ($L_{Aeq,T}$). This is effectively the average sound pressure level over a given period. As the decibel is a logarithmic quantity the L_{eq} is not a simple arithmetic mean value.

	The L_{eq} is calculated from the raw sound pressure data. It is not appropriate to include a reference to the FAST and SLOW time constants in the notation.
Likely Significant Effect	An effect that can't be ruled out and which may undermine a site's conservation objectives.
Limits of Deviation for Above Ground Plant	The 'Limits of Deviation for Above Ground Plant' represents the extent of the area within which the Above Ground Plant would be located. These are shown in the Design Principles Document (Document reference 5.11, DCO Volume 5). The 'Limits of Deviation for Above Ground Plant' do not represent the footprint of the Above Ground Plant.
Limits of Deviation for Pipeline	The 'Limits of Deviation for Pipeline' represent the area within the Order Limits that the pipeline could be permanently located once constructed. These are shown on the Works plans (Document reference 2.3, DCO Volume 2). The 'Limits of Deviation for Pipeline' does not represent the construction working area for the pipeline.
Link	A section of highway, footway or footpath, cycleway or cycle path, or bridleway.
Local Nature Reserves (LNR)	A protected area of land designated by a local planning authority because of its special natural interest and/or educational value.
Made Ground	Areas where natural deposits have been replaced or altered by the introduction of artificial deposits and/or imported natural materials.
Main River	Watercourses designated under the Water Resources Act 1991 as 'main' are usually larger rivers and streams that are shown on the Environment Agency's Statutory Main River map. The Environment Agency has permissive powers, but not a duty, to carry out maintenance, improvement or construction work on designated Main Rivers to manage flood risk.
Major accident	Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the Applicant or its appointed representatives to manage.
Marine Conservation Zone	A legally designated area around the English coast created to protect nationally important or threatened marine habitats and species.
Maximum operation	The period when the Proposed Development is operating at maximum flows. During maximum operation, the Water Recycling Plant would produce approximately 60 Megalitres per day (Ml/d) of recycled water, and approximately 90Ml/d of source water would be transferred from Havant Thicket Reservoir to Otterbourne Water Supply Works.
Micro-siting	This is the process part of the design development to define specific locations of certain components

	such as above-ground plant and temporary construction compounds.
Minimum operation	A minimum operation is required to ensure that the Proposed Development is in regular working use for when higher outputs are required. During minimum operation, the Water Recycling Plant would have an output of approximately 10 Megalitres per day (Ml/d).
Mitigation	Measures intended to avoid, prevent, reduce and, where possible, offset likely significant adverse environmental effects. Measures follow the mitigation hierarchy as described in section 5.3 of Environmental Statement Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6).
Mitigation hierarchy	A systematic approach to guide decision-making and prioritise mitigation design. The hierarchy comprises stages in order of preference and effectiveness: avoid, prevent, reduce and remediate as described in section 5.3 of Environmental Statement Chapter 5 EIA approach and methodology, Volume I (Document reference 6.1, DCO Volume 6).
Monitoring	Measures to ensure the systematic and ongoing collection, analysis and evaluation of data related to the implementation and performance of a development. Monitoring can be undertaken to monitor conditions in the future to verify any environmental effects identified by the Environmental Impact Assessment, the effectiveness of mitigation or enhancement measures or ensure remedial action are taken should adverse effects above a set threshold occur. All monitoring measures adopted by the Proposed Development are reflected in Environmental Statement Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6).
National Nature Reserve (NNR)	Exemplary, nationally important nature reserves, where nature conservation is the primary land use and significant other benefits may be provided for people and the environment.
National Site Network (NSN)	Network of protected sites within the United Kingdom territory comprising Special Areas of Conservation and Special Protection Areas as designated under The Conservation of Habitats and Species Regulations 2017 (as amended).
National Vegetation Classification (NVC)	Hierarchical system designed to classify natural habitats according to the vegetation they contain.
Nationally Significant Infrastructure Projects (NSIPs)	NSIPs are large scale major development projects in England or Wales which require permission under the Planning Act 2008. Projects are only defined as nationally significant if they meet the relevant threshold set out in the Planning Act 2008.
Night-time Bat Walkover	A field survey carried out at night-time to detect bat activity, including species presence and key commuting or foraging areas, across a site using bat detectors and suitability experienced surveyors.

Nitrogen deposition	The process by which reactive nitrogen compounds emitted into the atmosphere are deposited onto land and/or water bodies.
Noise	No strict definition and is often used interchangeably with Sound. However, it is usually taken to mean noticeable unwanted sound.
Noise level	Values measured in decibels.
Non-Road Mobile Machinery (NRMM)	NRMM is any mobile machine, transportable equipment, or vehicle with or without bodywork or wheels which: • Is not intended for carrying passengers or goods on the road. • Includes machinery installed on the chassis of vehicles. • Has a combustion engine – either an internal spark ignition engine, or a compression ignition engine.
Order Limits	The 'Order Limits' represent the extent of the area within which the Proposed Development, authorised by the Development Consent Order, may be carried out, including the permanent and temporary land needed for construction, operation and maintenance activities. The Order Limits are shown on the Works plans (Document reference 2.3, DCO Volume 2) and Land plans (Document reference 2.2, DCO Volume 2).
Ordinary Watercourse	An Ordinary Watercourse is any channel that water flows through that is not designated as an Environment Agency Main River. Lead local flood authorities and internal drainage boards have responsibility for Ordinary Watercourses.
Otterbourne Water Supply Works (WSW)	An existing Southern Water site which abstracts water from river Itchen and ground sources, and will continue to do in certain circumstances after the Proposed Development. The Proposed Development would transfer source water from Havant Thicket Reservoir to Otterbourne WSW. The source water would be treated to strict regulatory standards at Otterbourne WSW prior to being supplied to customers.
Operational Environmental Management Plan (OEMP) (Document reference 7.7, DCO Volume 7)	Provides a framework of commitments for the operational stage of the Proposed Development. These include general operational practices which have the potential to have an environmental impact, in addition to Proposed Development specific environmental mitigations. The measures contained in the OEMP are secured by a requirement in Schedule 2 to the Development Consent Order.
Outline Construction Environmental Management Plan (CEMP) (Document reference 7.1, DCO Volume 7)	Contains identified topic specific mitigation measures to be adopted during construction, and specifies plans and method statements to be produced by the Contractor to avoid and reduce environmental effects. Mitigation measures

	are generally tertiary mitigation, although some secondary mitigation measures are also included. The measures contained in the Outline CEMP are secured by a requirement in Schedule 2 to the Development Consent Order. Detailed CEMP(s) will be produced and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the draft Development Consent Order (Document reference 3.1, DCO Volume 3).
Outline Foundation Works Risk Assessment (FWRA) (Document reference 7.4, DCO Volume 7)	A preliminary assessment prepared during the design phase that identifies potential risks associated with foundation works, such as piling or ground improvement, particularly in areas of contamination or sensitive ground conditions. It sets out initial mitigation measures and informs the development of detailed risk assessments post-consent.
Outline Landscape and Ecology Management Plan (LEMP) (Document reference 7.5, DCO Volume 7)	Provides a framework for delivering the Green Infrastructure strategy for the Proposed Development. This addresses the reinstatement of existing vegetation following construction, the implementation, maintenance and long-term management of proposed environmental mitigation, as well as strategic environmental enhancements within the Order Limits. The measures contained in the Outline LEMP are secured by a requirement in Schedule 2 to the Development Consent Order. The detailed LEMPs will be required to be produced and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the draft Development Consent Order (Document reference 3.1, DCO Volume 3).
Peak Particle Velocity (PPV)	Is a measurement of maximum ground particle movement speed. It is used to assess the impact of vibration generated by certain operations in terms of structural damage and human response.
Permanent access	Identifies locations where permanent access will be taken from the highway network for the purpose of operation of the Proposed Development.
Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works	An underground pipeline approximately 35 kilometres long would transfer approximately 90 Megalitres per day of source water at maximum operation, from the Water Recycling Plant site to Otterbourne Water Supply Works. Above Ground Plant would support the transfer of water from the Water Recycling Plant site to Otterbourne Water Supply Works. Due to the length of the pipeline, it has been divided into sections: • Section D: The Water Recycling Plant site to Portsdown Hill • Section E: Portsdown Hill to Boarhunt • Section F: Boarhunt to Crockerhill

	• Section G: Crockerhill to Wickham • Section H: Wickham to Shedfield • Section J: Shedfield to the River Hamble • Section K: The River Hamble to Lower Upham • Section L: Lower Upham to Brambridge • Section M: Brambridge to Otterbourne Water Supply Works
Pipelines between Budds Farm Wastewater Treatment Works and the Water Recycling Plant site	Two pipelines between Budds Farm Wastewater Treatment Works and the Water Recycling Plant site: one to transfer treated wastewater from Budds Farm Wastewater Treatment Works to the Water Recycling Plant site and the other to transfer reject water from the Water Recycling Plant site to Budds Farm Wastewater Treatment Works. The Pipelines would connect to the existing treated wastewater release infrastructure and the reject water would be released via the existing Eastney Long Sea Outfall using the existing Eastney Transfer Tunnel and Eastney Pumping Station. The development required to connect into the existing treated wastewater infrastructure would form part of this component of the Proposed Development. The Pipelines between Budds Farm Wastewater Treatment works and the Water Recycling Plant site would be installed on the same route under the Hermitage Stream and Harts Farm Way and would be approximately 700m in length. The Pipelines between Budds Farm Wastewater Treatment works and the Water Recycling Plant site would transfer a maximum flow of approximately 82 Megalitres per day (Ml/d) of treated wastewater to the Water Recycling Plant site. The pipeline from the Water Recycling Plant site to Budds Farm Wastewater Treatment Works would be sized for the same transfer capacity of approximately 82Ml/d as it may be necessary to return the maximum volume of water being treated back to Budds Farm Wastewater Treatment Works.
Pipelines between the Water Recycling Plant site and Bedhampton Springs	The Pipelines would transfer recycled water from the Water Recycling Plant site to Bedhampton Springs, and source water from Bedhampton Springs back to the Water Recycling Plant site (before transfer to Otterbourne Water Supply Works). The Pipelines, connecting to pipelines being delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir, would enable the transfer at maximum operation of approximately 60 Megalitres per

	day (Ml/d) of recycled water from the Water Recycling Plant site to Havant Thicket Reservoir and approximately 90Ml/d of source water from Havant Thicket Reservoir to the Water Recycling Plant site, for onward transfer to Otterbourne Water Supply Works.
'Post-WRP' operation scenario	This scenario is used to describe an operational scenario following commissioning of the Proposed Development and the release of recycled water into Havant Thicket Reservoir.
Potential Special Protection Area	A site that has formally been proposed for classification as a Special Protection Area (SPA) under the Birds Directive (Directive 2009/147/EC) but has not yet been legally classified.
Predicated Environmental Concentration	The pollutant loading to a receptor as a result of the Proposed Development plus baseline deposition.
Primary (inherent) mitigation	Modifications to the location or design of the Proposed Development which are a result of design evolution. Modifications which are an inherent part of the Proposed Development design for the purpose of avoiding, preventing or minimising likely significant environmental effects. For example, re-routing the Proposed Development to avoid passing through an ancient woodland.
Principal Aquifer	Rocks or soils that provide significant quantities of water and can support water supply and/or baseflow to rivers, lakes and wetlands on a strategic scale. They typically have a high intergranular and/or fracture permeability, meaning they usually provide a high level of water storage.
Process contribution	The additional pollutant loading to a receptor as a result of the Proposed Development alone.
Process waste	Process waste is chemical waste that is removed from the water recycling process.
Project of national significance	Large scale development that has been directed by the Secretary of State to be treated as development for which a Development Consent Order is required under Section 35 of the Planning Act 2008 due to being a project of national significance.
Proposed Development	This refers to the Hampshire Water Transfer and Water Recycling Project, as described in Environmental Statement Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6).
Proposed Special Area of Conservation	A site that has been formally submitted to the European Commission as meeting the criteria for designation as a Special Area of Conservation under the Habitats Directive (92/43/EEC).
Ramsar site	A Ramsar site is the land listed as a Wetland of International Importance under The Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention) established in 1971 and came into force in 1975.
Receptor	An individual, group or asset that receives an impact of effect.

Recycled water	Purified water that has been produced by taking treated wastewater and removing remaining impurities using advanced treatment techniques.
Red Data Books	Series of books that provide the conservation status assessments of threatened species in Britain.
Reduced working width locations	Areas at specific and agreed locations where there is a reduced working width in response to sensitive constraints (e.g. vegetation and roads) during construction of the Proposed Development that will be used and are assessed in the ES. Reduced working width locations are secured in Appendix A of the Outline Construction Environmental Management Plan (Document reference 7.1, DCO Volume 7).
Reject water	During the water recycling process, reject water is produced. Reject water is water containing impurities removed from the treated wastewater and released using the existing Eastney Transfer Tunnel and Eastney Long Sea Outfall.
Release from the Eastney Long Sea Outfall (LSO)	The existing Eastney LSO releases treated wastewater from Budds Farm Wastewater Treatment Works via the existing Eastney Transfer Tunnel and Eastney Pumping Station. The Proposed Development would utilise the Eastney LSO for the release of reject water produced by the Water Recycling Plant site. During maximum operation approximately 22 Megalitres per day (Ml/d) of reject water would be released from the Eastney LSO. During minimum flow operation approximately 4Ml/d of reject water would be released from the Eastney LSO.
Residual effects	Remaining effects of the Proposed Development following the implementation of any secondary (foreseeable) mitigation.
Root protection area	Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil is treated as a priority.
Section 41 species	Species listed under Section 41 of the Natural Environment and Rural Communities Act 2006 are of principal importance for both the conservation and enhancement of biodiversity in England.
Secondary A aquifer	These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
Secondary B aquifer	These are mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers.
Secondary (foreseeable) mitigation	Measures or actions to prevent or minimise any remaining significant adverse environmental effects of the Proposed Development identified through the Environmental Impact Assessment process.

	For example, reptile translocation will be undertaken to mitigate for the potential killing or injury of common reptile species by the permanent loss of suitable habitat at the WRP site.
Sensitivity	The extent to which a receptor is likely to accept or respond to a change.
Significance	Significance is assessed by comparing the magnitude of an impact with a receptor's value, sensitivity, permanence or reversibility, in an assessment-specific matrix. The criteria in this matrix can be pre-set, allowing for objective impact assessment rather than subjective impact evaluation.
Site of Special Scientific Interest (SSSI)	A nationally site designated by Natural England as an area of special interest by reason of any of its flora, fauna, geological or physiographical features. SSSI are legally protected under the Wildlife and Countryside Act 1981 (as amended).
Solent Wader and Brent Goose Strategy (SWBGS) Sites	Network of sites around the Solent identified as being of value for waders and Brent Geese, designated by the Solent Recreation Mitigation Partnership (made up of the Solent Local Authorities). The SWBGS Sites identifies the network of sites around the Solent and determines which sites are the most valuable and why. The SWBGS aims to protect the network of non-designated terrestrial wader and brent goose sites that support the Solent Special Protection Areas from land take and recreational pressure associated with new development.
Sound	The physical phenomenon of the transmission of energy through gaseous, liquid or solid media via rapid periodic fluctuations in pressure.
Sound Pressure Level L_p obsolete – SPL	The basic measure of how much sound there is at a given location. It is a measure of the size of the pressure fluctuations in the air that we perceive as sound. Sound Pressure Level is expressed in decibels with a reference level of $20x10^{-6}$ Pascals (L_p in decibel re 20 µPa).
Source Protection Zone 1 (SPZ1)	Inner protection zone - defined as the 50-day travel time from any point below the water table to the abstraction source. This zone has a minimum radius of 50m radius from the source, whichever is larger.
Source water	Water that is used as a source for drinking water. For the Proposed Development, this water is treated to strict regulatory standards at the Otterbourne Water Supply Works before being supplied to customers.
South East England	Comprising counties of Berkshire, Buckinghamshire, East Sussex, Hampshire, Isle of Wight, Kent, London, Oxfordshire, Surrey and West Sussex.
Special Area of Conservation (SAC)	Area(s) of protected habitat(s) and species as defined in the European Union Habitats Directive (92/43/EEC).

Special Protection Area (SPA)	A designated area for birds under the European Union Directive on the Conservation of Wild Birds (2009/147/EC).
Spring 2025 Consultation	The statutory consultation held in Spring 2025 to consult on water quality modelling updates, and design refinements made to the Proposed Development in response to feedback from the Summer 2024 Consultation and ongoing scheme development.
Study area	A defined spatial scope (e.g. the area which may be impacted) for each topic assessment.
Sustainable Drainage System (SuDS)	A Sustainable Drainage System that generally mimic the natural drainage patterns of an undeveloped site allowing infiltration into the ground (where feasible) and controlling outflow rates from a proposed development. This reduces the impact and risk of flooding and can provide additional benefits such as pollution control, increased biodiversity, and provision of water-based amenity space.
Summer 2022 Consultation	The non-statutory consultation undertaken in summer 2022 which consulted on the Proposed Development, including the process undertaken to select the Proposed Development and the process undertaken to identify the preferred pipeline corridor, Water Recycling Plant site, and emerging Above Ground Plant zones.
Summer 2024 Consultation	The statutory consultation held in 2024 which consulted on the Proposed Development, including the draft Order Limits, the proposed pipeline routes, proposed sites for the Above Ground Plant and Water Recycling Plant, temporary construction compounds and any temporary or permanent access routes.
Temporary construction access	Identifies locations where temporary access will be taken from the highway network for the purpose of construction of the Proposed Development.
Tertiary (inexorable) mitigation	Standard industry good practice measures or actions to reduce impacts, regardless of the design process and Environmental Impact Assessment. These include actions that will be undertaken to meet existing legislative requirements, and/or actions that are considered to be standard good practice used to manage commonly occurring environmental effects. For example, considerate contractors' practices that manage activities which have potential nuisance and environmental effects, such as the spillage of fuels, oils or other chemicals.
Treated wastewater	Wastewater that has been treated to strict regulatory standards and is typically released to rivers or the sea.
Trenchless crossings	Crossings where trenchless installation techniques will be used during construction of the Proposed Development.
Washout valves	Located at topographical low points along the Proposed Development

	pipelines to facilitate commissioning and emptying a section of pipe for repair and maintenance.
Waste	Any substance or object which the holder discards or intends to or is required to discard – unusable or unwanted.
Wastewater	A combination of water from kitchens, bathrooms, sinks and taps (in domestic and non-domestic properties) and rainwater from roads and roofs, that is transported to, and cleaned at, a wastewater treatment works.
Watching Brief	A formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, in an inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.
Water storage lagoons	Temporary construction compounds that would store potable water used for commissioning of the Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works and the cleaning of this water using a silt buster.
Water for Life Hampshire	This is the programme being progressed by the Applicant to address the sustainability objectives of to meet demand following a reduction in abstractions on Hampshire's two main rivers - The Test and Itchen - and ensuring a resilient water supply for the Applicant's customers, especially during times of drought.
Water Recycling Plant (WRP)	The WRP would receive a total maximum volume of approximately 82 Megalitres per day (Ml/d) of treated wastewater from Budds Farm Wastewater Treatment Works. This would provide a maximum output of approximately 60Ml/d of recycled water. Approximately 22Ml/d of reject water is produced from the water recycling process and would be combined with the existing Budds Farm Wastewater Treatment Works treated wastewater flows (that are generated by the existing operation of Budds Farm Wastewater Treatment Works), and released via the existing Eastney Transfer Tunnel, Eastney Pumping Station, and Eastney Long Sea Outfall operated by the Applicant.
Water Recycling Plant (WRP) site	The site containing the WRP, three pumping stations, a main process building, kiosks, administrative buildings and parking facilities. Located at a site north-west of Budds Farm Wastewater Treatment Works.
Final Draft Water Resources Management Plan 2024 (WRMP24)	The Applicant's Final Draft WRMP24 which sets out how the Applicant will manage and develop water resources to ensure a resilient supply of water for at least the next 25 years The Final Draft WRMP24 supports the need for a strategic water resource option within the Western (Hampshire) supply area, from which the Proposed Development has been determined as the preferred solution to meet this

	need. The Final Draft WRMP24 has been submitted to Defra for approval.
The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 (WFD Direction)	The WFD Directive establish a series of thresholds that are used in the classification of water body status under the Water Environment (Water Framework Directive) England and Wales) Regulation 2017.
Zone of Influence (ZoI)	The spatial area over which an effect from a project is likely to be experienced.

Table 8-2 Abbreviations

Term	Definition
AADT	Annual average daily traffic
AEoI	Adverse effect on integrity
AGP	Above Ground Plant
ALM	Andover Link Main
APIS	Air Pollution Information System
BPT	Break Pressure Tank
BoCC	Birds of Conservation Concern
CEMP	Construction Environment Management Plan
CLo	Critical Load
CLe	Critical Level
COD	Chemical Oxygen Demand
CORMIX	Cornell Mixing Zone Expert System
COSHH	Control of Substances Hazardous to Health
CSZ	Core Sustenance Zone
DCO	Development Consent Order
DIC	Dissolved inorganic carbon
DOC	Dissolved organic carbon
DO	Dissolved oxygen
DPD	Design Principles Document
DPF	Diesel Particulate Filter
EA	Environment Agency
EAC	Environment Assessment Criteria
ECoW	Ecological Clerk of Works
EcIA	Ecological Environmental Impact Assessment
EIA	Environmental Impact Assessment

Term	Definition
ERL	Effects Range Low
ES	Environmental Statement
FWRA	Foundation Works Risk Assessment
HDV	Heavy duty vehicles
HDD	Horizontal directional drilling
HIA	Hydrogeological Impact Assessment
HRA	Habitats Regulations Assessment
HSM	Habitat Suitability Modelling
HSM	Habitat Suitability Modelling
IAQM	Institute of Air Quality Management
INNS	invasive non-native species
IPS	Intermediate Pumping Stations
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
LDV	Light-duty vehicles
LEMP	Landscape Environmental Management Plan
LNR	Local Nature Reserve
LSE	Likely Significant Effects
LSO	Long Sea Outfall
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zone
Ml/d	Megalitres per day
MMO	Marine Management Organisation
MTBM	Microtunnel boring machine
NE	Natural England
NRMM	Non-Road Mobile Machinery
NSN	National Site Network
OEMP	Operational Environmental Management Plan
PAH	Polycyclic Aromatic Hydrocarbons
PC	Process Contribution
PEC	Predicted Environmental Contribution
PPV	Peak Particle Velocity
PRF	Potential Roosting Feature

Term	Definition
PRF-I	A Potential Roosting Feature (PRF) that is only suitable for individual or very small numbers of bats
PRF-M	A Potential Roosting Feature (PRF) that is suitable for multiple bats and may therefore be used by a maternity colony
PRoW	Public Rights of Way
PS	Pumping Station
PSU	Practical Salinity Unit
pSAC	proposed Special Areas of Conservation
pSPA	potential Special Protection Areas
RDF	Required dilution factors
RPA	Root protection areas
rMCZs	Recommended Marine Conservation Zones
SAC	Special Areas of Conservation
SACO	Supplementary Advice on Conservation Objectives
SLM	Southampton Link Main
SoCG	Statements of Common Ground
SPA	Special Protection Areas
SPZ	Source Protection Zones
SSSI	Sites of Special Scientific Interest
SuDS	Sustainable Drainage System
SWBGS	Solent Waders and Brent Goose Strategy
TBM	Tunnel boring machine
TN	Total Nitrogen
TOC	Total organic carbon
TP	Total Phosphorus
TRL	Transport Research Laboratory
TT	Transfer Tunnel
TWG	Technical Working Group
UK	United Kingdom
WCA	Wildlife and Countryside Act
WFD	Water Framework Directive
WRMP	Water Resources Management Plan
WRP	Water Recycling Plant
WSW	Water Supply Works

Term	Definition
WTW	Wastewater Treatment Works
ZoI	Zone of Influence

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Appendix A HWTWRP HRA MCZ Stage 1 Screening

Habitats Regulations Assessment and Marine Conservation Zone Assessment

Stage 1 – Screening and Assessment Screening

DOCUMENT REFERENCE: 208102-ARU-EBD-XX-RP-L-00001

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Appendix A HRA and MCZ Sites Map

1 Introduction

1.1 Purpose of Report

1.1.1 This report provides the conclusions of Southern Water's Habitats Regulations Assessment (HRA) Stage 1 Screening and Marine Conservation Zone (MCZ) Screening assessment. This includes the necessary information to allow the Competent Authority (the Secretary of State) to decide whether the Proposed Development may have a Likely Significant Effect (LSE) on any European Sites or is capable of having a significant effect on the features or supporting processes of any MCZs. The assessment considers the Proposed Development both alone and in combination with other plans or projects. This report confirms whether subsequent stages of the HRA and MCZ assessment are required.

1.2 Description of Proposed Development

1.2.1 The Proposed Development is located in the south of Hampshire, with components spanning from Havant to Otterbourne. The Scoping Area for the Proposed Development is shown in Appendix A. The Scoping Area includes all land considered for the purposes of the Proposed Development within the Scoping Report (Hampshire Water Transfer & Water Recycling Project EIA Scoping Report 208102-ARU-EGN-XX-RP-L-00001).

1.2.2 The south-east of England is designated by the Environment Agency (EA) as an area of "serious water stress" (Environment Agency, 2021). This means that demand for water can outstrip supply, especially during a drought. In Hampshire in particular, a growing population and changing climate and sensitive environment means there is not enough water for people and nature when the weather is dry. Much of the county's water comes from the River Test and River Itchen, both chalk stream rivers that are ecologically important and rare.

1.2.3 The Proposed Development would use an advanced treatment process to turn treated wastewater into purified recycled water at a proposed Water Recycling Plant (WRP) to be located south of Havant in the vicinity of Budds Farm Wastewater Treatment Works (WTW). The recycled water would then be transferred via a proposed Pipeline to the planned Havant Thicket Reservoir. This would supplement the raw water proposed to be stored in the reservoir by Portsmouth Water. Another proposed Pipeline would be constructed to transfer source water[1] from the planned reservoir to the Otterbourne Water Supply Works (WSW), approximately 40 kilometres to the north-west. Here it would be treated to strict drinking water standards ready for supply to homes and businesses.

[1] Water that is used as a source for drinking water.

Principal Elements of the Proposed Development

1.2.4 The Proposed Development would use a full advanced treatment process to turn treated wastewater into purified recycled water at a new water recycling plant south of Havant.

1.2.5 The recycled water would then be transferred via a new pipeline to supplement the spring-fed water that will be stored in the planned Havant Thicket Reservoir.

1.2.6 Another new pipeline would be constructed to transfer source water from the planned reservoir to the Otterbourne Water Supply Works (WSW), approximately 40 kilometres to the north-west, to be treated to strict drinking water standards ready for supply to homes and businesses.

1.2.7 The Proposed Development comprises the construction, operation, maintenance and decommissioning of the following principal components:

- Proposed Water Recycling Plant (WRP) in the vicinity of Budds Farm WTW with a total peak output (i.e., during severe drought conditions) of approximately 60Ml/d of recycled water. During sweetening flow (i.e., non-peak/drought) operation, the output of the proposed WRP is expected to be approximately 20Ml/d depending on water availability at Bedhampton Springs (an existing operational Portsmouth Water site which also provides water to Havant Thicket Reservoir) to maintain water levels in Havant Thicket Reservoir. There would be three pumping stations at the proposed WRP site including the proposed High Lift Pumping Station (HLPS).
- Proposed Underground Pipeline between Budds WTW and the proposed WRP to accommodate approximately 80Ml/d peak transfer volumes in each direction.
- Proposed Pipeline to transfer at peak operation approximately 60Ml/d of recycled water from the proposed WRP to Havant Thicket Reservoir, and at peak operation approximately 90Ml/d of source water from Havant Thicket Reservoir to the proposed HLPS. The proposed Pipelines would either consist of two separate sections (one from the proposed WRP to Bedhampton Springs, and one from Bedhampton Springs to Havant Thicket Reservoir) or a single continuous section between the proposed WRP and Havant Thicket Reservoir. Bedhampton Springs is an existing operational Portsmouth Water site which will provide water to Havant Thicket Reservoir.
- Proposed Underground Pipeline to transfer at peak operation approximately 90Ml/d of water from Havant Thicket Reservoir to Otterbourne WSW via the proposed HLPS. During sweetening flow operation, the pipeline would transfer at least 20Ml/d of water from Havant Thicket Reservoir to Otterbourne WSW. The section between Havant Thicket Reservoir and the proposed HLPS is as described in the previous bullet point.
- Proposed Above Ground Plant (AGP) comprising proposed Intermediate Pumping Stations (IPSs) and proposed Break Pressure Tanks (BPTs)

located along the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW.

1.2.8 The Proposed Development would also comprise the use of or change of use of the following existing infrastructure:

- Use of Havant Thicket Reservoir for the storage of source water (water that is used as a source for drinking water) which includes recycled water from the proposed WRP and spring water from Bedhampton Springs.
- Diversion of treated wastewater streams at Budds Farm WTW.
- The use of the Eastney Long Sea Outfall (LSO), Eastney Pumping Station and associated Eastney Transfer Tunnel for the release of reject water from the proposed WRP.
- The use of a pipeline that is being consented by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir.

1.2.9 Associated development would include temporary works to support construction, works to support operation and maintenance, sites access, temporary and permanent utility connections, highway diversions and landscaping, environmental mitigation, enhancement, and compensation.

1.3 Legislation Summary

Habitat Regulations Assessment

1.3.1 Under the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations'), any plan or project with potential to impact a European Site, and which is not directly connected with or necessary for the management of the site, must be subject to a HRA to test if the proposal could significantly harm the designated features of a European Site. Within the United Kingdom (UK), European designated sites which were previously referred to as Natura 2000 sites are now referred to as National Site Network (NSN) sites[2].

1.3.2 Habitats Regulations Assessment (HRA) refers to the assessment of the potential effects of a development/project on one or more NSN site, including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (hereafter referred to as the 2019 Regulations) also expects potential SPAs (pSPAs), possible SACs (pSACs) and any confirmed HRA compensatory habitat to be considered in the same way. The below sites will be considered within this Screening:

- SACs which are designated under the Conservation of Habitats and Species Regulations 2017 (as amended), which require the establishment of a network of important high-quality conservation sites that will make a

[2] Special Areas of Conservation (SAC's) and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have created a national site network (NSN) on land and at sea, including both the inshore and offshore marine areas in the UK, including SAC's and SPA's.

significant contribution to conserving habitats and species identified as being of European importance;

- SPAs which are classified under the Conservation of Habitats and Species Regulations 2017 (as amended) for the protection of wild birds and their habitats (including particularly rare and vulnerable species, and migratory species);
- pSAC, namely sites that have been approved for consultation by the Government but are yet to be designated;
- pSPA, namely sites that have been approved for consultation by the Government but are not yet classified;
- A site of community importance which has been placed on the list of sites of community importance; and,
- Areas secured as sites compensating for damage to a European site are also to be included and will be termed 'Compensatory SAC/SPA Habitats'.

1.3.3 The types of site listed above will be referred to as Habitats sites within this report. The UK government has also advised that Ramsar sites should be considered and included within the assessment (2019 Regulations), and so will also be included as Habitats sites within this report:

- Ramsar sites support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, 1971).

1.3.4 When considering the qualifying features of Habitats Sites, Annex I and Annex II species are referred to. Annex I refers to birds which are the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. Annex II refers to animal and plant species of community interest whose conservation requires the designation of special areas of conservation.

1.3.5 Habitat Regulations Assessment is a staged process. The first stage is the screening assessment which identifies if a plan or project deemed to have the potential for Likely Significant Effects (LSE) on a Habitats site's conservation objectives, either alone, or in combination with other plans or projects and in the absence of mitigation. Should it not be possible to rule out the potential for any LSE during the Stage 1: Screening Assessment, without the need to consider mitigation, the HRA would need to progress to a Stage 2: Appropriate Assessment which assesses the LSE of the plan or project on the integrity of the site and its conservation objectives in more detail and to identify ways to avoid or minimise any potential for an adverse effect on the integrity (AEoI) of the site. At Stage 2 it is possible to include mitigation to avoid or reduce impacts. Should it not be possible to rule out an AEoI of the sites, the HRA would need to progress to Stage 3 to consider a derogation if a proposal that would have an adverse effect on a European site qualifies for an exemption, including that there are no feasible alternatives that would be less damaging to the site, the proposal needs to be carried out for Imperative Reasons of Overriding Public Interest (IROPI) and Compensatory Measures.

MCZ Assessment

1.3.6 Marine Conservation Zones are areas of the UK marine environment that are designated under the Marine and Coastal Access Act (2009) (MCAA) to protect a variety of nationally important, rare or threatened habitats and species (Marine Management Organisation, 2013). Under Section 126 of the MCAA, any acts as part of a plan or project that require a marine licence must be assessed if they are capable of affecting (other than insignificantly) the protected features of an MCZ or any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent (referred to as "supporting processes"). Under Section 149A of the Planning Act 2008 a deemed consent under a marine licence may be issued under Part 4 of the MCAA and as such a MCZ assessment should be completed for any Development Consent Order (DCO) submissions to provide adequate information to satisfy the governing authority in the discharge of their duties under Section 126 of the MCAA (described above).

1.3.7 While the MCAA does not stipulate an approach, MCZ assessment can be conducted similarly to HRA as a staged process, in line with guidance from the Marine Management Organisation (2013). The first stage is a screening assessment to determine through the course of screening that the licensable activity is taking place within or near an area being put forward or already designated as an MCZ and that the activity is capable of affecting (other than insignificantly) either (i) the protected features of an MCZ; or (ii) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependant. Where it has been determined through screening that s126 should apply to the licence application, the application will be further assessed to determine which subsections of s126 should apply to the application in two stages: Stage 1 assessment and Stage 2 assessment.

1.3.8 Stage 1 MCZ assessment determines whether there is a significant risk of the plan or project activity hindering the achievement of the conservation objectives or stopping the furthering[3] of the conservation objectives stated for the MCZ. Where the project or plan in its current form are considered to cause such hinderance, Stage 1 MCZ will also consider whether there are any alternative means that would create a substantially lower risk of hindering the achievement of the conservation objectives stated for the MCZ, including changing methods or at another location. Stage 2 MCZ Assessment determines whether public benefits clearly outweigh the risk of damaging the environment that will be created by proceeding with it. If so, the applicant will need to satisfy the authority that it will undertake or make arrangement for the undertaking of measures of equivalent environmental benefit to the damage that the act associated with the plan or project will or is likely to have in or on the MCZ.

[3] The MMO Guidance, define "further", in the case of a conservation objective, as any act that could increase the likelihood that the current status of a feature would (a) be maintained or (b) "recover" as it could move upwards (e.g. from degraded to favourable) either immediately or in the future.

2 Methodology

2.1 Structure of the Report

2.1.1 The assessment section of the report is divided into the following parts and sections:

- Potential Impact Pathways;
- Site Identification;
- HRA Stage 1 – Screening;
- MCZ Assessment Screening; and,
- Conclusion.

2.2 Source of Guidance

2.2.1 The approach to informing the HRA has been developed from the legislation described in the 'Legislation Summary' section and informed by the latest guidance for HRA in the UK, namely:

- Tyldesley, D. and Chapman C. (2013) The Habitats Regulations Assessment Handbook. Published and updated online by DTA Publications Limited: http://www.dtapublications.co.uk/handbooks. The Handbook is informed and regularly updated with amendments to the Regulations, the latest government guidance and case law;
- DEFRA (2012) The Habitats and Wild Birds Directives in England and its seas - Core guidance for developers, regulators & land/marine managers (draft for public consultation)
- DEFRA (2012) National policy statement for wastewater: A framework document for planning decisions on nationally significant waste water infrastructure.
- DEFRA (2013) National Policy Statement for Hazardous Waste: A framework document for planning decisions on nationally significant hazardous waste infrastructure.
- DEFRA (2019) National Policy Statement for Water Resources Infrastructure. (Draft for consultation)
- European Council (2007) EU Habitats Directive Annex II.
- MMO (2013) Marine conservation zones and marine licensing; and,
- Planning Inspectorate Advice Note Ten (Planning Inspectorate, 2022).

2.3 Responsibility for Undertaking HRA and MCZ Assessment

2.3.1 The responsibility for undertaking HRA lies with the Competent Authority (in this case the Secretary of State). Under the Habitats Regulations, the applicant (Southern Water) has an obligation to provide the Competent

Authority with such information as the authority may reasonably require for the purposes of the assessment. Similarly, guidance from the MMO (2013) on the MCZ assessment process places the onus on the applicant to provide relevant information to the Competent Authority in order progress the marine license through the assessment process.

2.4 HRA Process

2.4.1 The HRA process consists of several stages that are described further below.

Stage 1 – Screening

2.4.2 At Stage 1, Habitats Sites are screened for potential LSE, both in terms of effects of the project alone and in combination with other projects. Where it can be determined at this stage that there is no conceivable effect on or no potential effect pathways to any European site and its qualifying features as a result of the Proposed Development or that there is no potential for LSE to occur to a Habitats site, Ramsar site or to the interest features of a site from the Proposed Development, alone or in combination with other plans or projects, the screening out of a site can be sought. Mitigation measures proposed for the purpose of avoiding or minimising harmful effects to a European site must not be taken into account at Stage 1 HRA Screening.

Stage 2 – Appropriate Assessment

2.4.3 For those sites where the risk of LSE cannot be discounted in Stage 1, an appropriate assessment is required. The assessment will determine whether the project alone or in combination with other plans or projects could adversely affect the integrity of the Habitats site(s) being considered in the appropriate assessment, in view of its/their conservation objectives, taking into account proposed mitigation.

2.4.4 In certain circumstances, where AEoI cannot be excluded, a proposal can go ahead under what is known as a derogation. In cases where the appropriate assessment concludes that an AEoI of a Habitats Site cannot be ruled out, consent should not be granted unless the project can satisfy the tests for a derogation in Stage 3 of the HRA process, referred to as ‘HRA derogation’.

Stage 3 – Derogations

Test 1: Assessment of Alternatives

2.4.5 An assessment of alternative solutions that have been considered must be identified and assessed at Stage 3. The Planning Inspectorate advises in Advice Note Ten that alternative solutions can include a proposal of a different scale, a different location and an option of not having the Proposed Development at all – the ‘do nothing’ approach.

2.4.6 This assessment must determine whether there are any feasible alternative solutions to the proposal that would meet the project objectives and have a

lesser effect or avoid an AEoI of the Habitats site(s) or Ramsar site(s) and coherence of the national site network.

Test 2: Assessment Imperative Reasons of Overriding Public Interest (IROPI)

2.4.7 If it is demonstrated that there are no feasible alternative solutions, then a case would need to be prepared that the Proposed Development should nonetheless be carried out for Imperative Reasons of Overriding Public Interest (IROPI).

Test 3: Compensatory Measures

2.4.8 If there are no feasible alternative solutions and it has been shown that there are imperative reasons of overriding public interest, compensatory measures must be taken. These measures will need to fully offset the damage which will or could be caused to the site by the development. An assessment of compensatory measures must also be included in the HRA Report which forms part of the DCO application documents. Consultation must have been undertaken with the relevant Appropriate Nature Conservation Body (ANCB) and landowners.

2.5 MCZ Assessment Process

2.5.1 The MCZ assessment is split into a three-stage process consisting of; Screening, Stage 1 MCZ assessment, and the Stage 2 MCZ assessment in line with guidance from the Marine Management Organisation (2013). This process is outlined below in Figure 2.1 and though similar to the HRA process the grouping of aspects of the assessment fall into slightly different stages i.e., assessment of alternatives is with Stage 1 assessment rather than the final stage.

Screening

2.5.2 During the Screening stage of the assessment, high level information relating to the project/plan (location and likely activities associated) is considered in terms of its proximity and potential connectivity to any nearby MCZs. If deemed to be in close proximity to an MCZ, or if a pathway for potential impact is identified, the assessment will continue to the next stage .

Stage 1 Assessment

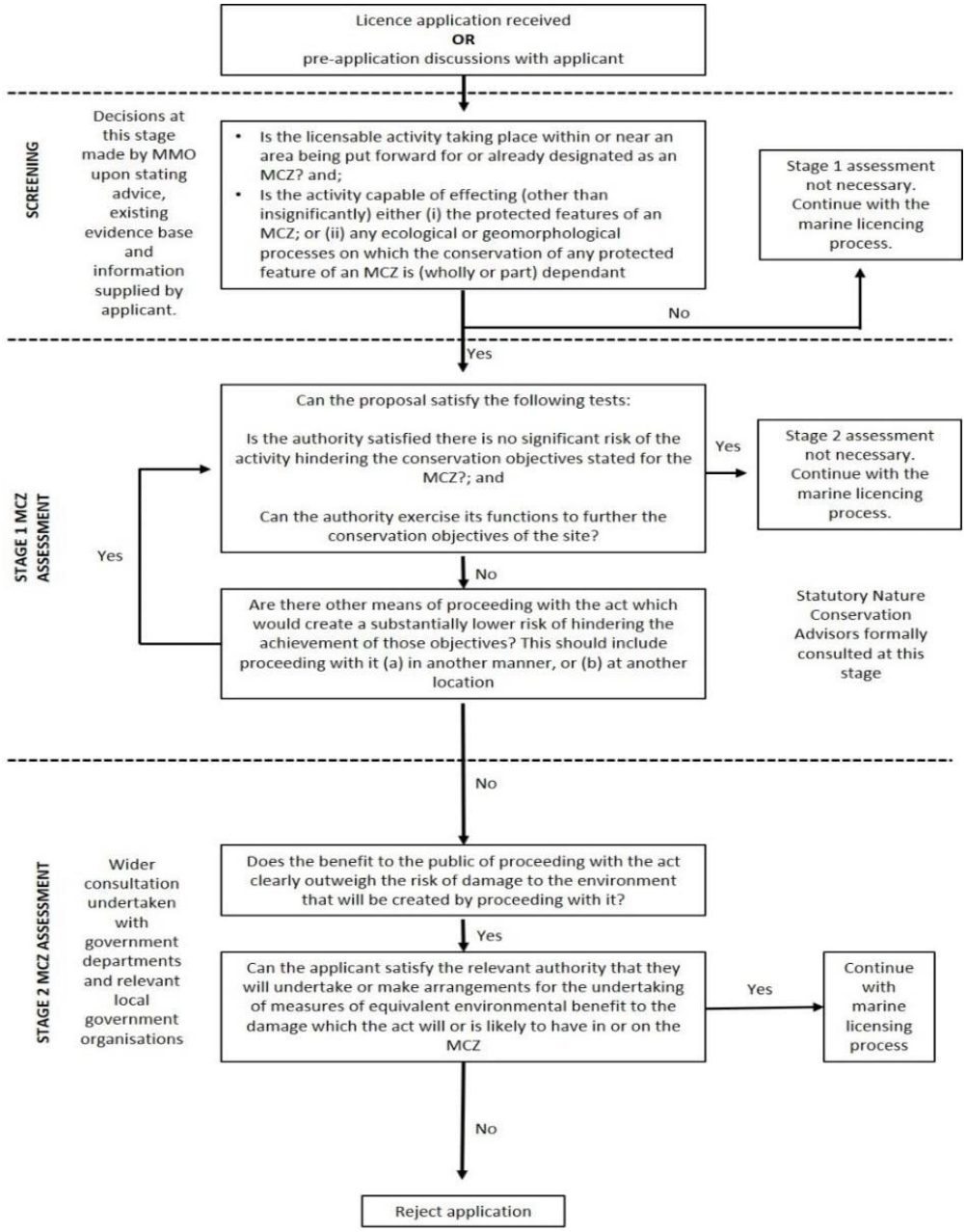
2.5.3 During the Stage 1 assessment, the potential impacts of the project/plan are highlighted and each of these is assessed against the interest features of the MCZ. This will then establish whether adverse effects are likely to arise on the interest features and whether mitigation measures are required to avoid these effects arising and prevent any hindrance to meeting the conservation objectives of the MCZ. If following the consideration of mitigation, it is

anticipated for an effect to remain, then the project/plan will commence the Stage 2 assessment.

