Hampshire Water Transfer and Water Recycling Project

Outline Construction Environmental Management Plan - 1 of 3 documents

VOLUME NUMBER: 7

PLANNING INSPECTORATE NUMBER: WA010002

APPLICATION DOCUMENT REFERENCE: 7.~~2~~1

APFP REGULATION: 5(2)(q)

~~May~~23 November 2026

Version ~~01~~1

from Southern Water

Document Control		
Title	Outline Construction Environmental Management Plan - 1 of 3 documents	
Version History		
Version	**Date**	**Status/Reason for Issue**
Version 0	21 May 2026	DCO Submission
Version 1	23 November 2026	Deadline 1

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Executive Summary

1. This Outline Construction Environmental Management Plan (CEMP) sets out how the Hampshire Water Transfer and Water Recycling Project (the 'Project') will avoid, reduce, and mitigate effects on the environment and surrounding area during construction. During construction the Contractor will adhere to all legislative and regulatory requirements at the time. The control measures included in the Outline CEMP are designed to achieve regulatory compliance as a minimum and additionally, to accord with good practice, where relevant, and to mitigate or control environmental effects.
2. Detailed CEMP(s) will be prepared by the Contractor post consent which will be 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), and will include site-specific construction methodologies, risk assessments and management plans.
3. The Outline CEMP consolidates mitigation embedded through the environmental impact assessment process and translates this into construction management measures across a range of environmental topics. Where appropriate, the Outline CEMP identifies the requirement for topic-specific management plans and strategies to provide additional detail and controls post-consent.
4. The document also ~~set outs~~sets out standard construction working hours and defines environmental roles and responsibilities, environmental management procedures, monitoring requirements and incident response arrangements. These requirements provide a framework for the management of environmental performance during construction and enable controls to respond to design development and changes to site conditions where necessary.

1 Introduction

1.1 Purpose of this document

1.1.1 This document has been updated at Deadline 1 having regard to having regard to Relevant Representations to amend existing (NV1 and TBF16) and include new mitigation measures (ACH3 and TBF29) in Table 5-1, and include consultees as part of the requirement discharge process. References to other Application documents have not been updated from the original submission. Please refer to the latest version of the Guide to the Application (Document reference 1.3, DCO Volume 1) for the list of current versions of documents.

~~1.1.1~~1.1.2 This Outline Construction Environmental Management Plan (CEMP) has been prepared by Southern Water Services Limited (hereafter referred to as 'the Applicant') for the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as 'the Project'). It sets out how the Project will avoid, reduce, and mitigate effects on the environment and surrounding area during construction.

~~1.1.2~~1.1.3 The predicted environmental effects of the Project are identified in the Environmental Statement (ES), which reports on the likely significant effects of the Project following the implementation of primary (inherent modifications to the location or design of the Project) and tertiary (standard industry good practice measures or actions) mitigation. The ES then reports on the residual likely significant effects of the Project following the implementation of any secondary (foreseeable measures or actions to prevent or reduce any remaining effects) mitigation. Mitigation measures contained in the Outline CEMP are generally tertiary mitigation, although some secondary measures are also included where it is appropriate for additional measures identified through the Environmental Impact Assessment (EIA) process to be secured through the Outline CEMP. Topic specific mitigation measures to be adopted during construction to avoid and reduce environmental effects are detailed in section 5 and Table 5-1 of this document.

~~1.1.3~~1.1.4 The Outline CEMP does not consider mitigation associated with the operational phase of the Project. The likely significant effects from the operation of the Project are assessed in the relevant technical assessment chapters within the ES including a description of relevant primary and tertiary mitigation measures. An Operational Environmental Management Plan (Document reference 7.7, DCO Volume 7) and Outline Landscape and Ecology Management Plan (LEMP) (Document reference 7.5, DCO Volume 7, Version 1) are also submitted with the Development Consent Order (DCO) application. These documents set out the approach to environmental management through the operation phase of the Project.

~~1.1.4~~1.1.5 This Outline CEMP has been produced at an appropriate level of detail for the DCO application. Detailed CEMP(s) will be produced by the Contractor and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3). This may include a CEMP for preliminary works.

1.1.6 As part of the requirement discharge process, Hampshire County Council, the Environment Agency and Natural England should be consulted on any matters that are relevant to their functions.

~~1.1.5~~1.1.7 A Commitments Register (ES Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6~~)~~, Version 1)) forms part of the DCO application. The Commitments Register is a live working document that sits alongside all submitted management plans as a master list and signposting directory. The Commitments Register captures all commitments made as part of the ES, including those set out in the Outline CEMP. The Commitments Register will be kept as a 'live' document so it can be updated through the Examination process and beyond to ensure it captures all relevant issues, providing certainty that the DCO and ES are consistent.

1.2 Description of the Project

1.2.1 The Project comprises the construction, operation and maintenance of the following components:

1. Water Recycling Plant (WRP) (Work Number 1) and associated pumping stations.
2. Pipelines between Budds Farm Wastewater Treatment Works (WTW) and the WRP site (Work Number 2).
3. Pipelines between the WRP site and Bedhampton Springs (Work Number 3), connecting to pipelines being delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir.
4. Pipeline between the WRP site and Otterbourne Water Supply Works (WSW) (Work Number 4).
5. Above Ground Plant (AGP) (Work Number 5) comprising Intermediate Pumping Stations (IPS) and Break Pressure Tanks (BPT) located along the Pipeline between the WRP site and Otterbourne WSW.

1.2.2 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.
2. The existing Eastney Long Sea Outfall (LSO), Eastney Pumping Station (PS), and associated Eastney Transfer Tunnel (TT) for the release of reject water from the WRP site. Pipelines and other related works (which have been consented separately by Portsmouth Water) for the transfer of recycled water and source water between Bedhampton Springs and Havant Thicket Reservoir.

1.2.3 The construction and operation of the Project would be supported by other temporary and permanent works.

1.2.4 The Outline CEMP applies to all construction works, including reinstatement of land over the pipeline and the installation of AGP.

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

1.2.6 While the Applicant is not seeking consent for decommissioning, it is recognised that the Project may require decommissioning at the end of its operational life. Any future decommissioning works would follow good industry practice and would comply with all relevant statutory requirements applicable at the time. The

Applicant is therefore not submitting an Outline Decommissioning Environmental Management Plan as part of the DCO application.

1.2.7 A detailed description of the Project can be found in ES Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6).

1.3 Definitions

1.3.1 In this Outline CEMP, the 'Contractor' should be read as referring to the Applicant or the person appointed by the Applicant to construct the Project. Where the benefit of all or part of the Order is transferred to another person, 'Contractor' should be read as the person with the benefit of the Order or the person appointed by the person with the benefit of the Order to construct the project, to the extent by which the benefit of the Order has been transferred to that person.

1.3.2 The CEMP sets out the measures for control and management of environmental effects during construction. Table 1-1 summarises the different developmental (iteration) stages of the CEMP and when it will be produced or refined.

Table 1-1 Construction Environmental Management Plan iteration stages

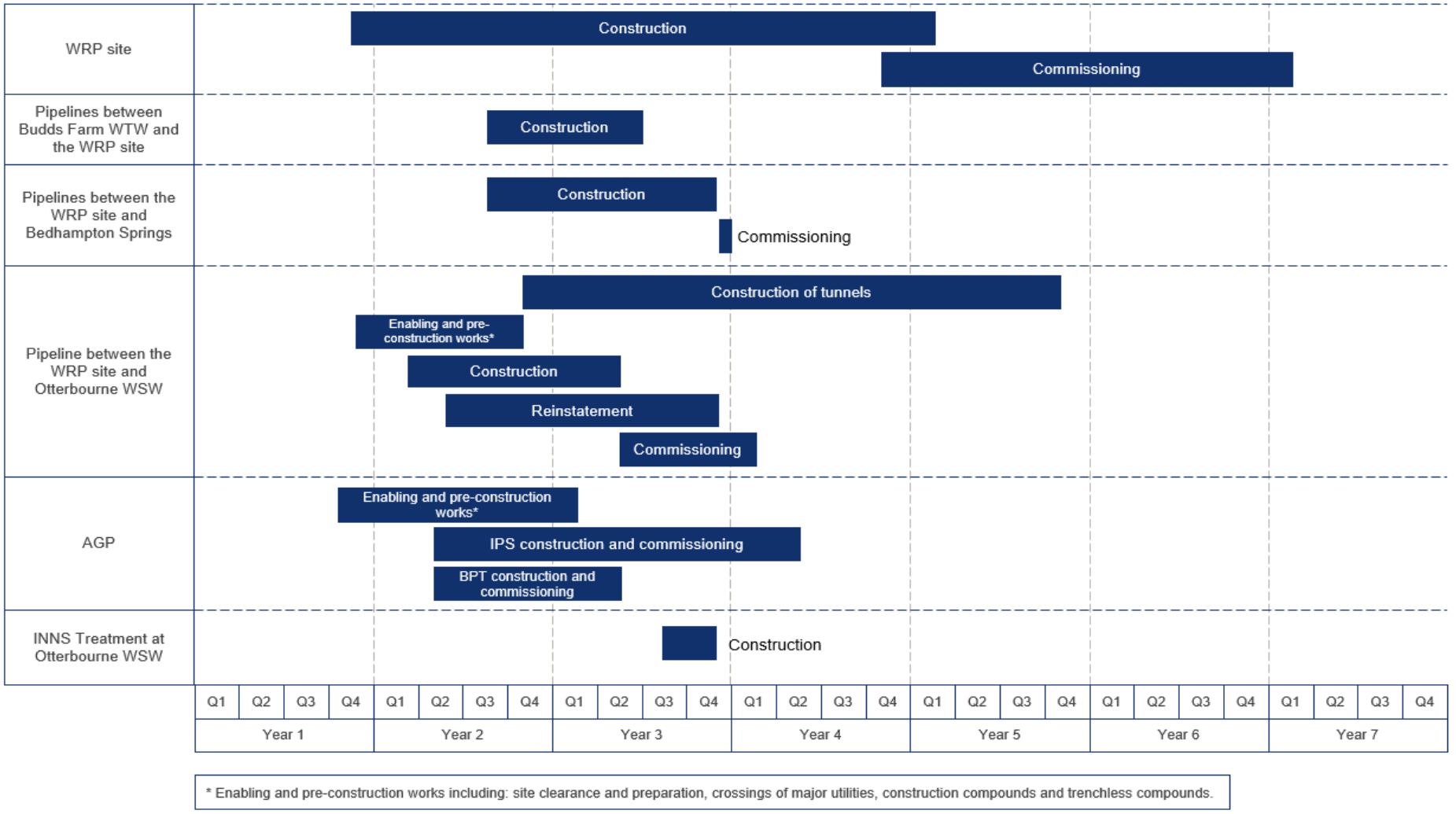
Project stage	Construction Environmental Management Plan iteration
Design – Summer 2024 Consultation and PEI Report	Preliminary Outline CEMP was the first iteration of the CEMP produced for the purpose of consultation.
Design – DCO application and ES	Outline CEMP, submitted with the DCO application, is the second iteration refined in line with EIA outcomes and having regard to feedback from the Summer 2024 Consultation, Spring 2025 Consultation, and Autumn 2025 Consultation.
Construction	The detailed CEMP(s) will be the third iteration refined for the construction stage for the consented project. This will be produced and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3). As part of the requirement discharge process, Hampshire County Council, the Environment Agency and Natural England should be consulted on any matters that are relevant to their functions.

1.4 Construction programme

1.4.1 The anticipated construction programme for the Project is set out in Graphic 1-1. This programme is presented as indicative and subject to future change.

1.4.2 Graphic 1-1 sets out that the Project is anticipated to be constructed over an approximate five-year period. It is currently expected that construction would commence in 2028, however this is dependent on various elements including the DCO programme and detailed design post-consent.

Graphic 1-1 Indicative construction programme



* Enabling and pre-construction works including: site clearance and preparation, crossings of major utilities, construction compounds and trenchless compounds.

1.5 Structure of this Outline Construction Environmental Management Plan

1.5.1 The remainder of this Outline CEMP is structured as follows:

1. Section 2: Environmental policy, legal and regulatory requirements. This section outlines the general approach the Contractor will take to ensure adherence to relevant policy, legal and regulatory requirements.
2. Section 3: Roles and responsibilities. This section sets out the roles and responsibilities for environmental management and provides a framework for the Contractor to take forward, including the requirement for an organisational chart to be included in the detailed CEMP(s). This section also sets out the Contractor's responsibility in relation to monitoring and reporting environmental performance during construction.
3. Section 4: General site requirements. Outlines standard procedures such as working hours, site layout and good housekeeping, incident reporting and worksite security.
4. Section 5: Environmental measures. This section provides identified topic mitigation measures to be adopted during construction to avoid and reduce environmental effects.
5. Section 6: Construction management plans and schedules. This section lists the construction management plans and schedules that are provided as appendices to the Outline CEMP, along with the management plans and environmental method statements the Contractor shall prepare for certain environmental topics.
6. Glossary, and list of abbreviations and references.

2 Environmental policy, legal and regulatory requirements

2.1 Environmental Management System and environmental policy

Environmental Management System

2.1.1 The Contractor will be required to have an Environmental Management System (EMS) based on the requirements of BS EN ISO 14001:2015. The Contractor's EMS will define appropriate control measures and monitoring systems to be employed during the planning of construction of the works for all relevant topic areas, as listed in Table 5-1. The EMS is the primary mechanism by which environmental policy requirements such as compliance with relevant legislation and standards, pollution prevention and continual improvement in environmental performance are to be measured, monitored and delivered.

2.1.2 The Contractor's EMS shall cover the activities of all their sub-Contractors. The Contractor will also be required to co-ordinate with other Contractors and relevant parties that may affect their works. This will be documented in their EMS, as appropriate. As part of their EMS, the Contractor shall commit to planning works in advance to ensure that, in so far as is reasonably practicable, measures to reduce environmental effects are integrated into the construction methods.

Environmental policy

2.1.3 The Contractor shall develop a project specific environmental policy to be included as part of the EMS. This policy will be developed in line with the Applicant's environmental policies and will set out how the Contractor will:

1. Adhere to the requirements of all relevant legislation at the time.
2. Commit to mitigating the impacts associated with construction, where it is reasonably practicable.
3. Commit to good practice in environmental performance.
4. Identify opportunities to improve the Project's whole life performance in terms of environmental and social implications.

2.1.4 Continuous monitoring of the environmental performance of the Project must be demonstrated, aligning with section 2.4 and section 3.3 of this Outline CEMP.

2.2 Environmental legal and regulatory requirements

2.2.1 The Contractor will adhere to all legislative and regulatory requirements at the time. The control measures included in the Outline CEMP are designed to achieve regulatory compliance as a minimum and additionally, to accord with good practice, where relevant, and to mitigate or control likely significant effects.