Stage 2 Assessment

2.5.4 During the Stage 2 assessment the Competent Authority would initiate wider consultation with government departments and relevant local government organisations to weigh up the benefits of the project/plan against the potential risk of damage to the environment. Discussions at this stage will also consider the potential to offset or create additional habitat. Following this stage, the project is either rejected or consented.

Figure 2-1 MCZ Assessment Process



Source: Adapted with unchanged content from Marine Management Organisation, 2013.

2.6 Limitations

2.6.1 Information provided by third parties, including publicly available information and databases, is considered correct at the time of publication. Due to the dynamic nature of the environment, conditions may change in the period between the preparation of this report and the construction and operation of the Proposed Development. This report is inclusive of the Stage 1 Screening assessment only for HRA and Screening for the MCZ assessment. Further information will be reviewed during the Stage 2 for HRA and Stage 1 for MCZ assessment. Any matters not being taken to the next stage will have robust and confident conclusions.

The HRA and MCZ assessment has been undertaken in as much detail as possible, using all available data sources where they exist. The conclusions drawn from this are necessarily limited by the age, type, coverage and availability of data. The next stages of the assessment will incorporate the ongoing design and assessment work.

2.6.2 Any uncertainties and the limitations of the assessment process are acknowledged and highlighted.

2.7 Consultation and engagement

2.7.1 Technical engagement is taking place through Technical Working Groups that have been established for the Proposed Development. For this topic, the Biodiversity and Water Working Group has been established and an introductory meeting was held with this group on 25th May 2022 which was attended by representatives from Natural England and the Marine Management Organisation, among others. An introduction to the proposed approach, key risks and receptors for terrestrial and freshwater biodiversity were presented.

2.7.2 The second EIA Working Group was held on 31 August 2022, presenting the EIA Scoping Report methodology and findings. This included attendance of representatives from Natural England, the Environment Agency, Eastleigh Borough Council (EBC), Havant Borough Council (HBC), Hampshire County Council (HCC), Winchester City Council (WCC), Fareham Borough Council (FBC, East Hampshire District Council (EHDC), Portsmouth City Council (PCC), Sussex Inshore Fisheries and Conservation Authorities (IFCA), and South Downs National Park Authority (SDNPA).

2.7.3 The third EIA Working Group was held on the 16 June 2023, which focussed on design development and EIA scoping. This included attendance of representatives from Natural England, the Environment Agency, EBC, FBC, Forestry Commission, HCC, HBC, MMO, and WCC.

2.7.4 The fourth EIA working group took place on 1 November 2023, on the topic of post-EIA Scoping Opinion. This included attendance of representatives from Natural England, the Environment Agency, Eastleigh Borough Council, Fareham Borough Council, HCC, HBC, MMO, and WCC.

2.7.5 A fifth EIA working group took place on the 29 January 2023, and presented the baseline, methodology and approach to mitigation. This included attendance of representatives from Natural England, the Environment Agency, EBC, FBC, HCC, HBC, MMO, PCC and WCC.

2.7.6 Following the close of the Summer 2022 Consultation on the Proposed Development, which was held between 5 July 2022 and 16 August 2022, consultee responses have been reviewed. This feedback included responses on the HRA, notably from Natural England (received 12 August 2022) confirming their concern regarding the crossings of the River Itchen and the River Meon and potential LSE on the coastal SPAs via impacts to Solent Wader and Brent Goose Strategy (SWBGS) sites. These comments have been taken into consideration within this report and ongoing assessment, as required.

3 Potential Impact Pathways

3.1.1 Tables 3.1 and 3.2 outline the potential effects as a result of the Proposed Development. The effects outlined below are considered separately for each site in Section 4.

3.1.2 Information gathered to inform the screening included the identification of:

- Any Habitats Sites and MCZs meeting the search criteria listed in Section 4.
- Potential effects resulting from the Proposed Development, alone or in combination with other plans and projects;
- The Zone of Influence (ZoI) of these effects (as defined in section 4.1.1), noting this may extend some distance from the Proposed Development itself and is not confined to activities on or adjacent to the Proposed Development;
- Any viable pathways for the Proposed Development to the receptor (either a Habitats Site itself or functionally linked land);
- The qualifying features of the Habitats Site in question; and,
- The conservation objectives of the Habitats Site, including any site sensitivities given within any supplementary advice, site improvement plan, or equivalent document published by the relevant nature conservation body.

3.1.3 Potential effects on the following are considered:

- Terrestrial areas within the Proposed Development where there would be land take and habitat removal for the temporary and permanent works during construction (including functionally linked land/habitats);
- Areas where there is a risk of altering the hydrodynamic regime or a reduction in water quality;
- Areas where there is a risk of an increase in air, noise, vibration and light pollution during construction and operation; and
- Areas where there is physical disturbance to international designated sites and/or their designated interest features.

3.1.4 In line with relevant established case law, this assessment has been undertaken in the absence of mitigation (where these are intended to avoid or reduce harmful effects upon a designated site).

Table 3-1 Potential Effects during Construction

Potential Effects	Rationale
Potential temporary and permanent habitat loss and fragmentation.	Construction of infrastructure associated with the Proposed Development may remove or replace features that contribute to or are functionally linked to the designated site. It may also create barriers between habitats or migration of species. These

Potential Effects	Rationale
	factors can result in a temporary or permanent loss of habitat within designated sites.
Potential for direct or indirect effects on designated sites due to disturbance of qualifying species.	The use of temporary construction lighting may adversely affect nocturnal species through disturbance and displacement. There is also potential for construction works to result in increased visual, noise and vibrational effects which may disturb protected and/or notable species which are qualifying features of designated sites. Currently, neither the depths at which tunnelling will occur nor the exact tunnelling methodology to be used are known. There is the potential for noise and vibration to occur as a result of the tunnelling, therefore until tunnelling details have been defined, effects cannot be ruled out at this stage. Migratory fish species may be affected by underwater noise and vibration, which can create temporary barriers to migration, cause permanent or temporary injury, or induce behavioural changes. Increased fragility of juvenile fish/larvae/eggs compared to adult fish (both migratory and non-migratory species), may make them more vulnerable to underwater noise and vibration. It is also noted that these fish populations, may potentially comprise prey species that designated birds are reliant upon. Therefore, underwater noise could indirectly affect bird species as well as directly affect designated aquatic species.
Potential for indirect effects on designated sites, functionally linked land or designated features due to effects on hydrology including turbidity changes.	There is a risk of changes to water flows, or quantities during construction of the Proposed Development, due to the presence of groundwater dependant designated sites causing habitat degradation or loss during watercourse crossing or pipeline construction. There is a risk of changes to water quality during construction of the Proposed Development, due to the disturbance of sediment causing habitat degradation or loss during pipeline construction.
Potential temporary direct or indirect effects on designated sites, functionally linked land or designated features due to waterborne pollution.	Run-off or spills associated with construction activities or from exposure of historic contaminated soils may have an impact pathway to adjacent or hydrologically connected designated sites including temporary hydrological connection in flood risk areas.
Potential temporary direct effects on designated sites, functionally	Emissions from vehicles or plant and dust from construction activities associated with the Proposed Development may result in deposition on

Potential Effects	Rationale
linked land or designated features due to airborne pollution.	designated sites within 250m of the Proposed Development, in accordance with guidance from Natural England (2018) and the Institute of Air Quality Management (IAQM, 2023).
Potential introduction and or spread of non-native species and disease.	The construction of the Proposed Development may result in the unintentional spread of unknown invasive non-native species (INNS) or diseases.

Table 3-2 Potential Effects during Operation

Potential Effects	Rationale
Potential indirect effects on designated sites, functionally linked land or designated features due to hydrological effects including turbidity changes.	There is a risk of LSE associated with changes to the flow or quantity of water entering watercourses or feeding reliant habitats as a result of the operation and maintenance activities of Proposed Development. Emergency draw-down of the Havant Thicket Reservoir has the potential to effect the local Hermitage Stream catchment and downstream sites and is included within this assessment only in relation to the change in source water quality within the reservoir. In addition, changes in water quality could occur from disturbance of soils/sediments as part of maintenance activities for the Proposed Development or introduction of suspended sediments during operations. This could adversely affect the geomorphology and water quality of the surface water drainage network, as well as groundwater and marine waters. This in turn could have an effect on aquatic ecology.
Potential direct or indirect effects on designated sites, functionally linked land or designated features due to waterborne pollution.	There is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of contaminated sediment, treatment chemicals, oils, fuels or lubricants. This could adversely affect the water quality of the surface water drainage network, as well as groundwater and marine waters. This in turn could affect aquatic ecology. In addition, the operation of the WRP as part of the operational phase of the Proposed Development would alter the discharge from the Eastney LSO. This is likely to alter the dispersion pathway and concentration of existing compounds within the discharge. It is possible that it may concentrate compounds above environmental quality standard for estuarine and coastal waters[4] or it may even

[4] See Screening tests: estuaries and coastal waters available from Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk)

Potential Effects	Rationale
	reduce nutrient concentrations. This would modify the water quality which in turn could affect aquatic ecology.
Potential direct or indirect effects on designated sites due to disturbance of qualifying species.	The operation and maintenance (both planned and unplanned) of the Proposed Development may result in increased levels of disturbance, depending on the activity this may comprise visual, vibration and noise disturbance. This can also potentially result in harm from temporary or permanent injury to aquatic species depending upon the intensity of the noise and vibration.
Potential introduction and or spread of non-native species and disease	The operation and maintenance activities (both planned and unplanned) of the Proposed Development may result in the unintentional spread of unknown invasive non-native species (INNS).

4 Site Identification

4.1.1 The area of potential effect, the ZoI, from the Proposed Development includes all Habitats Sites and MCZs within 5km or those with hydrological connections to the Proposed Development. In addition to this, all SACs designated specifically for bats within 15km[5] are included. Habitats Sites and MCZs are detailed within Table 4.1 have been identified as to be included within the HRA Stage 1 – Screening and MCZ assessment Screening. Habitats Sites detailed within Table 4.2 have been identified as scoped out due to no potential pathway for effect.

Table 4-1 Sites with the potential for impact pathways

Site	Distance and direction from Proposed Development
River Itchen SAC	Crossed by the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW.
Chichester and Langstone Harbour SPA	Crossed by the proposed Underground Pipeline between Budds Farm WTW and the proposed WRP and hydrologically connected via the crossing of Hermitage Stream and use of the Eastney LSO.
Chichester and Langstone Harbour Ramsar	Crossed by the proposed Underground Pipeline between Budds Farm WTW and the proposed WRP and hydrologically connected via the crossing of Hermitage Stream and use of the Eastney LSO.
Solent Maritime SAC	Crossed by the proposed Underground Pipeline between Budds Farm WTW and proposed WRP and hydrologically connected via the crossings of the River Itchen, River Hamble, River Meon and Hermitage Stream and use of the Eastney LSO.
Portsmouth Harbour SPA	1.6km south of the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW, and hydrologically connected via the crossing of the River Wallington and use of the Eastney LSO.
Portsmouth Harbour Ramsar	1.6km south of the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW, and hydrologically connected via the crossing of the River Wallington and use of the Eastney LSO.
Solent and Dorset Coast SPA	1.6km south of the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW, and hydrologically connected via use of the Eastney LSO and crossings of the River Itchen, River Hamble, River Meon and the River Wallington.

[5] 15km from the Proposed Development is taken to be an appropriate search radius for SACs with bats as a qualifying species as the largest buffers identified in guidance for relevant SACs within the South-East region extend up to 12km.

Site	Distance and direction from Proposed Development
Solent and Southampton Water SPA	Hydrologically connected to the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW via crossing of the River Itchen, River Hamble and the River Meon and the use of Eastney LSO. The closest point is 3km south-west of the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW.
Solent and Southampton Water Ramsar	Hydrologically connected to the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW via crossing of the River Itchen, River Hamble and the River Meon and use of the Eastney LSO. The closest point is 3km south-west of the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW.
South Wight Maritime SAC	Hydrologically connected by use of the Eastney LSO.
Solent and Isle of Wight Lagoons SAC	Hydrologically connected to the Underground Pipeline between Budds Farm WTW and the proposed WRP and use of the Eastney LSO.
River Meon Compensatory SAC Habitat	Crossed by the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW.
Bembridge Marine Conservation Zone (MCZ)	Hydrologically connected by use of the Eastney LSO as within two tidal excursions[6].

4.1.2 There are no pSACs, pSPAs or pRamsar sites present within the ZoI and there are no proposed MCZs present within hydrological connection of the Eastney LSO.

4.1.3 Solent Wader and Brent Goose Strategy (SWBGS) sites are areas of functionally linked land for Chichester and Langstone Harbour SPA and Ramsar and Portsmouth Harbour SPA and Ramsar. The SWBGS aims to protect the network of non-designated that support the Solent Habitat Sites from land take and recreational pressure associated with new development. The terrestrial wader and brent goose sites are located on land that falls outside of the Solent Habitat Sites boundaries; however, these identified areas of land are frequently used by species of importance to the designated sites (including qualifying features and assemblage species) and support the functionality and integrity of the designated sites.

4.1.4 The SWBGS are classified as core areas, primary support areas, secondary support areas, low use sites and candidate sites. The classification of sites is

[6] Approximately 10km using the nearest tidal ellipse. See the following for details ABPMer, “UK Renewables Atlas: WEBvision - Renewables (Tide),” 2017. [Online]. Available: https://www.renewables-atlas.info/explore-the-atlas/. [Accessed 16 May 2022].

fully detailed within Solent Waders and Brent Goose Strategy, 2020 (Whitfiled, 2020).

4.1.5 There are 64 SWBGS sites within 2km of the Proposed Development and 18 SWBGS sites within the Scoping Area.

Table 4-2 Sites with no potential impact pathways

Site	Distance and direction from Proposed Development	Justification
Briddlesford Copses SAC	11km south of the Proposed Development at the Eastney LSO (closest point)	Briddlesford Copse SAC is located on the Isle of Wight at Wootton Bridge. It is not connected to the Solent and therefore there are no potential pathways for effect from the Eastney LSO. The land-based components of the Proposed Development are 20km for this SAC. The Conservation Objectives Supplementary Advice (COSA) for this SAC states that the Bechstein's bat *Myotis bechsteinii*, which are the sole reason for the SAC designation of Briddlesford Copse, may forage up to 1-2.5km from their maternity roosts. The core sustenance zone (CSZ) for this species, defined by the BCT, is increased from the above to 3km (BCT, 2020). A CSZ refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. There are also no pathways for an impact to occur based on the identified CSZ and therefore there is no pathway for LSE upon the bat population or any other supporting habitats associated with the SAC.

Site	Distance and direction from Proposed Development	Justification
Kingmere MCZ	36.5km east of the Proposed Development at the Eastney LSO	The site is located further than two tidal ellipsis (over 10km) from the Eastney outfall and therefore is not considered to be hydrologically connected. This site is designated for subtidal chalk, moderate energy infralittoral rock and thin mixed sediments and black seabream (*Spondyliosoma cantharus*). As the site is over 10km from the Eastney LSO it is considered there is no impact pathway for LSE to occur on the features of this MCZ.
Mottisfont Bats SAC	15km north-west of the Proposed Development	The Conservation Objectives Supplementary Advice (COSA) for this SAC states that the Barbastelle bats *Barbastella barbastellus*, which are the sole reason for the SAC designation of Mottisfont woodlands, may forage up to 5-7km from their maternity roosts, which is in line with the CSZ for this species, defined by the BCT as 6km (BCT, 2020). The works at Otterbourne WSW, at 15km away, are sufficiently distant from the SAC and its associated CSZ and separated from it by the M3 motorway (a significant barrier to bat movements due to its width and artificial lighting) for there to be no impact pathway for LSE.
The Needles recommended Marine Conservation Zone (rMCZ)	34km south-west of the Proposed Development at the Eastney LSO	The site is located further than two tidal ellipsis (over 10km) from the Eastney outfall and therefore is not hydrologically connected. The site is designated for Moderate energy infralittoral rock, High energy infralittoral rock, Moderate energy circalittoral rock, Subtidal chalk, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand, Subtidal mud, Sheltered muddy gravels, Seagrass Beds, Stalked jellyfish (*Lucernariopsis campanulata*), Peacock's tail (*Padina pavonica*) and Native oyster (*Ostrea edulis*). As the site is over 10km from the Eastney LSO it is considered there is no impact pathway for LSE to occur on the features of this MCZ.

Site	Distance and direction from Proposed Development	Justification
Offshore Overfalls MCZ	21km south-east of the Proposed Development at the Eastney LSO	The site is located further than two tidal ellipsis (over 10km) from the Eastney outfall and therefore is not hydrologically connected. This site is designated for subtidal coarse sediment, subtidal mixed sediments, subtidal sand and English Channel outburst flood features. As the site is over 10km from the Eastney LSO it is considered there is no impact pathway for LSE to occur on the features of this MCZ.
Pagham Harbour MCZ	20km east of the Proposed Development at the Eastney LSO	The site is located further than two tidal ellipsis (over 10km) from the Eastney outfall and therefore is not hydrologically connected. This site is designated for seagrass beds, Defolin's lagoon snail (*Caecum armoricum*) and Lagoon sand shrimp (*Gammarus insensibis*). As the site is over 10km from the Eastney LSO it is considered there is no impact pathway for LSE to occur on the features of this MCZ.
Selsey Bill and the Hounds MCZ	15km east of the Proposed Development at the Eastney LSO	The site is located further than two tidal ellipsis (over 10km) from the Eastney outfall and therefore is not hydrologically connected. It is designated for Bracklesham Bay geological feature, Short-snouted seahorse (*Hippocampus hippocampus*), Subtidal mixed sediments, Subtidal sand, High energy infralittoral rock, Low energy infralittoral rock, Moderate energy infralittoral rock, Moderate energy circalittoral rock, and Peat and clay exposures.

Site	Distance and direction from Proposed Development	Justification
Singleton and Cocking Tunnels SAC	15km north-east of the Proposed Development	The COSA for this SAC references the South Downs National Park & Natural England Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol (2015) which has identified key flight lines and foraging areas for Bechstein's bat and barbastelle. The following impact zones are recommended around the SAC: • 6.5km Key Conservation Area –all impacts assessed. • 12km Wider Conservation Area – significant impacts or severance to flight lines to be considered. The Proposed Development is outside the wider conservation area and the proposed Underground Pipelines have been routed to avoid removal of ancient woodland and, where possible, woodland priority habitat. In addition, it is reasonable to assume, due to its width and artificial lighting, that the A3(M) is likely to be a barrier to flight movement from east to west. The CSZ for Bechstein's bat is 3km and for barbastelle, 6km. As such, there will be no overlap between the CSZ for either species or the wider conservation area and Proposed Development as it is 15km from the SAC. Therefore, there is no impact pathway for LSE to occur on qualifying features of this SAC.
Utopia MCZ	16km south-east of the Proposed Development at the Eastney LSO	The site is located further than two tidal ellipsis (over 10km) from the Eastney outfall and therefore is not hydrologically connected. This site is designated for Moderate energy circalittoral rock, High energy circalittoral rock, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand and Fragile sponge & anthozoan communities on subtidal rocky habitats. As the site is over 10km from the Eastney LSO it is considered there is no impact pathway for LSE to occur on the features of this MCZ.

Site	Distance and direction from Proposed Development	Justification
Yarmouth to Cowes MCZ	18km west of the Proposed Development at the Eastney LSO	The site is located further than two tidal ellipsis (over 10km) from the Eastney outfall and therefore is not hydrologically connected. It is designated for Bouldnor Cliff geological feature, Estuarine rocky habitats, Intertidal coarse sediment, Intertidal under boulder communities, Littoral chalk communities, Low energy intertidal rock, Moderate energy intertidal rock, Subtidal coarse sediment, High energy circalittoral rock, High energy infralittoral rock, Moderate energy circalittoral rock, Moderate energy infralittoral rock, Native oyster (*Ostrea edulis*), Peat and clay exposures, Sheltered muddy gravels, Subtidal chalk, Subtidal mixed sediments and, Subtidal mud. Therefore, the features are less likely to be impacted by the Proposed Development as they are sedentary rather than migratory. As the site is over 10km from the Eastney LSO and, as discussed above, the features are sedentary, it is considered there is no impact pathway for LSE to occur on the features of this MCZ.

4.1.6 The location of the Proposed Development and the above 13 sites that have been scoped in are shown in Appendix A.

5 Habitats Regulations Assessment: Stage 1 – Screening

5.1.1 The following Screening information has been produced to assess the potential effects resulting from the construction and operation of the Proposed Development and to identify any potential LSEs on the identified Habitats Sites and MCZs. Any identified LSEs will be subject to further investigation during the next stage (Stage 2) of the HRA process.

Table 5-1 River Itchen SAC Stage 1 Screening Assessment

Site Name: River Itchen SAC	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development)	The River Itchen SAC is crossed by the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW, via a trenchless crossing.
Qualifying features	Annex I habitats that are a primary reason for selection of this site: ■ 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. Annex II species that are a primary reason for selection of this site: ■ 1044 Southern damselfly *Coenagrion mercuriale; and,* ■ 1163 Bullhead *Cottus gobio.* Annex II species present as a qualifying feature, but not a primary reason for site selection: ■ 1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes;* ■ 1096 Brook lamprey *Lampetra planeri;* ■ 1106 Atlantic salmon *Salmo salar; and,* ■ 1355 Otter *Lutra lutra.*
Is the Site water dependent	Yes
Sensitivities of the Site	A principal threat to the habitats within this SAC is considered to be the decrease in flow velocities and increase in siltation, in turn affecting macrophyte cover (especially *Ranunculus*). Recent surveys have shown declines in *Ranunculus* cover since 1990, attributable to increased abstractions in the upper catchment, coupled with a series of years with below-average rainfall. Low flows interact with nutrient inputs from point sources to produce localised increases in filamentous algae and nutrient-tolerant macrophytes at the expense of *Ranunculus*. Efforts are

	currently being made to increase the viability of the southern damselfly population through population studies and a Species Action Plan. Threats, pressures and activities with impacts on the site listed on the standard data form: ■ Grazing; ■ Pollution to groundwater (point sources and diffuse sources); and, ■ Human induced changes in hydraulic conditions. The prioritised issues for the site as detailed in the Site Improvement Plan are as follows: ■ Water pollution; ■ Physical modification; ■ Siltation; ■ Overgrazing; ■ Water abstraction; ■ Inappropriate weed control; ■ Hydrological changes; ■ Inappropriate water levels; ■ Change in land management; ■ Inappropriate cutting/mowing; ■ Invasive species; ■ Under grazing; ■ Inappropriate ditch management; ■ Inappropriate scrub control; and, ■ Forestry and woodland management.
Conservation objectives	The Conservation Objectives for this site are, subject to natural change, to maintain in favourable condition (*): ■ The river habitat for water crowfoot, salmon, bullhead, brook lamprey and white-clawed crayfish; and, ■ the river and adjoining land as habitat for southern damselfly and otters. (*) or restored to favourable condition if features are judged to be unfavourable

Screening Assessment		
	Construction Phase	
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The proposed Underground Pipeline crosses the River Itchen via trenchless techniques from Brambridge to the west of the railway, adjacent to Otterbourne Park Wood, with additional trenchless crossings of two tributaries (no tributaries of the River Itchen will be crossed open cut). The tunnel begins 200m north (or 640m east) of the River Itchen SAC, with the end of the tunnel approximately 215m west of the River Itchen SAC. The trenchless crossings are embedded measures within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the avoidance of habitat loss and fragmentation as a result of trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022). The qualifying habitats of the SAC are watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. The Proposed Development will cross the River Itchen and associated tributaries via trenchless techniques and there will therefore be no direct effect to the qualifying habitats of the SAC. However, construction activities in the River Itchen catchment could increase soil erosion and the supply of fine sediment (e.g., clays, fine silts and sands) to the river. Increased sediment supply would increase turbidity levels within the water column, resulting in greater fine sediment deposition on the channel bed. Higher sediment loads entering the channel could also smother bed habitats, reduce light penetration and decrease temperature and dissolved oxygen levels. Whilst there is no habitat loss or fragmentation the changes to sediment levels could adversely affect the qualifying habitats and species for which the River Itchen SAC is designated. Habitats which may support qualifying species are present within the footprint of the Proposed Development. However, there is unlikely to be loss of habitat for resting or breeding otter as the design of the route alignment seeks to avoid all potential or confirmed holt sites that are identified. The proposed Underground Pipeline crossing of the River Itchen, the Itchen Navigation and tributaries will be a trenchless crossing. However, the proposed Underground Pipeline will be constructed via open-cut techniques for approximately 700m after the trenchless crossing of the main river and adjacent railway, up to the trenchless crossing of the western tributary and floodplain to the west of the railway. Compounds associated with these trenchless crossings are within 150m of the SAC at the closest point.	Yes

	In the unlikely event that an otter holt or couch is located within a hedgerow crossed by open-cut methods there is a risk of habitat loss for this qualifying species, outside the SAC. Open-cut methods may be used to construct the pipeline across habitats which may be used by Southern Damselfly outside of the SAC, notably drains which connect to the Otter Bourne. Although these drains were dry during surveys in 2022 there is potential for these to hold flowing water during less dry years and therefore, habitat loss or fragmentation could occur. The watercourses crossed by the Proposed Development may also support qualifying fish species. Direct effects of habitat loss or fragmentation will not occur as the pipeline will be in a trenchless tunnel section under the River Itchen SAC and tributaries. There is a risk of damage to spawning habitat due to vibration from the installation of the trenchless crossings if undertaken during the spawning season. This could result in damage of habitat used by qualifying species within and outside of the SAC. The results of eDNA surveys confirmed the likely absence of white clawed crayfish from the survey area.	
Disturbance	Construction within or under watercourses could cause noise and vibration disturbance which could disturb spawning fish, if undertaken during the spawning season. Although no in-channel works are proposed within the River Itchen SAC or its tributaries disturbance may occur as a result of vibration during construction of the trenchless crossing, if occurring during the spawning season. The trenchless crossings are embedded measures within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the minimisation of disturbance as a result of the trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022). Disturbance may occur from the installation of underground pipelines and associated infrastructure, which could result in increased water turbidity with groundwater, affecting water quality of the River Itchen. Due to the distance between the SAC and construction compounds of the trenchless crossing (a minimum of 150m), disturbance of qualifying species present within the SAC from activities within the compounds is not expected. However, there is a risk of disturbance of qualifying species which are present outside of the SAC. Disturbance of otter is possible where works are within proximity to a holt. No otter holts have been recorded in the habitats surround the River Itchen to date, although surveys are ongoing. Although the design seeks to avoid potential or confirmed holts, if an otter holt were to be found	Yes

	within Otterbourne Park Wood, or within the vicinity of the trenchless crossing compound at Brambridge, there would be potential for disturbance during construction.	
Hydrological change	There is potential that hydrological changes as a result of the construction of the Proposed Development could result in indirect effects to the SAC and its qualifying species and habitats. There is a risk that if perched groundwater was disturbed during the construction of this tunnel, that this could increase turbidity within the aquifer which is linked to the River Itchen SAC. In addition, the construction of the underground pipeline and associated infrastructure may result in a change in quantity or quality of flows between the aquifer and the SAC if flow paths are crossed by the pipeline. Any activities that disturb the ground, such as excavation, tunnelling or piling, could mobilise contaminants within soils or groundwater, and potentially adversely affect groundwater quality or locally alter the hydraulic properties of the aquifer which supplies the River Itchen. Additionally, if pipe jacking is used for the construction of the trenchless crossing this may also require boring fluid to be applied which would result in a risk of adding turbidity to the aquifer if groundwater was to be encountered. However, in the unlikely event that groundwater turbidity levels were affected, due to the existing fine grained alluvial and bed sediments beneath the Itchen and the deep-seated flow lines, there is unlikely to be a mechanism where turbid waters could be pulled upward into the root zones of plants or into the open waters of the River Itchen. Groundwater flows and levels may also be affected by temporary physical modifications (e.g., excavations or tunnelling), which would interrupt the natural groundwater flow pathways. The other potential risks to groundwater associated with excavations and/or tunnel construction include temporary dewatering, if required, for the tunnel or shafts, diverting water away from the river, or bypassing part of the system, leading to reduced groundwater flow. Construction of tunnel sections and partially buried structures below the maximum groundwater level in the chalk could create a permanent barrier to groundwater flow. This could lead to a rise in groundwater levels on the upstream side, which could cause additional groundwater flooding, and a reduction of groundwater levels on the downstream side. This could potentially permanently affect the River Itchen as a groundwater-dependent watercourse. The installation of the tunnels could also result in creating a permanent connection between two currently hydraulically disconnected aquifers. This could affect the quality of groundwater and consequently the River Itchen. Further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the SAC. A Hydrogeological Impact Assessment (HIA) will be prepared to evaluate	Yes

	quantitative impacts of the Proposed Development on selected groundwater receptors before and after mitigation, focussing on the tunnelling sections and trenchless crossings, including the River Itchen. A site-specific conceptual hydrogeological model will be derived to provide an overview of the interactions between groundwater and surface water and will identify potential linkages between potential effects from the Proposed Development (during construction or operation) and Ground Water Dependent Terrestrial Ecosystems (GWDTEs), such as functionally linked land associated with the SAC. Groundwater flow paths, groundwater levels and the proximity of GWDTEs will be taken into account in the conceptual hydrogeological model, which will be included in the HIA. If modelling shows that the construction of the pipeline will be above ground water levels and therefore there is considered to be no risk of encountering groundwater this would ensure no risk of altering the quantity or quality of flows feeding the SAC.	
Waterborne Pollution	The operation of construction machinery in the vicinity of the River Itchen has the potential for accidental release pollutants on to the ground, where pollutants could migrate into underlying groundwater. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter the river and adversely affect its physical and chemical properties. There is potential for LSE as a result of waterborne pollution in unmitigated circumstances, which is expected reduce to no significant effect when bespoke mitigation measures are implemented. This will be fully assessed at Stage 2.	Yes
Airborne Pollution	Construction dust may have LSE out to 250m from works (in accordance with IAQM, 2023 (Institute for Air Quality Management, 2023)). Therefore, there is potential for effects to occur within the SAC. In addition, the potential effects of construction traffic (due to temporary traffic management measures and/or additional vehicles travelling to and from the construction) and Non-Road Mobile Machinery (NRMM) emissions on air quality within 200m of the construction works boundary or a road affected by changes in traffic may affect the SAC (Natural England, 2018). Further assessment of these potential sources of air pollution will be undertaken, with additional modelling as required, to establish the potential for LSE.	Yes
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS.	Yes

	The crossing of the River Itchen will be via trenchless techniques and therefore the potential for the spread of INNS into the watercourse or within functionally linked land is extremely remote. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implemented. This will be fully assessed at Stage 2.	
Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological Change and Waterborne Pollution	Once operational, the Proposed Development should reduce the requirements for water abstractions from the River Itchen. This reduction in abstractions will help maintain natural watercourse flow and contribute to the conservation objective of maintaining or restoring the structure and function of habitats and species. Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. This could adversely affect the geomorphology and water quality of the surface water drainage network, as well as groundwater. This in turn could affect aquatic ecology and the qualifying features of the SAC. Additionally, washouts are expected to be located at topographical low points along the alignment of the proposed Underground Pipeline to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. Washouts will be contained with below ground chambers sized to ensure access around the pipework and fittings to enable future operation and maintenance. For example, on an 800mm pipe laid at nominal depth this would equate to approximately a 3x3x3m chamber. The chambers will be ventilated and stand at least 300mm above ground level in open land, and flush in road corridors, finished with an appropriately security rated chamber cover. Air valves are anticipated to be required every 500m, with two for each trenchless crossing to automatically	Yes

	release any build-up of air in the pipeline. Where required, isolation valves are expected to be required on both sides of major infrastructure and watercourse crossings and other locations where it may be difficult to gain access for repair and maintenance of the pipeline. They may be co-located with washouts/ air valves and will be designed with an integral bypass for the balancing of upstream and downstream pressure to facilitate operation. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in a receiving watercourse (if discharged to a watercourse), washout water may differ in its chemistry from that in the receiving watercourse and the hydrology and geomorphology of receiving watercourses could also be affected. Although the design will seek to avoid flows to the Itchen, further information and assessment at stage 2 is required to ensure that LSE are avoided. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (such as resulting from failure or accidental damage) could also affect flood risk, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term. As a sensitive chalk river, the Itchen is likely to be particularly susceptible to changes in water chemistry, although any changes are not likely to be sufficient to result in significant ecological responses. Adult Atlantic salmon, a qualifying feature of this SAC, are likely to pass by the Eastney LSO, which has the potential to concentrate compounds above environmental quality standard for estuarine and coastal waters[7] (see explanation in Section 6). The exact compounds of interest, and the associated change in concentration for each of these, has yet to be determined but as a precaution it is considered that concentrations could be above the EQS threshold as for estuarine and coastal waters (see Screening test: estuarine and coastal waters[8] compounds and limits). It is important to note that salmon are highly mobile, so they are likely to have a limited duration of exposure to any discharged compounds before they move into cleaner water or the discharge is sufficiently diluted by the Solent to below thresholds of effect. Consequently, it is unlikely to result in significant ecological effect to the species as a qualifying feature of the SAC, although this cannot be discounted at this stage without further evidence on the concentrations likely to be discharged.	

[7] See Screening tests: estuaries and coastal waters available from Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk)

[8] Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk)

INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the River Itchen is low; however, the emergency use of washouts could result in the spread of INNS into the River Itchen catchment. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	Yes
Stage 1 Screening Assessment – River Itchen SAC		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	
Does the Proposed Development have the potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	Yes – Further information is required, uncertainty remains	

Table 5-2 Chichester and Langstone Harbour SPA Stage 1 Screening Assessment

Site Name: Chichester and Langstone Harbour SPA	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development)	The Chichester and Langstone Harbour SPA is crossed by the proposed Underground Pipeline between Budds Farm WTW and the proposed WRP, the proposed Underground Pipeline between proposed WRP and Havant Thicket Reservoir and is within 180m of the Proposed WRP. The SPA is hydrologically connected to the Proposed Development via the crossing of Hermitage Stream. The Eastney LSO (release point for reject water) is 6km from the SPA at its closest point.
Qualifying features	This site qualifies under Article 4.2 of the Birds Directive (Directive 2009/147/EC) by supporting internationally important numbers of the following migratory bird and wintering bird species: ■ A046a *Branta bernicla bernicla*; Dark-bellied brent goose (Non-breeding); ■ A048 *Tadorna tadorna*; Common shelduck (Non-breeding); ■ A050 *Anas penelope*; Eurasian wigeon (Non-breeding); ■ A052 *Anas crecca*; Eurasian teal (Non-breeding); ■ A054 *Anas acuta*; Northern pintail (Non-breeding); ■ A056 *Anas clypeata*; Northern shoveler (Non-breeding); ■ A069 *Mergus serrator*; Red-breasted merganser (Non-breeding); ■ A137 *Charadrius hiaticula*; Ringed plover (Non-breeding); ■ A141 *Pluvialis squatarola*; Grey plover (Non-breeding); ■ A144 *Calidris alba*; Sanderling (Non-breeding); ■ A149 *Calidris alpina alpina*; Dunlin (Non-breeding); ■ A157 *Limosa lapponica*; Bar-tailed godwit (Non-breeding); ■ A160 *Numenius arquata*; Eurasian curlew (Non-breeding); ■ A162 *Tringa totanus*; Common redshank (Non-breeding); ■ A169 *Arenaria interpres*; Ruddy turnstone (Non-breeding); ■ A191 *Sterna sandvicensis*; Sandwich tern (Breeding); ■ A193 *Sterna hirundo*; Common tern (Breeding); and, ■ A195 *Sterna albifrons*; Little tern (Breeding).

Is the Site water dependent	Yes
Sensitivities of the Site	Threats, pressures, and activities with impacts on the site listed on the standard data form include: ■ Changes in biotic conditions; ■ Pollution to ground groundwater (point sources and diffuse sources); ■ Changes in abiotic conditions; ■ Fishing and harvesting aquatic resources; and, ■ Outdoor sports and leisure activities, recreational activities. The prioritised issues for the site are as follows (taken from overarching Solent Site Improvement Plan): ■ Public access/disturbance; ■ Coastal squeeze; ■ Fisheries: Commercial, marine and estuarine; ■ Water pollution; ■ Changes in species distribution; ■ Climate change; ■ Change to site condition; ■ Invasive species; ■ Direct land take from development; ■ Biological resource use; ■ Change in land management; ■ Inappropriate pest control; ■ Air pollution: Impact of atmospheric nitrogen deposition; ■ Hydrological changes; ■ Direct impact from third party; ■ Extraction: non-living resources; and, ■ Other.

Conservation objectives	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: ■ The extent and distribution of qualifying natural habitats and habitats of qualifying species; ■ The structure and function (including typical species) of qualifying natural habitats; ■ The structure and function of the habitats of qualifying species; ■ The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; ■ The populations of qualifying species; and, ■ The distribution of qualifying species within the site.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The proposed Underground Pipeline between Budds Farm WTW and the proposed WRP crosses under the Chichester and Langstone Harbour SPA, and the proposed WRP is 180m north of the SPA at its closest point. There will be no direct or indirect loss of habitat within the designated site. The trenchless crossing of Hermitage Stream is an embedded measure within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the avoidance of habitat loss and fragmentation as a result of trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022). The closest identified area of functional land outside of the designated site, as identified on the SWBGS is the WRP site itself (H08), part of which is classified as a low use site. In addition, there are SWBGS sites within 15m of the proposed WRP, across Harts Farm Way, classified as a core site (H07A), a secondary support area (H07B) and a low use site (H07C), along with a candidate site adjacent to the proposed WRP, along Hermitage Stream (H130) and a second candidate site across Hermitage Stream (H09). There is also a primary support area (H90) covering the southern part of Budds Farm WTW, and a candidate site (H29) immediately south of this. In addition, the proposed Underground Pipeline between the WRP, Havant Thicket Reservoir and Otterbourne WSW also intersect with SWBGS sites. Although the relevant sections of the underground pipeline will be constructed in tunnels, there will be a need for shafts to be installed at	Yes

	intervals along the tunnel lengths. The SWBGS sites that are located above the tunnels are a low use site (H04C) and candidate sites (H03, H05A). The site of the proposed WRP has been subject to regular vegetation clearance among other activities undertaken by the landowner, within the highway's plantation and woodland along Hermitage Stream that surrounds the site. This has likely reduced the suitability of the site for wintering birds by removing foraging or grazing habitats here. In addition, wintering bird surveys undertaken for the Proposed Development in the winters of 2022 and 2023 (October to March inclusive) recorded no use of the WRP site and limited use of the adjacent coastal sites. Due to the allocation of the proposed WRP site and Budds Farm WTW as SWBGS sites, and the potential for tunnel shafts to be located within SWBGS sites, there is likely to be loss of functional land outside of the designated site and therefore LSE from habitat loss.	
Disturbance	Terns, which are the breeding bird species listed as a qualifying feature of the SPA, require loose substrate to nest on. The more suitable areas for this are the small nearby islands, to the east of Farlington Marshes. The nearest of which is approximately 985m south-west of the proposed WRP, although colonies have previously only been recorded (Natural England, 2016) on the islands further south (around Baker's Island), approximately 1.8km south-west of the WRP. Therefore, disturbance is unlikely to occur directly at the breeding sites. However, disturbance of terns may occur away from the breeding sites, for example if foraging within Langstone Harbour closer to the WRP or Budds Farm WTW. However, construction activities will not be restricted to the breeding season only and will continue in the over-wintering period. Therefore, due to the proximity of both the SPA itself and functionally linked land (in the form of SWBGS sites) there is potential for both visual and aural stimuli during construction of the Proposed Development. Studies (Cutts, Hemingway and Spencer 2013) show a range of disturbance tolerance thresholds for the qualifying species of the SPA, ranging from 50m to 500m depending on the species and source of disturbance. A quantitative assessment of construction noise and vibration effects will be undertaken, based on estimates of reasonable worst case construction noise levels at the closest identified potentially sensitive receptors to the Proposed Development. The qualifying features are not considered to be directly affected by underwater noise and the habitats and species that support them are unlikely to be affected as they are either insensitive (e.g., plants or habitats) or the effect is considered limited due to the location of works in a localised,	Yes

	shallow water area and the temporary duration of works. It is anticipated that prey species may move from the construction area, creating a localised area where resources are reduced only for the duration of the works, not having an effect on the actual availability of resources. The bird species which are qualifying features of the SPA would continue to be able to utilise other feeding areas within the designated site, and therefore no effect on their foraging resources would occur.	
Hydrological Change	The proposed Underground Pipeline crosses under Hermitage Stream which flows into the SPA. The proposed WRP is adjacent to the tidally influenced lower course of Hermitage Stream, which is constrained by artificial banks and other urban infrastructure. The proposed Underground Pipeline would be drilled under the seabed, ensuring no hydrological changes. However, the trenchless crossing of Hermitage Stream is an embedded measure within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the avoidance of hydrological change as a result of trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022). In addition to crossing below the mouth of Hermitage Stream, the proposed Underground Pipeline between the proposed WRP and Havant Thicket Reservoir also crosses below Hermitage Stream and Brockhampton Stream, which is a tributary of Hermitage Stream. Groundwater is likely to feed into these streams and therefore, further modelling will be undertaken to assess the potential for hydrological impact pathways to the SPA and inform the detailed design and any possible mitigation requirements. If modelling shows that the construction of the pipeline will be above ground water levels, there would be no risk of encountering groundwater and therefore no risk of altering the quantity or quality of flows feeding the SPA.	Yes
Waterborne Pollution	Construction machinery at the proposed WRP has the potential for accidental release of pollutants on to the ground, where pollutants could migrate into underlying groundwater or Hermitage Stream. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter Chichester and Langstone Harbour SPA either directly or via Hermitage Stream and adversely affect its physical and chemical properties. As the proposed WRP site is a previous landfill, the site will be built up to accommodate infrastructure to ensure the landfill capping is not breached. Where piled foundations breach the capping and lining it is assumed these will be	Yes

	cast in situ. This method will ensure a seal is formed between the pile and capping / lining to prevent leachate. However, as the WRP is located within a contaminated (i.e. historic landfill) flood risk area, there is the potential that chemical or cement spill could transfer additional contaminated compounds when entering the water environment if unmitigated. During commissioning, flushing water will be used to clean and sterilise the new pipeline. Standard best practice measures will be implemented to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. As such, LSEs from waterborne pollution from flushing are possible. There is potential for LSE as a result of waterborne pollution.	
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. No INNS have been recorded within the site of the proposed WRP. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the SPA is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent where the SPA resides, the full salinity of the Solent would hinder spread of INNS. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is the potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implemented, which is to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**

Hydrological Change and Waterborne pollution	Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. This in turn could affect the qualifying features of the SPA. Additionally, washouts are expected to be located at topographical low points along the alignment of the proposed Underground Pipelines to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. Washouts will be contained with below ground chambers sized to ensure access around the pipework and fittings to enable future operation and maintenance. For example, on an 800mm pipe laid at nominal depth this would equate to approximately a 3x3x3m chamber. The chambers will be ventilated and stand at least 300mm above ground level in open land, and flush in road corridors, finished with an appropriately security rated chamber cover. Air valves are anticipated to be required every 500m, with two for each trenchless crossing to automatically release any build-up of air in the pipeline. Where required, isolation valves are expected to be required on both sides of major infrastructure and watercourse crossings and other locations where it may be difficult to gain access for repair and maintenance of the pipeline. They may be co-located with washouts / air valves and will be designed with an integral bypass for the balancing of upstream and downstream pressure to facilitate operation. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in a receiving watercourse (if discharged to a watercourse), washout water may differ in its chemistry from that in the receiving watercourses and the hydrology and geomorphology of receiving watercourses could also be affected. Although the design will seek to avoid flows to Langstone Harbour, further information and assessment at Stage 2 is required to ensure that LSE are avoided.	Yes

	Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (e.g., resulting from failure or accidental damage) could also affect, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term, although any changes are not likely to be sufficient to result in significant ecological responses due to the tidal nature of the SPA. The release point of reject water at Eastney LSO is approximately 6km from the SPA and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Therefore, further assessment (including dispersion modelling) is required in order to determine whether LSE on the SPA could occur. Nevertheless, the scale of changes at this distance are considered unlikely to affect the qualifying features directly and/or indirectly.	
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. Further any INNS that may have been introduced into the pipelines prior to the commencement of operations could be released when operation flows commence including through the LSO which has a degree of hydrological connection to the SPA and could potentially alter the supporting fish communities that the designated tern and gull species rely upon. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the Chichester and Langstone Harbour SPA is low; however, the emergency use of washouts could result in the spread of INNS into the river catchments that feed into the SPA. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	Yes
Stage 1 Screening Assessment – Chichester and Langstone Harbour SPA		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	

in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	
Does the Proposed Development have the potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	Yes – Further information is required, uncertainty remains

Table 5-3 Chichester and Langstone Harbour Ramsar Stage 1 Screening Assessment

Site Name: Chichester and Langstone Harbour Ramsar	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development)	The Chichester and Langstone Harbour Ramsar is crossed by the proposed Underground Pipeline between Budds Farm WTW and the proposed WRP, the proposed Underground Pipeline between proposed WRP and Havant Thicket Reservoir and is within 180m of the proposed WRP. The Ramsar is hydrologically connected to the Proposed Development via the crossing of Hermitage Stream. The Eastney LSO (release point for reject water) is 6km from the Ramsar at its closest point.
Qualifying features	The site is designated for the following: ■ Criterion 1: Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes; ■ Criterion 5: Assemblages of international importance with species with peak counts over winter (76,480 waterfowl – 5 year peak mean 1998/99-2002/2003); and

	■ Criterion 6: Species / populations occurring at levels of international importance. Qualifying species / populations (as identified at designation) are listed below. Species with peak counts in spring / autumn: ■ Ringed plover *Charadrius hiaticula;* ■ Black-tailed godwit *Limosa limosa islandica;* and, ■ Common redshank *Tringa totanus*. Species with peak counts in winter: ■ Dark-bellied brent goose *Branta bernicla bernicla;* ■ Common shelduck *Tadorna tadorna*; ■ Grey plover *Pluvialis squatarola;* and, ■ Dunlin *Calidris alpina alpina*. Species / populations identified subsequent to designation for possible future consideration under criterion 6. Species regularly supported during the breeding season: ■ Little tern *Sterna albifrons albifrons*
Is the Site water dependent	Yes
Sensitivities of the Site	As there is no corresponding data for the Ramsar, the threats, pressures, and activities with impacts on the site are taken from the standard data form for Chichester and Langstone Harbours SPA. These include: ■ Changes in biotic conditions; ■ Pollution to ground groundwater (point sources and diffuse sources); ■ Changes in abiotic conditions; ■ Fishing and harvesting aquatic resources; and ■ Outdoor sports and leisure activities, recreational activities. The prioritised issues for the site are as follows (taken from overarching Solent Site Improvement Plan): ■ Public access/disturbance; ■ Coastal squeeze;

	■ Fisheries: Commercial, marine and estuarine; ■ Water pollution; ■ Changes in species distribution; ■ Climate change; ■ Change to site condition; ■ Invasive species; ■ Direct land take from development; ■ Biological resource use; ■ Change in land management; ■ Inappropriate pest control; ■ Air pollution: Impact of atmospheric nitrogen deposition; ■ Hydrological changes; ■ Direct impact from 3rd party; ■ Extraction: non-living resources; and, ■ Other.	
Conservation objectives	As there is no corresponding data for the Ramsar, the conservation objectives for Chichester and Langstone Harbours SPA are taken to apply to the Ramsar too. Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Birds Directive (Directive 2009/147/EC), by maintaining or restoring: ■ The extent and distribution of the habitats of the qualifying features; ■ The structure and function of the habitats of the qualifying features; ■ The supporting processes on which the habitats of the qualifying features rely; ■ The population of each of the qualifying features, and, ■ The distribution of the qualifying features within the site.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**

Habitat loss and fragmentation	The proposed Underground Pipeline between Budds Farm WTW and the proposed WRP crosses under the Chichester and Langstone Harbour Ramsar, and the proposed WRP is 180m north of the Ramsar at its closest point. There will be no direct or indirect loss of habitat within the designated site or loss of the habitats for which the Ramsar is designated. The trenchless crossing of Hermitage Stream is an embedded measure within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the avoidance of habitat loss and fragmentation as a result of trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022). The closest identified area of functionally linked land outside of the designated site, as identified in the SWBGS is the WRP site itself (H08), part of which is classified as a low use site. In addition, there are SWBGS sites within 15m of the proposed WRP, across Harts Farm Way, classified as a core site (H07A), a secondary support area (H07B) and a low use site (H07C), along with a candidate site adjacent to the proposed WRP, along Hermitage Stream (H130) and a second candidate site across Hermitage Stream (H09). There is also a primary support area (H90) covering the southern part of Budds Farm WTW, and a candidate site (H29) immediately south of this. In addition, the proposed Underground Pipelines between the WRP, Havant Thicket Reservoir and Otterbourne WSR also intersect with SWBGS sites. Although the relevant sections of the proposed Underground Pipeline will be tunnels there will be a need for shafts to be installed at intervals along the tunnel lengths. The SWBGS sites that are located above the tunnels are a low use site (H04C) and candidate sites (H03, H05A). The site of the proposed WRP has been subject to regular vegetation clearance undertaken by the landowner, within the highway's plantation and woodland along Hermitage Stream that surrounds the site. This has likely reduced the suitability of the site for wintering birds by removing foraging or grazing habitats here. In addition, wintering bird surveys undertaken for the Proposed Development in the winters of 2022 and 2023 (October to March inclusive) recorded no use of the proposed WRP site and limited use of the adjacent coastal sites. Due to the allocation of the proposed WRP site and Budds Farm WTW as SWBGS sites, and the potential for tunnel shafts to be located within SWBGS sites, there is likely to be loss of functional land outside of the designated site and therefore LSE from habitat loss.	Yes
Disturbance	Although not currently a qualifying feature of the Ramsar, terns (which are the only breeding bird species noted for the Ramsar), require loose substrate to nest on. The closest suitable areas for this are the	Yes

	small nearby islands, to the east of Farlington Marshes. The nearest of which is approximately 985m south-west of the proposed WRP, although colonies have previously only been recorded (Natural England, 2016) on the islands further south (around Baker's Island), approximately 1.8km south-west of the WRP. Therefore, disturbance is unlikely to occur directly at the breeding sites. However, disturbance of terns may occur away from the breeding sites, for example if foraging within Langstone Harbour closer to the WRP or Budds Farm WTW. However, construction activities will not be restricted to the breeding season only and will continue in the over-wintering period. Therefore, due to the proximity of both the SPA itself and functionally linked land (in the form of SWBGS sites) there is potential for both visual and aural stimuli during construction of the Proposed Development. Studies (Cutts, Hemingway and Spencer 2013) show a range of disturbance tolerance thresholds for the qualifying species of the SPA, ranging from 50m to 500m depending on the species and source of disturbance. A quantitative assessment of construction noise and vibration effects will be undertaken, based on estimates of reasonable worst case construction noise levels at the closest identified potentially sensitive receptors to the Proposed Development. The qualifying features are not considered to be directly affected by underwater noise and the habitats and species that support them are unlikely to be affected as they are either insensitive (e.g., plants or habitats) or the effect is considered limited due to the location of works in a localised, shallow water area and the temporary duration of works. It is anticipated that prey species may move from the construction area, creating a localised area where resources are reduced only for the duration of the works, not having an appreciable effect on the actual availability of resources. The bird species which are qualifying features of the Ramsar would continue to be able to utilise other feeding areas within the designated site, and therefore no effect on their foraging resources would occur.	
Hydrological Change	The proposed Underground Pipeline crosses under Hermitage Stream which flows into the Ramsar site. The proposed WRP is adjacent to the tidally influenced lower course of Hermitage Stream, which is constrained by artificial banks and other urban infrastructure. The proposed Underground Pipeline would be drilled under the seabed, ensuring no hydrological changes. However, the trenchless crossing of Hermitage Stream is an embedded measure within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the avoidance of hydrological change as a result of trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022).	Yes

	In addition to crossing below the mouth of Hermitage Stream, the proposed Underground Pipeline between the proposed WRP and Havant Thicket Reservoir also crosses below Hermitage Stream and Brockhampton Stream, which is a tributary of Hermitage Stream. Groundwater is likely to feed into these streams and therefore, further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the Ramsar and inform the detailed design and any possible mitigation requirements. If the further modelling at the next stage of assessment shows that the construction of the pipeline will be above ground water levels and therefore there is considered to be no risk of encountering groundwater this would ensure no risk of altering the quantity or quality of flows feeding the Ramsar.	
Waterborne Pollution	Construction machinery at the proposed WRP has the potential for accidental release pollutants on to the ground, where pollutants could migrate into underlying groundwater or Hermitage Stream. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter Chichester and Langstone Harbour Ramsar either directly or via Hermitage Stream and adversely affect its physical and chemical properties. As the proposed WRP is a previous landfill the site will be built up to accommodate infrastructure to ensure the landfill capping is not breached. Where pilled foundations breach the capping and lining it is assumed to be cast in situ. This method will ensure a seal is formed between the pile and capping / lining to prevent leachate. However, due to the Proposed Development being located within a contaminated (i.e., landfill) flood risk area, there is the potential that chemical or cement spill could transfer additional contaminated compound when entering the water environment if unmitigated. Multiple coastal saline lagoons are approximately 1.5km south-west of the construction area and to the north-west of the designated area. During commissioning, flushing water will be discharged to clean and sterilise the new pipeline. The Proposed Development will include measures to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. As such, LSEs from waterborne pollution from flushing are possible. There is potential for LSE as a result of waterborne pollution.	Yes

Airborne Pollution	Construction dust may have LSE out to 250m from the Proposed Development (in accordance with IAQM, 2023). Therefore, there is potential for effects to occur within the Ramsar. In addition, the potential effects of construction traffic (due to temporary traffic management measures and/or additional vehicles travelling to and from the construction) and Non-Road Mobile Machinery (NRMM) emissions on air quality within 200m of the WRP or a road affected by changes in traffic may affect the Ramsar. Further assessment of these potential sources of air pollution will be undertaken, with additional modelling as required, to establish the potential for LSE.	Yes
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. No INNS have been recorded within the site of the proposed WRP. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the Ramsar is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent where the Ramsar resides, the full salinity of the Solent would hinder spread of INNS. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implemented, which is to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological Change and Waterborne pollution	Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. This in turn could affect the qualifying features of the Ramsar.	Yes

	Additionally, washouts are expected to be located at topographical low points along the alignment of the proposed underground pipelines to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. Washouts will be contained with below ground chambers sized to ensure access around the pipework and fittings to enable future operation and maintenance. For example, on an 800mm pipe laid at nominal depth this would equate to approximately a 3x3x3m chamber. The chambers will be ventilated and stand at least 300mm above ground level in open land, and flush in road corridors, finished with an appropriately security rated chamber cover. Air valves are anticipated to be required every 500m, with two for each trenchless crossing to automatically release any build-up of air in the pipeline. Where required, isolation valves are expected to be required on both sides of major infrastructure and watercourse crossings and other locations where it may be difficult to gain access for repair and maintenance of the pipeline. They may be co-located with washouts/ air valves and will be designed with an integral bypass for the balancing of upstream and downstream pressure to facilitate operation. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in a receiving watercourse (if discharged to a watercourse), washout water may differ in its chemistry from that in the receiving watercourses and the hydrology and geomorphology of receiving watercourses could also be affected. Although the design will seek to avoid flows to Langstone Harbour, further information and assessment at Stage 2 is required to ensure that LSE are avoided. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (e.g., resulting from failure or accidental damage) could also affect, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term, although any changes are not likely to be sufficient to result in significant ecological responses due to the tidal nature of the Ramsar. The discharge for reject water at Eastney LSO is approximately 6km from the Ramsar and therefore it is within the 10km marine ecology hydrological connectivity ZoI. While the scale of changes at this distance are considered unlikely to affect the qualifying features directly or indirectly, further assessment	

	(including dispersion modelling) is required in order to determine whether LSE on the Ramsar could occur.	
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the Chichester and Langstone Harbour Ramsar is low; however, the emergency use of washouts could result in the spread of INNS into the river catchments that feed into the Ramsar Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	Yes
Stage 1 Screening Assessment – Chichester and Langstone Harbour Ramsar		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	
Does the Proposed Development have the potential to cause Likely Significant Effects ‘alone	Yes – Further information is required, uncertainty remains	

and/or in combination' on the designated site?	

Table 5-4 Solent Maritime SAC Stage 1 Screening Assessment

Designated Site Name: Solent Maritime SAC	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development)	The Solent Maritime SAC is crossed by the proposed underground pipeline between Budds Farm WTW and the proposed WRP and the proposed pipeline between the proposed WRP and Havant Thicket Reservoir. The SAC is within 180m of the proposed WRP. The SAC is hydrologically connected to the Proposed Development via the crossings of the River Itchen, River Hamble, River Meon and Hermitage Stream. The Eastney LSO (release point for reject water) is 5.2km from the SAC at its closest point.
Qualifying features	Annex I habitats that are a primary reason for selection of this site: ■ 1130 Estuaries; ■ 1320 Spartina swards *Spartinion maritimae*; and, ■ 1330 Atlantic salt meadows *Glauco-Puccinellietalia maritimae* Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: ■ 1110 Sandbanks which are slightly covered by sea water all the time; ■ 1140 Mudflats and sandflats not covered by seawater at low tide; ■ 1150 Coastal lagoons * Priority feature; ■ 1210 Annual vegetation of drift lines; ■ 1220 Perennial vegetation of stony banks; ■ 1310 Salicornia and other annuals colonizing mud and sand; and, ■ 2120 "Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")". Annex II species present as a qualifying feature, but not a primary reason for site selection: ■ 1016 Desmoulin's whorl snail *Vertigo moulinsiana*.
Is the Site water dependent	Yes
Sensitivities of the Site	The site is vulnerable for a number of reasons, including the threats, pressure and activities from: ■ Pollution to surface waters (limnic & terrestrial, marine and brackish)

	■ Outdoor sports and leisure activities, recreational activities ■ Changes in biotic conditions ■ Fishing and harvesting aquatic resources. ■ Changes in abiotic conditions The prioritised issues for the site as detailed in the Site Improvement Plan (taken from the overarching Solent Site Improvement Plan) are as follows: ■ Public Access/Disturbance; ■ Coastal squeeze; ■ Fisheries: Commercia marine and estuarine; ■ Water pollution; ■ Changes in species and distributions; ■ Climate change; ■ Change to site conditions; ■ Invasive species; ■ Direct land take from development; ■ Biological resource; ■ Change in land management; ■ Inappropriate pest control; ■ Air Pollution: impact of atmospheric nitrogen deposition; ■ Hydrological changes; ■ Direct impact from 3rd party; and ■ Extraction: non-living resources.
Conservation objectives	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; ■ The extent and distribution of qualifying natural habitats and habitats of qualifying species; ■ The structure and function (including typical species) of qualifying natural habitats;

	■ The structure and function of the habitats of qualifying species; ■ The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; ■ The populations of qualifying species; and, ■ The distribution of qualifying species within the site.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The proposed Underground Pipeline between Budds Farm WTW and the proposed WRP crosses under the Solent Maritime SAC, and the proposed WRP is 180m north of the SAC at its closest point. There will be no direct or indirect loss of habitat within the designated site. The tidal and coastal habitats within the designated site are not present within any of the areas impacted by the Proposed Development. The trenchless crossing of Hermitage Stream is an embedded measure within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the avoidance of habitat loss and fragmentation as a result of trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022).	Yes
Disturbance	The only Annex II species which is a qualifying feature of the SAC is Desmoulin's whorl snail. The snail requires areas of fen, swamp and reedbed with infrequent scrub. Within the Solent Maritime SAC, Desmoulin's whorl snail was historically present in the freshwater fen, swamp and brackish reedbeds at the top of Fishbourne Channel in Chichester Harbour, approximately 12km from the Proposed Development. There are no suitable habitats affected by the Proposed Development which could support this species. Therefore, there are no LSE from disturbance on species for which the SAC is designated. There is potential for localised temporary vibration to occur during construction of the trenchless crossing under Hermitage Stream. Although this is considered unlikely to cause disturbance to the structure or function of the qualifying habitats of the SAC the crossing does pass under mudflats which are a qualifying feature of the SAC. Therefore, there is potential for LSE from disturbance to occur. The trenchless crossings are embedded measures within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the minimisation of disturbance	Yes

	as a result of the trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022). No disturbance to habitats is anticipated as a result of the terrestrial construction activities associated with the Proposed Development, or due to the trenchless crossings of the other rivers due to the intervening distance between these crossings and the SAC (crossings approximately 19km upstream under the River Itchen, 4.7km upstream under the River Hamble and 14km upstream under the River Meon).	
Hydrological Change	The proposed Underground Pipeline crosses under Hermitage Stream which flows into Langstone Harbour, part of the Solent Maritime SAC. The proposed WRP is adjacent to the tidally influenced lower course of Hermitage Stream. The tidal section of the Hermitage Stream has a straight planform, and it is constrained by artificial banks and other urban infrastructure. The proposed Underground Pipeline would be drilled under the seabed, ensuring no hydrological changes. However, the trenchless crossing of Hermitage Stream is an embedded measure within the design of the Proposed Development; however, these represent primary mitigation measures in accordance with the EIA Regulations and therefore the avoidance of hydrological change as a result of the trenchless crossing will be assessed at Stage 2 In addition to crossing below the mouth of Hermitage Stream, the proposed Underground Pipeline between the proposed WRP and Havant Thicket Reservoir also crosses below Hermitage Stream and Brockhampton Stream, which is a tributary of Hermitage Stream. Groundwater is likely to feed into these streams and therefore, further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the SAC and inform the detailed design and any possible mitigation requirements and inform the detailed design and any possible mitigation requirements. There is a potential that hydrological changes as a result of the construction of the Proposed Development could result in in-direct effects to the SAC. There is a risk that if perched groundwater is disturbed during the construction of watercourse crossings could increase turbidity within the groundwater entering the watercourses and reach the SAC. In addition, the construction of the Underground Pipeline and associated infrastructure may result in a change in quantity or quality of flows between aquifers and watercourses if flow paths are crossed by the pipeline. Any activities that disturb the ground, such as excavation, tunnelling or piling, could mobilise contaminants within soils or groundwater, and potentially adversely affect groundwater quality or locally	Yes

	alter the hydraulic properties of the aquifers which supplies the rivers that feed into the SAC. Additionally, if pipe jacking is used for the construction of the trenchless crossing this may also require boring fluid to be applied which would result in a risk of adding turbidity to the aquifer if groundwater was to be encountered. Further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the SAC. A Hydrogeological Impact Assessment (HIA) will be prepared to evaluate quantitative impacts of the Proposed Development on selected groundwater receptors before and after mitigation, focussing on the tunnelling sections and trenchless crossings, including the River Itchen. A site-specific conceptual hydrogeological model will be derived to provide an overview of the interactions between groundwater and surface water and will identify potential linkages between potential effects from the Proposed Development (during construction or operation) and GWDTEs, such as functionally linked land associated with the SAC. Groundwater flow paths, groundwater levels and the proximity of GWDTEs will be taken into account in the conceptual hydrogeological model, which will be included in the HIA. No construction activities are required to the Eastney LSO, and therefore there is no potential for LSE from hydrological change as a result of the construction of this element of the Proposed Development.	
Waterborne Pollution	Construction machinery at the proposed WRP has the potential for accidental release pollutants on to the ground, where pollutants could migrate into underlying groundwater or Hermitage Stream. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter the Solent and Maritime SAC either directly or via Hermitage Stream and adversely affect its physical and chemical properties. As the proposed WRP site is a previous landfill, the site will be built up to accommodate infrastructure to ensure the landfill capping is not breached. Where piled foundations breach the capping and lining it is assumed these will be cast in situ. This method will ensure a seal is formed between the pile and capping / lining to prevent leachate. However, due to the Proposed Development being located within a contaminated (i.e., landfill) flood risk area, there is the potential that chemical or cement spill could transfer additional contaminated compound when entering the water environment if unmitigated. Coastal lagoons (identified as priority feature in the SAC) are approximately 1.5km south-west of the Proposed WRP.	Yes

	During commissioning, flushing water will be used to clean and sterilise the new pipeline. The Proposed Development will include measures to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. There is potential for LSE as a result of waterborne pollution.	
Airborne Pollution	Construction dust may have LSE out to 250m from construction works (in accordance with IAQM, 2023). Therefore, there is potential for effects to occur within the SAC. In addition, the potential effects of construction traffic (due to temporary traffic management measures and/or additional vehicles travelling to and from the construction) and Non-Road Mobile Machinery (NRMM) emissions on air quality within 200m of the WRP or a road affected by changes in traffic may affect the SAC. Further assessment of these potential sources of air pollution will be undertaken, with additional modelling as required, to establish the potential for LSE.	Yes
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. No INNS have been recorded within the site of the proposed WRP. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the SAC is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent where the SAC resides, the full salinity of the Solent would hinder spread of INNS. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is for the potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implemented, to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**

Hydrological Change and Waterborne pollution	Once operational, the pipeline will reduce the need for water abstractions from the River Itchen will help restore natural flows back to these watercourses. It is unlikely that this would have any measurable effect on Solent Maritime SAC. Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. This in turn could affect the qualifying features of the SAC. Additionally, washouts are expected to be located at topographical low points along the alignment of the proposed underground pipelines to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. Washouts will be contained with below ground chambers sized to ensure access around the pipework and fittings to enable future operation and maintenance. For example, on an 800mm pipe laid at nominal depth this would equate to approximately a 3x3x3m chamber. The chambers will be ventilated and stand at least 300mm above ground level in open land, and flush in road corridors, finished with an appropriately security rated chamber cover. Air valves are anticipated to be required every 500m, with two for each trenchless crossing to automatically release any build-up of air in the pipeline. Where required, isolation valves are expected to be required on both sides of major infrastructure and watercourse crossings and other locations where it may be difficult to gain access for repair and maintenance of the pipeline. They may be co-located with washouts / air valves and will be designed with an integral bypass for the balancing of upstream and downstream pressure to facilitate operation. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in a receiving watercourse (if discharged to a watercourse) and washout water may differ in its chemistry from that in the receiving watercourses and the hydrology and geomorphology of receiving	Yes

	watercourses could also be affected. Although the design will seek to avoid flows to watercourses, further information and assessment at Stage 2 is required to ensure that LSE are avoided. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (e.g., resulting from failure or accidental damage) could also affect, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term, although any changes are not likely to be sufficient to result in significant ecological responses due to the tidal nature of the SAC. The release of reject water at the Eastney LSO is approximately 4.8km (closest point) from the SAC and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Therefore, further assessment (including dispersion modelling) is required with regard to LSE on the SAC.	
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the SAC is low; however, the emergency use of washouts could result in the spread of INNS into the river catchments that feed into the SAC. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	Yes
Stage 1 Screening Assessment – Solent Maritime SAC		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	

Significant Effects on the designated site?	
Does the Proposed Development have the potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	Yes – Further information is required, uncertainty remains

Table 5-5 Portsmouth Harbour SPA Stage 1 Screening Assessment

Designated Site Name: Portsmouth Harbour SPA	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development assessment corridor)	The Portsmouth Harbour SPA is located 1.6km south of the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW and is hydrologically connected via the crossing of the River Wallington. The Eastney LSO (release point for reject water) is 7.7km from the SPA at its closest point.
Qualifying features	This site qualifies under Article 4.2 of the Habitats Directive by supporting internationally important numbers of the following migratory bird and wintering bird species: ■ Dark-bellied brent goose *Branta bernicla bernicla;* ■ Red-breasted merganser *Mergus serrator;* ■ Dunlin *Calidris alpina alpina;* and, ■ Black-tailed godwit *Limosa limosa islandica.*
Is the Site water dependent	Yes
Sensitivities of the Site	Threats, pressures, and activities with impacts on the site listed on the standard data form include: ■ Fishing and harvesting aquatic resources; ■ Pollution to groundwater (point sources and diffuse sources); ■ Changes in abiotic conditions; ■ Outdoor sports and leisure activities, recreational activities; and, ■ Changes in biotic conditions. The prioritised issues for the site as detailed in the Site Improvement Plan (taken from overarching Solent Site Improvement Plan) are as follows: ■ Public Access/Disturbance; ■ Coastal squeeze;

	■ Fisheries: Commercia marine and estuarine; ■ Water pollution; ■ Changes in species and distributions; ■ Climate change; ■ Change to site conditions; ■ Invasive species; ■ Direct land take from development; ■ Biological resource; ■ Change in land management; ■ Inappropriate pest control; ■ Air Pollution: impact of atmospheric nitrogen deposition; ■ Hydrological changes; ■ Direct impact from 3rd party; ■ Extraction: non-living resources; and, ■ Other.	
Conservation objectives	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: ■ The extent and distribution of qualifying natural habitats and habitats of qualifying species; ■ The structure and function (including typical species) of qualifying natural habitats; ■ The structure and function of the habitats of qualifying species; ■ The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; ■ The populations of qualifying species; and, ■ The distribution of qualifying species within the site.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**

Habitat loss and fragmentation	The proposals are located 1.6km from the designated site at its closest point. There will be no direct or indirect loss of habitat within the designated site. The closest identified area of functional land outside of the designated site, as identified on the SWBGS is located within the Scoping Area, along the proposed Underground Pipeline on Portsdown Hill (W03G), a candidate site. Therefore, there is potential for temporary loss of functional land outside of the designated site during construction.	Yes
Disturbance	Due to the distance of the SPA from the Proposed Development, there will be no disturbance of qualifying species within the SPA. There is unlikely to be disturbance from noise or visual impact over 1.5km from the SPA; studies show a range of disturbance tolerance thresholds for the qualifying species of the SPA, ranging from 50m to 500m depending on the species and source of disturbance (Cutts, Hemingway and Spencer 2013). Whilst the behavioural responses of waterbirds to both visual and aural stimuli during the construction of flood defences on the Humber Estuary and in Cardiff Bay differed depending on the type and nature of construction activity, species, season, site topography, weather, tidal state and degree of habituation, studies (Burton *et al*. 2002) indicate that in general effects are confined to areas within 250m of the sources of disturbance during construction. However, due to the proximity between the proposed Underground Pipeline and identified functional land within the Scoping Area (2km north of the designated site), there is potential for disturbance of qualifying species outside of the designated site as a result of noise and visual disturbance from construction works and therefore LSE from disturbance may occur. A quantitative assessment of construction noise and vibration effects will be undertaken, based on estimates of reasonable worst case construction noise levels at the closest identified potentially sensitive receptors to the works. The qualifying features are not considered to be directly affected by underwater noise and the habitats and species that support them are unlikely to be affected as they are either insensitive (e.g. plants or habitats) or the effect is considered limited due to the location of works in a localised, shallow water area and the temporary duration of works. It is anticipated that prey species may move from the construction area, creating a localised area where resources are reduced only for the duration of the works, not having an effect on the actual availability of resources. The bird species which are qualifying features of the SPA would continue to be able to utilise other feeding areas within the designated site, and therefore no effect on their foraging resources would occur.	Yes
Hydrological Change	The proposed Underground Pipeline crosses the Wallington River which flows into Portsmouth Harbour SPA. This crossing will be constructed via trenchless techniques, extending for approximately 300m, from 100m south-east of the Wallington to 230m north-west. There is a potential that hydrological	Yes

	changes as a result of the construction of the Proposed Development could result in in-direct effects to the SPA and its qualifying species. There is a risk that if perched groundwater was disturbed during the construction of this tunnel, that this could increase turbidity within the groundwater entering the River Wallington. Further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the SPA. If modelling shows that the construction of the pipeline will be above ground water levels and therefore there is considered to be no risk of encountering groundwater this would ensure no risk of altering the quality of flows feeding the SPA. In addition, the approximately 2.5km of intervening river between the SPA and the crossing location, and the tidal nature of the designated site, any minor changes to surface or groundwater flows as a result of the River Wallington crossing would be highly unlikely to result in any measurable effect within the SPA. However, further information is required to confirm the avoidance of LSE from hydrological change.	
Waterborne Pollution	The operation of construction machinery in the vicinity of the River Wallington has the potential for accidental release pollutants on to the ground, where pollutants could migrate into underlying groundwater. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter the river and adversely affect its physical and chemical properties. Standard best practice pollution prevention measures will be implemented during all works to minimise the risk of pollution, manage construction silt, and react to any pollution incidents. Due to the distance between the SPA (2.5km downstream from the crossing of the River Wallington), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the designated site. However, there is potential for LSE as a result of waterborne pollution which will be assessed further at Stage 2.	Yes
Airborne Pollution	Due to the distance of the Proposed Development from the designated site, which is 1.6km south and well in excess of 250m (where LSE from airborne pollution due to construction are most likely to occur, in accordance with IAQM 2023), there will be no adverse effects as a result of airborne pollution and therefore no potential for adverse LSE.	No
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS.	Yes

	However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the SPA is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into the River Wallington which feed into the Solent where the SPA resides, the full salinity of the Solent would hinder spread of INNS. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is potential for LSE as a result of INNS in unmitigated circumstances, which is expected to reduce to no significant effect when standard measures are implemented, to be assessed during Stage 2.	
Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological Change and Waterborne pollution	Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. However, due to the intervening distance between the Proposed Development and the SPA LSEs on birds which are qualifying features of the SPA are considered unlikely. However, washouts are expected to be located at topographical low points along the alignment of the proposed underground pipelines to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in the receiving watercourses (if discharged to a watercourse), washout water may differ in its chemistry from that in the receiving watercourses and the hydrology and geomorphology of receiving watercourses	Yes

	could also be affected. Although the design will seek to avoid flows to watercourses, further information and assessment at Stage 2 is required to ensure that LSE are avoided. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (e.g., resulting from failure or accidental damage) could also affect, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term, although any changes are not likely to be sufficient to result in changes to the assemblages of birds associated with the SPA due to the intervening distance and the tidal nature of the SPA. The release of reject water at Eastney LSO is approximately 7km from the SPA and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Therefore, further assessment (including dispersion modelling) is required in order to determine whether LSE on the SPA could occur. Nevertheless, the scale of changes at this distance are considered unlikely to affect the qualifying features directly and/or indirectly.	
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW and the release of reject water at Eastney LSO has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the SPA is low; however, the emergency use of washouts could result in the spread of INNS into the catchment of the River Wallington which feeds into the SPA. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	Yes
Stage 1 Screening Assessment – Portsmouth Harbour SPA		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	

combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	
Does the Proposed Development have the potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	Yes – Further information is required, uncertainty remains

Table 5-6 Portsmouth Harbour Ramsar Stage 1 Screening Assessment

Designated Site Name: Portsmouth Harbour Ramsar	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development)	The Portsmouth Harbour Ramsar is located 1.6km south of the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW and is hydrologically connected via the crossing of the River Wallington. The Eastney LSO (release point for reject water) is 7.7km from the Ramsar at its closest point.
Qualifying features	The site is designated for the following: ■ Criterion 3: The intertidal mudflat areas possess extensive beds of eelgrass *Zostera angustifolia* and *Zostera noltei* which support the grazing dark-bellied brent geese populations. The mud-snail *Hydrobia ulvae* is found at extremely high densities, which helps to support the wading bird interest of the site. Common cord-grass *Spartina anglica* dominates large areas of the saltmarsh and there are also extensive areas of green algae *Enteromorpha* spp and sea lettuce *Ulva lactuca*. More locally the saltmarsh is dominated by sea purslane *Halimione portulacoides* which gradates to more varied communities at the higher shore levels. The site also includes a number of saline lagoons hosting nationally important species. Criterion 6: Species / populations occurring at levels of international importance. Qualifying species / populations (as identified at designation): ■ Dark-bellied brent goose *Branta bernicla bernicla*
Is the Site water dependent	Yes
Sensitivities of the Site	As there is no corresponding data for the Ramsar, the threats, pressures, and activities with impacts on the site are taken from the standard data form for Portsmouth Harbour SPA. These include: ■ Fishing and harvesting aquatic resources; ■ Pollution to groundwater (point sources and diffuse sources); ■ Changes in abiotic conditions; ■ Outdoor sports and leisure activities, recreational activities; and, ■ Changes in biotic conditions.

	The prioritised issues for the site are as follows (taken from overarching Solent Site Improvement Plan): ■ Public access/disturbance; ■ Coastal squeeze; ■ Fisheries: Commercial, marine and estuarine; ■ Water pollution; ■ Changes in species distribution; ■ Climate change; ■ Change to site condition; ■ Invasive species; ■ Direct land take from development; ■ Biological resource use; ■ Change in land management; ■ Inappropriate pest control; ■ Air pollution: Impact of atmospheric nitrogen deposition; ■ Hydrological changes; ■ Direct impact from 3rd party; ■ Extraction: non-living resources; and, ■ Other.
Conservation objectives	As there is no corresponding data for the Ramsar, the conservation objectives for Portsmouth Harbour SPA are taken to apply to the Ramsar too. Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: ■ The extent and distribution of qualifying natural habitats and habitats of qualifying species; ■ The structure and function (including typical species) of qualifying natural habitats; ■ The structure and function of the habitats of qualifying species; ■ The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;

	■ The populations of qualifying species; and, ■ The distribution of qualifying species within the site.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The proposals are located 1.6km from the designated site at its closest point. There will be no direct or indirect loss of habitat within the designated site. The closest identified area of functional land outside of the designated site, as identified on the SWBGS is located within the Scoping Area, along the proposed Underground Pipeline on Portsdown Hill (W03G), a candidate site. Therefore, there is potential for temporary loss of functional land outside of the designated site during construction.	Yes
Disturbance	Due to the distance of the Ramsar from the Proposed Development, there will be no disturbance of qualifying species within the Ramsar. There is unlikely to be disturbance from noise or visual impact over 1.5km from the SPA. Whilst the behavioural responses of waterbirds to both visual and aural stimuli during the construction of flood defences on the Humber Estuary and in Cardiff Bay differed depending on the type and nature of construction activity, species, season, site topography, weather, tidal state and degree of habituation, studies (Burton *et al*. 2002) indicate that in general effects are confined to areas within 250m of the sources of disturbance during construction. However, due to the proximity between the proposed Underground Pipeline and identified functional land within the Scoping Area (2km north of the designated site), there is potential for disturbance of qualifying species outside of the designated site as a result of noise and visual disturbance from construction works and therefore LSE from disturbance may occur. Studies (Cutts, Hemingway and Spencer 2013) show a range of disturbance tolerance thresholds for the qualifying species of the SPA, ranging from 50m to 500m depending on the species and source of disturbance. A quantitative assessment of construction noise and vibration effects will be undertaken, based on estimates of reasonable worst case construction noise levels at the closest identified potentially sensitive receptors to the works. The qualifying features are not considered to be directly affected by underwater noise and the habitats and species that support them are unlikely to be affected as they are either insensitive (e.g. plants or habitats) or the effect is considered limited due to the location of works in a localised, shallow water area and the temporary duration of works. It is anticipated that prey species may move from the construction	Yes

	area, creating a localised area where resources are reduced only for the duration of the works, not having an effect on the actual availability of resources.. The bird species which are qualifying features of the Ramsar would continue to be able to utilise other feeding areas within the designated site, and therefore no effect on their foraging resources would occur.	
Hydrological Change	The proposed Underground Pipeline crosses the River Wallington which flows into Portsmouth Harbour Ramsar. This crossing will be constructed via trenchless techniques, extending for approximately 300m, from 100m south-east of the Wallington to 230m north-west. There is a potential that hydrological changes as a result of the construction of the Proposed Development could result in in-direct effects to the SPA and its qualifying species. There is a risk that if perched groundwater was disturbed during the construction of this tunnel, that this could increase turbidity within the groundwater entering the River Wallington. Further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the Ramsar. If modelling shows that the construction of the pipeline will be above ground water levels and therefore there is considered to be no risk of encountering groundwater this would ensure no risk of altering the quality of flows feeding the Ramsar. In addition, the approximately 2.5km of intervening river between the Ramsar and the crossing location, and the tidal nature of the designated site, any minor changes to surface or groundwater flows as a result of the River Wallington crossing would be highly unlikely to result in any measurable effect within the Ramsar. However, further information is required to confirm the avoidance of LSE from hydrological change.	Yes
Waterborne Pollution	The operation of construction machinery in the vicinity of the River Wallington has the potential for accidental release pollutants on to the ground, where pollutants could migrate into underlying groundwater. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter the river and adversely affect its physical and chemical properties. Standard best practice pollution prevention measures will be implemented during all construction works to minimise the risk of pollution, manage construction silt, and react to any pollution incidents. Due to the distance between the SPA (2.5km downstream from the crossing of the River Wallington), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the designated site. Therefore, it is considered unlikely that chemical pollution or increase in suspended solids from site runoff during the construction could affect water quality within the SPA.	Yes

	However, there is potential for LSE as a result of waterborne pollution which will be assessed further at Stage 2.	
Airborne Pollution	Due to the distance of the Proposed Development from the designated site, which is 1.6km south and well in excess of 250m (where LSE from airborne pollution due to construction are most likely to occur, in accordance with IAQM 2023), there will be no adverse effects as a result of airborne pollution and therefore no LSE.	No
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the Ramsar is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into the River Wallington which feed into the Solent where the Ramsar resides, the full salinity of the Solent would hinder spread of INNS. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implemented, to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological Change and Waterborne pollution	Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. However, due to the intervening distance between the Proposed Development and the Ramsar LSE's are unlikely and there is no likely affect the birds or habitats which are qualifying features of the Ramsar. However, washouts are expected to be located at topographical low points along the alignment of the proposed underground pipelines to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are	Yes

	valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in the receiving watercourses (if discharged to a watercourse) , washout water may differ in its chemistry from that in the receiving watercourses and the hydrology and geomorphology of receiving watercourses could also be affected. Although the design will seek to avoid flows to watercourses, further information and assessment at Stage 2 is required to ensure that LSE are avoided. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (e.g., resulting from failure or accidental damage) could also affect, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term, although any changes are not likely to be sufficient to result in changes to the assemblages of birds associated with the Ramsar due to the intervening distance and the tidal nature of the Ramsar. The Eastney LSO is approximately 7km from the Ramsar and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Therefore, further assessment (including dispersion modelling) is required in order to determine whether LSE to the SAC could occur. Nevertheless, the scale of changes at this distance are considered unlikely to affect the qualifying features directly and/or indirectly.	
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW and the release of reject water at Eastney LSO has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. Further any INNS that may have been introduced into the pipelines prior to the commencement of operations could be released when operation flows commence including through the LSO which has a degree of hydrological connection to the Ramsar. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the Ramsar is low; however, the emergency use of washouts could result in the spread of INNS into the catchment of the River Wallington which feeds into the Ramsar. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	Yes

Stage 1 Screening Assessment – Portsmouth Harbour Ramsar	
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects
Does the Proposed Development have the potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	Yes – Further information is required, uncertainty remains

Table 5-7 Solent and Dorset Coast SPA Stage 1 Screening Assessment

Designated Site Name: Solent and Dorset Coast SPA	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development)	The Solent and Dorset Coast SPA is located 1.6km south of the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW and hydrologically connected via the crossings of the River Itchen, River Hamble, River Meon and River Wallington. The Eastney LSO (release point for reject water) is located within the SPA.
Qualifying features	The site qualifies under Article 4 of the Birds Directive (2009/147/EC) as the site regularly supports more than 1% of the Great Britain breeding populations of three species listed in Annex I of the Birds Directive. The site supports an internationally important population of breeding birds: ■ Common tern *Sterna hirundo;* ■ Sandwich tern *Sterna sandvicensis;* and, ■ Little tern *Sternula albifrons*.
Is the Site water dependent	Yes
Sensitivities of the Site	Threats, pressures and activities with impacts on the site listed on the standard data form are: ■ Military use and civil unrest; ■ Exploration and extraction of oil or gas; ■ Shipping lanes, ports, marine constructions; ■ Urbanised areas, human habitation; ■ Outdoor sports and leisure activities, recreational activities; ■ Renewable abiotic energy use; ■ Discharges; and, ■ Fishing and harvesting aquatic resources. The prioritised issues for the site as detailed in the Site Improvement Plan (taken from overarching Solent Site Improvement Plan) are as follows:

	■ Public Access/Disturbance; ■ Coastal squeeze; ■ Fisheries: Commercia marine and estuarine; ■ Water pollution; ■ Changes in species and distributions; ■ Climate change; ■ Change to site conditions; ■ Invasive species; ■ Direct land take from development; ■ Biological resource; ■ Change in land management; ■ Inappropriate pest control; ■ Air Pollution: impact of atmospheric nitrogen deposition; ■ Hydrological changes; ■ Direct impact from 3rd party; ■ Extraction: non-living resources; and, ■ Other.
Conservation objectives	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Birds Directive (2009/147/EC), by maintaining or restoring: ■ The extent and distribution of the habitats of the qualifying features; ■ The structure and function of the habitats of the qualifying features; ■ The supporting processes on which the habitats of the qualifying features rely; ■ The population of each of the qualifying features; and, ■ The distribution of the qualifying features within the site.
Screening Assessment	
Construction Phase	

Potential Effects	Assessment	LSE
Habitat loss and fragmentation	The Proposed Development is located 1.6km from the designated site at its closest point. Due to this distance, there will be no direct or indirect loss of habitat within the designated site or of functionally linked land.	No
Disturbance	During the breeding season significant effects are unlikely to occur directly at breeding sites. Terns, the qualifying feature of the SPA, require loose substrate to nest on. The closest suitable areas for this are the small nearby islands, to the east of Farlington Marshes. The nearest of which is approximately 985m south-west of the proposed WRP, although colonies have previously only been recorded (Natural England, 2016) on the islands further south (around Baker's Island), approximately 1.8km south-west. Due to the distance of the SPA from the Proposed Development, there will be no disturbance of qualifying species within the SPA. There is unlikely to be disturbance from noise or visual impact over 1.5km from construction works at the WRP and Budds Farm. Whilst the behavioural responses of waterbirds to both visual and aural stimuli during the construction of flood defences on the Humber Estuary and in Cardiff Bay differed depending on the type and nature of construction activity, species, season, site topography, weather, tidal state and degree of habituation, studies (Burton et al. 2002) indicate that in general effects are confined to areas within 250m of the sources of disturbance during construction. However, disturbance of terns may occur outside of the SPA, or away from the breeding sites, for example if foraging within Langstone Harbour closer to the WRP or Budds Farm WTW. The qualifying features are not considered to be directly affected by underwater noise and the habitats and species that support them are unlikely to be affected as they are either insensitive (e.g. plants or habitats) or the effect is considered limited due to the location of works in a localised, shallow water area and the temporary duration of works. It is anticipated that prey species may move from the construction area, creating a localised area where resources are reduced only for the duration of the construction works at the WRP and Budds Farm, not having an effect on the actual availability of resources. The bird species which are qualifying features of the SPA would continue to be able to utilise other feeding areas within the designated site, and therefore no effect on their foraging resources would occur.	No
Hydrological Change	There is a potential that hydrological changes as a result of the construction of the Proposed Development could result in in-direct effects to the SPA and its qualifying species. There is a risk that if perched groundwater is disturbed during the construction of watercourse crossings could increase turbidity within the groundwater entering the watercourses and reach the SPA. In addition, the	Yes

	construction of the Underground Pipeline and associated infrastructure may result in a change in quantity or quality of flows between aquifers and watercourses if flow paths are crossed by the pipeline. Any activities that disturb the ground, such as excavation, tunnelling or piling, could mobilise contaminants within soils or groundwater, and potentially adversely affect groundwater quality or locally alter the hydraulic properties of the aquifers which supplies the rivers that feed into the SPA. Additionally, if pipe jacking is used for the construction of the trenchless crossing this may also require boring fluid to be applied which would result in a risk of adding turbidity to the aquifer if groundwater was to be encountered. Groundwater flows and levels may also be affected by temporary physical modifications (e.g., excavations or tunnelling), which would interrupt the natural groundwater flow pathways. The other potential risks to groundwater associated with excavations and/or tunnel construction include temporary dewatering, if required, for the tunnel or shafts, diverting water away from the river, or bypassing part of the system, leading to reduced groundwater flow. Construction of tunnel sections and partially buried structures below the maximum groundwater level in the chalk could create a permanent barrier to groundwater flow. This could lead to a rise in groundwater levels on the upstream side, which could cause additional groundwater flooding, and a reduction of groundwater levels on the downstream side. This could potentially permanently affect groundwater-dependent watercourses. The installation of the tunnels could also result in creating a permanent connection between two currently hydraulically disconnected aquifers. This could affect the quality of groundwater and consequently groundwater dependent rivers. Further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the SPA. A Hydrogeological Impact Assessment (HIA) will be prepared to evaluate quantitative impacts of the Proposed Development on selected groundwater receptors before and after mitigation, focussing on the tunnelling sections and trenchless crossings, including the River Itchen. A site-specific conceptual hydrogeological model will be derived to provide an overview of the interactions between groundwater and surface water and will identify potential linkages between potential impacts from the Proposed Development (during construction or operation) and GWDTEs, such as functionally linked land associated with the SPA. Groundwater flow paths, groundwater levels and the proximity of GWDTEs will be taken into account in the conceptual hydrogeological model, which will be included in the HIA.	