2.3 Consents and permissions

2.3.1 Other consents and licences required for construction works associated with measures in the Outline CEMP may need to be obtained and complied with. Responsibility for these will be determined in accordance with the Other Consents and Licenses Position Statement (Document reference 5.4, DCO Volume 5) and other relevant management plans. The need for, and compliance with, any other consents and licences will be determined in accordance with the applicable legislation which is distinct from and separate to this Outline CEMP.

2.3.2 Where considered appropriate, applications will be made to the relevant local planning authority for a Section 61 consent under the Control of Pollution Act 1974 [1], at least 28 days before the relevant work is due to start, or earlier, if reasonably practicable. The application of a Section 61 consent will require noise (and where appropriate, vibration) assessments to be undertaken and Best Practicable Means measures set out to manage noise associated with construction of the Project.

2.4 Environmental records inspections

2.4.1 Systems of recording and inspections will be required to maintain an audit trail of environmental performance. This will be managed through the Quality and Safety Management Systems (QSMS) and the EMS of the Contractor, which will be certified in line with the ISO 14001 standards.

2.4.2 The management systems will set out processes, practices, and plans for monitoring and implementing environmental management on-site, and for responding to noted areas of non-compliance. This will ensure that a high standard of environmental control is maintained during the construction of the Project through the corrective action system managed by the Contractor.

2.4.3 The Contractor's EMS will establish record-keeping arrangements and a central filing system for checklists, reports, and monitoring, consistent with the Project QSMS and EMS.

2.4.4 To encourage continual performance improvement, the Contractor should ensure that relevant aspects of the EMS, including management plans and strategies are regularly reviewed, audited, and updated.

3 Roles and responsibilities

3.1 Site roles and responsibilities

3.1.1 The Contractor will prepare the detailed CEMP(s) and submit them for approval in accordance with the corresponding requirement in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3). Appropriate action will be taken where required to ensure compliance.

3.1.2 The Contractor shall establish a management structure that includes an organisational chart encompassing all site roles responsible for delivery of environmental mitigation measures and shall include this chart within the detailed CEMP(s). The chart will set out named roles and the responsibilities of each with regard to the delivery of the environmental mitigation measures within the detailed CEMP(s).

3.2 Training and competence

3.2.1 All site personnel and visitors are to receive a site safety induction and environmental awareness training from the Contractor. This will introduce accountability for personnel working on the Project.

3.2.2 The Contractor will develop a suitable programme of training on environmental issues prior to the construction stage, and will continue to develop and provide training throughout the construction stage. On commencement of site mobilisation, the Contractor will be responsible for site inductions and training.

3.2.3 The identification of training requirements will enable appropriate training to be provided, and suitably qualified and experienced professionals will be engaged for this purpose. Specific training needs will be identified and provided for all personnel involved in work activities that could result in adverse impacts on the environment.

3.2.4 The training programmes will prepare relevant staff with the appropriate level of knowledge on health and safety regulations, community relations, and environmental topics, in addition to the ability to adhere to environmental control measures and advise employees of changing circumstances throughout the construction operations.

3.2.5 Training for all staff will include reference to the importance of adhering to the contents of the detailed CEMP(s) and the potential consequences of departure from specified method statements. Those participating in or near to specific activities that have an environmental impact will be required to attend additional training or toolbox talks, which will be led by the Contractor, supported by appropriate specialists on topics such as ecological species, location-specific talks, pollution control, waste management and emergency procedures for minor and major incidents.

3.2.6 The Contractor will ensure all personnel conducting environmental tasks are suitably qualified and competent for the roles and responsibilities that they are employed to undertake. The Contractor will monitor and record that all staff have attended the relevant environmental induction and training prior to undertaking any activities on-site.

3.3 Monitoring and reporting

3.3.1 The Contractor will undertake the appropriate monitoring and reporting as outlined for each environmental topic within the detailed CEMP(s) and any applicable DCO requirements, licences and consents. The detailed CEMP(s) will set out the monitoring activities to be undertaken which is expected to include regular walkover surveys as well as formal inspections and audits. The monitoring process will evaluate the effectiveness of mitigation measures and the impact of construction activities associated with the Project. The detailed CEMP(s) will be produced and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3).

3.3.2 Monitoring requirements specific to each environmental topic are summarised in Table 5-1 of this Outline CEMP and will be further developed in the detailed CEMP(s).

3.3.3 Results of monitoring will be reviewed by the Contractor's environmental team and reported to the Applicant and shared with relevant authorities, where required, under relevant consents or licences. The Contractor will ensure that monitoring findings are used to support timely and appropriate responses/corrective action where environmental performance issues are identified. Records will be kept and managed in accordance with the Contractor's EMS, as per section 2.4.

4 General site requirements

4.1 Construction working hours

4.1.1 The standard working hours for construction of the Project would be as follows:

1. **Monday to Friday (excluding bank holidays)**: 07:00 to 19:00 in summer (April-September) and 07:00 to 17:30 in winter (October-March).
2. **Saturday**: 07:00 to 17:00.

4.1.2 Works outside these standard working hours or overnight (including Sundays and bank holidays) may be required for construction of some aspects of the Project including, but not restricted to, trenchless crossings and tunnelling, construction works within or near highways and railways, tidal working and abnormal load deliveries. This may be a result of ground conditions that require continuous working or for works within highways to reduce traffic disruption. The relevant local planning authority shall be notified in advance of any proposed works outside the core working hours identified above.

4.2 Construction methodologies

4.2.1 The maximum working width for the trenched open-cut construction of the pipeline will be 40m; however, this will be reduced in certain areas to a narrower 20m corridor to avoid and/or reduce the impacts on constraints and sensitivities and to reduce vegetation loss. The locations of these reduced working widths are detailed in the Reduced Working Width and Trenchless Crossing and Tunnelling Schedules and Plans contained in Appendix A of this Outline CEMP.

4.2.2 Where a reduced working width of 20m is used, there would be no space available to store excavated material. Therefore, in these areas, the Contractor may require the working width either side of the length where the width is reduced to be widened up to 50m for a maximum length of 42m (to be provided at one or the other end of a reduced working width or be split across each side of the reduced working width). This is to provide sufficient space for the storage of materials excavated along the pipeline route including the areas where there is a reduced working width. The need for widened working widths will be determined on a case-by-case basis and applied only where necessary to safely facilitate construction activities. These temporary widened widths will remain within the Order Limits and will be subject to the environmental control principles set out in this Outline CEMP, and the detailed measures included in the detailed CEMP(s).

4.2.3 The locations where trenchless construction methods are to be used (micro-tunnelling in the case of this Project) are detailed in the Reduced Working Width and Trenchless Crossing and Tunnelling Schedules and Plans in Appendix A.

4.2.4 EMEAs are undertaken only where authorised under other relevant Work Numbers. Trenchless construction techniques associated with Work Numbers 2, 3 and 4 may be used beneath EMEAs, provided there is no surface disruption. Where EMEAs overlap with other Work Numbers, the overlapping construction works will be undertaken in accordance with the relevant Work Number, and EMEA works will be phased to follow completion of those construction activities to ensure

the protection and integrity of the EMEA mitigation planting. Where access to an EMEA is available through construction activities delivered under other Work Numbers, EMEA works will utilise those accesses. Where an EMEA is not served by such access and temporary access is required solely to deliver the EMEA works, this will be designed to reduce impacts, with details set out in the detailed CEMP(s). Where EMEAs do not overlap with Work Number 4, shown on the Works Plans (Document reference 2.3, DCO Volume 2), and do not overlap with active construction areas, planting will, where safe and practicable, be delivered in advance of the wider construction programme. In some locations, multiple construction compounds have been identified to provide flexibility for the Contractor to construct the Project. However, only one option for each construction compound will be used.

4.3 Site layout and good housekeeping

4.3.1 To reduce the likelihood of an environmental incident or statutory nuisance (as defined by Part 3 of the Environmental Protection Act 1990 [2] occurring, the Contractor will ensure good housekeeping and cleanliness on sites, and the following measures will be used, where relevant:

1. Provision of staff welfare facilities and waste management.
2. Effective preventative pest and vermin control.
3. Prohibition of open fires, and a requirement to take measures to control the risk of fire.
4. Removal or stopping and sealing of drains and sewers taken out of use; no release of site run-off to ditches, watercourses, drains, sewers or soakaways without the agreement of the appropriate authority.
5. Maintenance of wheel-washing facilities or other containment measures.
6. Location of storage, machinery, equipment, and temporary buildings to reduce environmental effects and, where practicable, outside flood risk areas.
7. Containing and limiting the visual impact of construction sites, as far as reasonably practicable.
8. All fuel, oil, and chemical storage areas to be appropriately bunded and located away from drains and watercourses, with spill kits provided nearby.

4.4 Daily inspection

4.4.1 The Contractor, as the responsible construction site manager, will ensure environmental mitigation and staff responsibilities are made clear to site managers, sub-Contractors, and site supervisors. This will be managed through site inductions and specialist training as outlined in section 3.2. The Contractor will make key staff aware of their responsibilities for undertaking daily routine checks of the site and equipment.

4.4.2 It will be essential that the Contractor has processes and protocols in place for environmental topics to be checked. The Contractor will insert their standard inspection forms and checklists that are associated with their internal EMS into the detailed CEMP(s) appendices for information.

4.4.3 Once inspection and daily checks have been completed, they will be logged, and corrective actions implemented by the delegated site manager in discussion with the wider Contractor team. Section 3.3 sets out the monitoring and reporting procedures for reviewing the effectiveness of these actions and ensuring that identified issues are adequately addressed.

4.5 Incident reporting

4.5.1 The Contractor will be responsible for the development of the emergency procedures associated with construction of the Project. The procedures will be standardised across the various work sites and will account for the anticipated hazards relevant to the site-specific layout. The emergency procedures will contain phone numbers for the emergency services and the principal staff of the Contractor, in addition to the method for notifying statutory authorities.

4.5.2 The Contractor will develop and implement appropriate measures to control the risk of pollution resulting from construction operations. The Contractor will prepare a Pollution Prevention Management Plan (as per measures MAD4 and WE6) and which will provide information on how to handle and report environmental incidents, in accordance with relevant legislation, environmental good practice and ISO 14001, including proactive management practices to ensure that any pollution incident that may occur is controlled, reported to relevant parties and remediated. The plan will define the criteria for implementing the relevant measures.

4.6 Construction site security

4.6.1 The Contractor will carry out site-specific assessments of security and trespass risk and implement appropriate control measures. The following measures will be used to prevent unauthorised access to the site:

1. Use of temporary fencing or hoardings, as appropriate.
2. Temporary site lighting at site perimeters, as appropriate.
3. CCTV where required.

4.6.2 The design of fencing around construction activities shall include consideration of the character of the surrounding landscape. Fencing and hoarding shall be kept well maintained by the Contractor throughout construction. The features will further enhance the site security and public safety.

4.7 Lighting

4.7.1 Construction activity may require the use of temporary lighting to allow safe working outside daylight hours and in areas restricted from natural light. This has the potential to cause nuisance and adversely impact upon nearby sensitive receptors including the South Downs National Park's protected dark skies [3], local residents and wildlife. Lighting which causes glare can also negatively affect workers.

4.7.2 Measures will be implemented to reduce light pollution (including backlight, up-light, and glare), reducing nuisance, disturbance, light trespass, and unnecessary energy use. However, where lighting is required for safety and security, it will be

designed and managed to avoid excessive spill and reduce impacts on sensitive receptors.

4.7.3 Where working after dark is necessary, task lighting will be kept to a minimum. Lighting will be of the lowest luminosity necessary for safe delivery of each task. It will be designed, positioned, and directed to reduce the intrusion into adjacent properties and habitats. Additional environmental measures relating to lighting in specific areas are contained in Table 5-1.

4.8 Communication

4.8.1 The Contractor will be required to sign up and adhere to the Considerate Constructors Scheme before commencement of the works.

4.8.2 The Contractor shall develop and implement a Stakeholder and Customer Communications Plan that includes community engagement, before construction work commences, and throughout the construction phase, in liaison with the Applicant or other suitable person on-site. The Contractor shall provide appropriately experienced community relations personnel to implement the Stakeholder and Customer Communications Plan, provide appropriate information and be the first point of contact to resolve community issues.

4.8.3 The Contractor's community relations personnel shall notify affected communities and other relevant stakeholders prior to the commencement of potentially disruptive construction activities, to enable those affected to plan ahead and to reduce uncertainty particularly to align with actions set out in the Equality Impact Assessment Action Plan (Document reference 7.13, DCO Volume 7). Communication will include information about the nature and timing of the works and how any adverse effects will be managed. Should timescales change during construction, the relevant stakeholders will be informed in the same way that they were initially notified.

4.8.4 The Contractor shall arrange and attend meetings with relevant statutory bodies as necessary, in liaison with the Applicant Senior Stakeholder Manager – Major Projects.

4.8.5 The Contractor shall engage with local schools to raise awareness of the risks associated with construction sites and activity, in liaison with the Applicant Senior Stakeholder Manager – Major Projects.

4.8.6 The Contractor shall provide internal site notice boards in staff areas displaying the Contractor's environmental policy, emergency contact list, environmental procedures, and any other relevant information to ensure awareness of environmental responsibilities. These notice boards shall be situated in prominent positions.

4.8.7 The Contractor shall provide appropriate public-facing signage to inform the local community about the works. This will include the Contractor's 24/7 call centre number, project website or QR code for updates, and details of relevant community contact channels. Contact details for site offices and community liaison teams will be published through methods such as signage, letters, and digital communication channels, and integrated with the Contractor's existing reporting and data management systems.

4.8.8 During construction, a mechanism will be provided for members of the public to be able to report maintenance or damage issues that may arise as a direct consequence of construction works. Complaints received will be carefully monitored, including recording details of the location of the affected party, time of the disturbance and nature of the disturbance shall be undertaken to assist with managing the works to reduce the likelihood of further complaint.

4.8.9 The Contractor's Stakeholder and Customer Engagement Plan shall include appropriate strategies and tools to tailor engagement to local needs, including effective communication with diverse and less heard groups. All communication shall be in plain English and translated information shall be provided where reasonable and upon request.

4.8.10 The Contractor's Stakeholder and Customer Engagement Plan shall consider the specific needs of protected characteristic groups (as defined in the Equality Act 2010) [4], and shall include consideration of further engagement with impacted residents, especially in relation to the actions set out in the Action Plan (Document reference 7.13, DCO Volume 7). A range of tools will be used to achieve this that will tailor engagement to local needs.

4.8.11 The Contractor's Stakeholder and Customer Engagement Plan will also consider the engagement requirements associated with the Framework Construction Traffic Management Plan (Document reference 7.2, DCO Volume 7) and the Traffic Management Strategy (Document reference 7.3, DCO Volume 7).