	No construction activities are required to the Eastney LSO, and therefore no LSE from hydrological change as a result of this element of the Proposed Development.	
Waterborne Pollution	Due to the distance between the Proposed Development and the SPA (a minimum of 2.5km downstream from watercourse crossings), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the designated site. Therefore, it is considered unlikely that chemical pollution or increase in suspended solids from site runoff during the construction could affect water quality within the SPA. During commissioning, flushing water will be discharged to clean and sterilise the new pipeline. The Proposed Development will include measures to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. The SPA is not anticipated to be affected during the construction of the Proposed Development. However, there is potential LSE from waterborne pollution, which will be assessed further at Stage 2.	Yes
Airborne Pollution	Due to the distance of the Proposed Development from the designated site, well in excess of 250m (where LSE from airborne pollution due to construction are most likely to occur, in accordance with IAQM 2023), there will be no adverse effects as a result of airborne pollution and therefore no LSE.	No
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the SPA is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent where the SPA resides, the full salinity of the Solent would hinder spread of INNS. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implements, to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**

Hydrological Change and Waterborne pollution	Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. However, due to the intervening distance between the Proposed Development and the SPA this is considered unlikely to affect the birds which are qualifying features of the SPA. However, washouts are expected to be located at topographical low points along the alignment of the proposed underground pipelines to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in the receiving watercourses (if discharged to a watercourse), washout water may differ in its chemistry from that in the receiving watercourses and the hydrology and geomorphology of receiving watercourses could also be affected. Although the design will seek to avoid flows to watercourses, further information and assessment at stage 2 is required to ensure that LSE are avoided. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (e.g., resulting from failure or accidental damage) could also affect, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term, although any changes are not likely to be sufficient to result in changes to the assemblages of birds associated with the SPA due to the intervening distance and the tidal nature of the SPA. The release point for reject water at the Eastney LSO is located within the SPA and therefore further assessment (including dispersion modelling) is required with regard to LSE on the Solent and Dorset Coast SPA.	Yes
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW and reject water from the Eastney LSO has the potential to introduce INNS. Many INNS produce	Yes

	small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. Furthermore, any INNS that may have been introduced into the pipelines prior to the commencement of operations could be released via the Eastney LSO when operation flows commence and could potentially alter the supporting fish communities that these birds rely upon. The potential for INNS to reach the SPA is low; however, the emergency use of washouts could result in the spread of INNS into the catchments which feed into the SPA. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	
Stage 1 Screening Assessment – Solent and Dorset Coast SPA		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	
Does the Proposed Development have the potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	Yes – Further information is required, uncertainty remains	

Table 5-8 Solent and Southampton Water SPA Stage 1 Screening Assessment

Designated Site Name: Solent and Southampton Water SPA	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development)	The Solent and Southampton Water SPA is located approximately 3km south-west of the Proposed Development at its closest point. The SPA is hydrologically connected to the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW via the crossings of the River Itchen, River Hamble and the River Meon. The Eastney LSO (release point for reject water) is 4km from the SPA at its closest point.
Qualifying features	This site qualifies under Article 4.1 of the Birds Directive (2009/147/EC)as it used regularly by 1% or more of the of Annex 1 species listed below: ■ Mediterranean Gull *Larus melanocephalus;* ■ Sandwich tern *Sterna sandvicensis;* ■ Common tern *Sterna hirundo;* ■ Little tern *Sterna albifrons*; and, ■ Roseate tern *Sterna dougalli*. This site qualifies under Article 4.2 of the Birds Directive as it is used regularly by 1% or more of the biogeographic population of a regularly occurring migratory species (other than those listed in Annex 1) in any season: ■ Black-tailed godwit *Limosa limosa islandica* (wintering); ■ Dark-bellied brent goose *Branta bernicla bernicla* (wintering); ■ Ringed plover *Charadrius hiaticula* (wintering); ■ Teal *Anas crecca* (wintering); and, ■ Waterbird assemblage (wintering) - The site supports an internationally important wintering waterbird assemblage of 51,361 individuals (5-year peak mean 1991/92-1995/96).
Is the Site water dependent	Yes

Sensitivities of the Site	Threats, pressures and activities with impacts on the site listed on the standard data form include: ■ Pollution to groundwater (point sources and diffuse sources); ■ Outdoor sports and leisure activities, recreational activities; ■ Changes in abiotic conditions; ■ Changes in biotic conditions; and, ■ Fishing and harvesting aquatic resources. The prioritised issues for the site as detailed in the Site Improvement Plan (taken from overarching Solent Site Improvement Plan) are as follows: ■ Public Access/Disturbance; ■ Coastal squeeze; ■ Fisheries: Commercia marine and estuarine; ■ Water pollution; ■ Changes in species and distributions; ■ Climate change; ■ Change to site conditions; ■ Invasive species; ■ Direct land take from development; ■ Biological resource; ■ Change in land management; ■ Inappropriate pest control; ■ Air Pollution: impact of atmospheric nitrogen deposition; ■ Hydrological changes; ■ Direct impact from 3rd party; ■ Extraction: non-living resources; and, ■ Other.
Conservation objectives	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Birds Directive (2009/147/EC), by maintaining or restoring:

	■ The extent and distribution of the habitats of the qualifying features; ■ The structure and function of the habitats of the qualifying features; ■ The supporting processes on which the habitats of the qualifying features rely; ■ The population of each of the qualifying features; and ■ The distribution of the qualifying features within the site.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The proposals are located 3km from the designated site at its closest point. Due to this distance, there will be no direct or indirect loss of habitat within the designated site or of functionally linked land which is also located 3km east of the Proposed Development at its closest point (SWBGS site W17).	No
Disturbance	Due to the distance of the SPA from the Proposed Development, there will be no disturbance of qualifying species within the SPA. There is unlikely to be disturbance from noise or visual impact over 1.5km from the SPA. Studies on the Humber Estuary and in Cardiff Bay have indicated that while the behavioural responses of waterbirds to both visual and aural stimuli during the construction of flood defences differed depending on the type and nature of construction activity, species, season, site topography, weather, tidal state and degree of habituation, in general, effects are confined to areas within 250m of the sources of disturbance during construction (Burton *et al*. 2002).	No
Hydrological Change	There is potential that hydrological changes as a result of the construction of the Proposed Development could result in indirect LSE to the SPA. There is a risk that if perched groundwater is disturbed during the construction of watercourse crossings could increase turbidity within the groundwater entering the watercourses and reach the SPA. In addition, the construction of the Underground Pipeline and associated infrastructure may result in a change in quantity or quality of flows between aquifers and watercourses if flow paths are crossed by the pipeline. Any activities that disturb the ground, such as excavation, tunnelling or piling, could mobilise contaminants within soils or groundwater, and potentially adversely affect groundwater quality or locally alter the hydraulic properties of the aquifers which supplies the rivers that feed into the SPA. Additionally, if pipe jacking is used for the construction of the trenchless crossing this may also require boring fluid to	Yes

	be applied which would result in a risk of adding turbidity to the aquifer if groundwater was to be encountered. Groundwater flows and levels may also be affected by temporary physical modifications (e.g., excavations or tunnelling), which would interrupt the natural groundwater flow pathways. The other potential risks to groundwater associated with excavations and/or tunnel construction include temporary dewatering, if required, for the tunnel or shafts, diverting water away from the river, or bypassing part of the system, leading to reduced groundwater flow. Construction of tunnel sections and partially buried structures below the maximum groundwater level in the chalk could create a permanent barrier to groundwater flow. This could lead to a rise in groundwater levels on the upstream side, which could cause additional groundwater flooding, and a reduction of groundwater levels on the downstream side. This could potentially permanently affect groundwater-dependent watercourses. The installation of the tunnels could also result in creating a permanent connection between two currently hydraulically disconnected aquifers. This could impact the quality of groundwater and consequently groundwater dependent rivers. Further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the SPA. A Hydrogeological Impact Assessment (HIA) will be prepared to evaluate quantitative impacts of the Proposed Development on selected groundwater receptors before and after mitigation, focussing on the tunnelling sections and trenchless crossings, including the River Itchen. A site-specific conceptual hydrogeological model will be derived to provide an overview of the interactions between groundwater and surface water and will identify potential linkages between potential effects from the Proposed Development (during construction or operation) and GWDTEs, such as functionally linked land associated with the SPA. Groundwater flow paths, groundwater levels and the proximity of GWDTEs will be taken into account in the conceptual hydrogeological model, which will be included in the HIA. No construction activities are required to the Eastney LSO, and therefore no LSE from hydrological changes as a result of this element of the Proposed Development.	
Waterborne Pollution	Due to the distance between the Proposed Development and the SPA (a minimum of 4.7km downstream from watercourse crossings), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the designated site. Therefore, it is considered unlikely that chemical pollution or increase in suspended solids from site runoff during the construction could affect water quality within the SPA. During commissioning, flushing water will be discharged to clean and sterilise the new pipeline.	Yes

	The Proposed Development will include measures to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. The SPA is not anticipated to be affected during the construction of the proposed pipeline. However, there is potential for LSEs from waterborne pollution which will be assessed further at Stage 2.	
Airborne Pollution	Due to the distance of the Proposed Development from the designated site, well in excess of 250m (where LSE from airborne pollution due to construction are most likely to occur, in accordance with IAQM 2023), there will be no adverse effects as a result of airborne pollution and therefore no LSE.	No
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the SPA is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent where the SPA resides, the full salinity of the Solent would hinder spread of INNS. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implements, to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological Change and Waterborne pollution	Once operational, the Proposed Development will reduce the need for water abstractions from the River Itchen and the River Test which will help restore natural flows back to these watercourses. It is unlikely that this would have any effect on Solent and Southampton Water SPA. Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above	Yes

	ground infrastructure of the Proposed Development. This in turn could affect the qualifying features of the SPA. Additionally, washouts are expected to be located at topographical low points along the alignment of the proposed underground pipelines to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. Washouts will be contained with below ground chambers sized to ensure access around the pipework and fittings to enable future operation and maintenance. For example, on an 800mm pipe laid at nominal depth this would equate to approximately a 3x3x3m chamber. The chambers will be ventilated and stand at least 300mm above ground level in open land, and flush in road corridors, finished with an appropriately security rated chamber cover. Air valves are anticipated to be required every 500m, with two for each trenchless crossing to automatically release any build-up of air in the pipeline. Where required, isolation valves are expected to be required on both sides of major infrastructure and watercourse crossings and other locations where it may be difficult to gain access for repair and maintenance of the pipeline. They may be co-located with washouts / air valves and will be designed with an integral bypass for the balancing of upstream and downstream pressure to facilitate operation. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in the receiving watercourses (if discharged to a watercourse) and washout water may differ in its chemistry from that in the receiving watercourses and the hydrology and geomorphology of receiving watercourses could also be affected. Although the design will seek to avoid flows to watercourses, further information and assessment at Stage 2 is required to ensure that potential for LSE is avoided. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (e.g., resulting from failure or accidental damage) could also affect surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term, although any changes are not likely to be sufficient to result in significant ecological responses due to the tidal nature of the SPA.	

	The Eastney LSO is approximately 4km (closest point) from the SPA and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Therefore, further assessment (including dispersion modelling) is required with regard to LSE on the SPA.	
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. Furthermore, any INNS that may have been introduced into the pipelines prior to the commencement of operations could be released via the Eastney LSO when operation flows commence and could potentially alter the supporting fish communities that the designated tern and gull species rely upon. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the SPA is low; however, the emergency use of washouts could result in the spread of INNS into the catchments which feed into the SPA. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	Yes
Stage 1 Screening Assessment - Solent and Southampton Water SPA		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	
Does the Proposed Development have the	Yes – Further information is required, uncertainty remains	

potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?		

Table 5-9 Solent and Southampton Water Ramsar Stage 1 Screening Assessment

Designated Site Name: Solent and Southampton Water Ramsar	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development assessment corridor)	The Solent and Southampton Water Ramsar is located approximately 3km south-west of the Proposed Development at its closest point. The Ramsar is hydrologically connected to the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW via the crossings of the River Itchen, River Hamble and the River Meon. The Eastney LSO (release point for reject water) is 4km from the Ramsar at its closest point.
Qualifying features	The site is designated for the following: ■ Criterion 1: The site is one of few major sheltered channels between a substantial island and mainland in European waters which exhibits an unusual strong double tidal flow. The channel exhibits long periods of slack water at high and low tide. It includes many wetland habitats characteristic of the biogeographic region including saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs. ■ Criterion 2: The site supports an important assemblage of rare plants and invertebrates. At least 33 invertebrates and at least eight plants included in the British Red Data Book are represented on site. ■ Criterion 5: Assemblages of international importance. A peak count of 51,343 waterfowl in winter. ■ Criterion 6: Species occurring at levels of international importance including dark-bellied Brent goose *Branta bernicla bernicla*, black-tailed godwit *Limosa limosa islandica* and Eurasian teal *Anas crecca*.
Is the Site water dependent	Yes
Sensitivities of the Site	As there is no corresponding data for the Ramsar, the threats, pressures, and activities with impacts on the site are taken from the standard data form for Solent and Southampton Water Ramsar. These include: ■ Pollution to groundwater (point sources and diffuse sources); ■ Outdoor sports and leisure activities, recreational activities; ■ Changes in abiotic conditions; ■ Changes in biotic conditions; and

	■ Fishing and harvesting aquatic resources. The prioritised issues for the site as detailed in the Site Improvement Plan (taken from overarching Solent Site Improvement Plan) are as follows: ■ Public Access/Disturbance; ■ Coastal squeeze; ■ Fisheries: Commercia marine and estuarine; ■ Water pollution; ■ Changes in species and distributions; ■ Climate change; ■ Change to site conditions; ■ Invasive species; ■ Direct land take from development; ■ Biological resource; ■ Change in land management; ■ Inappropriate pest control; ■ Air Pollution: impact of atmospheric nitrogen deposition; ■ Hydrological changes; ■ Direct impact from 3rd party; ■ Extraction: non-living resources; and, ■ Other.
Conservation objectives	As there is no corresponding data for the Ramsar, the conservation objectives for Solent and Southampton Water SPA are taken to apply to the Ramsar too. Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Birds Directive(2009/147/EC), by maintaining or restoring: ■ The extent and distribution of the habitats of the qualifying features; ■ The structure and function of the habitats of the qualifying features; ■ The supporting processes on which the habitats of the qualifying features rely;

	■ The population of each of the qualifying features; and, ■ The distribution of the qualifying features within the site.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The Proposed Development isolated 3km from the designated site at its closest point. There will be no direct or indirect loss of habitat within the designated site, or of functionally linked land which is also located 3km east of the Proposed Development	No
Disturbance	Due to the distance of the Ramsar from the Proposed Development, there will be no disturbance of qualifying habitats or species within the Ramsar. There is unlikely to be disturbance from noise or visual impact over 1.5km from the Ramsar. Whilst the behavioural responses of waterbirds to both visual and aural stimuli during the construction of flood defences on the Humber Estuary and in Cardiff Bay differed depending on the type and nature of construction activity, species, season, site topography, weather, tidal state and degree of habituation, studies (Burton *et al*. 2002) indicate that in general effects are confined to areas within 250m of the sources of disturbance during construction.	No
Hydrological Change	There is a potential that hydrological changes as a result of the construction of the Proposed Development could result in in-direct effects to the Ramsar. There is a risk that if perched groundwater is disturbed during the construction of watercourse crossings could increase turbidity within the groundwater entering the watercourses and reach the Ramsar. In addition, the construction of the Underground Pipeline and associated infrastructure may result in a change in quantity or quality of flows between aquifers and watercourses if flow paths are crossed by the pipeline. Any activities that disturb the ground, such as excavation, tunnelling or piling, could mobilise contaminants within soils or groundwater, and potentially adversely affect groundwater quality or locally alter the hydraulic properties of the aquifers which supplies the rivers that feed into the Ramsar. Additionally, if pipe jacking is used for the construction of the trenchless crossing this may also require boring fluid to be applied which would result in a risk of adding turbidity to the aquifer if groundwater was to be encountered. Groundwater flows and levels may also be affected by temporary physical modifications (e.g., excavations or tunnelling), which would interrupt the natural groundwater flow pathways. The other potential risks to groundwater associated with excavations and/or tunnel construction include temporary	Yes

	dewatering, if required, for the tunnel or shafts, diverting water away from the river, or bypassing part of the system, leading to reduced groundwater flow. Construction of tunnel sections and partially buried structures below the maximum groundwater level in the chalk could create a permanent barrier to groundwater flow. This could lead to a rise in groundwater levels on the upstream side, which could cause additional groundwater flooding, and a reduction of groundwater levels on the downstream side. This could potentially permanently affect groundwater-dependent watercourses. The installation of the tunnels could also result in creating a permanent connection between two currently hydraulically disconnected aquifers. This could impact the quality of groundwater and consequently groundwater dependent rivers. Further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the Ramsar. A Hydrogeological Impact Assessment (HIA) will be prepared to evaluate quantitative impacts of the Proposed Development on selected groundwater receptors before and after mitigation, focussing on the tunnelling sections and trenchless crossings, including the River Itchen. A site-specific conceptual hydrogeological model will be derived to provide an overview of the interactions between groundwater and surface water and will identify potential linkages between potential effects from the Proposed Development (during construction or operation) and GWDTEs, such as functionally linked land associated with the Ramsar. Groundwater flow paths, groundwater levels and the proximity of GWDTEs will be taken into account in the conceptual hydrogeological model, which will be included in the HIA. No construction activities are required to the Eastney LSO, and therefore no LSE from hydrological change as a result of this element of the Proposed Development.	
Waterborne Pollution	Due to the distance between the Proposed Development and the Ramsar (a minimum of 4.7km downstream from watercourse crossings), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the designated site. Therefore, it is considered unlikely that chemical pollution or increase in suspended solids from site runoff during the construction could affect water quality within the Ramsar. Multiple saline lagoons are present in Gosport area, approximately 7.4km south of the construction area. However, any scale of changes at this distance are unlikely to affect this qualifying feature. During commissioning, flushing water will be discharged to clean and sterilise the new pipeline. The Proposed Development will include measures to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at	Yes

	the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. As such, LSEs from waterborne pollution from flushing are possible. The Ramsar is not anticipated to be affected during the construction of the proposed pipeline. However, there is potential for LSEs from waterborne pollution, which will be assessed further at Stage 2.	
Airborne Pollution	Due to the distance of the Proposed Development from the designated site, well in excess of 250m (where LSE from airborne pollution due to construction are most likely to occur, in accordance with IAQM 2023), there will be no adverse effects as a result of airborne pollution and therefore no LSE.	No
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the Ramsar is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into the river catchments that feed into the Solent, the full salinity of the Solent would hinder spread of these INNS. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implements, to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological Change and Waterborne Pollution	Once operational, the Proposed Development will reduce the need for water abstractions from the River Itchen and the River Test which will help restore natural flows back to these watercourses. It is unlikely that this would have any measurable effect on Solent and Southampton Water Ramsar. Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. This in turn could affect the qualifying features of the Ramsar.	Yes

	Additionally, washouts are expected to be located at topographical low points along the alignment of the proposed underground pipelines to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. Washouts will be contained with below ground chambers sized to ensure access around the pipework and fittings to enable future operation and maintenance. For example, on an 800mm pipe laid at nominal depth this would equate to approximately a 3x3x3m chamber. The chambers will be ventilated and stand at least 300mm above ground level in open land, and flush in road corridors, finished with an appropriately security rated chamber cover. Air valves are anticipated to be required every 500m, with two for each trenchless crossing to automatically release any build-up of air in the pipeline. Where required, isolation valves are expected to be required on both sides of major infrastructure and watercourse crossings and other locations where it may be difficult to gain access for repair and maintenance of the pipeline. They may be co-located with washouts / air valves and will be designed with an integral bypass for the balancing of upstream and downstream pressure to facilitate operation. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in the receiving watercourses (if discharged to a watercourse) and washout water may differ in its chemistry from that in the receiving watercourses and the hydrology and geomorphology of receiving watercourses could also be affected. Although the design will seek to avoid flows to watercourses, further information is required to ensure that potential for LSE is avoided, this will be undertaken at Stage 2. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (e.g., resulting from failure or accidental damage) could also affect, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term, although any changes are not likely to be sufficient to result in significant ecological responses due to the tidal nature of the Ramsar. Eastney LSO is approximately 4km (closest point) from the Ramsar and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Therefore, further assessment (including dispersion modelling) is required with regard to LSE on the Ramsar.	

INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. Further any INNS that may have been introduced into the pipelines prior to the commencement of operations could be released when operation flows commence including through the LSO which has a degree of hydrological connection to the Ramsar. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the Ramsar is low; however, the emergency use of washouts could result in the spread of INNS into the catchments which feed into the Ramsar. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements.	Yes
Stage 1 Screening Assessment - Solent and Southampton Water Ramsar		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	
Does the Proposed Development have the potential to cause Likely Significant Effects ‘alone and/or in	Yes – Further information is required, uncertainty remains	

combination' on the designated site?	

Table 5-10 South Wight Maritime SAC Stage 1 Screening Assessment

Designated Site Name: South Wight Maritime SAC	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development assessment corridor)	The South Wight Maritime SAC is site is located 14.4km south of the proposed WRP and the Eastney LSO (release point for reject water) is 4km from the SAC at its closest point.
Qualifying features	Annex I habitats that are a primary reason for selection of this site: ■ 1170 Reefs; ■ 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts; and, ■ 8330 Submerged or partially submerged sea caves.
Is the Site water dependent	Yes
Sensitivities of the Site	Threats, pressures, and activities with impacts on the site listed on the standard data form (taken from Solent and Isle of Wight Lagoons SAC): ■ Human induced changes in hydraulic conditions; ■ Outdoor sports and leisure activities; and, ■ Invasive non-native species. The prioritised issues for the site as detailed in the Site Improvement Plan are as follows: ■ Invasive species; ■ Inappropriate coastal management; ■ Public Access/Disturbance; ■ Physical modification; ■ Inappropriate coastal management; ■ Physical modification; and

	■ Fisheries: Commercial marine and estuarine.	
Conservation objectives	The conservation objectives are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: ■ The extent and distribution of qualifying natural habitats; ■ The structure and function (including typical species) of qualifying natural habitats; and ■ The supporting processes on which qualifying natural habitats rely.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The construction activities associated with the Proposal Development are located 14.4km from the designated site at its closest point. Due to this distance, there will be no direct or indirect loss of habitat within the designated site or within functionally linked land.	No
Disturbance	Due to the distance between the SAC and the Proposed Development there is no potential for LSE from disturbance on the qualifying habitats.	No
Hydrological Change	No construction activities are required to the Eastney LSO, and therefore, there is no potential for LSE from hydrological changes as a result of this element of the Proposed Development. Due to the distance between the SAC and construction works associated with the Proposed Development (namely, the 14.4km between the SAC and the WRP and Budds Farm elements) and the tidal nature of the SAC, any hydrological change would be significantly diluted to negligible by the time it reaches the designated site.	No
Waterborne Pollution	Due to the distance between the SAC (14.4km from construction activities at the closest point), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the designated site. Therefore, it is considered unlikely that chemical pollution or increase in suspended solids from site runoff during the construction could affect water quality within the SAC. During commissioning, flushing water will be discharged to clean and sterilise the new pipeline. The Proposed Development will include measures to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. As such, LSEs from waterborne pollution from flushing are possible.	Yes

	The SAC is not anticipated to be affected during the construction of the proposed pipeline. However, there is potential for LSEs from waterborne pollution, which will be assessed at Stage 2.	
Airborne Pollution	Due to the significant distance of the SAC from construction activities at the closest point, well in excess of 250m (where LSE from airborne pollution due to construction are most likely to occur, in accordance with IAQM 2023), there will be no adverse effects as a result of airborne pollution and therefore no potential for LSE.	No
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. Due to the distance between construction activities and the SAC, and the saline nature of this intervening environment, it is unlikely that terrestrial and freshwater INNS would pose a risk to the SAC. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the SAC is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent where the SAC resides, the full salinity of the Solent would hinder spread of INNS. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implements, to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological change and waterborne pollution	Eastney LSO is approximately 2.8km (closest point) from the SAC and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Therefore, further assessment (including dispersion modelling) is required in order to determine whether LSE on the SAC could occur.	Yes
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Havant Thicket Reservoir to Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. Furthermore, any INNS that may have been introduced into the pipelines prior to the commencement could be released via the Eastney LSO when operation flows commence. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the SAC is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species. Although the emergency use of washouts could result in the spread of	Yes

	INNS into river catchments which feeds into the Solent where the SAC resides, the full salinity of the Solent would hinder spread of INNS. However, further assessment of the INNS risk associated with the Proposed Development is required to rule out the risk, this will include an assessment of biosecurity considerations and any additional mitigation requirements at Stage 2.	
Stage 1 Screening Assessment – South Wight Maritime SAC		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	
Does the Proposed Development have the potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	Yes – Further information is required, uncertainty remains	

Table 5-11 Solent and Isle of Wight Lagoons SAC Stage 1 Screening Assessment

Designated Site Name: Solent and Isle of Wight Lagoons SAC	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development assessment corridor)	The Solent and Isle of Wight Lagoons SAC is split over multiple locations. The site is hydrologically connected to the Underground Pipeline between Budds Farm WTW and the Proposed WRP via Langstone Harbour and the Eastney LSO. The nearest parts of the SAC to the Proposed Development are Farlington Marshes, which is 2.2km south-west of the proposed WRP and Bembridge lagoons which is 5.5km south of the Eastney LSO (the release point for reject water). Gilkicker Lagoon is 7.2km from the Eastney LSO and 11.5km from the proposed WRP.
Qualifying features	Annex I habitats that are a primary reason for selection of this site: ■ 1150 Coastal lagoons: Farlington Marshes is an isolated lagoon in marsh pasture that, although separated from the sea by a seawall, receives sea water during spring tides. The lagoon holds a well-developed low-medium salinity insect-dominated fauna. Gilkicker Lagoon is a sluiced lagoon with marked seasonal salinity fluctuation and supports a high species diversity. The lagoons at Bembridge Harbour have formed in a depression behind the seawall and sea water enters by percolation. Species diversity in these lagoons is high and the fauna includes very high densities of *Nematostella vectensis*.
Is the Site water dependent	Yes
Sensitivities of the Site	Threats, pressures, and activities with impacts on the site listed on the standard data form: ■ Human induced changes in hydraulic conditions; ■ Changes in abiotic conditions; ■ Interspecific floral relations; ■ Fire and fire suppression; and, ■ Air pollution, airborne pollutants. The prioritised issues for the site as detailed in the Site Improvement Plan are as follows: ■ Hydrological changes; ■ Inappropriate weed control; ■ Coastal squeeze;

	■ Invasive species; and, ■ Air pollution: risk of atmospheric nitrogen deposition.	
Conservation objectives	The conservation objectives are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: ■ The extent and distribution of qualifying natural habitats; ■ The structure and function (including typical species) of qualifying natural habitats; and ■ The supporting processes on which qualifying natural habitats rely.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The construction activities associated with the Proposal Development are located 2.3km from the designated site at its closest point. The closest lagoon to construction activities is that at Farlington Marshes, which is an isolated lagoon which receives sea water during spring tides, when the sea level overtops the seawall. The other two lagoons (Gilkicker and Bembridge) are over 11km and 17km from construction activities respectively. Due to the intervening distance, and the isolated nature of the lagoons, there will be no direct or indirect loss of habitat.	No
Disturbance	Due to the nature of the lagoons there is limited hydrological connectivity to the Proposed Development; the lagoons are isolated (either naturally or as a result of sluice and seawall) and receive sea water seasonally or via percolation. This, combined with the distance between the SAC and the Proposed Development, there is no potential for LSE from disturbance on the qualifying habitats.	No
Hydrological Change	The proposed Underground Pipeline crosses under Hermitage Stream which flows into Langstone Harbour, which feeds the Solent and Isle of Wight Lagoons SAC at Farlington Marshes during spring tides. The proposed Underground Pipeline would be drilled under the seabed, ensuring no hydrological changes and therefore no LSE as a result of this tunnelled crossing. In addition, due to the intervening distance (2.6km from the crossing of Hermitage Stream to the SAC), and the tidal nature of Langstone Harbour and the designated site, any minor changes to the quality or quantity of flows as a result of the construction of the trenchless crossing would be highly unlikely to result in any measurable effect within the SAC and therefore no LSE from hydrological change.	No

	No construction activities are required to the Eastney LSO, and therefore no LSE from hydrological change as a result of this element of the Proposed Development.	
Waterborne Pollution	Due to the distance between the Proposed Development and the SAC (2.2km from the proposed WRP), and its tidal nature, any construction pollution would be significantly diluted before it could reach the designated site. Therefore, it is considered unlikely that chemical pollution or increase in suspended solids from site runoff during the construction could affect water quality within the SAC. It is highly unlikely that any construction phase pollution would have any measurable effect on the SAC, due to the isolated nature of the lagoons. During commissioning, flushing water will be discharged to clean and sterilise the new pipeline. The Proposed Development will include measures to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. As such, LSEs from waterborne pollution from flushing are possible. The SAC is not anticipated to be affected during the construction of the proposed pipeline. However, there is potential LSEs from waterborne pollution, which will be assessed further at Stage 2.	Yes
Airborne Pollution	Due to the significant distance of the SAC from construction activities, well in excess of 200m (where effects from airborne pollution are most likely to occur), there will be no adverse effects as a result of airborne pollution and therefore no potential for LSE.	No
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. However, the use of plant and equipment could transfer INNS between catchments. Although the potential for INNS to reach the SAC is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species, construction could result in the spread of INNS into river catchments which feed into the Solent where the SAC resides, the full salinity of the Solent would hinder spread of INNS. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implements, to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**

Waterborne pollution	Eastney LSO is approximately 5.5km from the SAC and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Therefore, further assessment (including dispersion modelling) is required in order to determine whether LSE on the SAC could occur. Nevertheless, the scale of changes at this distance and high degree of potential dilution by the time discharged concentrations exchange with coastal lagoons are potentially unlikely to affect the qualifying features directly and/or indirectly.	Yes
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. Further any INNS that may have been introduced prior to the commencement of operations could be released when operation flows commence including through the LSO which has a degree of hydrological connection to the SAC. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the SAC is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species. Although the emergency use of washouts could result in the spread of INNS into river catchments which feeds into the Solent which feeds the SAC, the full salinity of the Solent would hinder spread of INNS. However, further assessment of the INNS risk associated with the Proposed Development is required to rule out the risk, this will include an assessment of biosecurity considerations and any additional mitigation requirements at Stage 2.	Yes
Stage 1 Screening Assessment – Solent and Isle of Wight Lagoons SAC		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	

potential to cause Likely Significant Effects on the designated site?	
Does the Proposed Development have the potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	Yes – Further information is required, uncertainty remains

Table 5-12 River Meon Compensatory SAC Stage 1 Screening Assessment

Designated Site Name: River Meon Compensatory SAC Habitat	
Land-take from the Site	None
Distance from the Site or key features of the site (from edge of the Proposed Development assessment corridor)	The River Meon Compensatory SAC Habitat is crossed by the proposed Underground Pipeline between Havant Thicket Reservoir and Otterbourne WSW, via a trenchless crossing.
Qualifying features	The aim of the River Meon Compensatory SAC Habitat project is to restore the river for the following features: ■ Rivers with floating vegetation often dominated by water-crowfoot *Ranunculus aquatilis;* and, ■ Atlantic salmon *Salmo salar*. Specific measures to be implemented are likely to include the following: ■ Rehabilitation of the channel by restoring connectivity with the floodplain by lowering/removal or embankments; and, ■ Salmonid fish passage improvement.
Is the Site water dependent	Yes
Sensitivities of the Site	No sensitivities are listed for the River Meon Compensatory SAC Habitat. While the River Meon is not a designated site, best practice states that it should be bestowed the same protection and assessed under the same guidance (2019 Regulations). It is proposed for the development of compensatory measures for adverse effects on the integrity of Atlantic salmon from other projects (e.g., the Lower Itchen Sources Drought Order). In order to maintain the effectiveness of the River Meon compensatory measures in maintaining the overall coherence of the Habitats Site, it is important to assess the effects on Atlantic salmon using the river.
Conservation objectives	There are no conservation objectives for the River Meon Compensatory SAC Habitat; however, they are taken to be those of similar SACs.

	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: ■ The extent and distribution of qualifying natural habitats and habitats of qualifying species; ■ The structure and function (including typical species) of qualifying natural habitats; ■ The structure and function of the habitats of qualifying species; ■ The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; ■ The populations of qualifying species; and, ■ The distribution of qualifying species within the site.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The proposed pipeline crosses the River Meon via trenchless techniques, with the closest end of the crossing 50m from the River. There will be no direct habitat loss within the River Meon Compensatory SAC Habitat. The trenchless crossings are embedded measures within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the avoidance of habitat loss and fragmentation as a result of trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022). The qualifying habitats of the River Meon Compensatory SAC Habitat is the floating vegetation within the watercourses, often dominated by water-crowfoot, typical of chalk stream conditions. The Proposed Development will cross the River Meon via trenchless techniques there will be no direct effects to the watercourse. However, construction activities in the River Meon catchment could increase soil erosion and the supply of fine sediment (e.g., clays, fine silts and sands) to the river. Increased sediment supply would increase turbidity levels within the water column, resulting in greater fine sediment deposition on the channel bed. Higher sediment loads entering the channel could also smother bed habitats, reduce light penetration, and decrease temperature and dissolved oxygen levels. These effects could adversely affect the qualifying habitats and species of importance for the Compensatory SAC Habitat.	Yes

	While direct effects of habitat loss or fragmentation will not occur, there is a risk of damage to fish spawning habitat due to vibration from the installation of the trenchless crossing if during the spawning season. This could result in damage to habitat used by Atlantic Salmon.	
Disturbance	Construction within watercourses could cause noise and vibration disturbance which could disturb spawning fish, if undertaken during the spawning season. As no in-channel works are proposed within the Compensatory SAC Habitat there is no risk of direct disturbance. However, disturbance may occur as a result of vibration during construction of the trenchless crossing, if occurring during the spawning season. The trenchless crossings are embedded measures within the design of the Proposed Development; however, these represent primary mitigation measures and therefore the minimisation of disturbance as a result of the trenchless crossings will be assessed at Stage 2 in accordance with the precautionary approach set out in PINS Advice Note Ten (Planning Inspectorate, 2022). Disturbance may occur from the installation of underground pipelines and associated infrastructure, which could result in increased water turbidity with groundwater, effecting water quality of the River Meon.	Yes
Hydrological Change	There is potential that hydrological changes as a result of the construction of the Proposed Development could result in in-direct effects to the Compensatory SAC Habitat and its qualifying species and habitats. There is a risk that if perched groundwater was disturbed during the construction of the trenchless crossing, that this could increase turbidity within the aquifer which is linked to the River Meon. In addition, the construction of the proposed Underground Pipeline and associated infrastructure may result in a change in quantity or quality of flows between the aquifer and the river if flow paths are crossed by the pipeline. Any activities that disturb the ground, such as excavation, tunnelling or piling, could mobilise contaminants within soils or groundwater, and potentially adversely affect groundwater quality or locally alter the hydraulic properties of the aquifer which supplies the River Meon. Additionally, if pipe jacking is used for the construction of the trenchless crossing this may also require boring fluid to be applied which would result in a risk of adding turbidity to the aquifer if groundwater was to be encountered. However, in the unlikely event that groundwater turbidity levels were affected, due to the existing fine grained alluvial and bed sediments beneath the Meon, there is unlikely to be a mechanism where turbid waters could be pulled upward into the root zones of plants or into the open waters of the River Meon. Groundwater flows and levels may also be affected by temporary physical modifications (e.g., excavations or tunnelling), which would interrupt the natural groundwater flow pathways. The other	Yes

	potential risks to groundwater associated with excavations and/or tunnel construction include temporary dewatering, if required, for the tunnel or shafts, diverting water away from the river, or bypassing part of the system, leading to reduced groundwater flow. Construction of tunnel sections and partially buried structures below the maximum groundwater level in the chalk could create a permanent barrier to groundwater flow. This could lead to a rise in groundwater levels on the upstream side, which could cause additional groundwater flooding, and a reduction of groundwater levels on the downstream side. This could potentially permanently affect the River Meon as a groundwater-dependent watercourse. The installation of the tunnels could also result in creating a permanent connection between two currently hydraulically disconnected aquifers. This could affect the quality of groundwater and consequently the River Meon. Further modelling is required and will be undertaken to assess the potential for hydrological impact pathways to the Compensatory SAC Habitat. A Hydrogeological Impact Assessment (HIA) will be prepared to evaluate quantitative impacts of the Proposed Development on selected groundwater receptors before and after mitigation, focussing on the tunnelling sections and trenchless crossings, including the River Meon. A site-specific conceptual hydrogeological model will be derived to provide an overview of the interactions between groundwater and surface water and will identify potential linkages between potential effects from the Proposed Development (during construction or operation). Groundwater flow paths, groundwater levels will be taken into account in the conceptual hydrogeological model, which will be included in the HIA. If modelling shows that the construction of the pipeline will be above ground water levels and therefore there is considered to be no risk of encountering groundwater this would ensure no risk of altering the quantity or quality of flows feeding the Compensatory SAC Habitat.	
Waterborne Pollution	The operation of construction machinery in the vicinity of the River Meon has the potential for accidental release pollutants on to the ground, where pollutants could migrate into underlying groundwater. This could also be caused by spillage, leakage and in-wash from vehicle storage areas following rainfall, accidental release of foul waters (e.g., from welfare facilities) and construction materials, such as concrete, grout and inert drilling fluids from trenchless crossings, washouts or tunnelling. Such pollutants could enter the river and adversely affect its physical and chemical properties. There is therefore potential for LSE as a result of waterborne pollution, which will be assessed further at Stage 2.	Yes

Airborne Pollution	Construction dust may have LSE out to 250m from he Proposed Development (in accordance with IAQM, 2023). Therefore, there is potential for effects to occur within the Compensatory SAC Habitat. In addition, the potential effects of construction traffic (due to temporary traffic management measures and/or additional vehicles travelling to and from the construction) and Non-Road Mobile Machinery (NRMM) emissions on air quality within 200m of the construction works boundary or a road affected by changes in traffic may affect the Compensatory SAC Habitat (Natural England, 2018). Further assessment of these potential sources of air pollution will be undertaken, with additional modelling as required, to establish the potential for LSE.	Yes
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. The crossing of the River Meon will be via trenchless techniques and therefore the potential for the spread of INNS into the watercourse or within functionally linked land is extremely remote. Standard best practice biosecurity measures will be implemented during all works to minimise the risk of spreading INNS, along with the production of detailed Invasive Species Management Plans, if or as required. There is potential for LSE as a result of INNS in unmitigated circumstances which is expected to reduce to no significant effect when standard measures are implements, to be assessed during Stage 2.	Yes
Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological Change and Waterborne Pollution	Operational effects are anticipated to be minimal. However, there is the potential for accidental release of pollutants to surface water or groundwater during planned and unplanned operational maintenance. Activities could lead to the accidental release of fine sediment, treatment chemicals, oils, fuels or lubricants. There could also be emergency drainage, spillage and accidents associated with the above ground infrastructure of the Proposed Development. This could adversely affect the geomorphology and water quality of the surface water drainage network, as well as groundwater. This in turn could affect aquatic ecology and the qualifying features of the Compensatory SAC habitat. Additionally, washouts are expected to be located at topographical low points along the alignment of the proposed Underground Pipeline to facilitate commissioning and emptying treated water from a section of pipes for repair and maintenance with the aim to clean out any sediments in the pipe. Washouts are valves that can be opened on occasion to clear sediment from a water transmission pipeline or	Yes

	completely drain sections of pipelines in maintenance or repair scenarios. Depending on the final route of the proposed pipeline and the topography of it, one washout is anticipated to be required every 750m to 1km, as well as one for every trenchless crossing. Washouts will be contained with below ground chambers sized to ensure access around the pipework and fittings to enable future operation and maintenance. For example, for an 800mm pipe laid at nominal depth this would equate to approximately a 3x3x3m chamber. The chambers will be ventilated and stand at least 300mm above ground level in open land, and flush in road corridors, finished with an appropriately security rated chamber cover. Air valves are anticipated to be required every 500m, with two for each trenchless crossing to automatically release any build-up of air in the pipeline. Where required, isolation valves are expected to be required on both sides of major infrastructure and watercourse crossings and other locations where it may be difficult to gain access for repair and maintenance of the pipeline. They may be co-located with washouts / air valves and will be designed with an integral bypass for the balancing of upstream and downstream pressure to facilitate operation. The discharge location of and usage frequencies for washouts is yet to be defined, although usage is expected to be in the event of an emergency or when a section of the pipe needs to be drained to facilitate replacement of a section or fitting. Sediments from washouts could smother habitats in the receiving watercourse (if discharged to a watercourse), washout water may differ in its chemistry from that in the receiving watercourse and the hydrology and geomorphology of receiving watercourses could also be affected. Although the design will seek to avoid flows to the Meon, further information and assessment at Stage 2 is required to ensure that LSE are avoided. Leaks or accidental spillage of clean treated water from the pipeline or associated infrastructure (such as resulting from failure or accidental damage) could also affect flood risk, surface water hydrology, geomorphology and chemistry, particularly if these leaks are large or long term. As a sensitive chalk river, the Meon is likely to be particularly susceptible to changes in water chemistry, although any changes are not likely to be sufficient to result in significant ecological responses. Adult Atlantic salmon, considered to be a qualifying feature of the Compensatory SAC Habitat, are likely to pass by the Eastney LSO, which has the potential to concentrate compounds above environmental quality standard for estuarine and coastal waters[7] (see explanation in Section 6). The exact compounds of interest, and the associated change in concentration for each of these, has yet to be determined but as a precaution it is considered that concentrations could be above the EQS threshold as for estuarine and coastal waters (see Screening test: estuarine and coastal waters compounds and limits). It is important to note that salmon are highly mobile so they are likely to have a limited duration of exposure	

	to any discharged compounds before they move into cleaner water or the discharge is sufficiently diluted by the Solent to below thresholds of effect. Consequently, it is unlikely to result in significant ecological effects, although this cannot be discounted without further evidence on the concentrations likely to be discharged.	
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the River Meon is low; however, the emergency use of washouts could result in the spread of INNS into the River Meon catchment. Further assessment of the INNS risk associated with the Proposed Development is required, this will include an assessment of biosecurity considerations and any additional mitigation requirements at Stage 2.	Yes
Stage 1 Screening Assessment – River Meon Compensatory SAC Habitat		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	
Does the Proposed Development have the	Yes – Further information is required, uncertainty remains	

potential to cause Likely Significant Effects 'alone and/or in combination' on the designated site?	