5 Environmental measures

5.1.1 Table 5-1 sets out the environmental measures required during construction works, developed using information from the EIA and feedback from statutory consultees, stakeholders and consultation responses. All topics covered by the ES have been considered but only those with specific measures for the construction phase (supplementary to general construction measures as outlined in section 4) are included.

5.1.2 Table 5-1 includes:

1. Reference – A unique identifier defined within the table to enable simple reference to individual measures.
2. Environmental measures – A clear and specific description of each measure to be taken.
3. Objective – The objective of each measure and reference to relevant legislation requirements which the measure meets.
4. The relevant ES chapter.

5.1.3 Additional information such as responsible persons, monitoring requirements and how the measures will be implemented or secured will be clearly defined in the detailed CEMP(s) that will be produced by the Contractor.

5.1.4 Table 5-1 does not define general legislative requirements. However, the measures outlined will comply with applicable legislation and recognised industry good practice.

5.1.5 Table 5-1 does not include any measures with regards to traffic and transport, including PRoW, as these are set out in the Framework CTMP (and appended Framework Construction Worker Travel Plan (CWTP) and Framework Rights of Way Management Plan) (Document reference 7.2, DCO Volume 7), secured by corresponding requirements in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3).

Table 5-1 Environmental measures to be adopted during construction

Ref	Environmental measure	Objective	Relevant ES Chapter
Air quality and odour			
AQ1	Dust management - the Contractor will: ▪ Develop and implement a Dust Management Plan (DMP) as part of the detailed CEMP(s) with measures specific to the varying construction areas and activities. The DMP may include measures to control other emissions such as those associated with construction vehicles and machinery on-site and will be submitted and approved by the relevant local planning authorities. ▪ Display the name and contact details of person(s) accountable for air quality and dust issues at the site entrances. This may be the environment manager/engineer or the site manager (employed by the Contractor). Public-facing contact information will be displayed as described in section 4.8.	To reduce dust, air pollution and exhaust emissions (i.e. NOx and particulate matter) during the construction works.	ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6)
AQ2	Site management – the Contractor will: ▪ Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. ▪ Make the complaints log available to the relevant local planning authority, if requested. ▪ Record any exceptional incidents that cause dust and/or air emissions, either on or off-site, and the action taken to resolve the situation in the logbook. ▪ Hold regular liaison meetings with other high risk construction sites within 250m of the Order Limits, to ensure plans are co-ordinated and dust and particulate matter emissions are reduced. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.		
AQ3	Monitoring - the Contractor will: ▪ Undertake daily on-site and off-site inspection, where receptors (or roads) are nearby, to monitor dust, record inspection results, and make the log available to the relevant local planning authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the Order Limits, with cleaning to be provided, if necessary.		

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the relevant local planning authority, when requested. ▪ Increase the frequency of the site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out, and during periods of prolonged dry or windy conditions. ▪ Agree dust deposition, dust flux, or real-time indicative PM_{10} monitoring locations with the relevant local planning authority. Where practicable, commence baseline monitoring at least three months before work commences at specific locations across the Order Limits. Further guidance is provided by the Institute of Air Quality Management on monitoring during demolition, earthworks and construction. Specific monitoring requirements, including monitoring duration, will be included as part of the detailed CEMP(s) for individual sites, as required [5].		
AQ4	Preparing and maintaining the construction site – the Contractor will: ▪ When planning site layouts, the Contractor should seek, so far as is practicable within the constraints of the Order Limits, to locate dust causing activities away from dust sensitive receptors. ▪ Erect solid screens or barriers around dusty activities during construction works. ▪ Use a dust suppression system where there is a high potential for dust production and the site is active for an extensive period. ▪ Avoid site run-off of water or mud. ▪ Keep site fencing, barriers and scaffolding clean using wet methods. ▪ Materials with the potential to produce dust should not be stored on-site for extended periods, unless they are intended to be re-used on-site. Materials will be appropriately managed (e.g. covered, grassed). ▪ Manage storage areas to prevent wind whipping.		
AQ5	Construction operations – the Contractor will:		

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ 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. ▪ Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where reasonably practicable and appropriate. ▪ Use enclosed chutes and conveyors and covered skips. ▪ Reduce drop heights from handling equipment and use fine water sprays on such equipment wherever appropriate. ▪ Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. ▪ Avoid scabbling (roughening of concrete surfaces) if possible. ▪ 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. ▪ For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.		
AQ6	Bonfires and burning of waste materials will not be allowed on-site.		
AQ7	The Contractor will ensure sand and other aggregates are stored in appropriate manner to reduce dust generation for example the use of bunded areas.		
AQ8	Measures specific to earthworks – the Contractor will: ▪ Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. ▪ Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. ▪ Only remove the cover in small areas during work and not all at once.		ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6), ES Chapter 13 Landscape and visual, Volume I (Document

Ref	Environmental measure	Objective	Relevant ES Chapter
			reference 6.1, DCO Volume 6)
AQ9	Measures specific to trackout – the Contractor will: ▪ Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. ▪ Avoid dry sweeping of large areas, where reasonably practicable. ▪ Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. ▪ Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. ▪ Record all inspections of haul routes and any subsequent action in a site logbook. ▪ Install hard surfaced haul routes where reasonably practicable, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. ▪ Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud) prior to leaving the site, where reasonably practicable. ▪ Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permit(s). ▪ Locate access gates at least 10m from receptors where reasonably practicable.		ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6)
AQ10	Measures specific to the operation of vehicles and/ or machinery and sustainable travel – the Contractor will: ▪ Ensure all vehicles will switch off engines when stationary – no idling vehicles. ▪ Implement a CWTP that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing). This will be prepared and submitted for approval in accordance with the corresponding requirement in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3). ▪ The Contractor will seek to reduce the use of diesel or petrol powered generators and instead use mains electricity or battery powered equipment where reasonably practicable.	To reduce NRMM pollutant emissions from construction.	ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6), ES Chapter 18 Traffic and Transport, Volume 1 (Document

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ The Contractor will impose and clearly indicate a maximum speed limit of 15mph on surfaced and 10mph on unsurfaced haul roads (i.e. non-highway roads) and work areas. ▪ Manage the sustainable delivery of goods and materials via the Framework CTMP.		reference 6.1, DCO Volume 6)
AQ11	All Non-Road Mobile Machinery (NRMM) and plant will be well maintained. The Contractor will ensure all equipment complies with the appropriate NRMM standards. If any emissions of dark smoke occur, then the relevant machinery will be stopped as soon as practicable, and any problem rectified.		ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6)
AQ12	All NRMM will use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004) where reasonably practicable.		
AQ13	The Contractor will consider the siting of NRMM within the working area. Where practicable (and subject to detailed design), generators and plant will be located at the greatest distance from receptors to reduce the potential for air quality effects.		
AQ14	All diesel NRMM will be fitted with Diesel Particulate Filters (DPFs) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting): ▪ The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, will be ensured through a programme of on-site checks. ▪ Fuel conservation measures will be implemented, including instructions to: - Throttle down or switch off idle construction equipment. - Switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded. The Contractor will ensure equipment is properly maintained to ensure efficient fuel consumption.		
AQ15	All road construction vehicles will, at minimum, adhere to Ultra Low Emission Zone (for light duty vehicles) or Low Emission Zone (for heavy duty vehicles) equivalent emissions standards, i.e.: ▪ Petrol cars, vans and minibuses (vehicles less than 3.5 tonnes gross weight) should be Euro 4 (or better). ▪ Diesel cars, vans and minibuses (vehicles less than 3.5 tonnes gross weight) should be Euro 6 (or better).	To reduce road construction vehicle pollutant emissions from construction.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	Heavy duty vehicles (vehicles more than 3.5 tonnes gross weight) should be Euro VI (or better).		
AQ16	Where excavation does occur in odorous sites, material damping down, misting or other similar measures will be used as appropriate to manage odour	To reduce odour emissions.	
AQ17	During the WRP site construction, the Contractor will undertake the following: ▪ Focused pre-excavation trial pits/ground investigations. ▪ Regular monitoring/identification of excavated material to predict odour issues. ▪ Reduce the surface area exposed landfill matter as far as practicable. ▪ Provide temporary cover of exposed landfill areas promptly where possible. ▪ Permanently cover exposed landfill areas as soon as practicable. ▪ Provide surface gas monitoring where gas emissions are expected on exposed landfill areas. ▪ Landfill matter to be removed from site will be done so as soon as practicable and covered in the meantime. ▪ Where necessary mobile odour suppression units will be deployed. Sensory monitoring of odour should be implemented to support real-time identification and response to odour emissions.		
AQ18	Measures specific to demolition – the Contractor will: ▪ Ensure effective water suppression is used during demolition operations, for example by using hand held sprays, which are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, when manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. ▪ Explosive blasting will not be used in demolition activities and appropriate manual or mechanical alternatives will be employed instead. Bag and remove any biological debris or damp down such material before demolition. ▪ Soft strip inside buildings before demolition.	To reduce dust and PM_{10} emissions from demolition activities during the construction works.	ES Chapter 6 Air quality and odour, Volume I (Document reference 6.1, DCO Volume 6)
Archaeology and cultural heritage			

Ref	Environmental measure	Objective	Relevant ES Chapter
ACH1	The Contractor will use trackway and/or matting for access, where reasonably practicable in areas of archaeological interest during construction.	To avoid disturbance to areas of archaeological interest.	ES Chapter 7 Archaeology and cultural heritage, Volume I (Document reference 6.1, DCO Volume 6)
ACH2	The Contractor will use standardised noise reduction techniques covered in the noise and vibration section of this table (NV2 and NV3), and/or phasing of works as necessary as set out in NV3.	To reduce the risk of noise and vibrations on cultural heritage assets.	
ACH3	Intrusive construction works shall not commence until any pre-commencement archaeological investigation specified by the Outline Written Scheme of Investigation (WSI) (Document reference 7.6, DCO Volume 7, Version 1) and subsequent Survey-Specific WSIs required in the area of those works has been completed to the satisfaction of the relevant local planning authority archaeologist(s) and any non-investigative mitigation has been adequately secured.	To prevent inadvertent harm to cultural heritage assets	
Terrestrial and freshwater biodiversity			
TFB1	The Contractor will implement good practice measures to mitigate construction-related effects on biodiversity associated with dust deposition, air pollution (see AQ1 to AQ18), pollution incidents (see MAD4), water quality (see WE1 to WE19), light (see TFB12), noise and vibration (see NV1 to NV3).	To reduce pollution risk.	ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6)
TFB2	Construction working areas and haul routes will be clearly demarcated in the detailed CEMP(s) prepared by the Contractor, and boundaries adhered to where these are located adjacent to retained habitats.	To reduce damage to retained habitats.	
TFB3	An appropriately qualified and experienced Ecological Clerk of Works (ECoW) will be available during the construction phase to advise, supervise, and report on the delivery of the mitigation measures and controls outlined in the detailed CEMP(s). The ECoW will be supported as necessary by appropriately qualified specialists. The ECoW will ensure that all measures included within the detailed CEMP(s) are implemented	To reduce damage to or disturbance of ecological features or receptors.	
TFB4	The Contractor will comply with relevant protected species legislation. Appropriate licences to be obtained where necessary from Natural England for all works affecting protected species, as identified by the ES. The draft badger *Meles meles* and hazel dormouse *Muscardinus avellanarius* mitigation licences (for which Letters of No Impediment have been issued by	To manage changes in the baseline between DCO production and	ES Chapter 8 Terrestrial and freshwater biodiversity,

Ref	Environmental measure	Objective	Relevant ES Chapter
	Natural England) will be updated and final mitigation licences for these species will be obtained. If requirements for mitigation licences are identified through pre-construction surveys for other species (including, but not limited to, bats, otter *Lutra lutra*, water vole *Arvicola amphibius* or Schedule 1 birds), these will be obtained from Natural England. Great crested newt *Triturus cristatus* (GCN) compensation will be provided through District Licensing (DL) with NatureSpace where the local authority is signed up to a DL scheme. A post-consent reassessment will be carried out to appropriately quantify the actual planned impacts on GCN and the resulting licence conditions. An impact plan will be included in the detailed CEMP(s), which will also set out location specific mitigation requirements during construction. All applicable works will be undertaken in accordance with the relevant mitigation requirements and conditions set out in these licences. Any protected species licences secured are likely to include monitoring requirements. This is to ensure the mitigation stipulated within the licence is achieving the objectives set. The results of the monitoring will inform any remedial work required, or any further monitoring requirements to be undertaken by the Contractor, as well as reporting requirements.	commencement of construction.	Volume I (Document reference 6.1, DCO Volume 6)
TFB5	Pre-construction surveys will be undertaken for protected habitats and species by the Contractor to confirm and update the baseline survey findings, as detailed in ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6), and ensure the current mitigation proposals remain appropriate. The survey areas for pre-construction surveys are determined by the distances within which works associated with the Project may result in contravention of biodiversity legislation. Pre-construction surveys for terrestrial biodiversity will include (but are not limited to): ▪ Field signs walkover surveys for badger, of the Order Limits plus 30m, or when confirmed, the working width plus 30m to update the status of known setts and to record new setts. This will inform the final licence application and detailed mitigation design. Monitoring of setts will be undertaken if required, to assist with sett classification and determining appropriate mitigation. ▪ Update surveys of trees and buildings for bat potential and roost presence within the Order Limits, plus 10m, or when confirmed the working width plus 10m. ▪ Field signs surveys for otter and water vole to be undertaken 200m upstream and downstream of watercourse crossing points and other working areas within 30m of a watercourse.	Protected species licence compliance.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Habitats survey to record an assessment of changes to the baseline within the Order Limits, or when confirmed, the working width. ▪ Breeding bird walkover surveys of suitable habitat within the Order Limits, or when confirmed, the working width. ▪ Targeted Schedule 1 bird surveys if construction works are completed during the bird nesting season (March to August inclusive) within suitable habitat. Terrestrial biodiversity pre-construction surveys will be undertaken in accordance with relevant protected species licensing requirements (where applicable).		
TFB6	Where individuals of any species protected by biodiversity legislation are identified during the works, construction operations will stop in those areas and the ECoW contacted for further advice on how to proceed, as indicated in the detailed CEMP(s). Relevant legislation for protected species comprises: ▪ Wildlife and Countryside Act 1981 (as amended) [6]. ▪ Protection of Badgers Act 1992 (as amended) [7]. ▪ Natural Environment and Rural Communities Act 2006 (as amended) [8]. ▪ Conservation of Habitats and Species Regulations 2017 (as amended) [9].		
TFB7	Fencing to prevent access of site personnel, machinery and storage of materials will be used where necessary to protect retained habitats and avoid species mortality. The fencing will not restrict passage of wildlife and will be monitored and maintained.		
TFB8	A minimum of 15m exclusion zone from any construction works to designated ancient woodland habitat will be implemented.	To ensure compliance with Natural England standing ~~advise~~advice on ancient woodland.	
TFB9	A minimum 10m exclusion zone from hedgerow H250 will be established to avoid construction disturbance and impact. See ES Figure 8.9 UK Habitat Classification for linear features including important hedgerows within the field survey area Volume III (Document reference 6.3, DCO Volume 6). Root protection areas (RPAs) will be enforced using suitable fencing to ensure no excavations, soil compaction or damage to roots and canopy within the exclusion zone.	To reduce construction impacts to habitats due to construction compound.	