6 Marine Conservation Zone Assessment: Screening

Table 6-1 Bembridge MCZ Screening Assessment

Designated Site Name: Bembridge MCZ	
Land-take from the Site	None
Distance from the MCZ or key features of the site (from edge of the Proposed Development assessment corridor)	The Bembridge MCZ is located 14.4km south of the proposed WRP and the Eastney LSO (release point for reject water) is 1.7km northeast of the MCZ.
Protected features	Features protected under Schedule 2 of the Bembridge Marine Conservation Zone Designation Order 2019 within this site: ■ Subtidal coarse sediment; ■ Subtidal mixed sediments; ■ Subtidal mud; ■ Subtidal sand; ■ Maerl beds - highly sensitive to seabed activities and takes a long time to recover from damage; ■ Sea-pen and burrowing megafauna; ■ Communities; ■ Seagrass beds; ■ Sheltered muddy gravels; ■ Native oyster (*Ostrea edulis*); ■ Short snouted seahorse (*Hippocampus hippocampus*); ■ Stalked jellyfish (*Calvadosia campanulata*); ■ Stalked jellyfish (*Haliclystus species*); and,

	■ Peacock's tail (*Padina pavonica*) – at the most eastern edge of their distribution and are considered to seed other populations around the Isle of Wight.
Sensitivities of the MCZ	Natural England's published advice on operations (2023) details pressures associated with "Outfalls/Intake pipes (maintenance/construction/usage)" which is the closest activity type to the activities being undertaken as part of the Proposed Development. Those pressures listed by Natural England as medium to high-risk pressures where one of more features are classified as sensitive are as follows with those potentially relevant to Proposed Development marked with an asterisk (*): ■ Abrasion disturbance of the substrate on the surface of the seabed; ■ Barrier to species movement; ■ Changes in suspended solids (water clarity)*; ■ Habitat structure changes – removal of substratum (extraction); ■ Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; ■ Physical change (to another seabed type); ■ Physical change (to another sediment type); ■ Physical loss (to land or freshwater habitat); ■ Smothering and siltation rate changes (Heavy); ■ Smothering and siltation rate changes (Light)*; and, ■ Visual disturbance. Further Natural England list the following as low risk pressures which features reportedly show sensitivity and are considered relevant to the Proposed Development: ■ Deoxygenation; ■ Hydrocarbon & PAH contamination; ■ Introduction of microbial pathogens; ■ Nutrient enrichment; ■ Organic enrichment; ■ Salinity increase; ■ Salinity decrease; ■ Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceutical); and,

	■ Transition elements & organo-metal (e.g. TBT) contamination.	
Conservation objectives	1) The conservation objective of the Zone is that the protected features: (a) so far as already in favourable condition, remain in such condition, and (b) so far as not already in favourable condition, be brought into such condition, and remain in such condition. 2) Where "favourable condition" means: (a) with respect to a habitat within the Zone: i. its extent is stable or increasing; and ii. its structure and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it remains in a condition which is healthy and not deteriorating. (b) with respect to a species of marine fauna or flora within the Zone, means that the quality and quantity of its habitat and the composition of its population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive. For the purposes of: ■ paragraph (2)(a)(ii) - the reference to the composition of the characteristic biological communities of a habitat includes a reference to the diversity and abundance of species forming part of, or inhabiting, that habitat. ■ paragraph (2)(a)(ii) - any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery. ■ paragraph (2)(b) - any temporary reduction of numbers is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery. ■ determining whether a protected feature is in favourable condition within the meaning of paragraph (2), any alteration to that feature brought about entirely by natural processes is to be disregarded.	
Screening Assessment		
Construction Phase		
Potential Effects	**Assessment**	**LSE**
Habitat loss and fragmentation	The construction activities associated with the Proposal Development are located 14.2km from the designated site at its closest point. There will be no direct or indirect loss of habitat within the designated site or within functionally linked land.	No

Disturbance	Due to the distance between the MCZ and the Proposed Development there is no potential for LSE from disturbance on the qualifying habitats.	No
Hydrological Changes	Due to the distance between the MCZ (minimum 14.2km from construction activities) and its tidal nature, hydrological changes to the MCZ from construction activities of the WRP are not anticipated No construction activities are required to the Eastney LSO, there are therefore no LSE as a result of hydrological change.	No
Waterborne Pollution	Due to the distance between the MCZ (a minimum of 14km downstream from watercourse crossings), and its tidal nature, any construction pollution would be significantly diluted by the time it reaches the designated site. Therefore, it is considered unlikely that chemical pollution or increase in suspended solids from site runoff during the construction could affect water quality within the MCZ. During commissioning, flushing water will be discharged to clean and sterilise the new pipeline. The Proposed Development will include measures to dechlorinate and oxygenate the commissioning water to make it acceptable to discharge into the natural environment and ensure no adverse effects. However, at the time of this assessment the exact details of the volume, frequency and nature of flushing water discharge is unknown. The discharges are very unlikely to consist of a sufficiently large volume to overcome dilution by the sea before reaching the MCZ, although potential chemical effects are considered as a precaution. Therefore, potential for LSE as a result of waterborne pollution is possible and will be assessed further at Stage 1.	Yes
Airborne Pollution	Due to the distance of the Proposed Development from the designated site, well in excess of 250m (where LSE from airborne pollution due to construction are most likely to occur, in accordance with IAQM 2023), there will be no adverse effects as a result of airborne pollution and therefore no potential for LSE.	No
Invasive Non-Native Species (INNS)	Construction activities associated with the Proposed Development are only likely to spread INNS to areas within, or immediately adjacent to, the construction boundary, where the movement of vehicles, plant or operatives and the disturbance of ground (and potential run-off) may lead to the spread of INNS. The potential for INNS to reach the MCZ is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species and the full salinity of the Solent would prevent the survival or spread of these salt intolerant species. Due to the distance between construction activities and the MCZ, it is not at risk from INNS contamination during construction of the proposed pipeline. and there will be no potential for LSE.	No

Operational Phase		
Potential Effects	**Assessment**	**LSE**
Hydrological Changes and Waterborne Pollution	The discharge point for water recycling at Eastney LSO is located approximately 1.9km (closest point) from the MCZ and therefore it is within the 10km marine ecology hydrological connectivity ZoI. Discharge from the Eastney LSO would partially comprise a reject stream from the WRP necessary to achieve 20Ml/d of recycled water. This would alter as operational capacity phases to achieve a peak output of 60Ml/d of recycled water depending upon water availability at Bedhampton Springs (see Chapter 3 of the Environmental Impact Assessment Scoping Report Volume I Main Report - Document Reference: 208102-ARU-EGN-XX-RP-L-00001). Budds Farm WTW already discharges effluent into the marine environment from the existing LSO. As part of the operational process, a portion of the existing effluent from Budds Farm WTW will be subject to the water recycling processes before the reject stream is discharged at the same location. As a result, the discharge effluent (comprising the existing discharge from Budds Farm WTW and the rejected stream from the operational WRP) from the existing LSO would have a decreased volume because water has been removed and would be slightly more saline (although still below full marine salinity). Also, in the event of an emergency shutdown minerals added to the purified water may also be discharged which would also modify the salinity. In both cases this means that the resulting discharge effluent's salinity will be closer to the conditions of the Solent open water environment in which it is being discharged into when compared to the existing discharge. Accordingly, this is likely to slightly modify the existing dispersion pathway though the exact change has yet to be modelled. In addition, it is unclear how existing compounds within the discharge would be affected by this recycling process. It is possible that it may concentrate compounds above environmental quality standard for estuarine and coastal waters[7] or it may even reduce nutrient concentrations. Given that changes may potentially raise deleterious compounds above thresholds of effect levels or may alter the availability of nutrients or organic matter to existing communities it is likely that the benthic community could be affected. Therefore, further information and assessment at Stage 1 (including dispersion modelling) is required in order to determine whether LSE on the MCZ and supporting processes could occur.	Yes
INNS	The transfer of recycled water from the proposed WRP to Havant Thicket Reservoir and Otterbourne WSW has the potential to introduce INNS. Many INNS produce small larvae or dispersal life stages, or can be spread by miniscule fragments, which can pass through filters. Furthermore, any INNS that may	Yes

	have been introduced prior to the commencement of operations could be released via the Eastney LSO when operation flows commence. In addition, the use of plant and equipment for operational activities could transfer INNS between catchments. The potential for INNS to reach the MCZ is very low given INNS that could be introduced are likely terrestrial plant, freshwater or low salinity tolerant species. Although the emergency use of washouts could result in the spread of INNS into river catchments which feeds into the Solent where the MCZ resides, the full salinity of the Solent would hinder spread of INNS. However, further assessment of the INNS risk associated with the Proposed Development is required to rule out the risk, this will include an assessment of biosecurity considerations and any additional mitigation requirements at Stage 1.	
Screening Assessment – Bembridge MCZ		
Does the Proposed Development, when considered alone have the potential to cause Likely Significant Effects on the designated site or supporting processes?	Yes – Further information is required, uncertainty remains	
Does the Proposed Development considered in combination with permissions and/or plans/projects have the potential to cause Likely Significant Effects on the designated site or supporting processes?	Yes – Due to the potential for impacts alone, there is potential for in-combination effects	
Does the Proposed Development have the potential to cause Likely Significant Effects	Yes – Further information is required, uncertainty remains	

'alone and/or in combination' on the designated site or its supporting processes?	

7 Conclusion

7.1.1 The Stage 1 HRA Screening and MCZ assessment Screening has concluded that uncertainty remains and LSE cannot be screened out for the Habitats Sites and MCZs assessed.

Table 7-1 Summary of the potential for Likely Significant Effects

Sites	Potential Effect- Construction						Potential Effect- Operation	
	Habitat loss and fragmentation	Disturbance	Hydrological Change	Waterborne Pollution	Airborne Pollution	INNS	Hydrological Changes and Waterborne Pollution	INNS
River Itchen SAC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chichester and Langstone Harbour SPA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chichester and Langstone Harbour Ramsar	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Solent Maritime SAC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Portsmouth Harbour SPA	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Portsmouth Harbour Ramsar	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Solent and Dorset Coast SPA	No	No	Yes	Yes	No	Yes	Yes	Yes

Sites	Potential Effect- Construction						Potential Effect- Operation	
	Habitat loss and fragmentation	Disturbance	Hydrological Change	Waterborne Pollution	Airborne Pollution	INNS	Hydrological Changes and Waterborne Pollution	INNS
Solent and Southampton Water SPA	No	No	Yes	Yes	No	Yes	Yes	Yes
Solent and Southampton Water Ramsar	No	No	Yes	Yes	No	Yes	Yes	Yes
South Wight Maritime SAC	No	No	No	Yes	No	Yes	Yes	Yes
Solent and Isle of Wight Lagoons SAC	No	No	No	Yes	No	Yes	Yes	Yes
River Meon Compensatory SAC Habitat	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bembridge Marine Conservation Zone (MCZ)	No	No	No	Yes	No	No	Yes	Yes

7.1.2 Further assessment, including modelling of potential hydrological and hydrogeological effects and air quality changes are required to inform a complete assessment and identify any potential mitigation. Therefore, in the absence of mitigation, there are Likely Significant Adverse Effects alone, and therefore in-combination, on the following sites, and a Stage 2 Appropriate Assessment required:

- River Itchen SAC;
- Chichester and Langstone Harbour SPA;
- Chichester and Langstone Harbour SPA;
- Solent Maritime SAC;
- Portsmouth Harbour SPA;
- Portsmouth Harbour Ramsar;
- Solent and Dorset Coast SPA;
- Solent and Southampton Water SPA;
- Solent and Southampton Ramsar;
- South Wight Maritime SAC;
- Solent and Isle of Wight Lagoons SAC; and,
- River Meon Compensatory SAC Habitat.

7.1.3 The MCZ assessment Screening has concluded that the Bembridge MCZ requires Stage 1 assessment as LSE on the designated features or supporting features cannot be ruled out. Further assessment, including modelling of potential hydrological changes are required to inform a complete assessment and identify any potential mitigation.

8 References

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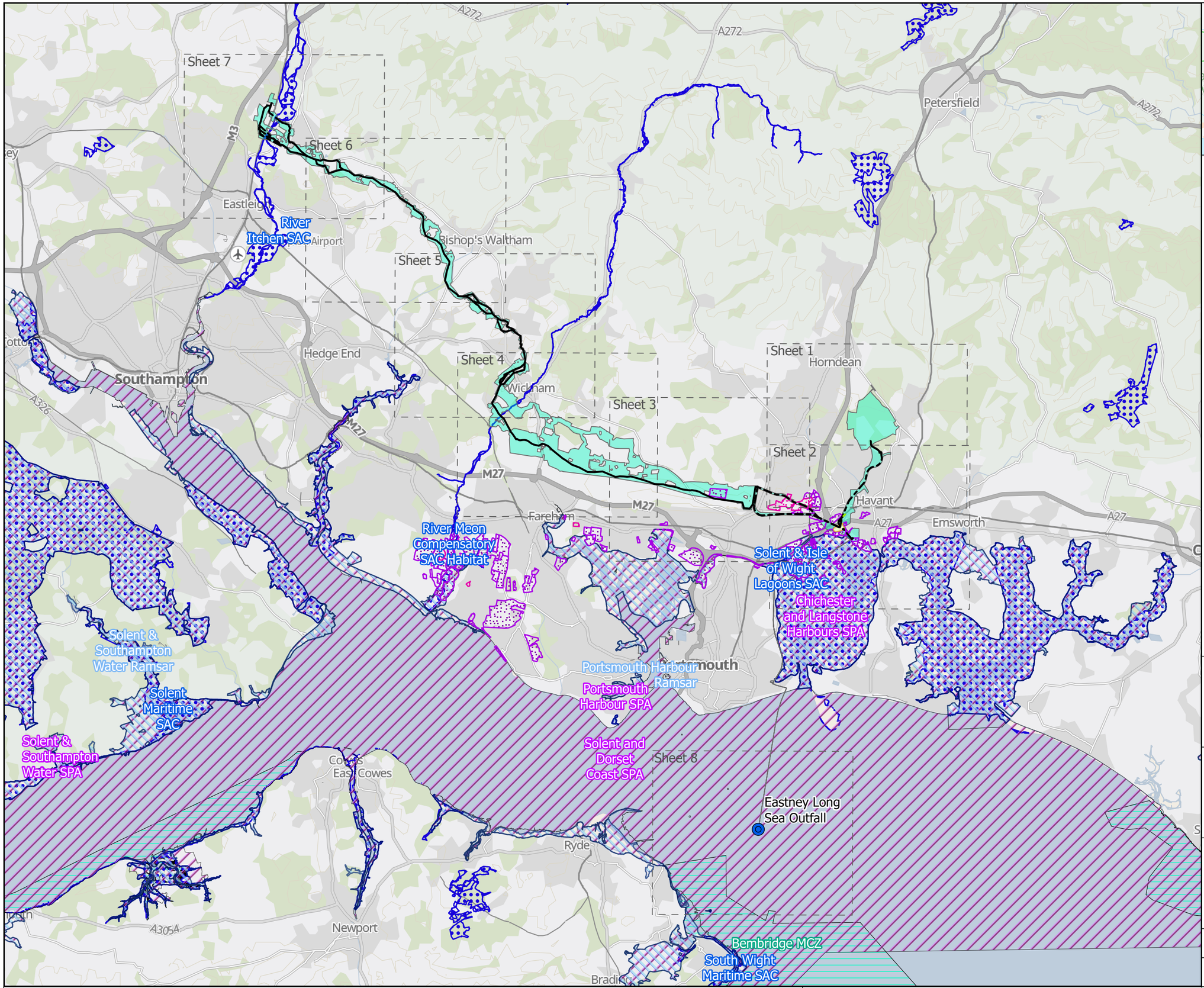
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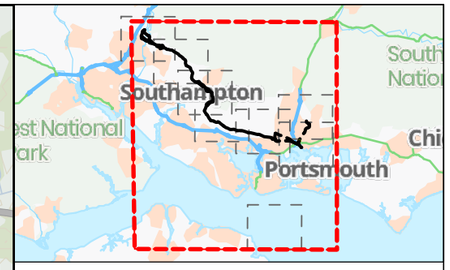
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Appendix A HRA and MCZ Sites Map





- Open Cut
- Trenchless
- Tunnel
- Above Ground
- Water Recycling Plant
- Eastney Long Sea Outfall
- Scoping Area Boundary
- Marine Conservation Zones
- Special Areas of Conservation
- Special Protection Areas
- Ramsar Sites
- Solent Waders and Brent Goose strategy sites
- Brent Goose sites

Coordinate system: British National Grid; Datum: OSGB 1936

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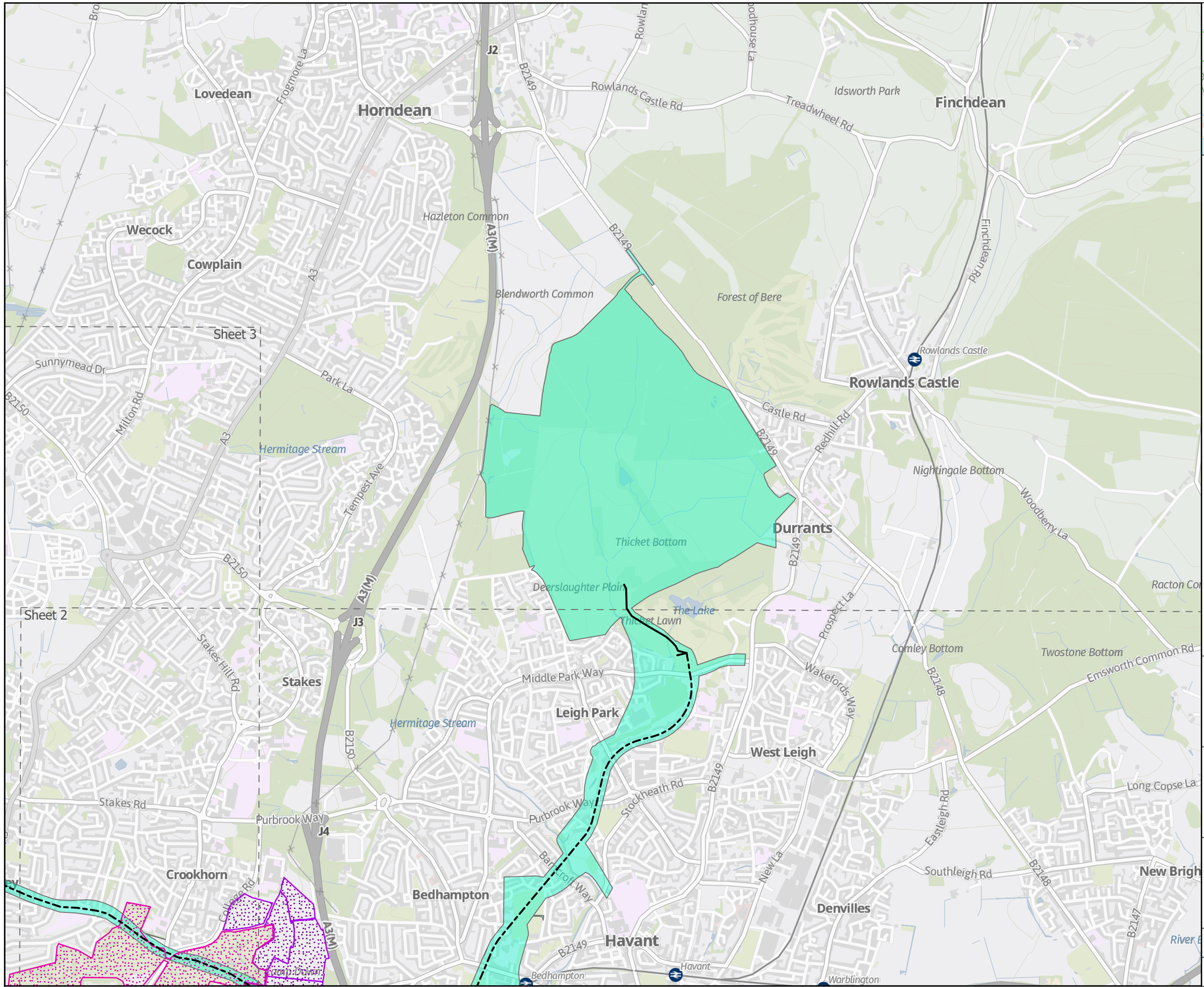
Appendix B:
HRA and MCZ Sites Map Overview

Drawn	GIS Checked	Checked	Approved
A Wilkins	**H Delamont Crookes**	**xxxx**	**xxxx**
Scale at A3	Status	Revision	Security
1:150,000	**INF**	**01**	**STD**

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0 2500 5000 7500 10000 12500 m

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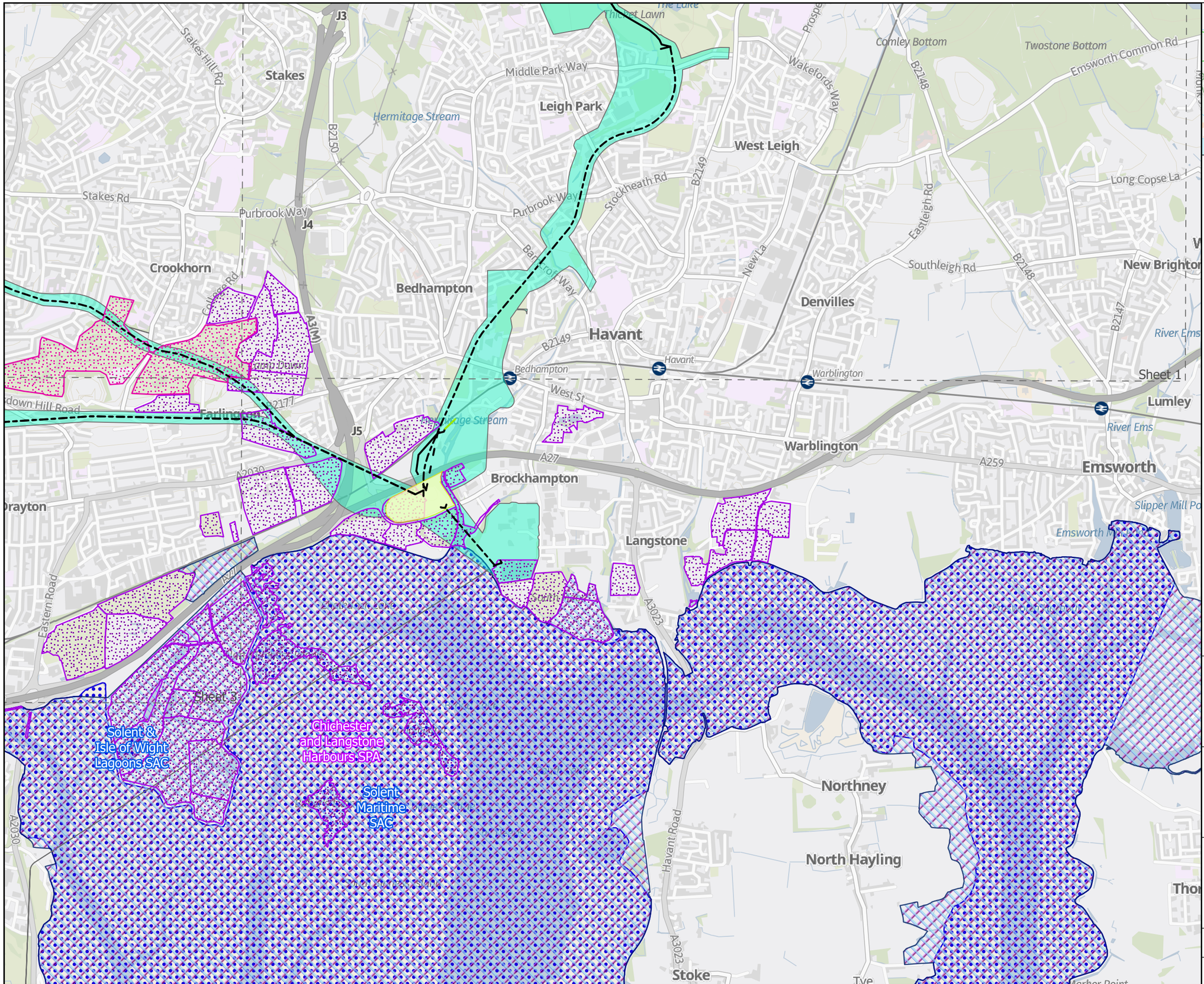
Appendix B:
HRA and MCZ Sites Map
Sheet 1 of 8

Drawn	GIS Checked	Checked	Approved
A Wilkins	H Delamont Crookes	xxxx	xxxx
Scale at A3	Status	Revision	Security
1:25,000	INF	01	STD

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0 425 850 1275 1700 2125 m



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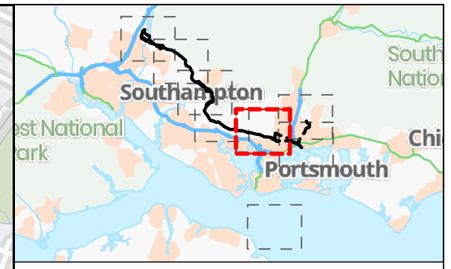
Appendix B:
HRA and MCZ Sites Map
Sheet 2 of 8

Drawn	GIS Checked	Checked	Approved
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0 425 850 1275 1700 2125 m



- Open Cut
- Tunnel
- Scoping Area Boundary
- Special Areas of Conservation
- Special Protection Areas
- Ramsar Sites
- Solent Waders and Brent Goose strategy sites
- Brent Goose sites

Coordinate system: British National Grid; Datum: OSGB 1936

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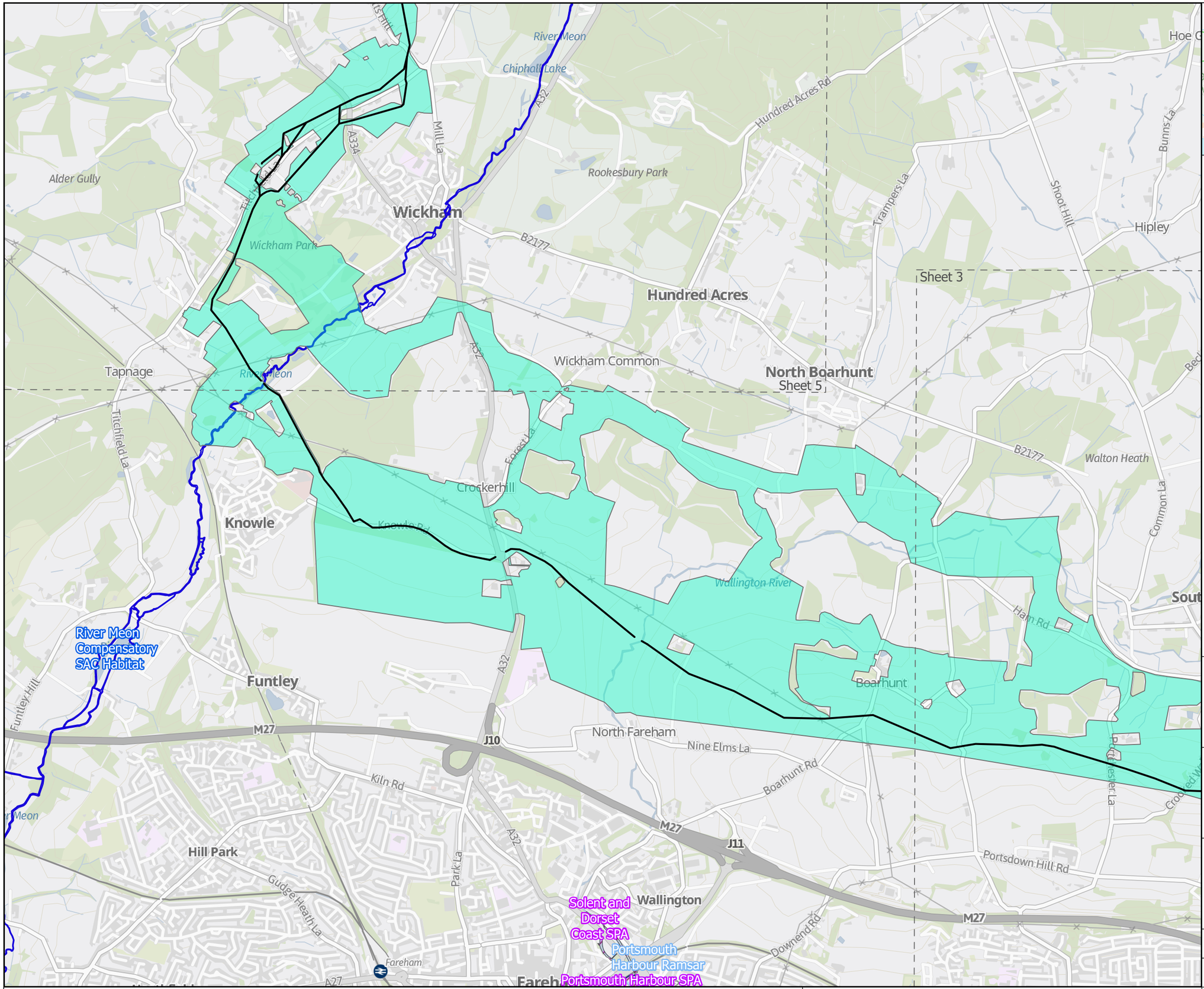
Appendix B:
HRA and MCZ Sites Map
Sheet 3 of 8

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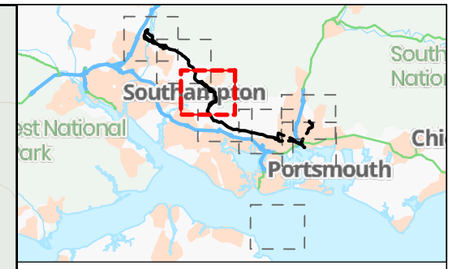
Appendix B:
HRA and MCZ Sites Map
Sheet 4 of 8

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0 425 850 1275 1700 2125 m

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- Open Cut
- Trenchless
- Scoping Area Boundary
- Special Areas of Conservation
- Special Protection Areas
- Ramsar Sites

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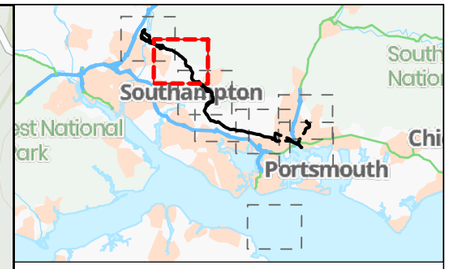
Appendix B:
HRA and MCZ Sites Map
Sheet 5 of 8

Drawn	GIS Checked	Checked	Approved
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0 425 850 1275 1700 2125 m



- Open Cut
- Trenchless
- Scoping Area Boundary

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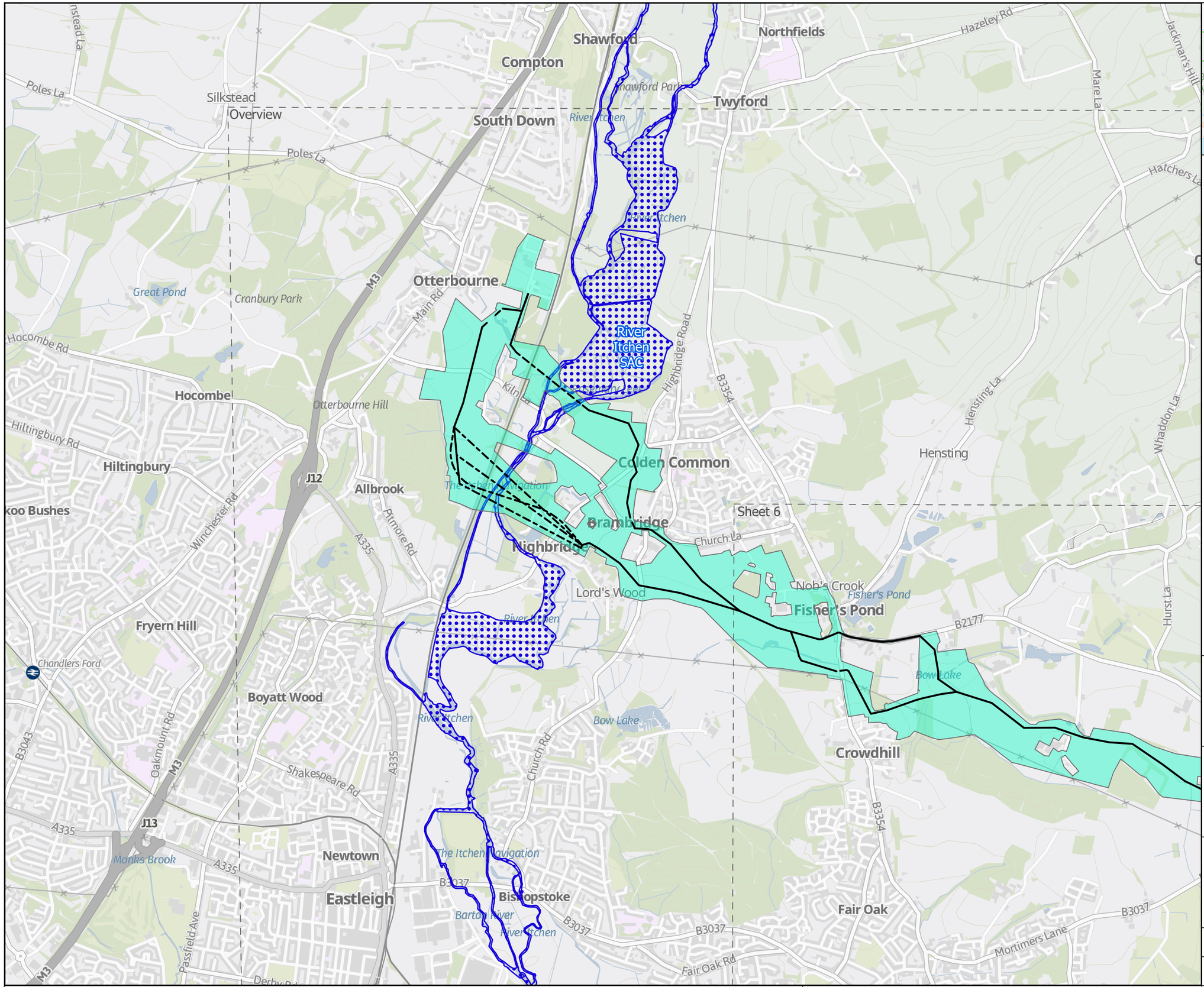
Appendix B:
HRA and MCZ Sites Map
Sheet 6 of 8

Drawn	GIS Checked	Checked	Approved
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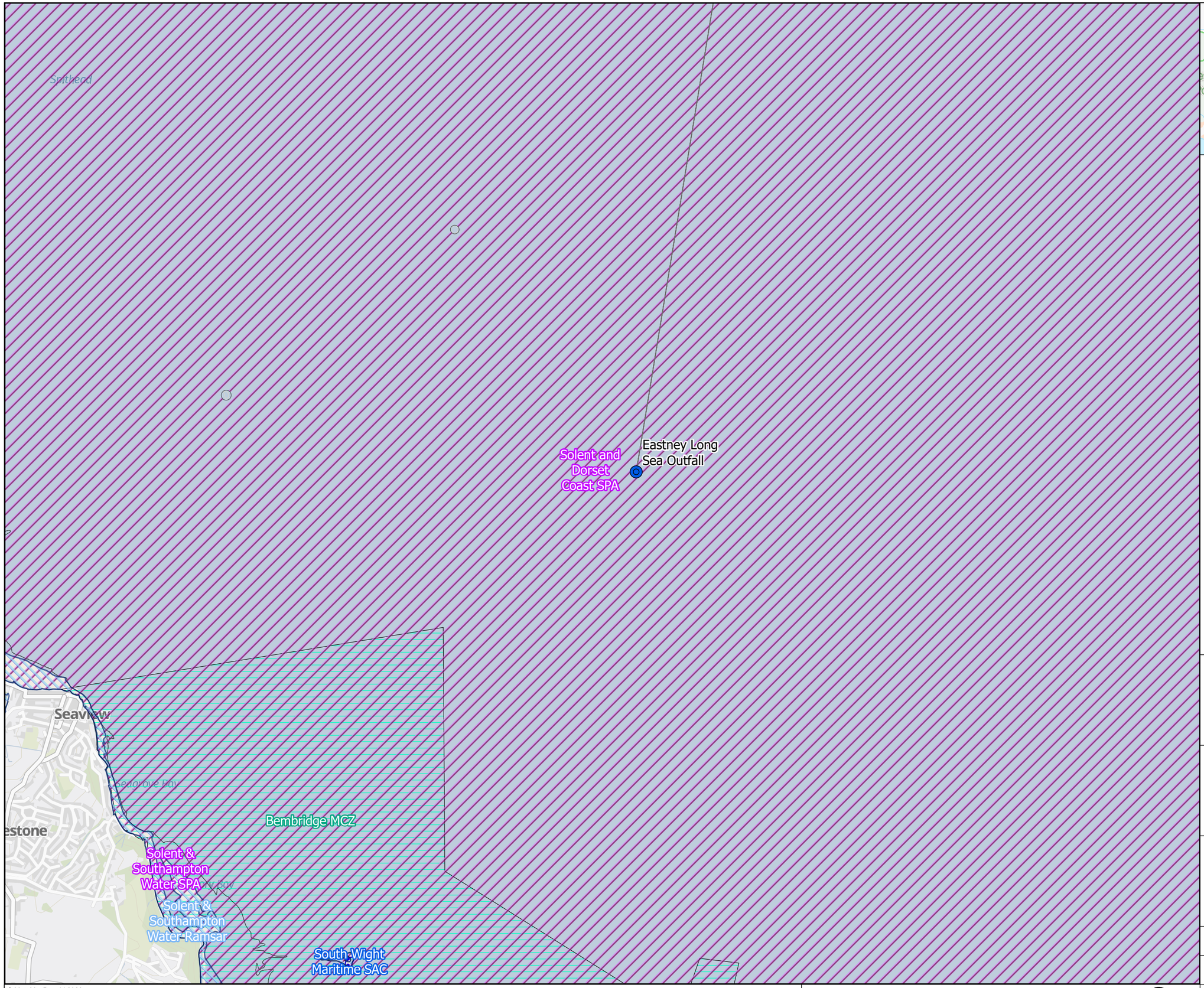
Appendix B:
HRA and MCZ Sites Map
Sheet 7 of 8

Drawn	GIS Checked	Checked	Approved
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Scale at A3	Status	Revision	Security
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Appendix B:
HRA and MCZ Sites Map
Sheet 8 of 8

Drawn	GIS Checked	Checked	Approved
A Wilkins	**H Delamont Crookes**	**xxxx**	**xxxx**
Scale at A3	Status	Revision	Security
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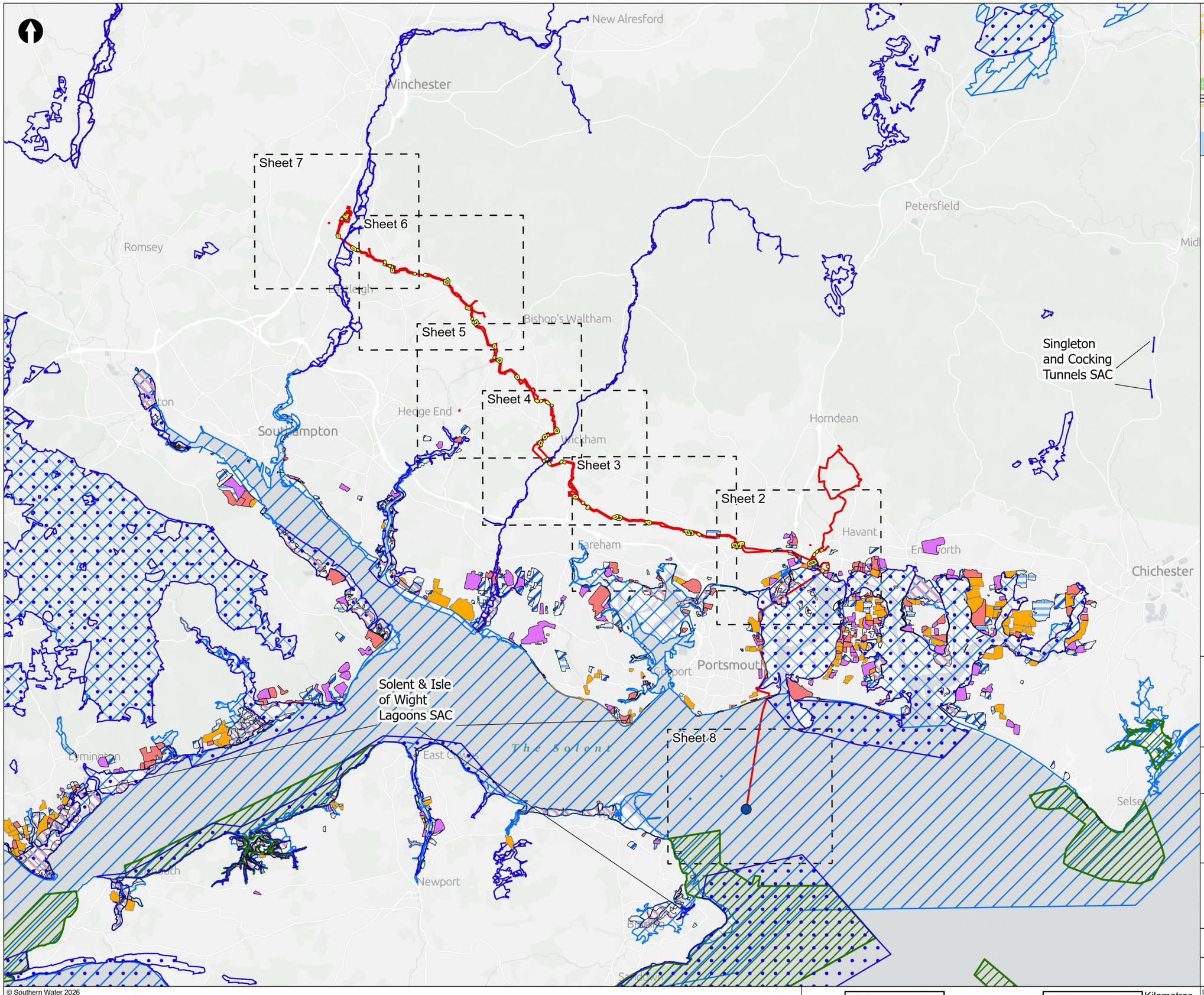
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Appendix B Habitats Sites and Marine Conservation Zones

Drawing Change Log

Drawing Number	Drawing Title	Updated Revision	Changes
17 July 2026 – Response to S51 Advice			
Appendix B: Habitats Sites and Marine Conservation Zones			
PC5223-RHD-DC-ZZ-D-Z-0003	Appendix B: Habitats Sites and Marine Conservation Zones SHEET 1 OF 7	02	• Singleton and Cocking Tunnels SAC added to figure.



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PROJECT TITLE

Hampshire Water Transfer and Water Recycling Project

from Southern Water.

Appendix B: Habitats Sites and Marine Conservation Zones Sheet 1 of 8

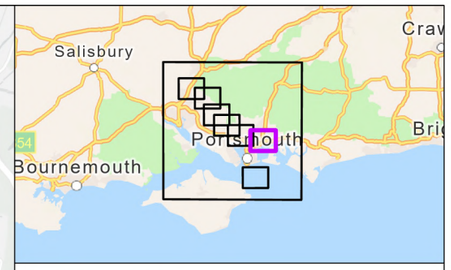
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Drawing Number: PC5223-RHD-DC-ZZ-D-Z-0003

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0 5 10 15 Kilometres

Sheet 3



Stakes
Leigh Park
West Leigh
Widley
Crookhorn
Bedhampton
Denvilles
Havant
Warblington
Farlington
Brockhampton
Langstone
Cosham
Drayton
Highbury
Hilsea
Anchorage Park
North

BPT/IPS E

Chichester and Langstone Harbours Ramsar
Chichester and Langstone Harbours SPA
Solent and Dorset Coast SPA
Solent & Isle of Wight Lagoons SAC
Solent Maritime SAC

- Order Limits
- Construction Compounds
- Sheet Extent Boxes 1:25K

Proposed Development components

- Budds Farm Wastewater Treatment Works
- Limits of Deviation for Budds Farm Pumping Station
- Water Recycling Plant site

Above Ground Plant

- Break Pressure Tank & Intermediate Pumping Station

Designated Sites

- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- Ramsar site

Solent Waders Brent Goose Strategy

- Core Area
- Primary Support Area
- Secondary Support Area
- SPA Site
- Low Use Site
- Candidate Site

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PROJECT TITLE

Hampshire Water Transfer and Water Recycling Project

WATER for LIFE from Southern Water.

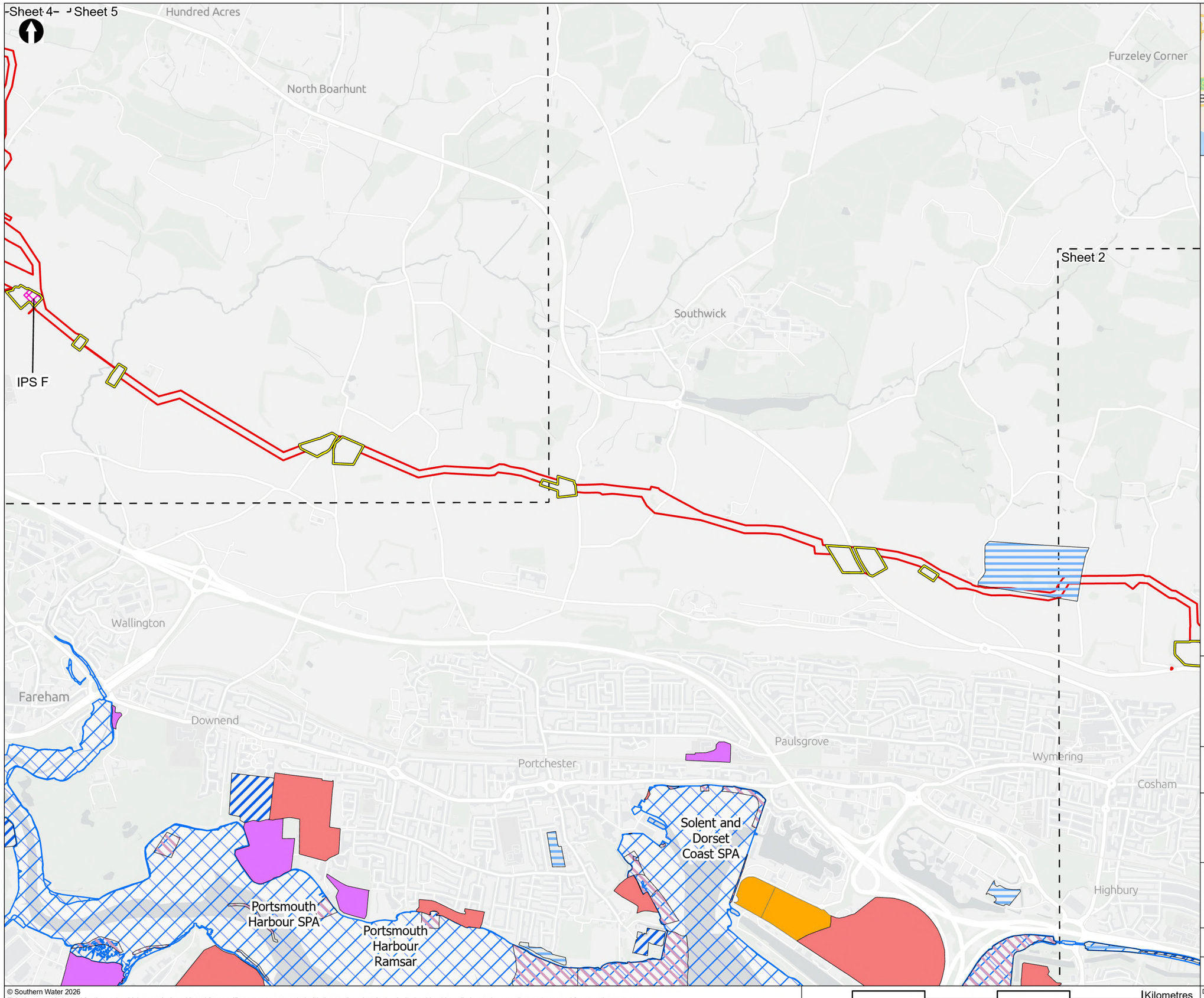
Appendix B: Habitats Sites and Marine Conservation Zones Sheet 2 of 8

Drawn	GIS Checked	Checked	Approved
MW	DL	MP	AK
Scale at A3	Status	Revision	Security
1:25,000	Final	02	STD

Drawing Number: PC5223-RHD-DC-ZZ-D-Z-0003

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0 0.5 1 1.5 2 Kilometres



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PROJECT TITLE

Hampshire Water Transfer and Water Recycling Project

WATER for LIFE from Southern Water

Appendix B: Habitats Sites and Marine Conservation Zones Sheet 3 of 8

Drawn	GIS Checked	Checked	Approved
MW	**DL**	**MP**	**AK**
Scale at A3	Status	Revision	Security
1:25,000	**Final**	**02**	**STD**

Drawing Number

PC5223-RHD-DC-ZZ-D-Z-0003

Sheet 5

Shirrell Heath

Shedfield

Newtown

River Meon
Compensatory SAC

IPS G

Wickham

Sheet 3

Hundred Acres

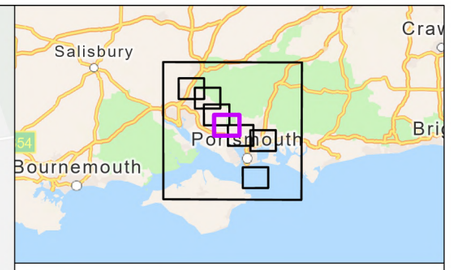
North Boarhunt

Welborne

Knowle

IPS F

Funtley



Order Limits
Construction Compounds
Sheet Extent Boxes 1:25K

Above Ground Plant

Intermediate Pumping Station
River Meon Compensatory SAC Habitat

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PROJECT TITLE

Hampshire Water Transfer and Water Recycling Project

WATER for LIFE from Southern Water.

Appendix B:
Habitats Sites and Marine Conservation Zones
Sheet 4 of 8

Drawn	GIS Checked	Checked	Approved
MW	**DL**	**MP**	**AK**
Scale at A3	Status	Revision	Security
1:25,000	**Final**	**02**	**STD**

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0 0.5 1 1.5 2 Kilometres

Sheet 6

Newtown

Bishop's Waltham

Hoe

Durley

Swanmore

Hillpound

Waltham Chase

Boorley Green

Sheet 4

Curdridge

Shirrell Heath

Botley

Shedfield

Solent & Southampton Water SPA

Solent & Southampton Water Ramsar

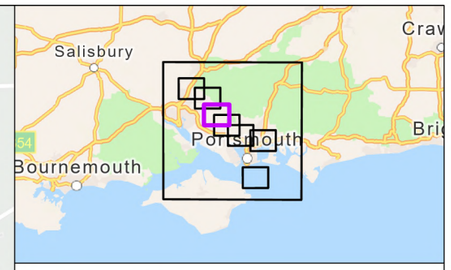
Solent Maritime SAC

IPS G

River Meon Compensatory SAC

Wickham

Sheet 3



Order Limits
Construction Compounds
Sheet Extent Boxes 1:25K

Above Ground Plant
Intermediate Pumping Station

Designated Sites
Special Areas of Conservation (SAC)
Special Protection Areas (SPA)
Ramsar site
River Meon Compensatory SAC Habitat

Solent Waders Brent Goose Strategy
Primary Support Area
Secondary Support Area
SPA Site
Low Use Site

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PROJECT TITLE

Hampshire Water Transfer and Water Recycling Project

Appendix B:
Habitats Sites and Marine Conservation Zones
Sheet 5 of 8

Drawn	GIS Checked	Checked	Approved
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Scale at A3	Status	Revision	Security
1:25,000	Final	02	STD

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0 0.5 1 1.5 2 Kilometres

Sheet 7

R
Itchen
SAC

Colden Common

Brambridge

Fisher's Pond

Crowdhill

Upham

Lower Upham

Fair Oak

BPT K

Sheet 5

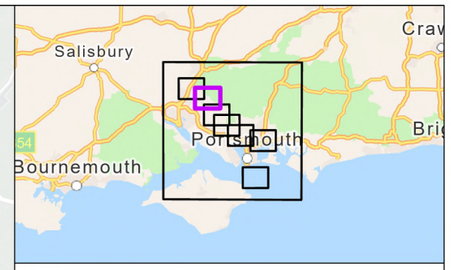
Horton Heath

Durley

Durley Street

Newtown

Bis



- Order Limits
- Construction Compounds
- Sheet Extent Boxes 1:25K

Above Ground Plant

- Break Pressure Tank

Designated Sites

- Special Areas of Conservation (SAC)

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PROJECT TITLE

Hampshire Water Transfer and Water Recycling Project

WATER for LIFE from Southern Water

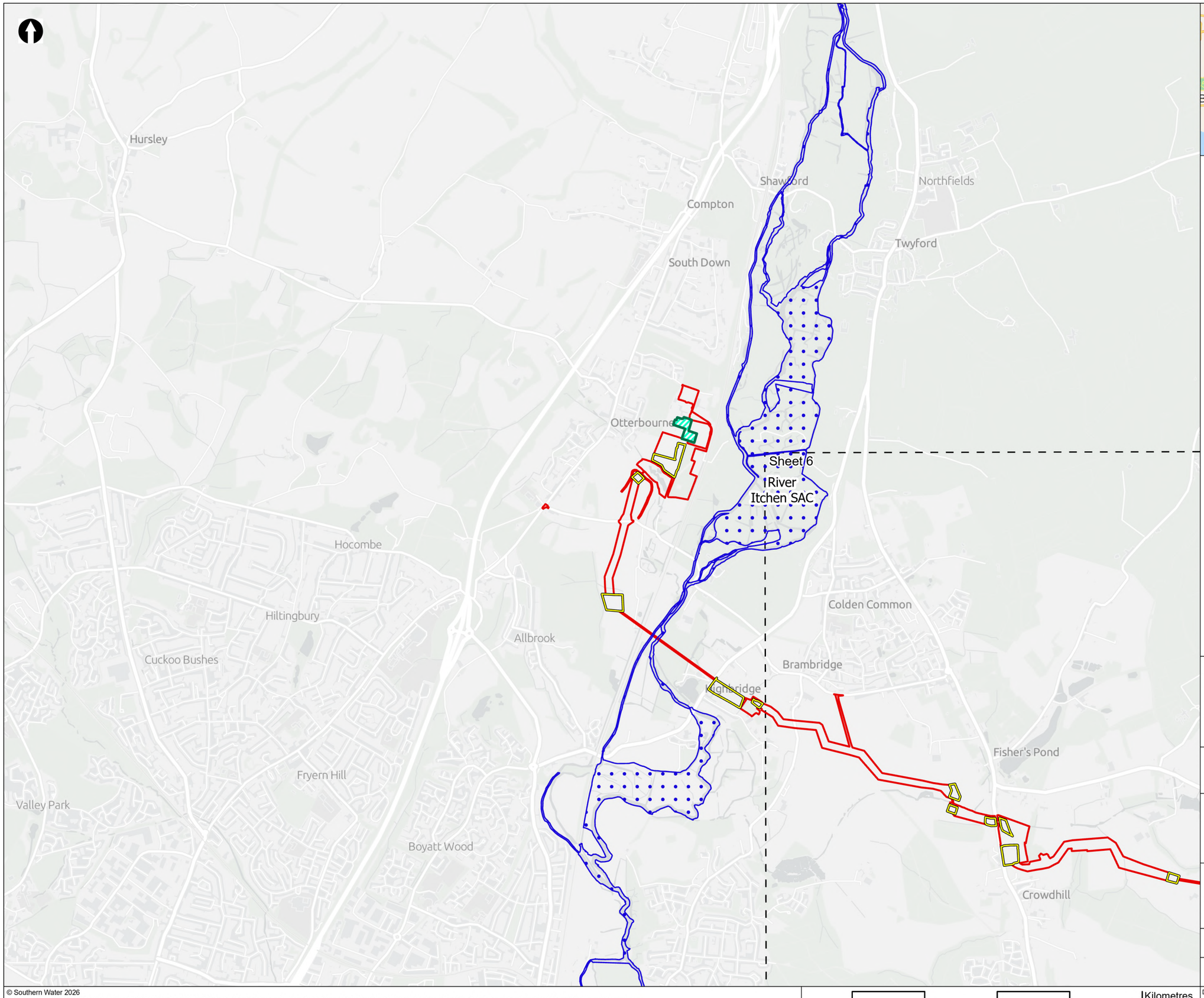
Appendix B: Habitats Sites and Marine Conservation Zones Sheet 6 of 8

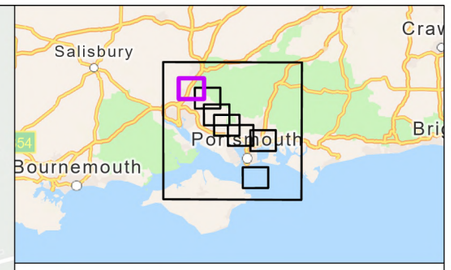
Drawn	GIS Checked	Checked	Approved
MW	DL	MP	AK
Scale at A3	Status	Revision	Security
1:25,000	Final	02	STD

Drawing Number PC5223-RHD-DC-ZZ-D-Z-0003

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0 0.5 1 1.5 2 Kilometres





- Order Limits
- Construction Compounds
- Limits of Deviation for Otterbourne INNS Treatment Plant
- Sheet Extent Boxes 1:25K

Designated Sites

- Special Areas of Conservation (SAC)

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PROJECT TITLE

Hampshire Water Transfer and Water Recycling Project

WATER for LIFE from Southern Water

Appendix B: Habitats Sites and Marine Conservation Zones Sheet 7 of 8

Drawn	GIS Checked	Checked	Approved
MW	**DL**	**MP**	**AK**
Scale at A3	Status	Revision	Security
1:25,000	**Final**	**02**	**STD**

Drawing Number

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0 0.5 1 1.5 2 Kilometres

Solent Maritime SAC

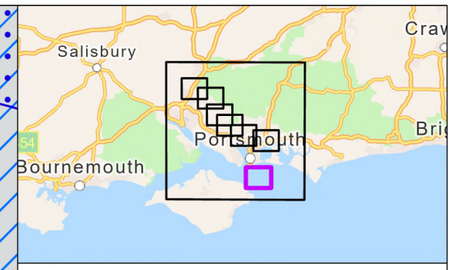
Solent and Dorset Coast SPA

Solent & Southampton Water Ramsar

Solent & Southampton Water SPA

Bembridge MCZ

South Wight Maritime SAC



- Order Limits
- Sheet Extent Boxes 1:25K
- Eastney Long Sea Outfall Discharge Point

Designated Sites

- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- Ramsar site
- Marine Conservation Zone (MCZ)

Solent Waders Brent Goose Strategy

- Low Use Site

Coordinate system: British National Grid; Datum: OSGB 1936
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PROJECT TITLE

Hampshire Water Transfer and Water Recycling Project

from Southern Water.

Appendix B: Habitats Sites and Marine Conservation Zones Sheet 8 of 8

Drawn	GIS Checked	Checked	Approved
MW	DL	MP	AK
Scale at A3	Status	Revision	Security
1:25,000	Final	02	STD

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0 0.5 1 1.5 2 Kilometres

Appendix C European Designated Sites Citations

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	River Itchen
Unitary Authority/County:	City of Southampton, Hampshire
SAC status:	Designated on 1 April 2005
Grid reference:	SU467174
SAC EU code:	UK0012599
Area (ha):	309.26
Component SSSI:	River Itchen SSSI

Site description:
The Itchen typifies the classic chalk river and shows a greater uniformity in physical characteristics along its entire length than other rivers of this type. Since the river is mainly spring-fed, there is only a narrow range of seasonal variation in physical and chemical characteristics. The water is of high quality, being naturally base-rich and of great clarity; and its temperature is relatively constant, with dissolved oxygen levels at or near saturation.

The river's vegetation is dominated by higher plants, and the aquatic flora is exceptionally species rich with many of the typical chalk stream plants present in abundance. The majority of species are present throughout the system and downstream changes are less than in most other rivers. The river is rich in invertebrates and supports diverse populations of aquatic molluscs. The Itchen supports one of the few populations of the native freshwater crayfish remaining in the rivers of southern England and a population of otters.

The river is dominated throughout by aquatic *Ranunculus* spp. The headwaters contain pond water-crowfoot *Ranunculus peltatus*, while two *Ranunculus* species occur further downstream: stream water-crowfoot *R. penicillatus* ssp. *pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*.

The fish fauna of the Itchen is typical of lowland chalk rivers. Strong populations of bullhead *Cottus gobbio* and brook lamprey *Lampetra planeri* are notable elements of the natural fish fauna. The river provides good water quality, extensive beds of submerged plants that act as a refuge for the species, and coarse sediments that are vital for spawning and juvenile development. The river's runs of Atlantic salmon *Salmo salar* fluctuate markedly.

The upper and mid river provides much suitable habitat for otters. A localised population of Atlantic stream crayfish *Austropotamobius pallipes* remains in a headwater of the river.

The Itchen valley contains areas of fen, swamp and meadow supporting vegetation with diverse plant communities, some typically species-rich. Meadow ditches support strong populations of southern damselfly *Coenagrion mercuriale*. The numbers recorded place the site amongst the most important in Britain for this species.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. (Rivers with floating vegetation often dominated by water-crowfoot)

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Atlantic salmon *Salmo salar*
- Brook lamprey *Lampetra planeri*
- Bullhead *Cottus gobio*
- Otter *Lutra lutra*
- Southern damselfly *Coenagrion mercuriale*
- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0012599
Date of registration: 14 June 2005

[redacted]

On behalf of the Secretary of State for Environment, Food and Rural Affairs

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0012599**

SITENAME **River Itchen**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT
- 7. MAP OF THE SITE

1. SITE IDENTIFICATION

Back to top

1.1 Type	1.2 Site code
B	UK0012599

1.3 Site name

River Itchen

1.4 First Compilation date	1.5 Update date
1998-03	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	1998-03
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

2.1 Site-centre location [decimal degrees]:

Back to top

Longitude	Latitude
-1.3347	50.9539

2.2 Area [ha]:

303.98

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

Back to top

3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
3260			36.48	0	G	A	C	A	A

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site					Site assessment		
G	Code	Scientific Name	S	NP	T	Size	Unit	Cat.	D.qual.	A|B|C|D	A|B|C	

						Min	Max				Pop.	Con.	Iso.	
I	1092	Austropotamobius pallipes			p	1001	10000	i		M	C	C	B	C
I	1044	Coenagrion mercuriale			p	1001	10000	i		M	B	B	A	A
F	1163	Cottus gobio			p				C	DD	C	B	C	B
F	1099	Lampetra fluviatilis			p				P	DD	D			
F	1096	Lampetra planeri			p				C	DD	C	B	C	C
M	1355	Lutra lutra			p	13	13	i		G	C	B	C	C
F	1095	Petromyzon marinus			p				P	DD	D			
F	1106	Salmo salar			p	251	500	i		M	C	B	C	C
I	1016	Vertigo moulinsiana			p				P	DD	D			

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

Back to top

4.1 General site character

Habitat class	% Cover
N16	10.0
N10	19.0
N21	1.0
N06	40.0
N19	2.0
N07	27.0
N14	1.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: basic,basalt,nutrient-rich,peat,sandstone,sedimentary,alluvium 2 Terrestrial: Geomorphology and landscape: floodplain,lowland,hilly

4.2 Quality and importance

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion

vegetation for which this is considered to be one of the best areas in the United Kingdom. Lampetra planeri for which the area is considered to support a significant presence. Salmo salar for which the area is considered to support a significant presence. Cottus gobio for which this is considered to be one of the best areas in the United Kingdom. Lutra lutra for which the area is considered to support a significant presence. Coenagrion mercuriale for which this is considered to be one of the best areas in the United Kingdom. Austropotamobius pallipes for which the area is considered to support a significant presence.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A04		I
H	H02		B
H	J02		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A04		I
H	A02		I
H	B02		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

Back to top

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK00	0.2	UK04	99.8		

6. SITE MANAGEMENT

Back to top

6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

☐ Yes

☐	No, but in preparation
☒	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

7. MAP OF THE SITES

Back to top

INSPIRE ID:

Map delivered as PDF in electronic format (optional)

☐ Yes ☒ No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK9011011**

SITENAME **Chichester and Langstone Harbours**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
A	UK9011011

1.3 Site name

Chichester and Langstone Harbours

1.4 First Compilation date	1.5 Update date
1987-10	2015-12

1.6 Respondent:

Name/Organisation:	Joint Nature Conservation Committee
Address:	Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:	

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1987-10
National legal reference of SPA designation	Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010, (http://www.legislation.gov.uk/uksi/2010/490/contents/made) as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011 (http://www.legislation.gov.uk/uksi/2011/625/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-0.92	50.80638889

2.2 Area [ha]:

5810.95

2.3 Marine area [%]

87.8

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight
UKJ2	Surrey, East and West Sussex

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A054	Anas acuta			w	330	330	i		G	C		C	
B	A056	Anas clypeata			w	100	100	i		G	C		C	
B	A052	Anas crecca			w	1824	1824	i		G	C		C	
B	A050	Anas penelope			w	2055	2055	i		G	C		C	
B	A169	Arenaria interpres			w	430	430	i		G	C		C	
B	A675	Branta bernicla bernicla			w	17119	17119	i		G	A		C	
B	A144	Calidris alba			w	236	236	i		G	C		C	
B	A672	Calidris alpina alpina			w	44294	44294	i		G	B		C	
B	A137	Charadrius hiaticula			w	846	846	i		G	B		C	

B	A157	Limosa lapponica			w	1692	1692	i		G	B		C	
B	A069	Mergus serrator			w	297	297	i		G	B		C	
B	A160	Numenius arquata			w	1861	1861	i		G	C		C	
B	A141	Pluvialis squatarola			w	3825	3825	i		G	B		C	
B	A195	Sterna albifrons			r	100	100	p		G	B		C	
B	A193	Sterna hirundo			r	33	33	p		G	C		C	
B	A191	Sterna sandvicensis			r	31	31	p		G	C		C	
B	A048	Tadorna tadorna			w	2410	2410	i		G	B		C	
B	A162	Tringa totanus			w	1788	1788	i		G	C		C	

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C|R|V|P	IV	V	A	B	C	D
B	WATR	Waterbird assemblage			93230	93230	i						X	

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see reference portal)
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories: IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N02	63.0
N08	0.1
N10	1.7
N07	0.5
N03	21.5
N23	0.2
N06	0.4
N16	0.8
N04	0.3
N14	11.7
Total Habitat Cover	100.2

Other Site Characteristics

1 Terrestrial: Soil & Geology: nutrient-rich,shingle,alluvium,sand,sedimentary,neutral,mud 2 Terrestrial: Geomorphology and landscape: coastal,lowland,floodplain 3 Marine: Geology: sand,clay,shingle,mud,sedimentary,gravel 4 Marine: Geomorphology: pools,lagoon,estuary,subtidal sediments (including sandbank/mudbank),enclosed coast (including embayment),islands,shingle bar,intertidal sediments (including sandflat/mudflat)

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: Sterna albifrons (Eastern Atlantic - breeding) 4.2% of the GB breeding population 5 year mean, 1992-1996 Sterna hirundo (Northern/Eastern Europe - breeding) 0.3% of the GB breeding population 5 year mean, 1992-1996 Sterna sandvicensis (Western Europe/Western Africa) 0.2% of the GB breeding population 5 year mean, 1993-1997 Over winter the area regularly supports: Limosa lapponica (Western Palearctic - wintering) 3.2% of the GB population 5 year peak mean 1991/92-1995/96 ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: Anas acuta (North-western Europe) 1.2% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Anas clypeata (North-western/Central Europe) 1% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Anas crecca (North-western Europe) 0.5% of the population 5 year peak mean 1991/92-1995/96 Anas penelope (Western Siberia/North-western/North-eastern Europe) 0.7% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Arenaria interpres (Western Palearctic - wintering) 0.7% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Branta bernicla bernicla (Western Siberia/Western Europe) 5.7% of the population 5 year peak mean 1991/92-1995/96 Calidris alba (Eastern Atlantic/Western & Southern Africa - wintering) 0.2% of the population 5 year peak mean 1991/92-1995/96 Calidris alpina alpina (Northern Siberia/Europe/Western Africa) 3.2% of the population 5 year peak mean 1991/92-1995/96 Charadrius hiaticula (Europe/Northern Africa - wintering) 3% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Mergus serrator (North-western/Central Europe) 3% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Numenius arquata (Europe - breeding) 1.6% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Pluvialis squatarola (Eastern Atlantic - wintering) 2.3% of the population 5 year peak mean 1991/92-1995/96 Tadorna tadorna (North-western Europe) 3.3% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Tringa totanus (Eastern Atlantic - wintering) 1% of the population 5 year peak mean 1991/92-1995/96 ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 93230 waterfowl (5 year peak mean 1991/92-1995/96) Including: Branta bernicla bernicla , Tadorna tadorna , Anas penelope , Anas crecca , Anas acuta , Anas clypeata , Mergus serrator , Charadrius hiaticula , Pluvialis squatarola , Calidris alba , Calidris alpina alpina , Limosa lapponica , Numenius arquata , Tringa totanus , Arenaria interpres

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	M02		B
H	H02		B
H	M01		B
H	F02		I
H	G01		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	D05		I
H	A04		I
H	B02		I
H	A02		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

EC Directive 79/409 on the Conservation of Wild Birds: Special Protection Area

CHICHESTER AND LANGSTONE HARBOURS (HAMPSHIRE/WEST SUSSEX)

The site is internationally important because it regularly supports more than 10,000 wintering wildfowl (average 25,000) and also by regualrly supporting more than 20,000 wintering waders (average 77,000).

The site also supports internationally important numbers of the following species: grey plover Pluvualis squatarola (3.9% of the west European population), sanderling Caldris alba (3.1%), dunlin Caldris alpina (2.6% and over 20,000 birds), redshank Tringa totanus (1.4%), brent goose Branta bernicla (12%), shelduck Tadorna tadorna (4%), and teal Anas crecca (1%).

The site qualifies under Article 4.2 by supporting internationally important numbers of the migratory bird species listed above and nationally important wintering numbers of the following migratory bird species: ringed plover Charadrius hiaticula, curlew Numerius arquata, bar-tailed godwit Limosta lapponica, turnstone Arenaria interpres, wigeon Anas penelope, pintail Anas acuta, shoveler Anas clypeata and the red-breasted merganser Mergus serrator.

The site also qualifies under Article 4.1 because it provices a breeding site for three species of terns Sterna.

This citation / map relates to a site entered in the Register of European sites for Great Britain.
Register reference number UK 00 11 01
Date of registration 30 JAN 1996
Signed [redacted]
on behalf of the Secretary of State for the Environment

32. Chichester and Langstone Harbours

Geographical Coordinates 50°50'N 1°00'W **Area** 5,749ha

Location On the eastern side of the city of Portsmouth, in the counties of Hampshire and West Sussex, southern England.

Date of Ramsar Designation 28 October 1987.

Other International Designations Special Protection Area under EC Directive 79/409.

National Designations Site of Special Scientific Interest (SSSI); Area of Outstanding Natural Beauty (AONB)[P]; Local Nature Reserve[P] (LNR).

Principal Features Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes extensive intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes. The mudflats support beds of *Zostera* and *Enteromorpha*, whilst the lower saltmarsh is dominated by *Spartina anglica*, with a more varied community at higher levels. Although many areas bordering the site have been developed, some grassland and brackish/freshwater marshes with reedbeds remain. Peak counts of wintering water birds regularly exceed 20,000 individuals, including internationally important numbers[*] of *Branta bernicla bernicla* (Chichester 10,133; Langstone 7,333), *Charadrius hiaticula* (1,041; 459), *Pluvialis squatarola* (2,803; 1,373), *Calidris alpina* (19,847; 32,896), and *Limosa limosa* (694; 668). Several other species occur in nationally important numbers, notably *Tadorna tadorna* (Chichester 2,373) and *Tringa totanus* (Chichester 1,460). Breeding *Sterna albifrons* (154 pairs in 1990) and *S. hirundo* (143 pairs in 1990) are also of national importance. Parts of the site are managed as nature reserves by the Royal Society for the Protection of Birds, the Hampshire and Isle of Wight Naturalists' Trust, Chichester Harbour Conservancy and Hampshire County Council. (1a,2c,3a,3b,3c)

[*]All figures are average peak counts for the five winters 1987/88 to 1991/92.

Conservation Issues The 1990 UK National report provided information concerning recreational disturbance and pollution from sewage effluent. However, measures aimed at improving the site's water quality are under way; one major source of untreated sewage effluent has already been removed through the construction of a new off-shore outfall. English Nature and Chichester Harbour Conservancy are working together to prepare an eatuary management plan which will address remaining water quality issues, together with recreational disturbance problems. Langstone Harbour is subject to dredging for oysters and clams. The alien seaweed *Sargassum muticum* has colonised both harbours. It is thought that the species spread to southern England from France, following accidental introduction with Pacific oysters *Crassostrea gigas*.

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:

Designated: 28 October 1987

3. Country:

UK (England)

4. Name of the Ramsar site:

Chichester and Langstone Harbours

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* □;
ii**) an electronic format** (e.g. a JPEG or ArcView image) Yes
iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ✓ -or- *no* □;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

50 48 23 N 00 55 12 W

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Portsmouth

The site lies on the central south coast of mainland England, approximately 1 km east of Portsmouth.

Administrative region: Hampshire; West Sussex

10. Elevation (average and/or max. & min.) (metres): 11. Area (hectares): 5810.03

Min. -2
Max. 4
Mean 0

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive mud and sand flats exposed at low tide. The site is of particular significance for over-wintering wildfowl and waders and also a wide range of coastal and transitional habitats supporting important plant and animal communities.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 5, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:
76480 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

Species with peak counts in spring/autumn:

Ringed plover , *Charadrius hiaticula*, Europe/Northwest Africa	853 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)
Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	906 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3)
Common redshank , *Tringa totanus totanus*,	2577 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Dark-bellied brent goose, *Branta bernicla bernicla*,	12987 individuals, representing an average of 6% of the population (5 year peak mean 1998/9-2002/3)
Common shelduck , *Tadorna tadorna*, NW Europe	1468 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)
Grey plover , *Pluvialis squatarola*, E Atlantic/W Africa -wintering	3043 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3)
Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	33436 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3)

Species/populations identified subsequent to designation for possible future consideration under criterion 6.

Species regularly supported during the breeding season:

Little tern , *Sterna albifrons albifrons*, W Europe	130 apparently occupied nests, representing an average of 1.1% of the breeding population (Seabird 2000 Census)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.
Details of bird species occuring at levels of National importance are given in Section 22

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	neutral, shingle, sand, mud, alluvium, nutrient-rich, sedimentary, clay, gravel
Geomorphology and landscape	lowland, coastal, floodplain, shingle bar, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), enclosed coast (including embayment), estuary, islands, lagoon, pools
Nutrient status	eutrophic, mesotrophic
pH	circumneutral
Salinity	brackish / mixosaline, saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Bognor Regis, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/bognor_regis.html) Max. daily temperature: 13.7° C Min. daily temperature: 7.7° C Days of air frost: 24.0 Rainfall: 717.4 mm Hrs. of sunshine: 1902.9

General description of the Physical Features:

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive sand- and mud-flats exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland. The basin contains a wide range of coastal habitats.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive sand- and mud-flats exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Shoreline stabilisation and dissipation of erosive forces, Sediment trapping, Maintenance of water quality (removal of nutrients)

19. Wetland types:

Marine/coastal wetland

Code	Name	% Area
G	Tidal flats	46
H	Salt marshes	21.4
Other	Other	14.3
F	Estuarine waters	14.1
B	Marine beds (e.g. sea grass beds)	1.7
Ts	Freshwater marshes / pools: seasonal / intermittent	0.9
E	Sand / shingle shores (including dune systems)	0.8
Tp	Freshwater marshes / pools: permanent	0.4
Sp	Saline / brackish marshes: permanent	0.3
W	Shrub-dominated wetlands	0.07
M	Rivers / streams / creeks: permanent	0.02
J	Coastal brackish / saline lagoons	0.01

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The site comprises two large, interconnected sheltered estuarine basins providing extensive intertidal mud and sand flats with eelgrass *Zostera* spp. beds, large areas of mixed saltmarsh and extensive cord-grass *Spartina* spp. swards in an advanced state of degeneration. Fringing habitats include shingle spits, saline, brackish and freshwater lagoons, coastal grazing marsh and deciduous woodland. The site supports important overwintering populations of migratory waterfowl.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site.

Higher plants.

Polypogon monspeliensis, Zostera angustifolia, Zostera marina, Zostera noltei

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species regularly supported during the breeding season:

Mediterranean gull , *Larus melanocephalus*, Europe	47 apparently occupied nests, representing an average of 43.5% of the GB population (Seabird 2000 Census)
Black-headed gull , *Larus ridibundus*, N & C Europe	3180 apparently occupied nests, representing an average of 2.4% of the GB population (Seabird 2000 Census)

Common tern , *Sterna hirundo hirundo*, N & E Europe	127 apparently occupied nests, representing an average of 1.2% of the GB population (Seabird 2000 Census)
Species with peak counts in spring/autumn:	
Little egret , *Egretta garzetta*, West Mediterranean	224 individuals, representing an average of 13.5% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian oystercatcher , *Haematopus ostralegus ostralegus*, Europe & NW Africa -wintering	3403 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Whimbrel , *Numenius phaeopus*, Europe/Western Africa	192 individuals, representing an average of 6.4% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak)
Eurasian curlew , *Numenius arquata arquata*, N. a. arquata Europe (breeding)	3108 individuals, representing an average of 2.1% of the GB population (5 year peak mean 1998/9-2002/3)
Spotted redshank , *Tringa erythropus*, Europe/W Africa	6 individuals, representing an average of 4.4% of the GB population (5 year peak mean 1998/9-2002/3)
Common greenshank , *Tringa nebularia*, Europe/W Africa	215 individuals, representing an average of 36% of the GB population (5 year peak mean 1998/9-2002/3)
Ruddy turnstone , *Arenaria interpres interpres*, NE Canada, Greenland/W Europe & NW Africa	569 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Species with peak counts in winter:	
Little grebe , *Tachybaptus ruficollis ruficollis*, Europe to E Urals, NW Africa	131 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)
Black-necked grebe , *Podiceps nigricollis nigricollis*, Europe, N Africa	14 individuals, representing an average of 11.6% of the GB population (5 year peak mean 1998/9-2002/3)
Great bittern , *Botaurus stellaris stellaris*, W Europe, NW Africa	1 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian teal , *Anas crecca*, NW Europe	2226 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Red-breasted merganser , *Mergus serrator*, NW & C Europe	306 individuals, representing an average of 3.1% of the GB population (5 year peak mean 1998/9-2002/3)
Water rail , *Rallus aquaticus*, Europe	12 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9-2002/3)
Bar-tailed godwit , *Limosa lapponica lapponica*, W Palearctic	1189 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

17 British Red Data Book species and 84 nationally scarce species have been recorded from Chichester and Langstone Harbours Ramsar site.

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Aquatic vegetation (e.g. reeds, willows, seaweed)
Archaeological/historical site
Environmental education/ interpretation
Fisheries production
Livestock grazing
Non-consumptive recreation
Scientific research
Sport fishing
Sport hunting
Subsistence fishing
Tourism
Traditional cultural
Transportation/navigation

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Local authority, municipality etc.	+	+
National/Crown Estate	+	+
Private	+	+
Public/communal	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	

Cutting of vegetation (small-scale/subsistence)		+
Fishing: commercial	+	+
Fishing: recreational/sport	+	+
Marine/saltwater aquaculture	+	
Gathering of shellfish	+	
Bait collection	+	
Arable agriculture (unspecified)		+
Permanent arable agriculture		+
Livestock watering hole/pond	+	
Permanent pastoral agriculture	+	
Hay meadows	+	+
Hunting: recreational/sport	+	+
Industry	+	+
Sewage treatment/disposal	+	+
Harbour/port	+	+
Flood control	+	+
Irrigation (incl. agricultural water supply)		+
Mineral exploration (excl. hydrocarbons)		+
Transport route	+	+
Domestic water supply		+
Urban development		+
Non-urbanised settlements	+	+
Military activities	+	+
Horticulture (incl. market gardening)		+

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Erosion	2		+		+
Eutrophication	1		+		+
Pollution – domestic sewage	1			+	

For category 2 factors only.
What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Erosion - Coastal Defence Strategies, regulation of private coastal defences, shoreline management plans are in place or are being developed.
Some larger-scale saltmarsh re-creation projects, beneficial usage of maintenance dredgings and managed realignment scheme to offset losses to coastal squeeze have been proposed. CHaMPs identify potential areas suitable for managed realignment.

Is the site subject to adverse ecological change? YES

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	+
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	+
Site management statement/plan implemented	+	
Area of Outstanding National Beauty (AONB)	+	+
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:
The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Contemporary.

Fauna.
Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
Bird Ringing by Solent Shorebirds Study Group.

Environment.
Coastal Sediment (SCOPAC)
Water Quality/Eutrophication (EA/Southern Water).
Various research and educational establishments carry out ongoing research into a number of different aspects of the environment.

Flora.
Spartina survey (EN project).

Completed.

Environment.
Extensive research and survey into:
Tidal regimes.
Proposed:
Intertidal Habitat Monitoring (EN/EA project).
Sediment movement.

Flora and Fauna.
The distribution of all major plant and animal groups/communities.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Interpretation facilities and interpretative panels exist at strategic locations on the Harbour footpaths; all nature reserve areas are covered by warden and ranger services with an educational remit. An Education Officer is employed by the Chichester Harbour Conservancy to instruct both school parties and adults in the cultural and nature conservation aspects of the harbour.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.
Walking, including dog walking: all year.

Birdwatching: all year.

Angling and bait-digging: all year.

Swimming (in restricted areas) - mostly summer.

Sailing, windsurfing, canoeing, waterskiing.

Sept-Feb wildfowling.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP & Davidson, NC (eds.) (1998) *Coasts and seas of the United Kingdom. Region 9 Southern England: Hayling Island to Lyme Regis.* Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)

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Bratton, JH (ed.) (1991) *British Red Data Books: 3. Invertebrates other than insects*. Joint Nature Conservation Committee, Peterborough

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Covey, R (1998) Chapter 7. Eastern Channel (Folkestone to Durlston Head) (MNCR Sector 7). In: *Benthic marine ecosystems of Great Britain and the north-east Atlantic*, ed. by K. Hiscock, 199-218. Joint Nature Conservation Committee, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)

Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge

Doody, JP, Johnston, C & Smith, B (1993) *Directory of the North Sea coastal margin*. Joint Nature Conservation Committee, Peterborough

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Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. www.wwt.org.uk/publications/default.asp?PubID=14

Ratcliffe, DA (ed.) (1977) *A Nature Conservation Review. The selection of biological sites of national importance to nature conservation in Britain*. Cambridge University Press (for the Natural Environment Research Council and the Nature Conservancy Council), Cambridge (2 vols.)