Ref	Environmental measure	Objective	Relevant ES Chapter
TFB10	The removal of vegetation with the potential to support nesting birds will be avoided during the breeding bird season, where reasonably practicable, by programming removal for the period outside of this season. The bird breeding season is defined by the Government as March to August inclusive [10], but several species may nest outside of this period and the Contractor's decisions will be informed by an experienced ornithologist. If it is not possible to remove vegetation outside of the breeding bird season, then the risk will be mitigated by pre-construction checks by a suitably experienced ornithologist and carried out within a maximum of 24-48 hours prior to the start of any construction work including enabling. An appropriate methodology for checking if active nests are present will be determined by an ECoW following good practice and based on habitat type and visibility. Where there is low visibility of the vegetation and an increased risk of an active bird nest not being detected, pre-construction checks for nesting birds is not appropriate and vegetation removal will be conducted outside of the breeding bird season or once the vegetation is deemed inactive from bird activity. If active nests are found, appropriate protection measures will be put in place. Measures will include implementing exclusion zones around active nests until chicks fledge (no longer reliant on the nest) or nests become inactive as determined by monitoring undertaken by an ECoW. Exclusion zones will vary due to differences in anthropogenic disturbance thresholds between species and will be determined in consultation with a suitably experienced ornithologist.	To reduce disturbance of breeding birds.	
TFB11	Habitat with the potential to support hibernating species (comprising common reptiles, amphibians and hazel dormouse) will not be removed between November and March (inclusive) without supervision by the ECoW, or unless previous mitigation has been implemented to exclude, remove or encourage these animals out of the works area (e.g. habitat manipulation for dormice and reptiles). This will be undertaken in accordance with the hazel dormouse licence method statement [Document reference 5.4, DCO Volume 5] as the hibernation period is variable depending on weather conditions.	To reduce damage to or disturbance of hibernation features.	
TFB12	Where working after dark is necessary, task lighting will be of the lowest luminosity necessary for safe delivery of each task and will be designed, positioned and directed to avoid light spill on sensitive habitats and, wherever practicable, to avoid any light spill within 20m of any confirmed bat roost.	To reduce disturbance to ecological features or receptors, notably bat roosting or hibernation features.	

Ref	Environmental measure	Objective	Relevant ES Chapter
TFB13	Working within statutory and non-statutory sites designated for their ecological features will be controlled using a variety of methods. These will take account of the reasons for designation to identify the appropriate techniques to reduce impacts. This could include reducing working corridor widths or the use of low ground pressure plant.	To reduce damage to or disturbance of designated sites.	
TFB14	Pre-construction habitat suitability assessment surveys for freshwater ecological receptors will be undertaken at all watercourses where open-cut construction is proposed, including assessments for white-clawed crayfish *Austropotamobius pallipes* and southern damselfly *Coenagrion mercurial* within the River Itchen and River Meon catchments only and assessments for Southern iron blue mayfly *Baetis niger* in the River Itchen catchment only. Should suitable habitat for these species be identified, dedicated surveys will be undertaken to establish their presence or absence prior to the start of any construction work including enabling, and works will only proceed under a method statement delivered by the ECoW, which may include (but is not limited to) ensuring appropriate timing of the works, exclusion works or altering the construction method to ensure damage to or removal of suitable habitat is limited. Should the potential for migratory fish be identified, works undertaken in these channels will be reduced or restricted to avoid sensitive spawning and migratory periods of the species present. Additionally, the flow will be maintained during construction for all trenched open-cut watercourse crossings (such as a temporary side channel), and fish relocation will be undertaken in the immediate vicinity of the works area if necessary. If fish relocation is required, permits will be obtained from the Environment Agency (EA) by the Contractor prior to work commencing at open-cut crossings of watercourses. For Ordinary Watercourses in Hampshire an Ordinary Watercourse Consent (OWC) or land drainage consent is also needed from Hampshire County Council. Should the potential for any notable macroinvertebrate species be identified in the pre-construction habitat suitability assessments, appropriate mitigation will be applied specific to the nature of that species. Mitigation might include relocating of any larger species to safe locations to avoid direct impacts, or consideration of the timing of the construction works to avoid key lifecycle stages for very sensitive species. There will be no open-cut crossings of Main Rivers.	To reduce damage to or disturbance of freshwater fish and macroinvertebrates.	
TFB15	Where reasonably practicable, no works will take place within 5m of the bank top of any watercourse. Where this is not reasonably practicable (i.e. at crossing points) good practice	To reduce damage to or disturbance of	

Ref	Environmental measure	Objective	Relevant ES Chapter
	guidance for pollution prevention will be followed, and vegetation will not be removed from the banks unless necessary to undertake the works. Where vegetation removal is required, removal will be restricted to the smallest practicable footprint and will be allowed to regenerate naturally.	watercourses and bankside vegetation.	
TFB16	All habitats suitable for common reptiles and amphibians within the Order Limits or working width when confirmed will be subject to two-stage habitat manipulation between mid-March and mid-October under the supervision of an ECoW. Vegetation clearance will be achieved using appropriate equipment having regard to the type of vegetation to be removed, the area affected and the risk of killing or injuring reptiles or amphibians. Construction works could commence immediately after completion of the second stage of habitat clearance. The two-stage clearance will encourage dispersal towards adjacent, suitable habitat. A temporary but secure fencing may be used to prevent reptiles or amphibians from moving into construction areas. Should displacement of either type not be possible then translocation to an appropriate and agreed receptor site will be undertaken following surveys. This will be undertaken ~~following a Reptile Translocation Strategy produced by the Contractor~~ in line with ~~relevant guidance to prevent killing or injury of common reptile species.~~the approach set out in TFB29..	To reduce risk of killing or injuring reptiles.	
TFB17	Where practicable, replacement hibernacula and refugia suitable for reptiles and amphibians will be provided using arisings from vegetation clearance and within the Order Limits.	To reduce habitat loss for reptiles and amphibians.	
TFB18	Where there is a risk of animal entrapment, such as where excavations must 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 will 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. This will be undertaken by either the ECoW or the biodiversity representative within the construction team. If an animal is found within the excavation during these checks the ECoW will be contacted, and they will attend to assess the situation and release the animal if possible. Any pipework left open at night (stored or under construction) should be sealed up overnight, from at least two hours before sunset to after sunrise.	To reduce risk of animal entrapment.	
TFB19	A construction exclusion zone, in accordance with BS5837:2012 [11] will be set up around trees to be retained. This will separate RPAs and ancient tree buffer zones from the construction	To reduce damage to tree roots resulting in	

Ref	Environmental measure	Objective	Relevant ES Chapter
	works area using temporary tree protection fencing, to ensure no excavations, soil compaction or damage to roots and canopy within the buffer. Protective Heras rail fencing will allow a maximum 1m buffer between the extent of proposed excavation works and RPAs of the retained trees. In line with section 6.2.2 of BS 5837:2012, which requires that the tree protection barriers be fit for the purpose of excluding construction activity and that they provide adequate protection to the trees, hedgerows and woodland, fencing should consist of 2m tall, welded mesh panels (Heras fencing or similar) fixed to the ground via vertical tubes driven into the ground until secure. These tubes should be spaced at a maximum interval of 3m. Each panel will be secured to its neighbour with a minimum of two anti-tamper couplers. Where space allows, the panels should be supported on the inner side by stabiliser struts which are attached to a base plate and secured with ground pins. Weather-proof signs shall be fixed to the outside of the hoarding with words such as 'Construction exclusion zone – No access and no storage or working within this area'. The protective fencing will be maintained for the duration of the construction phase and checked periodically. In the event that an RPA for retained trees cannot practicably be excluded from the works area, protective fencing should be adjusted to the new location and mitigation such as ground protection that are fit for the purpose of supporting any traffic entering the RPA without causing compaction of the soil below and manual excavation under strict arboricultural supervision will be utilised. The following precautions must be followed for works occurring inside RPAs: ▪ Excavations within the RPAs must be carried out using hand tools, compressed air and soil vacuum excavation techniques. ▪ A written Method Statement for hand digging shall be included within the CEMP(s) if required. ▪ All hand digging within RPAs must be undertaken with great care, requiring closer supervision than normal operations to enable the identification and protection of structural roots (roots with diameters equal to or greater than 25mm) or massed fibrous roots. ▪ These roots must not be severed at any time without first consulting a suitably qualified and experienced Arboriculturist or the relevant local planning authority's Tree Officer. ▪ Any non-structural roots (roots with diameters below 25mm) may be pruned back if considered safe to do so, to a lateral root where possible, using a pruning saw or	loss of trees, and the loss or deterioration of irreplaceable habitats	

Ref	Environmental measure	Objective	Relevant ES Chapter
	secateurs, leaving a clean-cut surface, subject to strict arboricultural monitoring and supervision. The Contractor will ensure that in respect to trenchless excavation solutions beneath ancient or veteran tree buffers and ancient woodland buffers, both launch and receptor pits are located outside buffer zones and that a minimum depth of 4m is maintained between the surface level and the outer diameter of the bore. For all other trees to be retained and subject to site location, soil type and proximity to tree centres a minimum depth of 3m from the outer diameter of the bore and the surface level will be maintained, in consultation with the project engineer and Arboriculturist. No machinery or materials including fuels and chemicals will be stored within the RPA. No ground level changes, construction activities or vehicle access will be allowed within the RPA. Any additional underground services will seek to avoid the RPAs in order to avoid damage to the retained trees. If additional services must unavoidably be installed within the RPAs of retained trees, the locations of these will be chosen in consultation with a suitably qualified and experienced Arboriculturist and will be identified within the Tree Impacts Plan, read in conjunction with the method statement. Where possible the works will be carried out using trenchless techniques such as moling, laser guided boring, or through continuous trenching under strict arboricultural supervision. The Contractor will ensure all site personnel, including machine operators, are briefed on tree protection measures through inductions and toolbox talks, and that these requirements are adhered to throughout construction. Paragraph 6.3 of BS 5837:2012 states that wherever trees on or adjacent to a site have been identified as requiring protection, there should be an auditable system of arboricultural site monitoring. This should include arboricultural supervision whenever construction or development activity is to take place within RPAs of retained trees. Following each site visit by a suitably qualified and experienced Arboriculturist, a monitoring report should be issued to the Contractor. Copies of these reports should be kept and made available to the relevant local planning authority on request. Key timings for supervision include:		

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Following installation of tree protection barriers and ground protection, before commencement of any construction works including enabling, to inspect tree and ground protection against approved plans. ▪ For the duration of any site works (e.g. excavations, construction) taking place within the RPA of retained trees. ▪ Periodically, with a minimum of one supervisory visit every month to ensure tree protection remains correctly installed and is fit for purpose throughout the duration of works. ▪ All protection measures included in the detailed CEMP(s) will be followed.		
TFB20	An unobstructed path within the Order Limits will be provided and maintained throughout construction for use by badgers between dusk and dawn, connecting a known sett to wider foraging and territorial areas. No location details or sett reference are provided here due to the risk of persecution faced by this species; specifications to be detailed in the badger mitigation licence.	To reduce risk of isolation of main badger sett from wider territory and foraging habitat.	
TFB21	Biosecurity measures will be implemented at locations of badger sett closures and high levels of badger activity (including disinfection of footwear and equipment). The Contractor to regularly review https://www.ibtb.co.uk/ for information regarding local outbreaks in relation to locations of badger sett closures. If necessary, in the case of a severe outbreak, an Infectious Disease Risk Assessment will be produced in consultation with Natural England.	To reduce risk of bovine tuberculosis (bTB) spread amongst badger populations and cattle.	
TFB22	To prevent wildfowl nesting (particularly Canada goose *Branta canadensis*, greylag goose *Anser anser* and Egyptian goose *Alopochen aegyptiaca*), within proximity of the temporary water storage lagoons, the Contractor will implement the following: ▪ Installation of mesh fencing around the perimeter of the temporary storage lagoon, prior to filling with water, to prevent direct movement of wildfowl from adjacent terrestrial habitat. Wildfowl that nest on the perimeter of waterbodies require direct access from the terrestrial habitat to the lagoon. Therefore, the installation of barrier fencing is deemed an effective method to prevent nesting activity. ▪ Display wildfowl nesting prevention signage on the mesh fencing.	To prevent wildfowl nesting within proximity of the temporary water storage lagoons (and associated airport bird strike risk).	ES Chapter 8 Terrestrial and freshwater biodiversity and ES Chapter 14 Major accidents and disasters, Volume I (Document

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ The mesh fencing will be at least 90cm high, suitable mesh size (2-5cm mesh size) and fitted with no gaps at the bottom of the fence line or around the perimeter [12] [13] [14]. ▪ Review the integrity of the mesh fencing every day and if the mesh fencing becomes damaged, repair immediately. ▪ Remove fencing when the temporary storage lagoon is empty and requires removal. If wildfowl directly land on the waterbody and are observed loafing on the temporary storage lagoon: ▪ The Contractor will contact a suitably experienced ornithologist. ▪ The ornithologist will record the date, time, species, number and behaviour of individuals present on the temporary storage lagoon. ▪ A dynamic risk assessment will be undertaken to determine whether acoustic deterrents and/or shade balls require installation to prevent loafing activity on the temporary storage lagoons. ▪ The above will all be reviewed by the Contractor prior to construction (including enabling) and commissioning. Four of the seven total lagoons are located within 13km of Southampton Airport, if any changes to the approach for these lagoons are required, the airport authorities will be consulted on changes to the mitigation approach and agreement sought.		reference 6.1, DCO Volume 6)
TFB23	Construction works will be timed to avoid the non-breeding bird season (September to March inclusive) within candidate Solent Wader and Brent Goose Strategy (SWBGS) [15] site 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. 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). If piling is required within 200m of candidate site H130 it will be timed to avoid the non-breeding bird season (September-March inclusive). Where temporary habitat losses occur within this area (i.e. for pipeline installation and any other areas required to facilitate the construction such as the haul route or soils storage) these will be fully reinstated as set out in the reinstatement strategy in the Outline LEMP (Document reference 7.5, DCO Volume 7).	To prevent potential adverse effects on-site integrity of qualifying species of the Chichester and Langstone Harbour SPA/ Ramsar site, as the land has been identified as functionally linked to the Habitats Site.	ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6)

Ref	Environmental measure	Objective	Relevant ES Chapter
	Additionally, where construction works result in noise disturbance levels at the boundaries of sites H08, H130 and H90 of more than 50dB LAeq, or an agreed level above baseline noise levels (to be agreed with Natural England), watching briefs will be required during the non-breeding bird season (September to March inclusive) to determine species presence and abundance within the Zone of Influence (ZoI) of the works. The watching briefs are proposed for at least two hours either side of high tide. If 1% or more of the estimated population of any one qualifying species of Chichester and Langstone Harbour SPA and Ramsar and Portsmouth Harbour SPA and Ramsar are present within the ZoI during proposed enabling and construction works, works estimated to produce noise more than 50dB LAeq or an agreed level above baseline noise levels (to be agreed with Natural England) will cease. This aims to prevent adverse effects on-site integrity of the qualifying species populations 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 Wetland Bird Survey (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. 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. Good practice measures including the insulation of pumps, generators and plant, and installation of acoustic fencing (ready hoard or Heras fencing) around sensitive areas within the construction footprint will be implemented to reduce noise and visual disturbance to SWBGS sites associated with Chichester and Langstone Harbour Special Protection Area (SPA) and Ramsar and Portsmouth Harbour SPA and Ramsar. In addition, a soft start methodology will be implemented if percussive or vibration piling works is required at Budds Farm. 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 [16]. The slow increasing of noise levels will avoid a sudden impulsive loud noise and the subsequent startle effect on qualifying species present		

Ref	Environmental measure	Objective	Relevant ES Chapter
	If temperatures of 0ºC or lower occur within a 24-hour period, for five consecutive days, leading up to or during any activities that will produce noise levels above 50dB LAeq at the boundaries of sites H08, H130 and H90, then works estimated to produce noise levels above 50dB LAeq or an agreed level above baseline noise levels (to be agreed with Natural England) must cease. Once temperatures have been above 0ºC for three consecutive days works can then recommence. A bespoke mitigation approach for the loss of SWBGS low use site H08, located at the WRP site, will be delivered off-site by a third party. Monitoring requirements of the off-site mitigation site will be specified within the management plan for the mitigation site.		
TFB24	One area of coastal floodplain and grazing marsh habitat would be temporarily lost but reinstated and enhanced. This comprises other neutral grassland within the Fielders Farm Meadows (Eastleigh) Site of Importance for Nature Conservation (SINC). The entire SINC falls within Work Number 7. Land to the east of the pipeline and the construction compound L-5 will be retained and protected during construction. Seek to reduce the footprint of the construction compound L-5 (Work Number 6) and the works footprint within this SINC to that reasonably required (see ES Figure 1.1 Location of the Proposed Development and Order Limits, Volume III (Document reference 6.3, DCO Volume 6) for labelled locations of compounds). Measures for this SINC include: ▪ A bespoke habitat reinstatement plan will be produced for the SINC, full details are included in the Outline LEMP (Document reference 7.5, DCO Volume 7). ▪ Removal of INNS. ▪ Management of scrub encroachment. ▪ Habitat reinstatement will consider soil handling so that flora seed bank is used where possible.	Retention and protection of habitats within the Fielders Farm Meadows (Eastleigh) SINC	
TFB25	Measures for reinstatement and enhancement of Field to West of Gillman Road SINC: ▪ A bespoke habitat reinstatement plan will be produced for the SINC, full details are included in the Outline LEMP (Document reference 7.5, DCO Volume 7). ▪ Habitat reinstatement will consider soil handling so that local flora seed bank is used where possible.	Enhancement and reinstatement of Field to West of Gillman Road SINC.	

Ref	Environmental measure	Objective	Relevant ES Chapter
TFB26	Where barn owl *Tyto alba* nest sites may be directly lost via physical removal due to construction activities (including enabling) or these activities are likely to cause the disturbance or displacement of barn owl from a known nest site, these nest sites will be carefully boarded over or capped while inactive and removed. Alternative nest sites (two nest boxes; second box provides a roost site) will be provided at least 30 days before the start of enabling works. The nest boxes will be installed nearby, but at a distance not subject to disturbance from the Project, ideally within 200m of the existing nest site and in compliance with guidance outlined in Shawyer [17]. Enabling works within 175m of a nest site will be reviewed in advance on a site-by-site basis by a suitably qualified ornithologist, to determine if there is a risk of disturbance or displacement of barn owl.	To prevent impacts to barn owl.	
TFB27	The following mitigation measures will be implemented for otter where works are unavoidable within 30m of a watercourse: ▪ No night works, when otter are most active, will take place at construction compounds L-7 and L-8 and the corridor buffer between these compounds will be maintained and left undisturbed at night-time. ▪ Implementation of a 15m buffer between the Bow Lake watercourse and pipeline construction works outside of construction compound L-5, L-6 and L-7. ▪ Adoption of sensitive construction methodologies to ensure continued accessibility for otter to the majority of suitable foraging and commuting habitats while securing works areas where the risk to individual otter is greatest. ▪ The 30m buffer will be imposed around any resting site before any work starts on-site using fencing to restrict construction disturbance, whilst not affecting otter movement through suitable retained habitats. It will be clearly demarcated using coloured tape, chestnut pale fencing, steel mesh fencing or similar. ▪ Additional noise or light screening or other suitable light and noise abatement measures (in place of or additional to natural screening that might be delivered through habitat enhancement along the watercourse) may be implemented according to risk and as advised by the ECoW. ▪ If a natal site is confirmed or suspected to support otter cubs, the buffer will be extended to 200m of the natal site, with works within this buffer being suspended for approximately	To reduce impacts to otter.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	eight to ten weeks until it has been confirmed the cubs are mobile, or presence of cubs is ruled out. ▪ Access for otter to the riparian zones utilised by otter will be maintained at all times, including through the provision of temporary bypasses if determined to be required following pre-commencement surveys. ▪ Impacts to established otter paths and traditional routes along watercourses and within supporting riparian zones during the construction phase will be reduced. ▪ Cessation of certain works during night-time hours, or curtailment of works within two hours of sunset or sunrise. ▪ For construction within 200m of a watercourse known to support otter, the ECoW will assess and identify any potential entrapment, barrier or collision risk for otter and provide advice accordingly.		
TFB28	Mitigation secured for water vole may include displacement. If required, displacement will, if reasonably practicable, be undertaken in the spring seasonal window (between 15 February and 15 April), when water vole are establishing breeding territories. If this is not reasonably practicable, it will be carried out in the autumn seasonal window (between 15 September and 31 October). Displacement to be carried out under the supervision of an appropriately licenced individual.	To reduce impacts to water vole.	
TFB29	~~A~~ Reptile translocation ~~Strategy for the WRP site~~to an appropriate and agreed receptor site or sites will be ~~produced by the Contractor in line with relevant guidance~~undertaken to prevent killing or injury of common reptile species. ~~Measures within this will include:~~ ~~Any required preparations~~Surveys in line with good practice will be undertaken to confirm the size of the population to be translocated and determine the carrying capacity of the receptor site~~, including habitat enhancement or creation such as scrub clearance and creation of hibernacula.~~(s). Preparation for the translocation will be supervised by an Ecological Clerk of Works ~~requirements for supervising any necessary preparations to the receptor site and the WRP site, including habitat enhancement and creation and~~ . This will include ensuring correct installation of exclusion fencing at the WRP site and confirming that the receptor site(s) are in the required condition to receive the reptiles.	To prevent killing or injury of common reptile species at the WRP site.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	~~• Trapping methodology, including the~~The translocation will be carried out by suitably qualified and experienced ecologists and will follow good practice approaches using exclusion fencing around the WRP site and the laying of artificial refuges which will be checked regularly. If required ~~density of refugia and bedding in period, expected~~ to increase trapping ~~period, weather restrictions and suitable reptile handling techniques.~~ ~~• Any required~~efficiency, habitat manipulation ~~at the WRP site to increase capture efficiency such as reducing the habitat suitability and the hand removal of natural refugia features such as rubble piles.~~ ~~Site clearance methodology~~will be undertaken. On completion of the requisite number of trapping ~~period, including the final stripping of remaining vegetation~~days, a destructive search of the WRP will be undertaken, again in line with good practice approaches, to reduce the risk of reptile re-colonisation. ~~• Post-translocation fence inspection requirements.~~ Post-translocation monitoring of the receptor site(s) reptile population(s) will be carried out and ~~suggested~~ remedial actions implemented, if required.		
TFB30	Fish rescue and relocation to an unimpacted refuge may be required at open-cut watercourse crossings prior to and construction works commencing (including enabling). This will be dependent on the hydrological connectivity of the impacted area and whether opportunity is present for fish to move out. Flows across dammed sections will be maintained through the use of pumps, pipes or flumes. Construction work at these locations will be undertaken outside of fish migration or spawning periods to avoid effects (where reasonably practicable).	To prevent killing or injury of fish species.	
TFB31	The Contractor will install swift *Apus apus* boxes on BPT/IPS-E, ideally on the eastern elevation as it will provide unobstructed access from the nest boxes to suitable feeding habitat. This is in accordance with Portsmouth City Council Policy PLP33.	To comply with local biodiversity policies.	
TFB32	At locations of visibility splays, mitigation measures may be required including restrictions around vegetation removal and traffic management. The locations and any specific measures will be confirmed in the detailed CEMP.	To prevent impacts to biodiversity features at locations of visibility splays.	
TFB33	To reduce the risk of harm to other notable fauna, such as herptiles and notable mammals that are not subject to licensing, standard mitigation will be implemented where appropriate. This	To reduce impact to other notable species.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	could include measures such as habitat manipulation (to reduce the suitability of habitats within the works footprint and to encourage animals to disperse), fingertip searching and supervised destructive searches of potential refuges.		
TFB34	The area of construction compound G-7 that overlaps with the woodland belt adjacent to the southern side of Titchfield Lane (Work Number 6) will only be used for the temporary access route. Only the minimum area of woodland required for this access route will be cleared with the remainder demarcated to prevent unplanned incursions and protect the woodland.	To reduce potential impacts on woodland that it a Habitat of Principal Importance.	
TFB35	Temporary fencing to be used to maintain linear connectivity during construction at key bat foraging and commuting hedgerows and reduce habitat fragmentation; for example, heras fencing with camouflage netting. These will be kept as dark corridors during construction with light spill avoided on retained habitat. 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 under licence (if required). Mitigation for bats will include the following measures: ▪ For every two Preliminary Roost Feature-I (PRF-I) lost, one will be created and for loss of one Preliminary Roost Feature-M (PRF-M) two will be created. ▪ Completion of pre-works checks for potential features for roosting bats prior to the start of construction works (including enabling). Any tree with PRF-M suitability is assumed to also have hibernation suitability. Any construction works (including enabling) within 10m of these trees will be undertaken outside of the hibernation period (November – March), where practicable, to avoid significant disturbance and the need for licensing. Where this is not practicable, before construction works (including enabling), the trees will be assessed for hibernation suitability and inspections of those trees with moderate or high suitability will be undertaken in the winter to assess presence or likely absence of hibernating bats. If these hibernation surveys combined with pre-construction surveys during the active season (April – October) confirm the likely absence of bats, then it is considered reasonable to fell these trees in winter months (to avoid the bird nesting season) on the completion of a final, pre-felling survey to ensure no bats are present at the time of felling. Where trees cannot be safely and fully inspected then emergence surveys will be undertaken to	To prevent impacts to bats	

Ref	Environmental measure	Objective	Relevant ES Chapter
	confirm likely absence at the time of felling. Therefore, where this is the case, such trees will only be felled during the active season. Both existing and pre-construction surveys will be used to inform which trees can be safely and fully inspected and those trees which cannot.		
TFB36	The canopies and root protection areas of the veteran trees north-west and north-east of construction compound L-9, and the woodland to the south-west of the limits of deviation for Work Number 4 will be protected from all construction activity.	To prevent impact to a valuable woodland and veteran trees in the area.	
Marine biodiversity			
MB1	For construction of Sustainable Drainage Systems (SuDS) outfall at the intertidal section of Hermitage Stream, a temporary cofferdam or sandbags, or other appropriate measure, will be used to enclose and create a dry environment for concrete work near water. Any water that enters the cofferdam (if used) will be over pumped back into the Hermitage Stream (before construction of the SuDS outfall commences), ensuring no contamination enters the watercourse.	To reduce risk of pollution events on fish and benthic marine species arising from SuDS outfall construction at Hermitage Stream.	ES Chapter 9 Marine biodiversity, Volume I (Document reference 6.1, DCO Volume 6)
MB2	For construction of the SuDS outfall at the intertidal section of the Hermitage Stream, suitable scour protection will be included to reduce impacts on the bed and banks of the channel.	To reduce the potential effects on the Hermitage Stream arising from SuDS outfall construction at Hermitage Stream.	
MB3	If the Contractor will have unenclosed construction activities at the intertidal section of Hermitage Stream, the Contractor will review the need for monitoring of water turbidity and use of a barricade system to prevent dispersion of sediment.	To reduce effect of sediment dispersion on fish and benthic marine species arising from SuDS outfall construction at Hermitage Stream.	

Ref	Environmental measure	Objective	Relevant ES Chapter
MB4	If sheet piling is to be used for a temporary cofferdam, piling activity will be operated at either side of low tide (targeting in the dry, or slack water) as far as reasonably practicable to reduce underwater noise, and with a soft-start procedure to avoid sudden increase in noise.	To reduce the effect of underwater noise and vibration on fish due to possible use of sheet piling for a temporary cofferdam.	
Carbon and climate change			
CCC1	The Contractor will adopt measures to reduce emissions from the use of vehicles, plant and equipment as per the measures set out in the Outline Carbon Management Plan (Document reference 7.8, DCO Volume 7).	To reduce the amount of greenhouse gas emissions to the global atmosphere.	ES Chapter 10 Carbon and climate change, Volume I (Document reference 6.1, DCO Volume 6)
CCC2	The Contractor will implement the Construction Drainage Plan measures as set out in WE4 and WE5 to reduce the risk of flooding.	To manage surface water and associated flood risk during construction.	
CCC3	The Contractor will adopt the following measures to account for the exposure of site workers and construction plant to extreme weather events - ensuring appropriate preparation and responses are in place to reduce the impact of climate change hazards during construction: ▪ Schedule construction activities based on timely weather forecasts. ▪ Monitor on-site weather conditions and severe weather alert services. ▪ Incorporate a severe weather protocol and assign clear responsibilities in the event of an emergency. ▪ Include additional provisions in their management plans based on weather conditions during construction such as additional rest breaks during heatwaves, securing stored equipment and material during high wind events and specifying de-icing equipment during cold spells.	Climate change resilience.	
CCC4	The Contractor will address temporary trench stability by taking a number of factors into account, such as the presence of high groundwater and unstable granular soils. Temporary works will be designed to meet current and short-term conditions, which will take into account	Climate change resilience	

Ref	Environmental measure	Objective	Relevant ES Chapter
	foreseeable weather and climate conditions. Any risk assessment compiled during the construction phase will take into account any relevant emergency procedures.		
Land quality and ground conditions			
LQGC 1	The Contractor will develop and adhere to risk assessments and method statements protective of human health, the environment, and controlled waters informed by findings from ground investigations and interpretative reports.	Reduce potential risks to human health, environmental and controlled water receptors from potentially contaminated soils and groundwater.	ES Chapter 11 Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6)
LQGC 2	Appropriate personal protective equipment will be worn by all site personnel.	Reduce exposure of site personnel to contaminated soils and groundwater and associated health impacts.	
LQGC 3	Welfare facilities will be provided to all site personnel. Appropriate and safe waste management and general cleanliness on-site will be maintained by all site personnel.	Reduce exposure (for instance dermal cross contamination) of site personnel to contaminated soils and groundwater and associated health impacts.	
LQGC 4	The Contractor will undertake monitoring of works including air quality and control of odour as outlined in AQ2, AQ3, AQ16 and AQ17.	To reduce the risk of inhalation of contaminated dusts.	