Sneddon, P & Randall, RE (1994) *Coastal vegetated shingle structures of Great Britain: Appendix 3. Shingle sites in England*. Joint Nature Conservation Committee, Peterborough

Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) www.jncc.gov.uk/UKSPA/default.htm

Tubbs, C (1991) The Solent: a changing wildlife heritage. Hampshire and Isle of Wight Wildlife Trust, RomseyTubbs, CR & Tubbs, JM (1980) Wader and shelduck feeding distribution in Langstone Harbour, Hampshire. *Bird Study*, **27**, 239-248

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone**: +41 22 999 0170** • Fax: **+41 22 999 0169** • email: **ramsar@ramsar.org**

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Solent Maritime
Unitary Authority/County:	City of Portsmouth, City of Southampton, Hampshire, Isle of Wight, West Sussex
SAC status:	Designated on 1 April 2005
Grid reference:	SU756003
SAC EU code:	UK0030059
Area (ha):	11325.09
Component SSSI:	Bouldnor and Hamstead Cliffs SSSI, Chichester Harbour SSSI, Eling and Bury Marshes SSSI, Hurst Castle and Lymington River Estuary SSSI, Hythe to Calshot Marshes SSSI, King's Quay Shore SSSI, Langstone Harbour SSSI, Lee-on-the-Solent to Itchen Estuary SSSI, Lincegrove and Hackett's Marshes SSSI, Lower Test Marshes SSSI, Medina Estuary SSSI, Newtown Harbour SSSI, North Solent SSSI, Thorness Bay SSSI, Upper Hamble Estuary and Woods SSSI, Yar Estuary SSSI

Site description:

The Solent encompasses a major estuarine system on the south coast of England with four coastal plain estuaries (Yar, Medina, King's Quay Shore, Hamble) and four bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, Chichester Harbour). The Solent and its inlets are unique in Britain and Europe for their hydrographic regime with its double tides, as well as for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, intertidal areas that support eelgrass *Zostera* spp., sand and shingle spits, and natural shoreline transitions. The mudflats range from low and variable salinity in the upper reaches of the estuaries to very sheltered almost fully marine muds in Chichester and Langstone Harbours. As well as occurring within the estuaries, mudflats and sandflats are found throughout the Solent and form the predominant intertidal substrates. Unusual features include the presence of very rare sponges in the Yar estuary and a sandy 'reef' of the polychaete *Sabellaria spinulosa* on the steep eastern side of the entrance to Chichester Harbour.

Shallow sediment communities (comprising the subtidal sandbanks feature) occur around the Solent, particularly in the large harbours. They are typically colonised by a burrowing fauna of worms, crustaceans, bivalve molluscs and echinoderms. Where coarse stable material is present, species attached to the surface may include foliose algae, hydroids, bryozoans and ascidians. Mixtures of sand and associated hard substrate can lead to the presence of very rich communities. Mobile fauna at the surface of the sandbanks may include shrimps, prosobranch molluscs, crabs and fish. Shallow sandy sediments may be important nursery areas for fish and feeding grounds for seabirds.

Pioneer saltmarsh vegetation colonises intertidal mud and sandflats in areas protected from strong wave action. This habitat is dominated by open stands of glasswort *Salicornia* spp. or annual sea-blite *Suaeda maritima*. It occurs within pioneer marsh communities along the lower marsh and at the lower limits of tidal inundation, as well as in small depressions or saltpans in the upper and middle saltmarsh, or in narrow strips running along the margins of

rivulets and creeks within the saltmarsh. This is one of only two sites where significant amounts of the native cordgrass species, small cord-grass *S. maritima* are found. It is also the only site for the naturalised North American species, smooth cord-grass *Spartina alterniflora* in the UK, and one of the few remaining sites for Townsend's cord-grass *S.* x *townsendii*. There are also extensive areas of common cord-grass *Spartina anglica* throughout the site. Thus all four cord-grass taxa occur here in close proximity.

The Solent contains the second-largest aggregation of Atlantic salt meadows in south and south-west England. The salt meadows are representative of the ungrazed type and support a range of communities dominated by sea-purslane *Atriplex portulacoides*, common sea-lavender *Limonium vulgare* and thrift *Armeria maritima*. In general, the salt meadow is somewhat less truncated by man-made features in the Solent than other parts of the south coast. In places such as Chichester Harbour it shows rare and unusual transitions to freshwater reedswamp and alluvial woodland as well as coastal grassland. Typical Atlantic salt meadow is still widespread in this site, despite a long history of colonisation by cord-grass *Spartina* spp.

Driftline habitats support a number of specialist plant species and can be found on a variety of coarse substrates across the Solent, including shingle beaches, shingle spits, shingle islands and chenier banks (formed by the deposition of broken shells by wave action on the saltmarsh edge). A transition is found in many areas from vegetated shingle to saltmarsh. Two important driftline communities can be identified. The first is dominated by spear-leaved orache *Atriplex prostrata* or grass-leaved orache *A. littoralis* on the seaward edge of the shingle. The second are sea sandwort *Honkenya peploides* – sea rocket *Cakile maritima* strandline communities with perennial associations of sea mayweed *Tripleurospermum maritimum*, curled dock *Rumex crispus*, sea beet *Beta vulgaris* ssp. *maritima*, sea campion *Silene uniflora* and yellow-horned poppy *Glaucium flavum*.

On more stable (typically landward) shingle or stony substrates, additional perennial species are found (these communities comprise the perennial vegetation of stony banks feature). There are at least four distinct community types present within the Solent including a specialised community characterised by hare's-foot clover *Trifolium arvense* occurring with lichens and mosses. Sites such as Calshot Spit and Chichester Harbour are important locations for this feature.

The site supports a number of coastal lagoons both on the Isle of Wight and along the Hampshire coast. This suite of lagoons provides examples of a variety of successional stages and salinity regimes including quite brackish conditions. Some of the lagoons support specialised invertebrates such as the nationally rare insensible shrimp *Gammarus insensibilis* occurring at Yar Bridge lagoon on the Isle of Wight.

The extensive sand dunes at East Head at the mouth of Chichester Harbour are dominated by marram grass *Ammophila arenaria*. There are also accreting sand dunes found at Pilsey Island in Chichester Harbour.

Desmoulin's whorl snail *Vertigo moulinsiana,* which is rare in Great Britain and usually occurs within base-rich wetlands where there are long established swamps, fens and marshes, is found in the reedbeds at the top of Fishbourne channel in Chichester Harbour.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Annual vegetation of drift lines
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Coastal lagoons*
- *Spartina* swards (*Spartinion maritimae*). (Cord-grass swards)
- Estuaries
- Mudflats and sandflats not covered by seawater at low tide. (Intertidal mudflats and sandflats)
- Perennial vegetation of stony banks. (Coastal shingle vegetation outside the reach of waves)
- *Salicornia* and other annuals colonising mud and sand. (Glasswort and other annuals colonising mud and sand)
- Sandbanks which are slightly covered by sea water all the time. (Subtidal sandbanks)
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes). (Shifting dunes with marram)

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Desmoulin's whorl snail *Vertigo moulinsiana*

Annex I priority habitats are denoted by an asterisk (*).

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0030059
Date of registration: 14 June 2005

[redacted]

On behalf of the Secretary of State for Environment, Food and Rural Affairs

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0030059**

SITENAME **Solent Maritime**

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- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0030059

1.3 Site name

Solent Maritime

1.4 First Compilation date	1.5 Update date
1998-10	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	1998-10
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-0.927777778	50.79638889

2.2 Area [ha]:

11243.12

2.3 Marine area [%]

91.9

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight
UKZZ	Extra-Regio
UKJ2	Surrey, East and West Sussex

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
1110			3597.8	0	M	C	C	C	C
1130			6633.44	0	G	A	B	B	B
1140			5059.4	0	G	A	C	B	C
1150	X		146.16	0	P	C	B	B	C
1210			112.43	0	P	C	A	B	C
1220			112.43	0	M	C	B	B	C
1310			123.67	0	P	B	B	B	C
1320									

			94.44	0	P	A	A	C	A
1330			2023.76	0	M	B	B	B	B
2120			112.43	0	M	C	B	B	C
2130	X		112.43	0	M	D			

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
M	1355	Lutra lutra			p				P	DD	D			
M	1365	Phoca vitulina			p				P	DD	D			
I	1016	Vertigo moulinsiana			p				R	DD	B	B	B	C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N16	0.5
N03	23.0
N05	3.0

N04	0.5
N01	14.0
N02	59.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: shingle,sedimentary,sand,alluvium,mud,neutral,nutrient-rich,clay 2 Terrestrial: Geomorphology and landscape: island,lowland,coastal 3 Marine: Geology: sand,clay,sedimentary,gravel,mud,limestone/chalk,shingle,sandstone/mudstone 4 Marine: Geomorphology: open coast (including bay),estuary,enclosed coast (including embayment),shingle bar,subtidal sediments (including sandbank/mudbank),intertidal sediments (including sandflat/mudflat),islands,lagoon

4.2 Quality and importance

Sandbanks which are slightly covered by sea water all the time for which the area is considered to support a significant presence. Estuaries for which this is considered to be one of the best areas in the United Kingdom. Mudflats and sandflats not covered by seawater at low tide for which the area is considered to support a significant presence. Coastal lagoons for which the area is considered to support a significant presence. Annual vegetation of drift lines for which the area is considered to support a significant presence. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares. Perennial vegetation of stony banks for which the area is considered to support a significant presence. Salicornia and other annuals colonising mud and sand for which the area is considered to support a significant presence. Spartina swards (Spartinion maritimae) for which this is one of only two known outstanding localities in the United Kingdom. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares. Atlantic salt meadows (Glauco-Puccinellietalia maritimae) for which this is considered to be one of the best areas in the United Kingdom. Shifting dunes along the shoreline with Ammophila arenaria (?white dunes?) for which the area is considered to support a significant presence. Vertigo moulinsiana for which the area is considered to support a significant presence.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts

Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	H02		B
H	G01		I
H	M02		B
H	F02		I
H	M01		B

Positive Impacts

Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A03		I
H	A02		I
H	A04		I
H	D05		I
H	D05		I
H	B02		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324

http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK00	28.6	UK01	4.5	UK04	71.4

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

EC Directive 79/409 on the Conservation of Wild Birds Special Protection Area

Portsmouth Harbour, Hampshire

Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. The Wallington River flows into the north-west of the estuary and gives rise to Fareham Creek, the most notable channel. Together with the adjacent Langstone and Chichester Harbours, Portsmouth Harbour forms an unusual intertidal ecosystem receiving comparatively little fresh water and possessing a characteristic hydrology arising from only narrow connections to the sea via the Solent.

Portsmouth Harbour is adjacent to the existing Chichester and Langstone Harbours Special Protection Area. The boundary of Portsmouth Harbour proposed Special Protection Area follows the seaward side of Burrow Island, Foxbury Point, Portchester, Horsea Island and Whale Island ending to the south of the latter. The seaward boundary is the Mean Low Water Mark. It also incorporates several inlets including Gosport and Paulsgrove.

Portsmouth Harbour qualifies under Article 4.2 of the Birds Directive by supporting internationally or nationally important wintering populations of the following species of migratory waterfowl (average peak counts for the five year period 1986/87 to 1990/91): 2,290 dark-bellied brent geese *Branta bernicla bernicla* (1.3% of the north-west European population and 2.5% of the British wintering population), 100 red-breasted merganser *Mergus serrator* (1% of British), 70 black-tailed godwit *Limosa limosa* (over 1% of British)and 8,010 dunlin *Calidris alpina* (over 1% of British).

SPA Citation
DMC August 1992

This citation / map relates to a site entered in the Register of European sites for Great Britain.
Register reference number UK0011057
Date [redacted]
Signe[redacted]
on behalf of the Secretary of State for the Environment

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK9011051**

SITENAME **Portsmouth Harbour**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
A	UK9011051

1.3 Site name

Portsmouth Harbour

1.4 First Compilation date	1.5 Update date
1995-02	2015-12

1.6 Respondent:

Name/Organisation:	Joint Nature Conservation Committee
Address:	Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:	

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1995-02
National legal reference of SPA designation	Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010, (http://www.legislation.gov.uk/uksi/2010/490/contents/made) as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011 (http://www.legislation.gov.uk/uksi/2011/625/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-1.125555556	50.82805556

2.2 Area [ha]:

1249.6

2.3 Marine area [%]

98.4

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A675	Branta bernicla bernicla			w	2847	2847	i		G	B		C	
B	A672	Calidris alpina alpina			w	5123	5123	i		G	C		C	
B	A616	Limosa limosa islandica			w	31	31	i		G	C		C	
B	A069	Mergus serrator			w	87	87	i		G	C		C	

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are

deficient (DD) or in addition to population size information

- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N10	1.0
N03	14.0
N02	85.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: nutrient-rich,mud,neutral,sedimentary,alluvium,acidic 2 Terrestrial: Geomorphology and landscape: lowland,coastal 3 Marine: Geology: sedimentary,mud,gravel 4 Marine: Geomorphology: estuary,enclosed coast (including embayment),intertidal sediments (including sandflat/mudflat),islands,subtidal sediments (including sandbank/mudbank),lagoon

4.2 Quality and importance

ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: Branta bernicla bernicla (Western Siberia/Western Europe) 0.9% of the population 5 year peak mean 1991/92-1995/96 Calidris alpina alpina (Northern Siberia/Europe/Western Africa) 1% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Limosa limosa islandica (Iceland - breeding) 0.4% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Mergus serrator (North-western/Central Europe) 0.9% of the population in Great Britain 5 year peak mean 1991/92-1995/96

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	F02		I
H	H02		B
H	M01		B
H	G01		I
H	M02		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

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5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

☐	Yes
☐	No, but in preparation
X	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

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2250	Coastal dunes with Juniperus spp.	57
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4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

84. Portsmouth Harbour

Geographical Coordinates:	50°50'N 1°07'W	**Area:**	1,248ha

Location: Between the city of Portsmouth and the town of Gosport, in the county of Hampshire, on the coast of central southern England. Immediately east of Chichester and Langstone Harbours Ramsar site.

Date of Ramsar Designation: 28 February 1995

Other International Designations: European Union Special Protection Area

National Designations: Site of special scientific interest

Principal Features: Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. The Wallington River flows into the northwest estuary and gives rise to Fareham Creek, the most notable channel. Together with the adjacent Langstone and Chichester Harbours Ramsar site, Portsmouth Harbour forms an unusual intertidal ecosystem receiving comparatively little freshwater and possessing a characteristic hydrology arising from only narrow connections to the sea via the Solent. This is a very productive ecosystem with an invertebrate flora similar to Langstone and Chichester Harbours and a high density of benthic species including the mud snail *Hydrobia ulvae*. The mudflats support large beds of eelgrass *Zostera angustifolia* and *Z. noltii* and large numbers of phytoplankton. The saltmarshes contain *Spartina* with a sea couch *Elymus pycnanthus* zone above the high water mark. The channel is a nursery for sea bass *Dicentrarchus labrax*. The estuary regularly supports an internationally important wintering population of *Branta bernicla bernicla*. In the five winter period 1986/87-1990/91, an average peak count of over 2,290 birds was recorded. The area also supports nationally important numbers of the following species (figures given are average peak counts for the five year winter period between 1986/87 - 1990/91): *Calidris alpina* (8,010), *Limosa limosa* (70) and *Mergus serrator* (100). (Criteria 2b,3c).

Conservation Issues: Land uses at the site include habitat/nature conservation and harbour use. There is a proposal for the development of 800 residential units at Priddy's Hard, immediately adjacent to an area of inter-tidal mudflats that has been proposed as an extension to the existing Portsmouth Harbour SSSI. The environmental effects of this proposal will be fully assessed before a decision is reached. A study is in preparation for a shoreline management plan.

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:

Designated: 28 February 1995

3. Country:

UK (England)

4. Name of the Ramsar site:

Portsmouth Harbour

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* □;
ii**) an electronic format** (e.g. a JPEG or ArcView image) Yes
iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ✓ -or- *no* □;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

50 49 41 N 01 07 32 W

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Portsmouth

Portsmouth Harbour lies on the central south coast of mainland England, to the west of Portsmouth City.

Administrative region: Hampshire

10. Elevation (average and/or max. & min.) (metres): 11. Area (hectares): 1248.77

Min. -1
Max. 1
Mean 0

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. The mudflats support large beds of narrow-leaved and dwarf eelgrass, extensive green alga and sea lettuce. The harbour has only a narrow connection to the sea via the Solent, and receives comparatively little freshwater, thus giving it an unusual hydrology. The site supports internationally important numbers of wintering dark-bellied brent geese and nationally important numbers of grey plover, dunlin and black-tailed godwit.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

3, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 3

The intertidal mudflat areas possess extensive beds of eelgrass *Zostera angustifolia* and *Zostera noltei* which support the grazing dark-bellied brent geese populations. The mud-snail *Hydrobia ulvae* is

found at extremely high densities, which helps to support the wading bird interest of the site. Common cord-grass *Spartina anglica* dominates large areas of the saltmarsh and there are also extensive areas of green algae *Enteromorpha* spp. and sea lettuce *Ulva lactuca*. More locally the saltmarsh is dominated by sea purslane *Halimione portulacoides* which gradates to more varied communities at the higher shore levels. The site also includes a number of saline lagoons hosting nationally important species.

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

Species with peak counts in winter:

Dark-bellied brent goose, *Branta bernicla bernicla*,	2105 individuals, representing an average of 2.1% of the GB population (5 year peak mean 1998/9-2002/3)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.

See Sections 21/22 for details of noteworthy species

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15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

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16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	acidic, neutral, mud, alluvium, nutrient-rich, sedimentary, gravel
Geomorphology and landscape	lowland, island, coastal, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), enclosed coast (including embayment), estuary, islands, lagoon
Nutrient status	eutrophic, mesotrophic
pH	circumneutral
Salinity	saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent

Summary of main climatic features	Annual averages (Bognor Regis, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/bognor_regis.html) Max. daily temperature: 13.7° C Min. daily temperature: 7.7° C Days of air frost: 24.0 Rainfall: 717.4 mm Hrs. of sunshine: 1902.9

General description of the Physical Features:

Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. Portsmouth Harbour has only a narrow connection to the sea via the Solent, and receives comparatively little fresh water, thus giving it an unusual hydrology.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. Portsmouth Harbour has only a narrow connection to the sea via the Solent, and receives comparatively little fresh water, thus giving it an unusual hydrology.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Shoreline stabilisation and dissipation of erosive forces

19. Wetland types:

Marine/coastal wetland

Code	Name	% Area
G	Tidal flats	59.3
F	Estuarine waters	21.2
H	Salt marshes	14
B	Marine beds (e.g. sea grass beds)	4.8
Other	Other	0.3
J	Coastal brackish / saline lagoons	0.3
E	Sand / shingle shores (including dune systems)	0.08

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

Portsmouth Harbour comprises a large, sheltered estuarine basins supporting extensive intertidal mudflats with *Zostera* beds and significant areas of mainly *Spartina* saltmarsh. The site also includes small, isolated shingle islands supporting scrub and broad-leaved woodland and two saline lagoon habitats. The site supports important overwintering populations of migratory waterfowl. A number of off-site areas of grassland are particularly important feeding sites for overwintering dark-bellied brent geese and as roosting areas for waders.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site.

Higher Plants.

Zostera noltei, Zostera angustifolia, Zostera marina, Inula crithmoides

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species with peak counts in spring/autumn:

Little egret , *Egretta garzetta*, West Mediterranean	47 individuals, representing an average of 2.8% of the GB population (5 year peak mean 1998/9-2002/3)
Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	343 individuals, representing an average of 2.2% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Nationally important species occurring on the site:
Lagoon sand shrimp *Gammarus insensibilis* (nationally scarce)
Starlet sea anemone *Nematostella vectensis* (RDB vulnerable)

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Archaeological/historical site
Environmental education/ interpretation
Fisheries production
Non-consumptive recreation
Scientific research
Sport fishing
Subsistence fishing
Tourism
Traditional cultural
Transportation/navigation

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Local authority, municipality etc.	+	+
National/Crown Estate	+	
Private	+	+
Public/communal		+
Other	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	
Fishing: (unspecified)	+	+
Fishing: commercial	+	+
Fishing: recreational/sport	+	+
Gathering of shellfish	+	
Bait collection	+	
Industry	+	+
Sewage treatment/disposal	+	+
Harbour/port	+	+
Flood control	+	
Mineral exploration (excl. hydrocarbons)		+
Oil/gas exploration		+
Transport route	+	+
Urban development	+	+
Military activities	+	+

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Eutrophication	1		+		+
Unspecified development: urban use	1	Disturbance and land-take pressures (on and off-site) from urban and industrial development.	+	+	
Coastal engineering, e.g. construction of sea defences for coastal protection	2	Coastal squeeze arising from coastal defences	+		+

For category 2 factors only.
What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Coastal engineering, e.g. construction of sea defences for coastal protection - Shoreline management plan should identify areas to offset losses from coastal squeeze when in place.

Is the site subject to adverse ecological change? YES

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	+
Management agreement	+	
Site management statement/plan implemented	+	

b) Describe any other current management practices:

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Contemporary.

Fauna.
Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
Bird Ringing by Solent Shorebirds Study Group.

Environment.
Coastal Sediment (SCOPAC)
Various research and educational establishments carry out ongoing research into a number of different aspects of the environment.
Proposed:
Intertidal Habitat Monitoring (EN/EA project)I

Completed.

Fauna.
Benthic surveys of Haslar, Forton & Tipner Lakes
Lagoon survey - Cockle Pond, Alver Lake
Site-specific Environmental Assessments eg Priddys Hard, Cold Harbour, Tipner, Continental Ferry Port.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Little at present, however there is scope for interpretation through implementation of the Harbour Plan, and Gosport and Portsmouth Millennium projects.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.
Land-based recreation:

Walking including dog-walking - All year.

Bait-digging - All year - mainly winter

Birdwatching - Autumn-Spring.

Water-based recreation:

Sailing, power-boating, windsurfing, canoeing - Mainly Spring-Autumn

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP & Davidson, NC (eds.) (1998) *Coasts and seas of the United Kingdom. Region 9 Southern England: Hayling Island to Lyme Regis*. Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)

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Clark, M & Gurnell, A (1987) *The Solent estuary: environmental background*. Southampton University, GeoData Unit, Southampton

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Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge

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Fowler, SL (1995) *Review of nature conservation features and information within the Solent & Isle of Wight Sensitive Marine Area*. Report to the Solent Forum Strategic Guidance Subgroup [Includes extensive bibliography]

Musgrove, AJ, Langston, RHW, Baker, H & Ward, RM (eds.) (2003) *Estuarine waterbirds at low tide. The WeBS Low Tide Counts 1992–93 to 1998–99*. WSG/BTO/WWT/RSPB/JNCC, Thetford (International Wader Studies, No. 16)

Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. www.wwt.org.uk/publications/default.asp?PubID=14

Nicholas Pearson Associates (1996) *Portsmouth Harbour Plan Review: draft for working group. July 1996*. Centre for Coastal Zone Management, University of Portsmouth

Sneddon, P & Randall, RE (1994) *Coastal vegetated shingle structures of Great Britain: Appendix 3. Shingle sites in England*. Joint Nature Conservation Committee, Peterborough

Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) www.jncc.gov.uk/UKSPA/default.htm

Tubbs, C (1991) The Solent: a changing wildlife heritage. Hampshire and Isle of Wight Wildlife Trust, Romsey

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**

Telephone**: +41 22 999 0170** • Fax: **+41 22 999 0169** • email: **ramsar@ramsar.org**

Solent and Dorset Coast Site Citation

EC Directive 79/409 on the Conservation of Wild Birds

Special Protection Area (SPA)

Name: *Solent and Dorset Coast Special Protection Area*

Counties/Unitary Authorities:

The SPA lies entirely in UK territorial waters adjacent to the following counties / unitary authorities:

Dorset County Council, Purbeck District Council, Poole Borough Council, Christchurch Borough Council, Bournemouth Borough Council, New Forest District Council, Hampshire Country Council, Southampton City Council, Portsmouth City Council, Isle of Wight Council, Arun District Council, West Sussex Country Council, Gosport Borough Council, Fareham Borough Council, Havant Borough Council, Chichester District Council, Gosport Borough Council, Eastleigh Borough Council

Boundary of the SPA:

The landward boundary is located on the coasts of Dorset, Hampshire, Isle of Wight and West Sussex. The westernmost extremity of the boundary is at Worbarrow Bay in Dorset and the easternmost extremity of the boundary lies approximately 88km to the east at Bognor Regis in West Sussex. The westernmost extremity is determined by the modelled usage of Sandwich terns foraging from the Poole Harbour SPA, whereas the easternmost extremity is determined by the modelled usage of Sandwich terns foraging from Chichester & Langstone Harbours SPA.

The SPA wholly occupies The Solent with its seaward extent boundary beyond The Solent consisting, for simplicity, of angled straight lines. The seaward boundary consists broadly of three arcs running west to east. The furthermost extremes of these arcs lie at approximately 5km, 12km and 12km from the nearest points of the mainland shore and are determined by the modelled usage of Sandwich terns foraging from Poole Harbour SPA, Solent and Southampton Water SPA and Chichester & Langstone Harbour SPA.

Size of SPA:

The SPA covers an area of 88,980.55 ha.

Site description:

The Solent and Dorset Coast SPA is located along the coasts of Dorset, Hampshire, Isle of Wight and West Sussex and adjacent areas offshore. It overlaps, abuts and is close to many designated areas, summarised below. At its western point, South Dorset Coast SSSI, Townsend SSSI, Purbeck Ridge (West & East) SSSI, Studland Cliffs SSSI, Studland & Godlingson SSSI, Poole Bay Cliffs SSSI and Boscombe & Southbourne Overcliff LNR, Bournemouth fall just outside the SPA boundary and have no tern interest. A cluster of adjacent, overlapping and underpinning designations exist at Christchurch Harbour, Hengistbury Head and adjacent undeveloped land, which is surrounded by the Bournemouth and Christchurch sprawling conurbation on one side and open sea on the other. These designations include Dorset Heathlands SPA, Dorset Heaths SAC, Christchurch Harbour SSSI, Hengistbury Head LNR and Stanpit Marsh LNR, and are fed by the narrow Avon Valley (Bickton to Christchurch) Ramsar and SSSI, and River Avon System AONB and SSSI. The SPA boundary extends to Mean High Water and so is underpinned by Christchurch Harbour SSSI. Its citation describes, “The site comprises the drowned estuary of the rivers Stour and Avon and the peninsula of Hengistbury Head. The varied habitats include saltmarsh, wet meadows, drier grassland, heath, sand dune, woodland and scrub and the site is of great ornithological interest.” Terns are not mentioned on the citation but, “Sandwich, common and little terns all occur in the harbour and have tried to nest in the past but they face a lot of pressure from predators, disturbance and tides and sadly have not been successful.” (Chichester Harbour Ornithological Group, 2007). Along 9km of coastline, from Christchurch in Dorset to Milford on Sea in Hampshire, the cliffs and intertidal zone are designated Highcliffe to Milford Cliffs gSSSI, which underpin the SPA.

Along the northwest coast of The Solent, the Solent and Southampton Water SPA and Ramsar overlaps with Solent Maritime SAC and these are underpinned by the Hurst Castle and Lymington River Estuary SSSI. East from River Lymington, the intertidal saltmarsh is also designated Boldre Foreshore LNR. A series of intertidal SSSIs underpin the SPA and eastward are the North Solent SSSI (where also North Solent NNR), Dibden Bay SSSI, Hythe to Calshot Marshes SSSI, then east from Southampton is the Lee-on-Solent to Itchen Estuary SSSI (where also Hook and Warsash LNR), Titchfield Haven SSSI (also NNR and LNR) and Browndown SSSI near Gosport, Hampshire. Portsmouth Harbour SPA is underpinned by Portsmouth Harbour SSSI, where since the SPA will overlap this SPA, will itself become underpinned by this SSSI. Both estuaries of the Chichester and Langstone Harbours SPA are separately underpinned by SSSIs and Chichester Harbour is an AONB. Within or partly within this SPA’s boundary are Farlington Marshes LNR, West Hayling LNR, Hayling Billy LNR, Gutler Point LNR, The Kench, Hayling Island LNR, Sandy Point LNR, Earnes Farm LNR, Nutborne Marshes LNR, Pilsey Island LNR, The Solent Maritime SAC overlaps this SPA and further extends nearly 2km out from the south coast of Hayling Island.

Since the southwest headland and offshore sandbank of Hayling Island are designated Sinah Common SSSI and only abuts with the Solent Maritime SAC, the situation is thus

created wherein the intertidal part of this SSSI up to Mean High Water underpins the SPA, but not the SAC.

In West Sussex, the shoreline for approximately 8.2km from near West Wittering, southeast to Selsey is designated the Bracklesham Bay SSSI. Pagham Harbour SPA is underpinned by Pagham Harbour SSSI and abutting this along the intertidal zone for approximately 4km adjacent to Bognor Regis is the Bognor Reef SSSI. On the Isle of Wight, almost the entire coastal cliff-line and intertidal zone along the southwest side is designated SSSI, including Compton Chine to Steephill Cove SSSI, Compton Down SSSI and Headon Warren and West High Down SSSI, which occupies The Needles and west headland; all fall also within the Isle of Wight AONB. Colwell Bay SSSI occupies 1.7km of the northwest coastline. At Yarmouth is the Yar Estuary SSSI; either side and including Newtown is the Bouldnor and Hamstead Cliffs SSSI, Newtown Harbour SSSI (and NNR) and Thorness Bay SSSI. The entire northeast Isle of Wight coastline, around Foreland (east headland of Isle of Wight) and to Yaverland, near Sandown along the southeast coastline is all SSSI. Clockwise these are King's Quay Shore SSSI, Ryde Sands and Wootton Creek SSSI, Brading Marshes to St Helen's Ledges SSSI, Whitecliff Bay and Bembridge Ledges SSSI and Bembridge Down SSSI. Solent and Southampton Water SPA and Solent Maritime SAC also occupy intertidal and sub-tidal areas of the Isle of Wight. The South Wight Maritime SAC is relatively large, extending up to 4km out from the southwest coastline and out over 8km from the southeast coastline. Below Mean Low Water, these SACs are not underpinned by SSSIs. There are two Marine Conservation Zones that wholly lie within the SPA (The Needles MCZ; Yarmouth to Cowes MCZ) and one which partially lies within the site (Bembridge MCZ)

Qualifying species:

The site qualifies under **Article 4** of the Birds Directive (2009/147/EC) for the following reasons (summarised in Table 1):

- The site regularly supports more than 1% of the Great Britain breeding populations of three species listed in Annex I of the Birds Directive. Therefore, the site qualifies for SPA Classification in accordance with the UK SPA selection guidelines (stage 1.1).

Table 1 Summary of qualifying ornithological interest in Solent and Dorset Coast SPA

Species[1]	**Season**	**Count[2,3] (period)**	**% of GB breeding population[4]**
Sandwich tern *Sterna sandvicensis*	Breeding	441 pairs (882 breeding adults)[5] (2008 - 2014)	4.01%

Common tern *Sterna hirundo*	Breeding	492 pairs (984 breeding adults) (2009 - 2014)	4.77%
Little tern *Sternula albifrons*	Breeding	63 pairs (126 breeding adults) (2009 - 2014)	3.31%

[1] Species of terns that depend on the Solent and Dorset Coast SPA area of sea for foraging that derive from breeding colonies at the following existing SPAs: Poole Harbour SPA, Solent and Southampton Water SPA and Chichester & Langstone Harbours SPA.
[2] The SPA population is derived from the sum of the most recent populations of each species within the existing SPAs identified above. These totals exclude: i) numbers of any terns that may undertake foraging within Solent and Dorset Coast SPA, but derive from breeding colonies that are situated outside of existing SPAs; ii) numbers of any terns at existing SPAs which are not qualifying features of these sites and not currently present in numbers exceeding SPA selection criteria thresholds , iii) numbers of terns at existing SPAs which, although qualifying features of those sites, were not present at classification in numbers exceeding SPA selection criteria thresholds and/or are no longer present in such numbers, iv) numbers of terns at existing SPAs which, although qualifying features of those sites and present at classification in numbers exceeding SPA selection criteria thresholds are no longer present in such numbers at those particular sites and when summed across all source SPAs that might contribute to the numbers supported by the SPA.
[3] Sources of count data and recent mean figures for each contributing SPA are detailed elsewhere in this Department Brief.
[4] GB breeding populations taken to be that within Great Britain as presented in Musgrove *et al.* (2013).
[5] Pairs multiplied by 2 to arrive at breeding adult numbers; this rule applies to all species listed in the table

Principal bird data sources:

JNCC Seabird Monitoring Project and site managers from the National Trust, RSPB and Hampshire Country Council

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE	**UK9020330**
SITENAME	**Solent and Dorset Coast**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 6. SITE MANAGEMENT
- 7. MAP OF THE SITE

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
A	UK9020330

1.3 Site name

Solent and Dorset Coast

1.4 First Compilation date	1.5 Update date
2020-12	-

1.6 Respondent:

Name/Organisation:	Joint Nature Conservation Committee
Address:	Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:	

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2020-01
National legal reference of SPA designation	Regulations 15 and 17-19 of The Conservation of Habitats and Species Regulations 2017 (https://www.legislation.gov.uk/uksi/2017/1012/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude
-1.006389

Latitude
50.737222

2.2 Area [ha]:

88980.55

2.3 Marine area [%]

99.87

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight
UKJ2	Surrey, East and West Sussex
UKZZ	Extra-Regio
UKK2	Dorset and Somerset

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A195	Sterna albifrons			r	63	63	p		G	C	C		
B	A193	Sterna hirundo			r	492	492	p		G	C	C		
B	A191	Sterna sandvicensis			r	441	441	p		G	C	C		

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N03	0.01
N23	0.01
N02	0.02
N01	99.94
N05	0.02
Total Habitat Cover	100

Other Site Characteristics

4 Marine Geomorphology: Estuary, Intertidal sediments (including sandflat/mudflat), Subtidal sediments (including sandbank/mudbank).

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: Sterna sandvicensis - 4.01% of the GB breeding population (5 year mean 2010-2014, 441 pairs). Sterna hirundo - 4.77% of the GB breeding population (5 year mean 2009-2014, 492 pairs). Sterna albifrons - 3.31% of the GB breeding population (5 year mean 2009-2014, 63 pairs).

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	G04		i
L	C02		i
L	D03		i
L	E01	X	o
M	F02		i
H	G01		i
L	C03		i
L	E03	X	b

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

http://publications.naturalengland.org.uk/category/6490068894089216

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	IFCAs
Address:	
Email:	

Organisation:	Local Authorities
Address:	
Email:	

Organisation:	MMO
Address:	
Email:	

Organisation:	Natural England
Address:	
Email:	

Organisation:	Ports
Address:	
Email:	

Organisation:	Crown Estate
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

- [ ] Yes
- [X] No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

EC Directive 79/409 on the Conservation of Wild Birds: Special Protection Area (SPA)

Name: Solent and Southampton Water

Unitary Authority/County: Hampshire County Council, New Forest District Council, Test Valley Borough Council, Southampton City Council Unitary Authority, Eastleigh Borough Council, Fareham District Council and Isle of Wight Council Unitary Authority.

Consultation proposal: The Solent and Southampton Water SPA site comprises a series of estuaries and adjacent coastal habitats important for breeding gulls and terns and wintering waterfowl. The following SSSIs; Lymington River Reedbeds, Sowley Pond, Hythe to Calshot Marshes, Eling and Bury Marshes, Lower Test Valley, Lincegrove and Hacketts Marshes and Titchfield Haven, and parts of Yar Estuary, Hurst Castle and Lymington River Estuary, North Solent, Lee-on-Solent to Itchen Estuary, Upper Hamble Estuary and Woods, Newtown Harbour, Thorness Bay, Medina Estuary, King's Quay Shore, Ryde Sands and Wootton Creek, Brading Marshes to St Helen's Ledges, Whitecliff Bay and Bembridge Ledges have been recommended as a Special Protection Area because of their European ornithological importance.

Status: Classified 1 October 1998.

Boundary of SPA: SPA boundary is coincident with Lymington River Reedbeds SSSI, Sowley Pond SSSI, Hythe to Calshot Marshes SSSI and Titchfield Haven SSSI and includes parts of the other SSSI listed above. See map for clarification of the SPA boundary.

European ornithological importance of SPA

Solent and Southampton Water SPA is of European importance because:

a) The site qualifies under article 4.1 of the Birds Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain population of a species listed in Annex 1 in any season:

Annex 1 species	5 yr peak mean		Count years
Mediterranean Gull *Larus melanocephalus*	2 pairs	(8.2-13.9% GB)	1994-1998
Sandwich tern *Sterna sandvicensis*	231 pairs	(1.7 % GB)	1993-1997
Common tern *Sterna hirundo*	267 pairs	(2.2 % GB)	1993-1997
Little tern *Sterna albifrons*	49 pairs	(2 % GB)	1993-1997
Roseate tern *Sterna dougalli*	2 pairs	(3.1 % GB)	1993-1997

Bird Numbers from: JNCC Seabird Colony Register

b) The site qualifies under article 4.2 of the Birds Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographic population of a regularly occurring migratory species (other than those listed in Annex 1) in any season.

Non- Annex 1 migratory bird species	5 yr peak mean from -1992/93-1996/97	
Dark- bellied brent geese *Branta bernicla bernicla*	7506[1]	(2.5% W Siberia/W Europe)
Teal *Anas crecca*	4,400[1]	(1.1% NW Europe)
Ringed plover *Charadrius hiaticula*	552[1]	(1.1% Europe/NW Africa)
Black-tailed godwit *Limosa limosa*	1125[1]	(1.6 % Iceland)

Bird Numbers from: WeBS Wildfowl & Waders database

Unit of population size: I- individual birds wintering

c) The site is used regularly by over 20,000 waterfowl (waterfowl as defined by the Ramsar Convention) or 20,000 seabirds in any season.

5 yr peak mean from 1992/93- 1996/97	
51,361[1]	(21,401 wildfowl 29,960 waders)

Unit of population size: I- individual birds wintering

Additional non-qualifying interest

An outstanding assemblage of wintering and passage birds are dependent on wetland habitats within the site, including the following Annex 1 species not mentioned previously: red-throated diver *Gavia stellata*, black-throated diver *G. arctica*, great northern diver *G. immer*, Slavonian grebe *Podiceps auritus*, little egret *Egretta garzetta*, hen harrier *Circus cyaneus*, marsh harrier *Circus aeruginosus*, merlin *Falco columbarius*, peregrine *Falco peregrinus* and short-eared owl *Asio flammeus*.

This citation / map relates to a site entered in the Register of European sites for Great Britain.
Register reference number UK9010051

[redacted]

On behalf of the Secretary of State for the Environment

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK9011061**

SITENAME **Solent and Southampton Water**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
A	UK9011061

1.3 Site name

Solent and Southampton Water

1.4 First Compilation date	1.5 Update date
1998-10	2015-12

1.6 Respondent:

Name/Organisation:	Joint Nature Conservation Committee
Address:	Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:	

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1998-10
National legal reference of SPA designation	Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010, (http://www.legislation.gov.uk/uksi/2010/490/contents/made) as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011 (http://www.legislation.gov.uk/uksi/2011/625/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-1.525833333	50.74027778

2.2 Area [ha]:

5401.12

2.3 Marine area [%]

59.3

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo
B	A052	Anas crecca			w	4400	4400	i		G	B		C	
B	A675	Branta bernicla bernicla			w	7506	7506	i		G	B		C	
B	A137	Charadrius hiaticula			w	552	552	i		G	C		C	
B	A176	Larus melanocephalus			r	2	2	p		G	A		C	
B	A616	Limosa limosa islandica			w	1125	1125	i		G	A		C	
B	A195	Sterna albifrons			r	49	49	p		G	B		C	
B	A192	Sterna dougallii			r	2	2	p		G	B		A	
B	A193	Sterna hirundo			r	267	267	p		G	B		C	
B	A191	Sterna sandvicensis			r	231	231	p		G	C		C	

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public

access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C|R|V|P	IV	V	A	B	C	D
B	WATR	Waterbird assemblage			51361	51361	i						X	

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see reference portal)
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories: IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N05	10.2
N16	0.6
N03	18.2
N07	3.4
N04	2.8
N10	17.1
N02	47.7
Total Habitat Cover	100.00000000000001

Other Site Characteristics

1 Terrestrial: Soil & Geology: mud,acidic,alluvium,sedimentary,neutral 2 Terrestrial: Geomorphology and landscape: floodplain,coastal,lowland 3 Marine: Geology: sand,gravel,sedimentary,shingle 4 Marine: Geomorphology: open coast (including bay),lagoon,estuary,intertidal rock,enclosed coast (including

embayment),shingle bar,islands,intertidal sediments (including sandflat/mudflat) Ramsar Wetland Types: Marine and coastal wetlands

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: Larus melanocephalus 15.4% of the GB breeding population 5 year peak mean, 1994-1998 Sterna albifrons (Eastern Atlantic - breeding) 2% of the GB breeding population 5 year peak mean, 1993-1997 Sterna dougallii (Europe - breeding) 3.1% of the GB breeding population 5 year peak mean, 1993-1997 Sterna hirundo (Northern/Eastern Europe - breeding) 2.2% of the GB breeding population 5 year peak mean, 1993-1997 Sterna sandvicensis (Western Europe/Western Africa) 1.7% of the GB breeding population 5 year peak mean, 1993-1997 ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: Anas crecca (North-western Europe) 1.1% of the population 5 year peak mean, 1992/3-1996/7 Branta bernicla bernicla (Western Siberia/Western Europe) 2.5% of the population 5 year peak mean, 1992/3-1996/7 Charadrius hiaticula (Europe/Northern Africa - wintering) 1.2% of the population 5 year peak mean, 1992/3-1996/7 Limosa limosa islandica (Iceland - breeding) 1.7% of the population 5 year peak mean, 1992/3-1996/7 ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 51361 waterfowl (5 year peak mean 1991/92-1995/96) Including: Branta bernicla bernicla , Anas crecca , Charadrius hiaticula , Limosa limosa islandica

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	G01		I
H	M01		B
H	M02		B
H	F02		I
H	H02		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A04		I
H	D05		I
H	A03		I
H	A02		I
H	B02		I
H	D05		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK01	21.8	UK04	100.0		

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

Information Sheet on Ramsar Wetlands (RIS)

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:

Designated: 01 October 1998 / Updated: May 2005

3. Country:

UK (England)

4. Name of the Ramsar site:

Solent and Southampton Water

5. Map of site included:

a) hard copy (required for inclusion of site in the Ramsar List): *yes* -or- *no*

b) digital (electronic) format (optional): Yes

6. Geographical coordinates (latitude/longitude)**:**

50º 44’ 25’’ N 01º 31’ 32’’ W

7. General location:

Nearest town/city: Southampton

Solent and Southampton Water lies on the central south coast of England.

Administrative region: City of Portsmouth; City of Southampton; Hampshire; Isle of Wight

8. Elevation (average and/or max. & min.) (metres)**:** **9. Area** (hectares)**:** 5415

Min. No information available
Max. No information available
Mean No information available

10. Overview:

The area covered extends from Hurst Spit to Gilkicker Point along the south coast of Hampshire and along the north coast of the Isle of Wight. The site comprises of estuaries and adjacent coastal habitats including intertidal flats, saline lagoons, shingle beaches, saltmarsh, reedbeds, damp woodland, and grazing marsh. The diversity of habitats support internationally important numbers of wintering waterfowl, important breeding gull and tern populations and an important assemblage of rare invertebrates and plants.