Ref	Environmental measure	Objective	Relevant ES Chapter
LQGC 5	The Contractor will implement appropriate storage area management and dust suppression as outlined in AQ1, AQ2 and AQ4.	To reduce the risk to human health receptors from the inhalation of wind-blown contaminated dusts.	
LQGC 6	The Contractor will prepare a plan for dealing with unforeseen contamination, including the need for a watching brief and discovery strategy, in accordance with current guidance and legislation. Should visual and/or olfactory indicators of contamination (including asbestos) be encountered, works will cease in that area and advice will be sought from a suitably qualified geoenvironmental professional.	To reduce risk to human health, environmental and controlled water receptors from unforeseen contamination.	
LQGC 7	The Contractor will adopt CL:AIRE Definition of Waste: Code of Practice [18] to manage the re-use of excavated soils on-site, where reasonably applicable and appropriate. The Contractor will produce and adhere to a Materials Management Plan (MMP), which will form part of, or be appended to, the detailed CEMP(s).	To protect human health, controlled waters and other environmental receptors from contaminated soils and aid in maximising sustainability and provide an audit trail to demonstrate the appropriate use of materials (excluding areas of landfilling).	ES Chapter 11 Land quality and ground conditions, Volume I and ES Chapter 16 Resources and waste management, Volume I (Document reference 6.1, DCO Volume 6)
LQGC 8	The Contractor will undertake detailed FWRAs in line with CL:AIRE's Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention [19]. The detailed FWRAs will provide an assessment for each of the proposed foundation types for the WRP, associated structures and AGP, and an assessment of construction methodologies for trenchless construction works, tunnels and shafts respectively. The detailed FWRAs will include detailed Piling Risk Assessments and an assessment of other	To mitigate risk of release of contaminated water/ leachate into watercourses/ groundwater and to reduce the potential	ES Chapter 11 Land quality and ground conditions, Volume I and ES Chapter 19 Water environment,

Ref	Environmental measure	Objective	Relevant ES Chapter
	foundation types. The detailed FWRAs will be undertaken in consultation with the EA~~,~~ and the relevant local planning authority ~~and other relevant bodies (if applicable).~~. In a Source Protection Zone 1 (SPZ1~~),~~) and in relation to any works relating to the Mill Lane East shaft and the Mill Lane West shaft , 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 works (including enabling works) commencing in the SPZ or for the Mill Lane East shaft or the Mill Lane West shaft (if required).	increase in ground gas risk via the creation of preferential pathways due to foundation works and other adopted construction methodologies.	Volume I (Document reference 6.1, DCO Volume 6)
LQGC 9	The Contractor will adopt the following measures with regard to contaminated soils: ▪ Store contaminated soils in areas effectively demarcated from construction works and access/egress routes. ▪ Place contaminated soils on impermeable surfaces to prevent contamination of the underlying ground. ▪ Cover contaminated soil stockpiles to prevent windblown dust or the ingress of rainwater, where practicable. ▪ Implement controls for containing surface water run-off from contaminated stockpiles to prevent the uncontrolled release of contaminated effluent. ▪ Display clear and unambiguous signage to notify site personnel of the presence of contaminated soil.	Reduce potential risks to human health, environmental and controlled water receptors from potentially contaminated soils.	ES Chapter 11 Land quality and ground conditions, Volume I and ES Chapter 16 Resources and waste management, Volume I (Document reference 6.1, DCO Volume 6)
LQGC 10	In areas deemed, by geo-environmental professionals, to represent a potentially unacceptable risk to land quality and ground conditions receptors (for example, areas where laboratory analysis of geo-environmental samples have identified concentrations in excess of their respective screening criteria), remediation strategies will be developed by the Contractor following the guidance provided within the EAs Land Contamination Risk Management Framework [20]. Any required remediation works will be undertaken in accordance with current guidance and legislation.	Reduce potential risks to human health, environmental and controlled water receptors from potentially contaminated soils and groundwater.	ES Chapter 11 Land quality and ground conditions, Volume I and ES Chapter 16 Resources and waste management, Volume I

Ref	Environmental measure	Objective	Relevant ES Chapter
			(Document reference 6.1, DCO Volume 6)
LQGC 11	The Contractor will ensure appropriate storage of fuels and oils with processes in place to manage any leaks or spills from equipment. Plant refuelling will be undertaken on areas of hardstanding or within defined areas that utilise drip trays/plant nappies. The Contractor will develop spill response plans and train personnel on how to use spill kits.	Reduce potential risks to environment and controlled water receptors from accidental spillages.	ES Chapter 11 Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6)
LQGC 12	The Contractor will need to produce a Risk Assessment and Method Statement (RAMS) that clearly sets out the procedures and controls to be followed to ensure safe excavation practices and prevention of pollution to soils and groundwater is followed. The RAMS will be produced in accordance with guidance from the CIRIA standard CIRIA97 [21], complying with excavation practices linked to trenching.	To ensure safe excavation practices and prevent pollution of soils and groundwater during construction.	
LQGC 13	Appropriate groundwater control measures will be implemented as required along the pipeline, where groundwater levels are above excavation levels. This may include sump pumping or well dewatering systems.	To manage groundwater levels during excavation, ensuring excavation stability and preventing environmental impacts from dewatering activities.	
LQGC 14	Within Section E: Portsdown Hill to Boarhunt, Section F: Boarhunt to Crockerhill and Section M: Brambridge to Otterbourne WSW of the Pipeline between the WRP site and Otterbourne WSW chalk dissolution features may be present beneath clay deposits such as Head Deposits, River Terraces Deposits or Alluvium. A chalk hazard assessment will be conducted by qualified geohazard specialists and if necessary, the geohazard specialists will attend on-site during construction to guide Contractors on any proposed mitigation measures such as grout control.	To identify and manage chalk dissolution features through specialist assessment and mitigation, ensuring safe excavation and environmental protection.	

Ref	Environmental measure	Objective	Relevant ES Chapter
LQGC 15	The Contractor will ensure that tunnelling and trenchless construction activities are undertaken so that impact to surrounding structures, property or buried services is reduced, where practicable. Ground movement assessments and predictions, as defined by the post-consent detailed design, will be used to inform the Contractor's Safe System of Work. The Contractor will establish the potential construction-induced ground movements affecting receptors within the predicted ZoI and will implement good practice measures (including monitoring before, during and after the works) to avoid or reduce any impact of settlement and sub-surface movement during construction. Ground movement monitoring during the works will be compared against the design predictions, with trigger levels and associated actions defined within the detailed CEMP(s) and the Contractor's method statements and specifications.	To protect adjacent structures, property, and buried services from damage by controlling, monitoring, and mitigating construction-induced ground movements during tunnelling and associated excavation works.	
Land use and agriculture			
LUA1	The Contractor will prepare and adhere to the detailed Soil Resource Management Plan (SRMP), which will form part of, or be appended to, the detailed CEMP(s). An Outline SRMP is contained in Appendix B of this Outline CEMP. The Outline SRMP sets out the overall approach to managing soil resources affected by the Project and describes the measures and principles required to reduce potentially harmful impacts on soils.	Reduce the impact upon soils.	ES Chapter 12 Land use and agriculture, Volume I (Document reference 6.1, DCO Volume 6)
LUA2	The Contractor will prepare and adhere to the Site Waste Management Plan (SWMP), in line with requirements in RWM1, to reduce the impact on soils by maximising the re-use and recovery of soils to reduce the quantity of waste produced.		
LUA3	Stiles, gates or gaps will be incorporated into temporary fencing where reasonably practicable to maintain access for landowners/occupiers. Where reasonably practicable, access points will be provided by agreement with the landowner/occupier to allow access across the construction working width and thereby mitigate field severance.	Maintain access to farm tracks and mitigate field severance.	
LUA4	The Contractor will engage with owners and operators of Wickham Park Golf Club and Winters Hill Hall (where significant effects are reported in ES Chapter 12), specifically around the extent of the proposed temporary possession of land, the approach to access and expected impacts from the relevant construction works. The Contractor will have regard to any feedback received when finalising its proposals.	To reduce adverse impacts on local residents and businesses.	

Ref	Environmental measure	Objective	Relevant ES Chapter
LUA5	The Contractor will proactively engage with all land and structure owners and operators affected by the demolition, disassembly and/or temporary relocation of existing structures required to facilitate the construction works for the Project. This engagement will be undertaken as early as reasonably practicable and will be maintained, as required, throughout the duration of the activity to ensure that: a. Arrangements for access to undertake the demolition, disassembly and/or temporary relocation of the structures are communicated in advance to affected owners and operators. b. Disruption during construction arising from the presence, condition, demolition, disassembly, and/or temporary relocation of such structures is kept to a practicable minimum. c. Business operations, including agricultural business operations, land use activities or any other functions linked to the affected structures are not unduly affected or interrupted. d. Appropriate collaborative discussions are facilitated between the Contractor and owners and operators of the land and structures about timing, sequencing, and alternative arrangements; e. If during engagement, it is determined that business operations including agricultural business operations, land use activities, or any other functions linked to the affected structures will be affected or interrupted, then compensation is payable in accordance with the relevant provisions of the DCO and the statutory compensation code.		
LUA6	Where grazing land is severed, the Contractor will ensure that troughs, standpipes, or field supplies located within the working area are moved to a new, temporary, or agreed permanent location.	Mitigate the potential effect of field severance on livestock.	
Landscape and visual			
LVI1	The Contractor will reduce the duration and footprint of construction activity where reasonably practicable; locating development in the least prominent positions and wherever practicable, maximising the distance from nearby visual receptors; positioning the works to make use of existing natural features such as landform and vegetation to screen views.	Reduce impact of construction on the landscape and visual receptors.	ES Chapter 13 Landscape and visual, Volume I (Document reference 6.1, DCO Volume 6)
LVI2	Retain existing landscape features, including trees, woodland, and hedgerows, where reasonably practicable, including RPAs.	Avoid or reduce loss of existing landscape features of value, such	

Ref	Environmental measure	Objective	Relevant ES Chapter
	Where vegetation removal is unavoidable, it will be the intention of the detailed design to avoid high-quality category A trees as first priority, followed by moderate-quality category B and low-quality category C trees, wherever practicable. There will be no loss or deterioration of ancient and veteran trees. Refer to ES Appendix 13.5 Arboricultural Impact Assessment (AIA) Volume II (Document reference 6.2, DCO Volume 6). To inform the detailed design stage, the Contractor will undertake a topographical survey and update the AIA to reflect all areas affected by the Project, to ensure precise location of trees and RPA extents. The loss of existing landscape features of value will be mitigated with replacement planting as close to the location, type and character of the existing vegetation as practicable. Species selection will prioritise resilience to disease and will refer to the indicative species list provided in the Outline LEMP (Document reference 7.5, DCO Volume 7).	as trees, woodland, and hedgerows.	
LVI3	Construction activities will follow good practice guidance, as set out in ES Appendix 13.5 Arboricultural Impact Assessment, Volume II (Document reference 6.2, DCO Volume 6), to avoid damage to retained trees. An updated Tree Impacts Plan (TIP) will be prepared prior to construction (including enabling works). The updated TIP will supersede the version contained within ES Appendix 13.5 and will inform the construction-stage tree protection measures.	Protect retained landscape features, such as trees, woodland, and hedgerows.	
Major accidents and disasters			
MAD1	The Contractor will refresh data on the locations of utilities at reasonable appropriate points during the design and construction of the Project to provide relevant information to plan, manage, monitor and co-ordinate health and safety in the construction phase. The risk of damage to utilities will be managed through the Contractor's Permit to Dig which will include details for avoidance of utilities and an emergency response which will be employed should a utility be damaged.	To manage risk of damage to utilities during construction phase.	ES Chapter 14 Major accidents and disasters, Volume I (Document reference 6.1, DCO Volume 6)
MAD2	The Contractor's Emergency Management Plan will include the risk of fire, and the way in which the Contractor will respond to an incident. This plan will form part of, or be appended to, the detailed CEMP(s) and will be prepared in consultation with the fire and rescue/emergency services. The plan will be prepared prior to commencement of construction, including enabling works. This will include how fuel and plant will be safely stored to reduce the risk of fire. For the risk of fire from landfill gas during construction, gas management will be addressed through method statements. These will include details of mitigation measures to reduce the risk of fire	To manage fire risk.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	caused by landfill gas, primarily through ventilation. All flammable gases will be monitored during construction activities on the landfill site with work stopped if the threshold alarm is triggered. If natural ventilation is insufficient to maintain gas concentrations at safe levels, forced ventilation may be employed by pumping air into construction shafts and vacuum extraction of air from the bottom of construction shafts. Sources of ignition will also be prevented with equipment used that is designed not to operate at high temperatures or generate sparks, as well as a no smoking or naked flames requirement enforced at the site.		
MAD3	The Contractor will implement mitigation as recommended in ES Appendix 14.2 Detailed unexploded ordnance risk assessments, Volume II (Document reference 6.2, DCO Volume 6), appropriate to the risk level including: ▪ An Unexploded Ordnance (UXO) Safety and Awareness Briefing ▪ Site specific safety instructions ▪ Explosive Ordnance Disposal Engineer Watching Brief ▪ Magnetometer surveys	To manage UXO risk.	
MAD4	The Contractor will produce a Pollution Prevention Management Plan for preventing and managing pollution events, which will form part of, or be appended to, the detailed CEMP(s), and will provide detail on how to handle and report environmental incidents, including measures to manage spills (e.g. through the use of a spill kit), and to clean up following an incident, including a potential incident associated with hazardous loads being transported for construction, and good practice pollution prevention measures. The Contractor will adhere to the standards set out in the British Tunnelling Society guidance [22] and Civil Engineering Specification for the Water Industry [23] and any applicable guidance.	To manage pollution risk.	
Noise and vibration			
NV1	The Contractor will prepare a Noise and Vibration Management Plan (NVMP) which will form part of, or be appended to, the detailed CEMP(s) and include: ▪ Details for the preparation and submission of any Section 61 consent applications (under the Control of Pollution Act 1974 [1]). ▪ Noise and vibration trigger levels. ▪ Identification of likely noisy activities, or activities with high vibration emissions, in the construction programme, and a strategy for actively communicating this information to	To comply with the requirements of the Control of Pollution Act 1974 [1] to implement Best Practicable Means and reduce potential for	ES Chapter 15 Noise and vibration, Volume I (Document reference 6.1, DCO Volume 6)

Ref	Environmental measure	Objective	Relevant ES Chapter
	local communities. For each identified activity, the NVMP will include hours of working, nearest residential receptors, predicted construction noise and/or vibration impacts, proposed site-specific Best Practicable Means and additional noise and vibration mitigation measures~~, and a strategy for actively communicating this information to local communities.~~. ▪ A noise and vibration monitoring protocol including a schedule of noise and vibration monitoring locations and stages during construction of the Project when monitoring will be undertaken. To include physical and observational checks/audits at locations to be determined in consultation with relevant local planning authorities. Locations selected shall be determined by the works being undertaken (and level of anticipated noise) and the sensitivity of receptor and will be informed by further calculations once detailed design and construction planning is complete. ▪ Management processes to ensure ongoing compliance, improvement, and rapid corrective actions.	construction noise and vibration to disturb occupants or users of sensitive receptors.	
NV2	The Contractor will ensure use of Best Practicable Means (as per BS 5228-1 [24] and BS 5228-2 [25]) during construction works, as specified in the relevant approved NVMP. Such measures will include as a minimum: ▪ Schedule works, where practicable, to reduce noise and vibration impacts at highly sensitive times. ▪ Schedule works, where practicable, to avoid multiple activities being undertaken simultaneously near to Noise and Vibration Sensitive Receptors (NVSRs). ▪ Select plant and working methods to reduce noise and vibration impacts whilst carrying out the work in an efficient and cost-effective manner. ▪ Shut down or throttle back of plant to idling speed in between periods of use. ▪ Maintain plant and equipment in good working order, with particular attention being paid to the condition of silencers and acoustic panels. ▪ Locate noisy equipment to reduce noise impacts at NVSRs, for example considering layouts of construction compounds to use materials storage areas and welfare facilities as screening. ▪ Provide acoustic screening and enclosures where required.		

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Provide less intrusive plant movement alarms, such as broadband vehicle reversing warnings and that vary the loudness level according to ambient noise levels.		
NV3	The Contractor will adopt additional noise and vibration mitigation measures to reduce exceedances of the Lowest Observed Adverse Effect Level (LOAEL) and avoid likely significant adverse effects where relevant and practicable, as specified in the relevant approved NVMP. Subject to the detailed assessment presented in the NVMP, these measures are currently anticipated to include consideration of the following: ▪ Provision of acoustic screening between receptors at which exceedances of the LOAEL or likely significant effects are predicted and the works identified as responsible in ES Chapter 15 Noise and vibration, Volume I (Document reference 6.1, DCO Volume 6). ▪ Introduce additional working hours restrictions, such as restricting construction works from taking place after 13:00 on Saturdays, for activities in certain locations as identified in section 15.9 of ES Chapter 15 Noise and vibration, Volume I (Document reference 6.1, DCO Volume 6). ▪ Locate the trenchless construction launch shaft in the construction compound which is the furthest from NVSRs. ▪ Use of a temporary acoustic enclosure over the trenchless construction equipment. ▪ Reduce intensity of works (e.g. numbers or on-time of noisy equipment such as circular saws or pneumatic breakers) during noise sensitive periods. ▪ Use of additional silencers, screening and/or enclosures. ▪ Selection of quieter plant, equipment or working methods. ▪ Interspersing of noisy works between quieter works to provide periods of respite. ▪ Phasing of the works to ensure that the noisiest operations are performed during the least sensitive times and vice-versa. ▪ Review of the construction programme to reduce the duration of the works at the closest approach to properties where practicable to give periods of respite. ▪ Using low-vibration methods of shaft excavation, such as segmental lining or secant piling. ▪ Using a compactor with one or more of the following:	To reduce potential for construction noise and vibration to disturb occupants or users of sensitive receptors.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	- A single drum - A drum amplitude of less than 0.5mm - A wider drum, ideally at least 2m ▪ Adoption of non-vibratory ground compaction methods.		
Resources and waste management			
RWM1	The Contractor will produce, implement and maintain a SWMP. A SWMP is a live document that outlines how construction waste will be forecasted, reduced, managed, and monitored to ensure legal compliance and environmental efficiency. The SWMP will record any decisions given to material resource efficiency when designing and planning the Project. Any assumptions on the nature of the Project; its detailed design; the construction method or materials employed, in order to reduce the quantity of waste produced; or maximise the amount of waste re-used, recycled or recovered, will be captured within the SWMP.	To reduce waste generation and ensure waste is managed in accordance with the waste hierarchy and Duty of Care requirements.	ES Chapter 16 Resources and waste management, Volume I (Document reference 6.1, DCO Volume 6)
RWM2	The SWMP will include measures to ensure that all waste management measures to be implemented on-site will be in accordance with the waste hierarchy and circular economy principles. The SWMP will ensure that hazardous waste will be reduced through design opportunities prior to excavation, construction and demolition. The SWMP will also ensure that Designing out Waste principles are applied throughout all stages of construction: ▪ Design for re-use and recovery ▪ Design for off-site construction ▪ Design for materials optimisation ▪ Design for waste efficient procurement ▪ Design for deconstruction and flexibility		
RWM3	The SWMP will be a live document and will be updated at regular intervals throughout the design and construction stages; as a minimum every six months, and whenever there is a significant change in the design or construction plan.		
RWM4	The SWMP will include a forecast of the types and quantities of waste expected to be generated during each stage of construction (demolition, enabling works, excavation, construction, fit-out,	To ensure that waste is managed in line with	

Ref	Environmental measure	Objective	Relevant ES Chapter
	etc). The SWMP will also detail what waste management actions are proposed (including re-use, recycling, recovery and disposal). Comparisons between the forecast quantities of waste, and the actual quantities of waste record during construction, should be made at each update to the SWMP, with any significant discrepancy explained and justified.	good practice to reduce the impact on the environment.	
RWM5	The SWMP will include details of the methodology for testing and classifying of waste in accordance with relevant legislation and guidance. Specific measures will be included in the SWMP for implementation during construction to ensure that waste is correctly classified, and that hazardous and non-hazardous waste is not mixed. The testing methodology will take into account known risk areas with respect to contamination.		
RWM6	The SWMP will include measures to ensure that sufficient space is available for the on-site segregation of recyclable materials to help promote recycling or re-use where applicable.		
RWM7	The Contractor will establish and maintain dedicated waste storage area(s) at the location marked on construction site plans that will be included within the SWMP: ▪ The waste storage area(s) will be located in a secure location, away from public access to prevent fly-tipping. ▪ Waste will be stored and maintained appropriately in suitable receptacles. ▪ Waste storage receptacles will be colour-coded in line with the colour-coding scheme that will help reduce the levels of contamination in the skips. ▪ Skips will be monitored by the Contractor to ensure that contamination of segregated skips does not occur. Waste will not be stored on-site for extended periods to avoid potential of odour issues.		
RWM8	The Contractor will reduce hazardous waste sent for disposal through opportunities to be identified in the SWMP, where possible (Designing out Waste principles). Any hazardous waste generated by demolition, construction and excavation works will be diverted from landfill as far as is reasonably practicable, through treatment, remediation and/or recovery. The Contractor will ensure that no hazardous waste excavated from historic landfill is sent directly off-site for disposal at hazardous landfill without assessing the possibility for treatment, remediation, and/or recovery, wherever possible.	Reduce reliance on hazardous waste landfill capacity and reduce effect of hazardous construction waste.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	All hazardous waste will be managed in accordance with relevant legislation, and appropriate measures will be undertaken to prevent pollution resulting from the generation of hazardous waste. Where off-site disposal of hazardous construction material is required, this will be disposed at non-hazardous landfill sites within a separate cell for Stable Non-Reactive Hazardous Waste (SNRHW) providing it meets SNRHW waste acceptance criteria, where reasonably practicable.		
RWM9	Communication and training (for all relevant staff) regarding waste management and material efficiency will be undertaken regularly from the commencement of construction, with the programme/frequency to be specified in the SWMP.	To ensure waste is managed in line with good practice to reduce the impact on the environment.	
RWM10	The SWMP will ensure that all equipment, temporary structures, and waste associated with construction is removed upon Contractor construction completion.		
RWM11	The Contractor will record (by European Waste Catalogue code) the type, quantities and management method for all waste generated on-site. The requirement and process will be detailed in the SWMP. The authorised waste carrier details and their waste carrier registration number will also be recorded. In addition, and in line with the Waste Duty of Care, reporting on the final destination of all waste streams will be recorded as soon as established. This record will be appended to the SWMP and updated regularly throughout the construction stage.		
RWM12	The SWMP will record decisions given to materials resource efficiency during detailed design and planning of the construction works. Any assumptions relating to the design; construction methods and materials resulting in a reduction in the quantity of waste produced or maximisation of re-use, recycling or recovery will be captured within the SWMP.	To maximise sustainability through reusing, recycling or recovering waste.	ES Chapter 11 Land quality and ground conditions and ES Chapter 16 Resources and waste management, Volume I (Document

Ref	Environmental measure	Objective	Relevant ES Chapter
			reference 6.1, DCO Volume 6)
RWM13	To ensure effective management of minerals, a Minerals Management Strategy (MMS) will be developed by the Contractor for inclusion within or to accompany the detailed CEMP(s) and prior to the commencement of excavation activities. The MMS will include the following: ▪ Extraction and handling procedures: methodologies for the extraction, handling, temporary storage/stockpiling and beneficial use within the construction of the Project. ▪ Documentation and records: method for documenting the quantities of minerals which have been excavated, stored/stockpiled and used in the construction of the Project. Where safeguarded minerals are encountered during excavation and are not required for the construction of the Project, the potential for off-site reuse will be considered, having regard to the reasonable practicability and commercial viability of doing so in a manner that will not give rise to environmental effects not assessed in the ES.	To address the management of mineral resources and align with the Construction Code of Practice for the Sustainable Use of Soils on Constructions Sites [26].	ES Chapter 16 Resources and waste management, Volume I (Document reference 6.1, DCO Volume 6
RWM14	The detailed CEMP(s) will set out appropriate working methods to ensure the following: ▪ Avoid spreading contamination by mismanagement of hazardous wastes (bunding, protection from rain infiltration, etc). ▪ Avoid windblown waste affecting neighbouring properties. ▪ Avoid dust issues from waste management, from implementation of the DMP as outlined in ~~AQO1~~AQ1. ▪ Reduce ecological degradation by careful management of topsoils. ▪ Manage waste to avoid odour issues. ▪ Manage the construction site to avoid fly tipping.	To reduce the effects of waste on other environmental receptors.	
Socio-economics, tourism and health			
STH1	The Contractor will ensure that secure barrier fencing, lighting (appropriate to setting) and a gate person (where practicable) are in place to reduce safety risks and perceptions of safety risks around construction sites for the public.	Maintain public safety around construction sites.	ES Chapter 17 Socio-economics, tourism and health, Volume I (Document

Ref	Environmental measure	Objective	Relevant ES Chapter
			reference 6.1, DCO Volume 6)
Water environment			
WE1	The Contractor will adhere to the EAs Approach to Groundwater Protection 2018 Framework [27].	To reduce direct and indirect impacts on groundwater quality and groundwater resources.	ES Chapter 19 Water environment, and ES Chapter 14 Major accidents and disasters, Volume I (Document reference 6.1, DCO Volume 6)
WE2	The Contractor will prepare a RAMS, specific to works within Source Protection Zones (SPZ; most critically SPZ1 and 1c) in accordance with the Outline Water Monitoring Plan, and will be submitted for approval separately to the CEMP in accordance with the corresponding requirement contained in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3). The RAMS will include a description of the construction methodologies to be used, evidence of past successful utilisation within karstic chalk and SPZ1, identification of key risks to the aquifer (e.g. slurry loss, turbidity etc) and control measures to reduce risks.	Reduce impact on public water supplies.	
WE3	A Voids Treatment Protocol will be developed by the Contractor to set out how voids encountered during construction within the chalk will be mitigated to avoid pollution or flow impacts on groundwater bodies.	Reduce pollution risks and construction risks.	
WE4	A Construction Drainage Plan will be prepared by the Contractor, 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 reduce water within the working area and ensure ongoing drainage of surrounding land, such as: ▪ Channels with sufficient capacity to convey the required range of flows at each location. ▪ Changes in run-off to be attenuated and released at a controlled rate (green field run-off rate or equivalent). ▪ Temporary interceptor drainage ditches parallel to the pipeline corridor and any trenched crossings and soil storage areas to intercept surface water run-off. ▪ Use of pumps to remove water from trenches during pipeline installation.	To manage surface water and associated flood risk during construction.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ During decommissioning of drains, standing water will be pumped out to settling tanks and sediment that has settled out within the drain will be left in place with soil replaced in reverse order and vegetation reinstated. ▪ A suitable methodology for the reinstatement of drainage systems impacted by pipeline installation, where appropriate. This will be informed by the pre-construction survey. In the event reinstating existing land drains is not feasible, a post construction drainage plan will be implemented. The purpose of the post- Construction Drainage Plan is to restore the soil structure and drainage status to at least the same condition as recorded prior to commencement of the construction works. A Sustainable Drainage Systems (SuDS) strategy has been developed to serve as the surface water management plan for the permanent above-ground infrastructure.		
WE5	The Construction Drainage Plan will also incorporate measures to reduce/remove risk of sediment entrainment, including: ▪ Routing to avoid water resources and flood risk receptors where reasonably practicable. ▪ Limit the extent of open excavations along pipeline routes at any one time (as far as reasonably practicable). ▪ Topsoil to be stored and capped to reduce wind/water erosion. ▪ Soil storage should be avoided in areas with increased flood risk (e.g. within Flood Zones 2 and 3 or on surface water flow paths). Where soil storage on the floodplain in unavoidable, storage areas will be designed and located such that they do not block or divert existing flow paths. ▪ Reduce subsoil exposure and retain strips of undisturbed vegetation on the edge of working areas, where reasonably practicable. ▪ On-site retention of sediment will be maximised by routing all drainage through site drainage systems. ▪ Site drainage systems will incorporate interceptor drains for the settlement of sediment (including sediment traps - locally wider/deeper areas of drains that encourage passive deposition), where reasonably practicable.	To reduce the risk of sediment entrainment during construction.	ES Chapter 19 Water environment, Volume I (Document reference 6.1, DCO Volume 6)