11. Ramsar Criteria:

1, 2, 5, 6

12. Justification for the application of each Criterion listed in 11. above:

Ramsar criterion 1

The site is one of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow and has long periods of slack water at high and low tide. It includes many wetland habitats characteristic of the biogeographic region: saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs.

Ramsar criterion 2

The site supports an important assemblage of rare plants and invertebrates. At least 33 British Red Data Book invertebrates and at least eight British Red Data Book plants are represented on site.

The higher plants *Orobanche purpurea* and *Spartina maritima* are considered vulnerable and endangered, respectively, in the GB Red Book.

The Mediterranean gull (*Larus melanocephalus*) is included in CITES Appendix I

Secretariat Comment: Criterion 2 requires to specify the scientific names of those mentioned species considered vulnerable, endangered or critically endangered. This need to be included in the next update.

Ramsar criterion 5
Assemblages of international importance:

Species with peak counts in winter:
51,343 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6
Species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):
Species with peak counts in spring/autumn:
Species with peak counts in winter:

Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	1,240 individuals, representing an average of 2.6% of the population (5 year peak mean 1998/9-2002/3)
Dark-bellied brent goose, *Branta bernicla bernicla*,	6,456 individuals, representing an average of 3.2% of the population (5 year peak mean 1998/9-2002/3)
Eurasian teal , *Anas crecca*, NW Europe	5,514 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)

More contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey Alerts report, which is updated annually. See http://www.bto.org/survey/webs/webs-alerts-index.htm.

13. Biogeography:

a) biogeographic region:
Atlantic

b) biogeographic regionalisation scheme (include reference citation):
Council Directive 92/43/EEC

14. Physical features of the site:

Soil & geology	acidic, neutral, shingle, sand, mud, alluvium, sedimentary
Geomorphology and landscape	lowland, island, coastal, floodplain, shingle bar, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), open coast (including bay), enclosed coast (including embayment), estuary, lagoon, intertidal rock
Nutrient status	eutrophic
pH	no information
Salinity	brackish / mixosaline, fresh, saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Everton, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/everton.html) Max. daily temperature: 14.0° C Min. daily temperature: 7.0° C Days of air frost: 32.5 Rainfall: 763.7 mm Hrs. of sunshine: 1750.7

General description of the Physical Features:

No information available

15. Physical features of the catchment area:

No information available

16. Hydrological values:

Shoreline stabilisation and dissipation of erosive forces, Sediment trapping

17. Wetland types

Marine/coastal wetland

Code	Name	% Area
D	Rocky shores	1.5
E	Sand / shingle shores (including dune systems)	12.1
G	Tidal flats	47.9
H	Salt marshes	18.5
J	Coastal brackish / saline lagoons	0.7
Sp	Saline / brackish marshes: permanent	14.9
Tp	Freshwater marshes / pools: permanent	3.7
Xf	Freshwater, tree-dominated wetlands	0.7

18. General ecological features:

The estuaries and harbours of the Solent are particularly sheltered and form the largest number and tightest cluster of small estuaries anywhere in Great Britain. The Solent and Isle of Wight system is notable for its large range and extent of different habitats.

The intertidal area is predominantly sedimentary in nature with extensive intertidal mud and sandflats within the sheltered harbours and areas of gravel and pebble sediments on more exposed beaches. These conditions combine to favour an abundant benthic fauna and green algae which support high densities of migrant and over-wintering wildfowl and waders. Eelgrass *Zostera* beds occur

discontinuously along the north shore of the Isle of Wight and in a few places along the northern shore of The Solent.

The Solent system supports a wide range of saltmarsh communities. Upper saltmarshes are dominated by sea purslane *Atriplex portulacoides*, sea plantain *Plantago maritima*, sea meadow grass *Puccinellia maritima* and sea lavender *Limonium vulgare*; locally thrift *Armeria maritima* and the nationally scarce golden samphire *Inula crithmoides* are abundant. Lower saltmarsh vegetation tends to be dominated by sea purslane, cord grass *Spartina* spp., glasswort *Salicornia* spp. and sea-blite *Suaeda maritima*. Cord-grasses dominate much of the saltmarsh in Southampton Water and in parts of the Solent and it was the original location of the introduction of *Spartina alterniflora* and subsequent hybridisation with the native species.

There are several shingle spits including Hurst spit, Needs Ore Point, Calshot spit and Newtown Harbour spits which support a characteristic shingle flora.

A range of grassland types lie inshore of the intertidal zone including unimproved species-rich neutral and calcareous grasslands, brackish grazing marsh systems and reed dominated freshwater marshes.

The brackish water lagoons associated with grazing marsh systems behind the seawalls, e.g. Keyhaven-Lymington, Gilkicker lagoon, and at Brading Marshes contain internationally important communities of rare and endangered invertebrates and plants.

19. Noteworthy flora:

Nationally important species occurring on the site.

Higher Plants.

Eleocharis parvula, Geranium purpureum forsteri, Lotus angustissimus, Ludwigia palustris, Orobanche purpurea, Lamprothamnium papulosum, Spartina maritima and *Zostera marina*.

20. Noteworthy fauna:

Birds

Species currently occurring at levels of national importance:

Species regularly supported during the breeding season:

Black-headed gull , *Larus ridibundus*, N & C Europe	6911 apparently occupied nests, representing an average of 5.4% of the GB population (Seabird 2000 Census)
Common tern , *Sterna hirundo hirundo*, N & E Europe	192 apparently occupied nests, representing an average of 1.8% of the GB population (Seabird 2000 Census)
Little tern , *Sterna albifrons albifrons*, W Europe	22 apparently occupied nests, representing an average of 1.1% of the GB population (Seabird 2000 Census)
Mediterranean gull , *Larus melanocephalus*, Europe	11 apparently occupied nests, representing an average of 10.1% of the GB population (Seabird 2000 Census) CITES Appendix I
Roseate tern , *Sterna dougallii dougallii*, W Europe	1 apparently occupied nests, representing an average of 1.9% of the GB population (Seabird 2000 Census)
Sandwich tern , *Sterna (Thalasseus) sandvicensis sandvicensis*, W Europe	268 apparently occupied nests, representing an average of 2.5% of the GB population (Seabird 2000 Census)

Species with peak counts in spring/autumn:

Common greenshank , *Tringa nebularia*, Europe/W Africa	58 individuals, representing an average of 9.7% of the GB population (5 year peak mean 1998/9-2002/3)
Little egret , *Egretta garzetta*, West Mediterranean	115 individuals, representing an average of 6.9% of the GB population (5 year peak mean 1998/9-2002/3)
Spotted redshank , *Tringa erythropus*, Europe/W Africa	13 individuals, representing an average of 9.5% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Black-necked grebe , *Podiceps nigricollis nigricollis*, Europe, N Africa	3 individuals, representing an average of 2.5% of the GB population (5 year peak mean 1998/9-2002/3)
Common shelduck , *Tadorna tadorna*, NW Europe	964 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3)
Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	10417 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian curlew , *Numenius arquata arquata*, N. a. arquata Europe (breeding)	1766 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian wigeon , *Anas penelope*, NW Europe	7907 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)
Great cormorant , *Phalacrocorax carbo carbo*, NW Europe	247 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Grey plover , *Pluvialis squatarola*, E Atlantic/W Africa -wintering	1171 individuals, representing an average of 2.2% of the GB population (5 year peak mean 1998/9-2002/3)
Little grebe , *Tachybaptus ruficollis ruficollis*, Europe to E Urals, NW Africa	105 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3)
Northern pintail , *Anas acuta*, NW Europe	359 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3)
Northern shoveler , *Anas clypeata*, NW & C Europe	267 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)
Red-breasted merganser , *Mergus serrator*, NW & C Europe	142 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3)
Slavonian grebe , *Podiceps auritus*, Northwest Europe	12 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)
Water rail , *Rallus aquaticus*, Europe	17 individuals, representing an average of 3.7% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Nationally important species occurring on the site.

Invertebrates.

Allomelita pellucida, Gammarus insensibilis, Nematostella vectensis, Arctosa fulvolineata, Aulonia albimana, Anisodactylus poeciloides, Anthonomus rufus, Baris analis, Berosus spinosus, Cantharis fusca, Drypta dentata, Leptura fulva, Meligethes bidentatus, Paracymus aeneus, Staphylinus caesareus, Aphrosylus mitis, Atylotus latistriatus, Dorycera graminum, Haematopoda grandis, Hippobosca equina, Linnaemya comta, Stratiomys longicornis, Syntormon mikii, Tetanocera freyi, Villa circumdata, Trachysphaera lobata, Paludinella littorina, Truncatellina cylindrica, Andrena alfkenella, Acleris lorquiniana, Elachista littoricola, Melissoblaptes zelleri, Platytes alpinella, Psamathrocrita argentella, Armandia cirrhosa

21. Social and cultural values:

Aesthetic
Aquatic vegetation (e.g. reeds, willows, seaweed)
Archaeological/historical site
Conservation education
Current scientific research
Fisheries production
Livestock grazing
Non-consumptive recreation
Sport fishing
Sport hunting
Tourism
Traditional cultural
Transportation/navigation

22. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation	+	+
Local authority, municipality etc.	+	+
National/Crown estate	+	+
Private	+	+
Public/communal	+	+
Other	+	+

23. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Tourism	+	
Recreation	+	
Research	+	
Collection of non-timber natural products: (unspecified)	+	
Commercial forestry		+
Cutting for firewood	+	
Fishing: (unspecified)	+	
Fishing: commercial	+	
Fishing: recreational/sport	+	
Marine/saltwater aquaculture	+	
Gathering of shellfish	+	
Bait collection	+	
Arable agriculture (unspecified)		+
Permanent arable agriculture		+
Permanent pastoral agriculture	+	
Hay meadows	+	

Hunting: recreational/sport	+	
Industry		+
Sewage treatment/disposal	+	
Harbour/port	+	
Flood control	+	
Irrigation (inc agricultural water supply)		+
Mineral exploration		+
Oil/gas exploration		+
Oil/gas production		+
Transport route		+
Domestic water supply		+
Urban development		+
Non-urbanised settlements		+
Military activities	+	+

24. Factors adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Erosion	2		+		+

For category 2 factors only. What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors? Erosion - Coastal Defence Strategies, regulation of private coastal defences, shoreline management plans, ChAMPs are in place or are being developed.
Is the site subject to adverse ecological change? YES

25. Conservation measures taken:

Conservation measure	On-site	Off-site
SSSI / ASSI	+	
NNR	+	+
SPA	+	
Land owned by a NGO for nature conservation	+	+

Management agreement	+	+
SAC	+	
Management plan in preparation	+	

26. Conservation measures proposed but not yet implemented:
No information available

27. Current scientific research and facilities:

Contemporary.
Numbers of migratory and wintering waterfowl are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
Bird Ringing by Solent Shorebirds Study Group.

Environment.
Coastal Sediment (SCOPAC)
Water Quality (EA/Southern Water)
Various research and educational establishments carry out ongoing research into a number of different aspects of the environment.

Flora.
Saltmarsh Monitoring (EN project).
Spartina survey (EN project).

Completed.

Flora.
Sand dune and saltmarsh NVC survey.
Habitats.
Habitat surveys (various local individual surveys).
Species surveys (various local individual surveys).

28. Current conservation education:
Various educational programmes exist within the voluntary conservation organisations, research institutes, education centres and also Local Authorities e.g. Newtown National Nature Reserve managed by National Trust, Medina Valley Centre, and Southampton Oceanography Centre.
There are a number of interpretation facilities present and proposed in the area e.g. National Nature Reserve & Local Nature Reserve and proposed centre of coastal management on Isle of Wight.

29. Current recreation and tourism:

Activities, Facilities provided and Seasonality.
Almost all the estuaries in the Ramsar site are used extensively for a wide range of leisure and recreational activities, particularly water-based recreation.

Land based recreation:

Walking including dog-walking is popular along large stretches of the coast and estuaries. The presence of country parks, NNR and LNRs on the coast also attract large numbers of people to certain locations.

Bait-digging and collection of shellfish occurs in a number of locations. Birdwatching is also a popular activity with a number of favoured locations with easy access. Some golf courses are also present.

Water-based recreation:

The Solent is an internationally important centre for yachting, dinghy sailing and power-boating and national important for canoeing, and water-skiing. A small amount of hovercraft racing sometimes occurs.

Wildfowling and egg collection:

Private, syndicate and club wildfowling operate on the marshes. Small-scale egg-collecting also occurs. Bait-digging and angling also occur.

Air Recreation:

There is a proposed microlighting centre within the area.

The high degree of recreation in the Solent is accompanied by a high degree of supporting developments e.g. marinas, boatyards, clubs, holiday centres occur throughout the area.

30. Jurisdiction:

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

31. Management authority:

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

32. Bibliographical references:

Site-relevant references

Anon. (1995) *Biodiversity: The UK Steering Group Report. Volume 2: Action plans*. HMSO, London

Anon. (2003) *The Solent Coastal Habitat Management Plan: Executive summary*. English Nature, Peterborough (Living with the Sea LIFE Project) www.english-nature.org.uk/livingwiththesea/project_details/good_practice_guide/HabitatCRR/ENRestore/CHaMPs/Solent/SolentCHaMP.pdf

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Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone**: +41 22 999 0170** • Fax: **+41 22 999 0169** • email: **europe@ramsar.org**

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	South Wight Maritime
Unitary Authority/County:	Isle of Wight
SAC status:	Designated on 1 April 2005
Grid reference:	SZ462771
SAC EU code:	UK0030061
Area (ha):	19862.71
Component SSSI:	Bembridge Down SSSI, Bonchurch Landslips SSSI, Compton Down SSSI, Compton Chine to Steephill Cove SSSI, Headon Warren and West High Down SSSI, Whitecliff Bay and Bembridge Ledges SSSI

Site description:

South Wight Maritime contains contrasting Cretaceous hard cliffs, semi-stable soft cliffs and mobile soft cliffs. The western and eastern extremities of the site consist of high chalk cliffs with species-rich calcareous grassland vegetation, the former exposed to maritime influence and the latter comparatively sheltered. At the western end, the site adjoins the Isle of Wight Downs SAC, providing an unusual combination of maritime and chalk grassland. The most exposed chalk cliff tops support important assemblages of nationally rare lichens, including *Fulgensia fulgens*. The longest section is composed of slumping acidic sandstones and neutral clays with an exposed south-westerly aspect. The vegetation communities are a mixture of acidic and mesotrophic grasslands with some scrub and a greater element of maritime species, such as thrift *Armeria maritima*, than is usual on soft cliffs. A small, separate section of the site on clays has a range of successional stages, including woodland, influenced by landslips. These cliffs are minimally affected by sea defence works and together they form one of the longest lengths of naturally-developing soft cliffs on the UK coastline.

The exposure of this coast to high wave energy has allowed the erosion of the cliffs to form sea caves. Examples of this habitat can be found from the Needles along the south-west coast of the Island to Watcombe Bay, and also in Culver Cliff on the south-east coast of the Island. This site also contains the only known location of subtidal chalk caves in the UK. The large intertidal caves in the chalk cliffs are of ecological importance, with many hosting rare algal species, which are restricted to this type of habitat. The fauna of these sea caves includes a range of mollusc species such as limpets *Patella* spp. and the horseshoe worm *Phoronis hippocrepia*.

The southern shore of the Isle of Wight, includes a number of subtidal reefs that extend into the intertidal zone. This site supports a variety of reef types and associated communities, including chalk, limestone and sandstone reefs. To the west and south-west some of the most important subtidal chalk reefs in British waters occur, including the extensive tide-swept reef off the Needles and examples at Culver Cliff and Freshwater Bay. These support a diverse range of species in both the subtidal and intertidal. Other reef habitats within the site include areas of large boulders off the coast around Ventnor. There is a large reef of harder limestone off Bembridge and Whitecliff Bay, where the horizontal and vertical faces and crevices provide a range of habitats. The bedrock is extensively bored by bivalves. Their presence, together with the holes they create, gives shelter to other species, which adds further to habitat diversity. Intertidal pools support a diverse marine life, including a number of rare or unusual

seaweeds, such as the shepherd's purse seaweed *Gracilaria bursa-pastoris*.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Reefs
- Submerged or partially submerged sea caves
- Vegetated sea cliffs of the Atlantic and Baltic coasts

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0030061
Date of registration: 14 June 2005

[redacted]

On behalf of the Secretary of State for Environment, Food and Rural Affairs

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0030061**

SITENAME **South Wight Maritime**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0030061

1.3 Site name

South Wight Maritime

1.4 First Compilation date	1.5 Update date
1998-10	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	1998-10
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-1.3475	50.59138889

2.2 Area [ha]:

19866.12

2.3 Marine area [%]

98.7

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKZZ	Extra-Regio
UKJ3	Hampshire and Isle of Wight

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
1110			1390.63	0	M	D			
1140			198.66	0	M	D			
1170			13906.28	0	M	A	C	A	A
1230			198.66	0	M	A	C	A	A
4030			198.66	0	M	D			
6210			198.66	0	M	D			
8330			198.66	0	P	A	C	A	B

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter

"X" in the column PF to indicate the priority form.

- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
P	1654	Gentianella anglica			p				P	DD	D			

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N01	96.0
N09	1.0
N04	0.5
N05	1.0
N08	1.0
N16	0.5
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: basic,sedimentary,sandstone,limestone,clay,acidic,nutrient-poor,mud 2 Terrestrial: Geomorphology and landscape: slope,coastal,caves 3 Marine: Geology: biogenic reef,cobble,boulder,sedimentary,mud,sand,limestone/chalk,sandstone/mudstone 4 Marine: Geomorphology: subtidal sediments (including sandbank/mudbank),subtidal rock (including rocky reefs),open coast (including bay),cliffs,pools,intertidal rock,intertidal sediments (including sandflat/mudflat),cave/tunnel

4.2 Quality and importance

Reefs for which this is considered to be one of the best areas in the United Kingdom. Submerged or partially submerged sea caves for which this is considered to be one of the best areas in the United Kingdom. Vegetated sea cliffs of the Atlantic and Baltic coasts for which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	J02		B
H	G01		I
H	I01		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A02		I
H	A04		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK00	97.5	UK04	2.5		

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

☐ Yes

	No, but in preparation
X	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Solent and Isle of Wight Lagoons
Unitary Authority/County:	City of Portsmouth, Hampshire, Isle of Wight
SAC status:	Designated on 1 April 2005
Grid reference:	SZ608977
SAC EU code:	UK0017073
Area (ha):	36.24
Component SSSI:	Brading Marshes to St Helens Ledges SSSI, Gilkicker Lagoon SSSI, Hurst Castle and Lymington River Estuary SSSI, Langstone Harbour SSSI

Site description:
The Solent on the south coast of England encompasses a series of coastal lagoons, including percolation, isolated and sluiced lagoons. The site includes a number of lagoons in the marshes in the Keyhaven – Pennington area, at Farlington Marshes in Langstone Harbour, behind the sea-wall at Bembridge Harbour and at Gilkicker, near Gosport. The lagoons show a range of salinities and substrates, ranging from soft mud to muddy sand with a high proportion of shingle, which support a diverse fauna including large populations of three notable species: the nationally rare foxtail stonewort *Lamprothamnium papulosum*, the nationally scarce lagoon sand shrimp *Gammarus insensibilis*, and the nationally scarce starlet sea anemone *Nematostella vectensis*. The lagoons in Keyhaven – Pennington Marshes are part of a network of ditches and ponds within the saltmarsh behind a sea-wall. Farlington Marshes is an isolated lagoon in marsh pasture that, although separated from the sea by a sea-wall, receives sea water during spring tides. Gilkicker Lagoon is a sluiced lagoon with marked seasonal salinity fluctuation and supports a high species diversity. The lagoons at Bembridge Harbour have formed in a depression behind the sea-wall and sea water enters by percolation and by man-made culverts. Species diversity in these lagoons is high and the fauna includes very high densities of *N. vectensis* and the nationally rare Bembridge water beetle *Paracymus aeneus*.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Coastal lagoons*

Annex I priority habitats are denoted by an asterisk (*).

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0017073
Date of registration: 14 June 2005

[redacted]

On behalf of the Secretary of State for Environment, Food and Rural Affairs

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0017073**

SITENAME **Solent and Isle of Wight Lagoons**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0017073

1.3 Site name

Solent and Isle of Wight Lagoons

1.4 First Compilation date	1.5 Update date
1996-10	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	1996-10
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

Back to top

2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-1.136944444	50.775

2.2 Area [ha]:

37.93

2.3 Marine area [%]

91.7

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ3	Hampshire and Isle of Wight

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
1150	X		0.38	0	P	B	C	B	B
1310			0.38	0	G	D			
1330			3.14	0	G	D			

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N03	8.3
N02	91.7
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: mud,sedimentary,nutrient-rich,neutral,alluvium,clay 2 Terrestrial: Geomorphology and landscape: coastal,floodplain,lowland 3 Marine: Geology: sedimentary,mud,shingle 4 Marine: Geomorphology: lagoon

4.2 Quality and importance

Coastal lagoons for which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	J02		B
H	M01		B
H	K04		I
H	I01		B
H	H04		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A02		I
H	B02		I
H	D05		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

☐	Yes
☐	No, but in preparation
☒	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
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M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
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UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name: Singleton and Cocking Tunnels

Unitary Authority/County: West Sussex

SAC status: Designated on 1 April 2005

Grid reference: SU872144

SAC EU code: UK0030337

Area (ha): 2.45

Component SSSI: Singleton and Cocking Tunnels SSSI

Site description:
Singleton and Cocking Tunnels constitute the most important sites for hibernating bats in south-east England, in particular barbastelle *Barbastella barbastellus* and Bechstein's *Myotis bechsteinii* bats. These two disused brick railway tunnels, located in rural Sussex, once formed part of the Chichester to Midhurst railway line. They now support, during the winter months, large numbers of hibernating bats. Eight species have been found in all. In addition to barbastelle and Bechstein's bats those also best represented include Natterer's *Myotis nattereri*, Daubenton's *Myotis daubentoni*, brown long-eared *Plecotus auritus* and Brandt's *Myotis brandti*/whiskered *Myotis mystacinus* and this is the only known location in Britain for the mouse-eared bat *Myotis myoti*s.

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Barbastelle bat *Barbastella barbastellus*
- Bechstein's bat *Myotis bechsteinii*

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0030337
Date of registration: 14 June 2005

[redacted]

On behalf of the Secretary of State for Environment, Food and Rural Affairs

STANDARD DATA FORM for sites within the ‘UK national site network of European sites’

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
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Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0030337**

SITENAME **Singleton and Cocking Tunnels**

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- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0030337

1.3 Site name

Singleton and Cocking Tunnels

1.4 First Compilation date	1.5 Update date
2003-05	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	2003-05
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-0.758611111	50.92166667

2.2 Area [ha]:

1.88

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ2	Surrey, East and West Sussex

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
P	1308	Barbastella barbastellus			p				P	DD	C	B	B	C
M	1323	Myotis bechsteinii			p				P	DD	C	B	B	C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N23	100.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: nutrient-poor,sedimentary,basic 2 Terrestrial: Geomorphology and landscape: lowland,valley

4.2 Quality and importance

Barbastella barbastellus - for which the area is considered to support a significant presence. Myotis bechsteini - for which the area is considered to support a significant presence.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A02		I
H	M02		B
H	J03		B
H	G01		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

☐	Yes
☐	No, but in preparation
☒	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

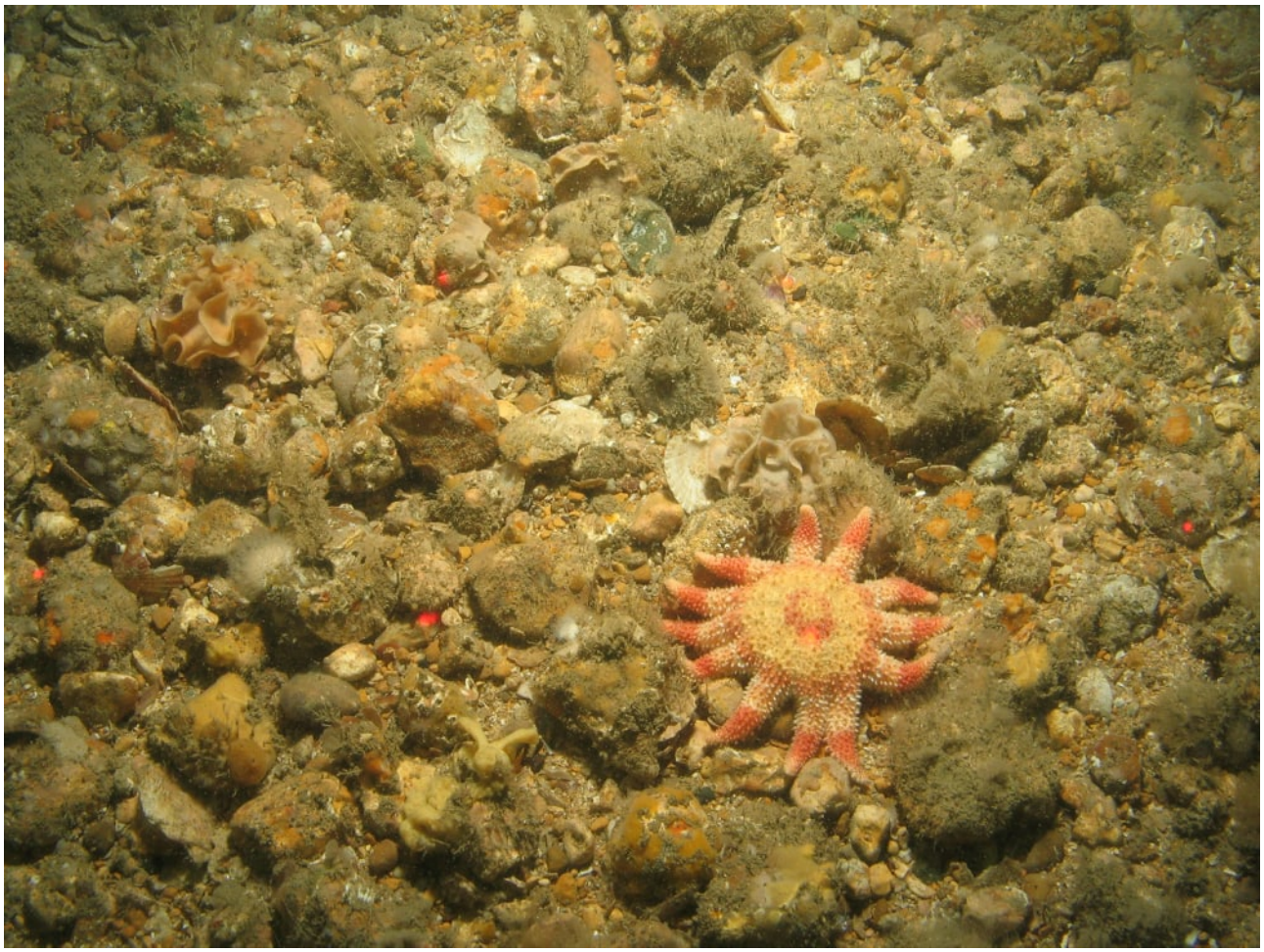
CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

Department for Environment, Food and Rural Affairs

Bembridge Marine Conservation Zone

This document sets out why this site is important, the features protected and general management information.

31 May 2019



Sun star and bryozoans on subtidal coarse sediment © Crown Copyright

Overview

This site became a Marine Conservation Zone (MCZ) in May 2019. This means that specific features within this area are protected and, where necessary, regulators will manage marine activities.

Where is the site?

Bembridge MCZ is an inshore site that covers an area of approximately 75 km². The site lies adjacent to the east coast of the Isle of Wight from Nettlestone Point in the north to

Ventnor in the south. The site encompasses the intertidal and subtidal areas extending to the edge of the deep water channel approach into the Eastern Solent.

The site overlaps with the South Wight Maritime Special Area of Conservation (SAC) and will offer protection to species and features not currently protected by the SAC.

Why is the site important?

MCZs, together with other types of marine protected areas, will form the UK contribution to an international network of protected sites in the north east Atlantic. The network will help to deliver the government's vision of clean, healthy, safe, productive and biologically diverse oceans and seas. MCZs protect typical, rare or declining habitats and species found in our seas.

The area within Bembridge MCZ is highly diverse and includes a wide range of habitats, from rocky shores and intertidal sediments to deep water habitats supporting features such as sea pens and burrowing megafauna. Several species, including the peacock's tail seaweed, are at the most eastern edge of their distribution and are considered to seed other populations around the Isle of Wight.

The central area of the site is dominated by an extensive area of limestone and chalk bedrock providing a complex system of crevices, tunnels and pools supporting very diverse algae and invertebrate species such as crustaceans (such as crabs, lobsters and barnacles) and molluscs (such as mussels, oysters and cockles).

The large areas of subtidal mixed sediments act as a supporting substrate to several important features such as maerl beds. Maerl is a fragile, calcareous, red seaweed that forms large mats and provides shelter for many other species. It is highly sensitive to seabed activities and takes a long time to recover from damage.

The site would also protect the short-snouted seahorse as well as two species of stalked jellyfish.

Designation of this site as a Marine Conservation Zone protects the following features. You can find detailed information about each feature at http://jncc.defra.gov.uk/page-4527.

Protected features	General management approach
Sheltered muddy gravels	Maintain in favourable condition
Short-snouted seahorse (*Hippocampus hippocampus*)	
Stalked jellyfish (*Calvadosia campanulata*)	
Stalked jellyfish (*Haliclystus* species)	
Subtidal coarse sediment	
Subtidal sand	
Maerl beds	Recover to favourable condition
Native oyster (Ostrea edulis)	
Peacock's tail (*Padina pavonica*)	
Sea-pens and burrowing megafauna	
Seagrass beds	
Subtidal mixed sediments	
Subtidal mud	

Management of the site

Now that this site has been designated, some activities may need additional management. Activities and the management measures used to regulate them may need to change if new evidence becomes available.

Most marine activity is already regulated by the relevant regulatory bodies. There is an existing legal framework that regulators use to manage fishing, coastal development, recreation and pollution. This also applies in MCZs.

Regulators will manage each site according to the features and activities in, or near, a specific area. Management measures will be implemented at sites most at risk of damage first, regulating only those activities which have a detrimental impact on the designated features. Any management measures that are required for MCZs will be applied on a case-by-case basis.

Management in MCZs can take several different forms, including introducing voluntary measures, use of the existing planning and licensing framework, specific byelaws and orders. There has to be public consultation on permanent byelaws and orders. For

activities that already need a marine licence, regulators consider the MCZ in their decision as soon as the site is consulted on. Find out more about marine licensing in MCZs at https://www.gov.uk/government/publications/marine-conservation-zones-mczs-and-marine-licensing.

Regulators

This table lists the authorities responsible for MCZs and the activities they manage.

Lead regulator	What it manages
Inshore Fisheries and Conservation Authorities (IFCAs) http://www.association-ifca.org.uk	• Fisheries in the inshore area (0-6 nautical miles (nm)) including commercial fisheries and recreational sea angling.
Marine Management Organisation (MMO) https://www.gov.uk/government/organisations/marine-management-organisation	• Fisheries within British limits around the coast of England. • Licensable activities such as construction, alteration or improvement of works, dredging and disposal, other removals or deposits, incineration or the scuttling of vessels within England's marine area. • Section 36 (of the Electricity Act 1989) Consents and Safety Zones for offshore renewable energy installations producing up to 100MW. • Activities requiring a marine wildlife licence.
Environment Agency (EA) https://www.gov.uk/government/organisations/environment-agency	• Fisheries for migratory and freshwater fish. • Coastal protection and flood management. • Water quality, including environmental permits for discharges from terrestrial sources.
Oil and Gas Authority https://www.ogauthority.co.uk/	• Licensing for exploration and exploitation of oil and gas reserves.
Department for Business, Energy and Industrial Strategy (BEIS) https://www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy **Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) – Part of BEIS**	• Oil and gas related activities • Renewable energy related activities • Environmental approvals and consents for offshore oil and gas related activities, Carbon Capture and Storage and Gas Unloading and Storage, and decommissioning activities.
Harbour Authorities and Local Planning Authorities	• Harbour authorities have management responsibilities for ports and coastal waters within their limits.

	• Local planning authorities manage activities at the coast. These include coastal recreation, public rights of way (including the English Coastal Path), tourism, economic regeneration, flood protection, and planning and development on coasts and estuaries, including aquaculture in the intertidal zone.
Department for Transport (DfT) https://www.gov.uk/government/organisations/department-for-transport	• Policy on environmental impacts associated with ports and shipping, including pollution from ships. • Policy on maritime safety including navigation safety.
Maritime and Coastguard Agency (MCA) - An Executive Agency of the Department for Transport https://www.gov.uk/government/organisations/maritime-and-coastguard-agency	• Vessel safety consents, including certification of seafarers and equipment.
Natural England (NE) https://www.gov.uk/government/organisations/natural-england	• Establishment and management of the English Coastal path. • Activities requiring consents and ascents within or adjacent to Sites of Special Scientific Interest (SSSIs). • Activities requiring wildlife licences for terrestrial and intertidal species.
The Planning Inspectorate https://www.gov.uk/government/organisations/planning-inspectorate	• Activities requiring Development Consent Orders under the Planning Act 2008, regarded as Nationally Significant Infrastructure Projects

Further information

Read about government policy on MCZs at:
https://www.gov.uk/government/collections/marine-conservation-zone-designations-in-england

Read the advice provided by Natural England on MCZs at:
http://publications.naturalengland.org.uk/publication/5703660445368320



Subtidal coarse sediment © Crown Copyright

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Department for Environment, Food and Rural Affairs

Bembridge MCZ

Feature Maps

May 2019

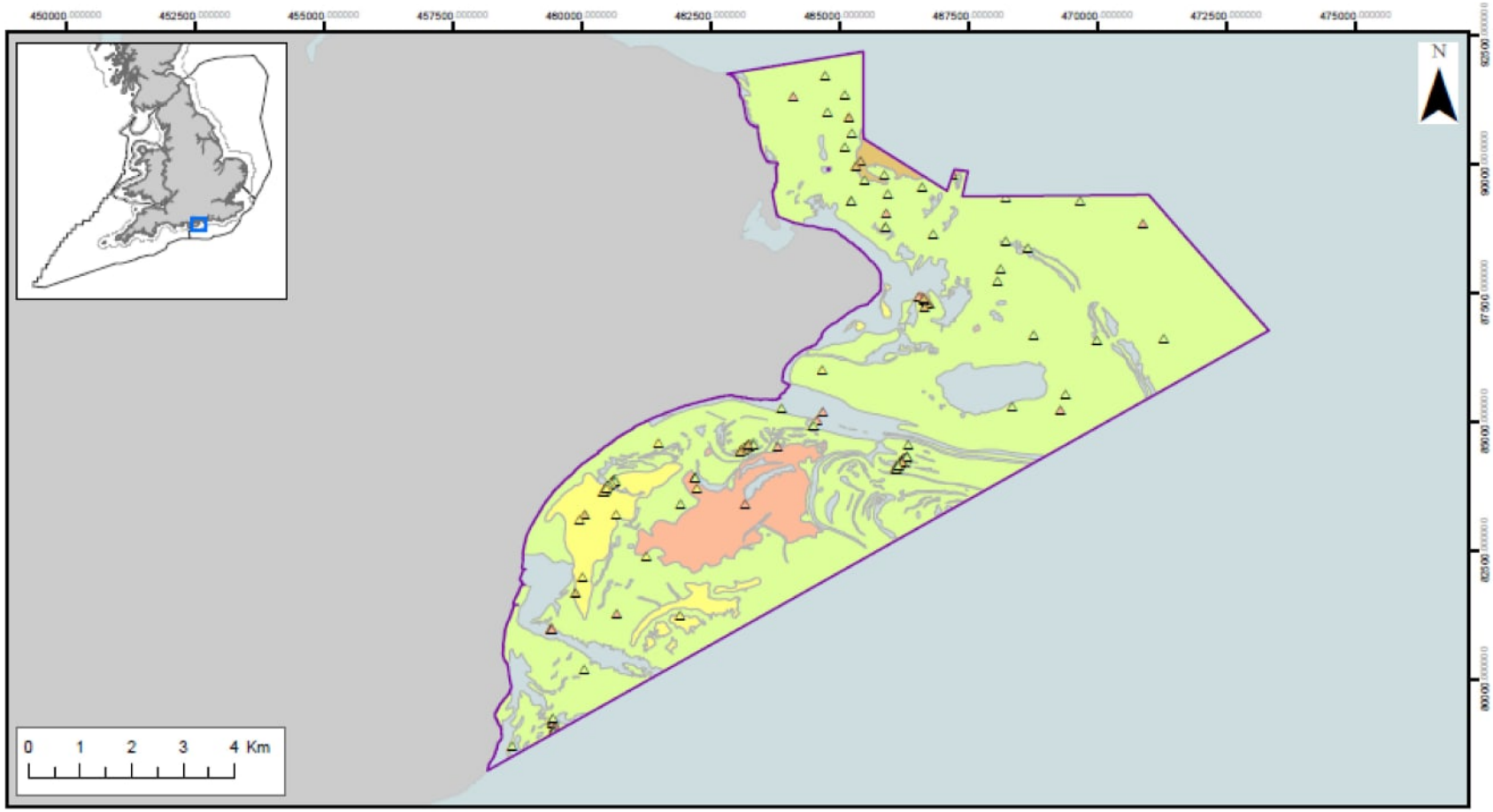
The following maps show where the features protected by this Marine Conservation Zone (MCZ) are located.

There are two separate maps, to make it easier to see the locations of features. One map shows the broad-scale habitats, and the second shows features of conservation importance. Broad scale habitats represent habitats, and associated species that live on and in the habitat. Features of conservation importance are specific habitats and species that are known to be rare, threatened or declining in our seas.

A range of different types of surveys have been used to create these maps. The symbols on the map show where a sample has been taken, or where a feature has been recorded in a specific location. For many features, there is also shading to show the extent of the area in which the feature is found. For the broad scale habitat maps, this is created from survey data and using mathematical models. On the FOCI maps, the extent is only shown where a survey has confirmed that the feature exists in this whole area. More detailed information on the techniques used and the features themselves can be found here:

http://publications.naturalengland.org.uk/publication/5703660445368320

Mapped data on features correct at the time of publishing, for the most up to date feature data please consult the MAGIC website (https://magic.defra.gov.uk/).



Bembridge MCZ
Broad Scale Habitats

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nM Territorial Seas Limit
- Sea
- Land

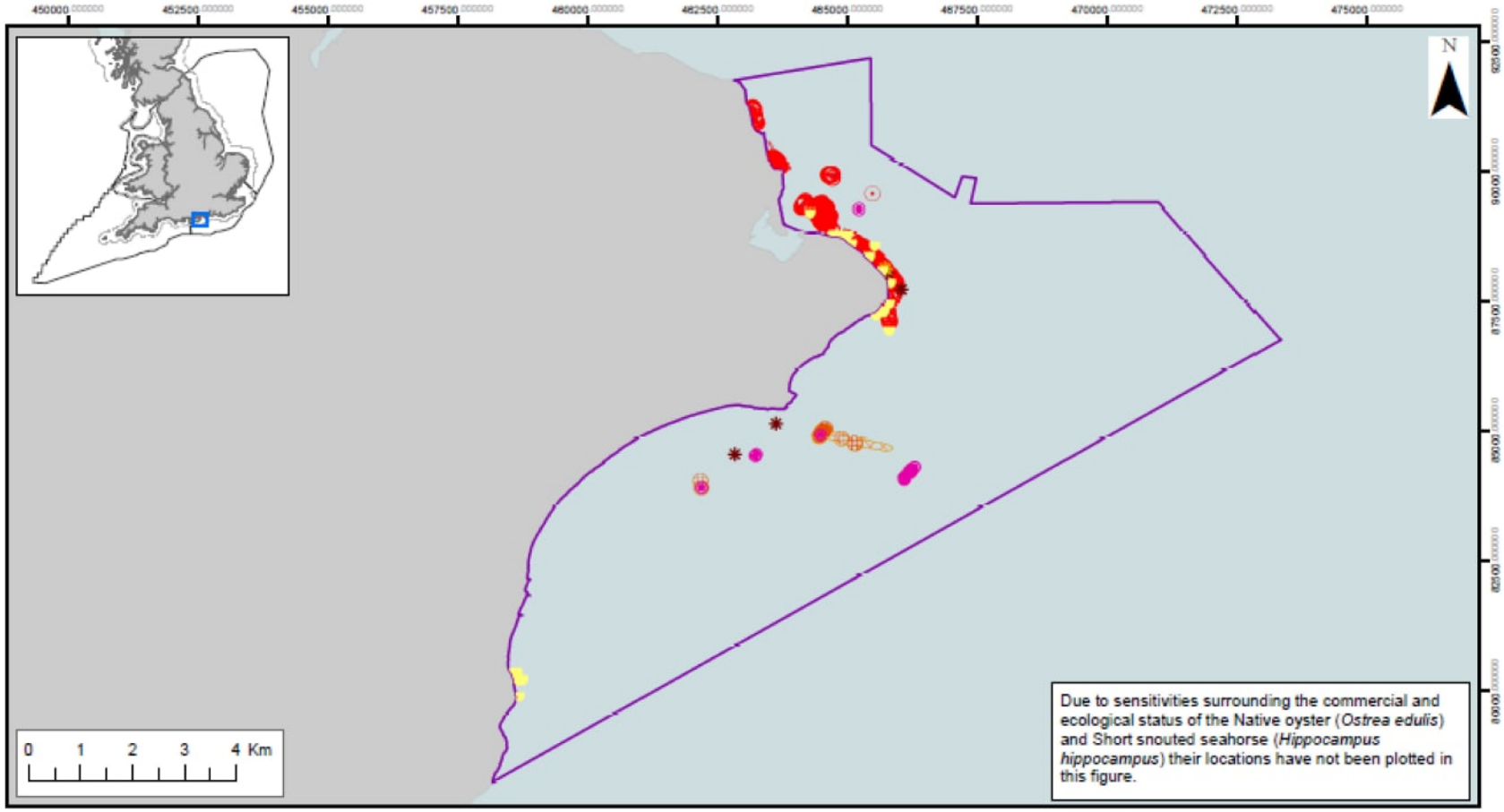
Features designated in 2019

- Subtidal coarse sediment (A5.1)
- Subtidal sand (A5.2)
- Subtidal mud (A5.3)
- Subtidal mixed sediments (A5.4)

△ Groundtruthing sampling points, such as diver survey, grab sampling, drop down video, walk over survey or core sampling

Shaded areas represent habitats mapped according to data originating from surveys and mathematical models

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Reference: Theme ID: 1477572
Map Projection: British National Grid



Bembridge MCZ
Features of Conservation Importance

- Marine Conservation Zone
- Regional MCZ Project Area
- 12nM Territorial Seas Limit
- Sea
- Land

Features designated in 2019

- Stalked jellyfish (*Haliclystus* sp.)
- Stalked jellyfish (*Calvadosia campanulata*)
- Peacock's tail (*Padina pavonica*)
- Maerl beds
- Seagrass beds
- Sheltered muddy gravels
- Maerl beds
- Seagrass beds
- Sheltered muddy gravels

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