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Where water enters construction areas, water will be pumped via settling tanks/filtration ponds before being released to local ditches or drains via interceptor drains to remove sediment. ▪ Weekly monitoring of sediment traps via visual inspection will be undertaken, with increased monitoring during inclement weather. ▪ The wheels of construction vehicles should be cleaned prior to leaving site to prevent soil and sediment on road surfaces. ▪ Where vegetation has been removed, reseed where appropriate and compatible with site-specific reinstatement requirements to reduce future run-off.		
WE6	A range of measures will be implemented by the Contractor to manage potential contamination risks, including: ▪ Fuels, oils lubricants and other chemicals to be clearly labelled and the site will retain an up-to date Control of Substances Hazardous to Health (COSHH) inventory. ▪ Fuels, oils lubricants and other chemicals to be stored in a bunded compound (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 receptors and pathways (such as drains and watercourses), and inspected at least weekly for signs of spillage, leaks and damage. ▪ Portable bowsers with built-in bunds will 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. ▪ Appropriate spill response equipment will be available at all locations used for vehicle refuelling and storage. ▪ Small plant to be provided with drip trays. ▪ All construction plant will be inspected for fuel leaks before being moved from compounds to working areas. ▪ Biodegradable oils to be used where reasonably practicable.	To manage the risk of accidental spillages or leakage of contaminants into surface and groundwaters during construction.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Concrete/cement mixing (if required) and washing areas will be located at least 10m away from nearest water body (as required by the EA in Regulatory Position Statement 287 [28]). ▪ 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. ▪ A Pollution Prevention Management Plan will be prepared by the Contractor for pollution events, which 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.		
WE7	The design of piled foundations and deep structures will include a Foundation Works Risk Assessments (FWRA), undertaken in accordance with relevant CL:AIRE published guidance. The Contractor will undertake a Piling Risk Assessment, as per LQGC8, to develop site-specific measures to manage risks to potable water supplies.	To mitigate risk of new pathway creation, release of contaminants to groundwater and increasing turbidity during piling, on local high value receptors (such as Public Water Supplies).	ES Chapter 19 Water environment and ES Chapter 11 Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6)
WE8	The Contractor will manage any unforeseen contamination in line with requirements of LQGC6.	To mitigate risk of release of contaminated water into watercourses/groundwater.	
WE9	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.	Measures to manage pollution risks to the water environment associated with construction activity.	ES Chapter 19 Water environment, Volume I (Document

Ref	Environmental measure	Objective	Relevant ES Chapter
			reference 6.1, DCO Volume 6)
WE10	Where the works occur and construction compounds are located within a flood risk zone (surface water, coastal or fluvial), the Contractor will be obliged to carry out a risk assessment, to ensure the Project does not increase flood risk outside the site. Additional measures will be employed when working in Flood Zone 2 or 3 to manage site safety and reduce pollution risk during periods of extreme weather (i.e. flooding): ▪ The Contractor will monitor water levels, sign up to the EAs flood warning system, and ensure that there is an emergency evacuation plan in place. ▪ The extent of the storage of materials or equipment in the highest risk areas will be reduced where reasonably practicable. Machinery will be stored or returned to areas of hard standing, preferably remote from flood water or where not reasonably practicable, sufficiently constrained as not to wash away. ▪ Portacabins will be raised so that they are above the ground surface. ▪ No excavated material will be stored on functional flood plains (Flood Zone 3b) and best efforts will be made to avoid storing spoil in Flood Zone 3a and Flood Zone 2. As per the Construction Insurance Risk Engineers Group (CIREG) guidance, the configuration of the compound should utilise an 'As Low As Reasonably Practicable' approach or similar to manage the risk of flooding. ▪ Installing small-scale flow diversion and retention measures as part of the site drainage system to protect sensitive areas within the compound, without increasing flood risk elsewhere. ▪ No storage of soil or other materials on watercourse banks and where possible, spoil to be set back from watercourses by at least 8m (this prevents excessive loading on watercourse banks, reduces risk of stored material entering the watercourses, and retains access for flood risk management authorities). ▪ Stores of chemicals/oils/fuels will be surrounded by an impervious bund wall and installed in the remotest possible location away from watercourses and from rising water and walls will be of sufficient height and structural soundness to withstand flood water ingress. ▪ Debris will be safely contained reducing risk of large items from entering flood flow.	Measures to reduce and manage the consequences of flooding and prevent entrainment of plant and materials in case of a flood event.	ES Chapter 19 Water environment and ES Chapter 14 Major accidents and disasters, Volume I (Document reference 6.1, DCO Volume 6)

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Monitoring of sediment traps will be undertaken more frequently during heavy rain and remove sediment, if necessary, prior to rain events. ▪ Flood warning and evacuation measures, including safe access and egress routes, will be put in place to protect site users and off-site receptors.		
WE11	Where trenched crossings are to be carried out on an ordinary watercourse, the Contractor will implement the following: ▪ Installation of a temporary dam will be undertaken upstream and downstream of the crossing point and the trench excavated in a dry environment. ▪ 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. ▪ 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. ▪ The pipeline will be installed at a minimum depth of 1.5m below the bed of the watercourse. ▪ Flood warning and evacuation measures, including safe access and egress routes, will be put in place to protect site users and off-site receptors. ▪ Where diversion channels are used, geotextiles or similar will be used to line the channel and prevent sediment release into the watercourse. ▪ Scour protection may be required to protect the riverbed downstream of the dam from high energy flow at any outlets from flumes/pumps. For work on Ordinary Watercourses, OWC will be sought from the LLFA.	To reduce the potential effects on watercourses associated with pipeline crossings.	ES Chapter 19 Water environment, Volume I (Document reference 6.1, DCO Volume 6)
WE12	Where temporary structures are required for crossings (e.g. where haul road access across watercourses is required), the Contractor will implement the following: ▪ The structure will be installed below the channel bed to avoid upstream impoundment, maintain sediment continuity and reduce impacts on the movement of fish and aquatic invertebrates. ▪ The structure will be sized to accommodate likely worst case flows (e.g. bankfull flow or equivalent), to be calculated for each crossing location.		

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Suitable scour protection will be included to reduce impacts on the bed and banks of the channel.		
WE13	The Pipeline will typically be installed at least 1.5m below the bed of ordinary watercourses and 2.5m below the bed of main rivers (dependent on local geology and geomorphological risks). This avoids exposure during periods of higher energy flow when the bed could be mobilised and the consequent change in geomorphological conditions. This depth takes into consideration anticipated climate change related changes in fluvial flows and erosion that will occur over time. In addition, vegetation will not be removed from the banks unless necessary to undertake the works, in which case removal will be restricted to the smallest practicable footprint and will be allowed to naturally regenerate.		
WE14	A Drilling Fluid Management Plan (DFMP) will be developed by the Contractor and agreed with the EA, Natural England, and the Marine Management Organisation prior to commencement of relevant construction activities (i.e. trenchless construction activities requiring the use of drilling fluids). The DFMP will document how risks of any fluid breakouts will be reduced, and in the event of an outbreak from trenchless construction works during construction, how any breakout will be managed and mitigated, to reduce environmental impacts. The DFMP will consider breakout of all drilling fluids or muds that could breakout to the environment. Measures within this plan will need to include: ▪ Measures to reduce the risk of breakout. ▪ Measures to monitor and communicate breakout. ▪ Measures to ensure operations cease once a breakout is reported. ▪ Measures to contain breakout, for example sandbags to reduce extent of smothering. ▪ Measures to remediate released drilling fluids, if a significant volume is released - for example pumped back to a lagoon within an appropriate compound or pumped to interceptor drains. This will be confirmed by the Contractor in advance of the commencement of relevant construction activities.	To manage potential effects associated with the use of drilling fluids - smothering of aquatic habitats.	
WE15	All washout water generated during the testing and commissioning process will be collected directly in a tanker, with no source water released to the environment. Washout water will be tankered to a suitable off-site location for disposal.	To reduce the effects of commissioning releases on the	

Ref	Environmental measure	Objective	Relevant ES Chapter
		hydrology and flood risk of surface waters.	
WE16	The Contractor will undertake any dewatering operations in compliance with the appropriate abstraction licences and discharge permits, including monitoring and mitigation measures (also see WE9). Monitoring is to be undertaken: ▪ To establish the baseline environmental conditions before the commencement of dewatering. ▪ To further characterise the hydrogeology and hydrology of a dewatering operation and its surrounding area. ▪ To demonstrate compliance with conditions attached to relevant abstraction licences or discharge consents. ▪ To trigger mitigation measures or temporary cessation of dewatering, if the water level in a receptor (such as a wetland) falls below an agreed threshold. ▪ To provide early warning of adverse impacts on receptors such as sensitive water-dependent ecosystems, or other abstractions. ▪ To provide information for the day-to-day operation of the dewatering system (and where appropriate, the mitigation system), thus enabling the dewatering to be optimised. ▪ To enable the post-closure period (on permanent cessation of dewatering) to be managed successfully. As opposed to consumptive groundwater abstractions, mitigation measures are available to temporary dewatering operations to reduce groundwater flow to the abstraction point or return the abstracted water to the environment. Should any additional mitigation measures be identified as required following monitoring, these may include: ▪ Limiting the extent of the excavation or dewatering system so that the zone of dewatering influence does not affect sensitive features. ▪ Using 'closed-circuit' dewatering systems that involve recharging the abstracted water to ground within or close to the site, rather than pumping off-site.	Reduce hydrological/hydrogeological impacts.	

Ref	Environmental measure	Objective	Relevant ES Chapter
	▪ Recharging the abstracted water directly into surface watercourses, lakes or other water features that could potentially be affected. ▪ Installation of a low-permeability cut-off barriers around all or part of the site, or between the excavation and sensitive features (alternatively fissure grouting may be feasible in fractured bedrock). ▪ Providing alternative water supplies to impacted abstractions. ▪ Continuous monitoring of water levels in nearby receptors, or flows in watercourses, so that additional mitigation measures can be provided as required.		
WE17	Any trenchless construction works to use a methodology that excludes groundwater (i.e. closed face) unless agreed with the EA beforehand.	Reduce hydrological/hydrogeological impacts from altered groundwater levels/flows.	
WE18	Any piled foundations will be cast in situ (continuous flight auger piles or other bored method) at the WRP site, to reduce the risk associated with landfill leachate, and to reduce the potential for the creation of new contamination pathways.	Reduce risk of mobilising contamination.	ES Chapter 19 Water environment and ES Chapter 11 Land quality and ground conditions, Volume I (Document reference 6.1, DCO Volume 6)
WE19	Temporary commissioning lagoons will have a maximum depth of 1m and will be lined. All temporary commissioning lagoons shall be located a minimum of 15 m from the nearest highway boundary unless otherwise agreed with the relevant highway authority.	To limit the extent of the commissioning lagoons and therefore control the direct but temporary impacts.	None (from Design Principles Document (Document reference 5.11, DCO Volume 5)

6 Construction management plans and schedules

6.1 Management Plans

6.1.1 An Outline Soil Resource Management Plan is provided in Appendix B of this Outline CEMP.

6.1.2 Post-consent, the Contractor shall prepare the following documentation, where relevant in accordance with the corresponding requirements in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3):

1. Drilling Fluid Management Plan.
2. Dust Management Plan.
3. Emergency Management Plan.
4. Foundation Works Risk Assessments.
5. Materials Management Plan.
6. Minerals Management Strategy.
7. Noise and Vibration Management Plan.
8. Pollution Prevention Management Plan.
9. ~~Reptile Translocation Strategy.~~
10. ~~10.~~9. Risk Assessment and Method Statement.
11. ~~11.~~10. Site Waste Management Plan.
12. ~~12.~~11. Soil Resource Management Plan.
13. ~~13.~~12. Stakeholder and Customer Communications Plan.
14. ~~14.~~13. Construction Drainage Plan.
15. ~~15.~~14. Voids Treatment Protocol.

6.1.3 The Contractor will also develop a number of traffic management plans, which will be approved separately to the CEMP in accordance with the corresponding requirements in Schedule 2 to the draft DCO (Document reference 3.1, DCO Volume 3).

6.2 Work schedules

6.2.1 Appendix A (Reduced Working Width and Trenchless Crossing and Tunnelling Schedules and Plans) identifies the locations at which reduced working width and trenchless crossing and tunnelling construction techniques will be implemented during construction of the Pipeline, as well as a location where trenchless construction is restricted, within the parameters defined by the Works Plans. These locations have been identified through the design development process, and will be applied to avoid and/or reduce the impacts on constraints and sensitivities, to reduce vegetation loss, and to reduce impacts on third party infrastructure such as highways and railways. The Contractor will construct the authorised works in accordance with Appendix A.

Glossary

The Glossary table provides definitions of technical terms used in this Outline CEMP.

Term	Definition
Above-Ground Plant (AGP)	This collectively refers to the Intermediate Pumping Stations and Break Pressure Tanks.
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.
Archaeology	The study of human activity through the recovery and analysis of material culture.
Autumn 2025 Consultation	The statutory, targeted consultation held in Autumn 2025 to consult on eight further design refinements to the Project made in response to feedback from the Spring 2025 Consultation, further investigations, surveys and assessments, and design development.
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 Project are assessed for each relevant assessment.
Best Practicable Means	As defined by Section 72 of the Control of Pollution Act 1974 [29].
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 Project 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 discharge into the Solent.

Term	Definition
	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.
Commissioning	A process undertaken prior to operation to verify that components of a project are installed correctly and are functioning. For the Project, 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	The Commitments Register, presented in ES 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 [30] and it sets out the environmental commitments made in the Environmental Statement and identifies the means by which each are secured.
Consents and Agreements Position Statement	A document identifying additional environmental consents, licences, and agreements required outside of the Development Consent Order (DCO). It outlines responsibilities, progress, and timing for obtaining these consents to ensure legal compliance during construction and operation.
Construction compounds	Temporary areas required to facilitate the construction of the Project.
Construction waste	Consists of all waste produced directly or indirectly during the construction process, including excavated material displaced during this process that no longer has a use.
Contractor	The Applicant or a person appointed by the Applicant or by anyone else having the benefit of part or all of the DCO to

Term	Definition
	carry out any construction element of the Project or to operate the Project.
Cut and fill	Cut and fill is a common earthworks technique used in construction and civil engineering projects. It involves the removal ('cut') of soil or material from higher areas of a site and the placement ('fill') of that material into lower areas to create a level surface suitable for development.
Design	All of the decisions that shape a development throughout its design and pre-construction, construction/commissioning, operation.
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 [31].
Disaster	May be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.
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 Long Sea Outfall (LSO) are proposed as part of the Project, 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 Project. The Eastney Pumping Station (PS) receives treated wastewater flows, via gravity, from Budds Farm Wastewater Treatment Works and pumps it out via the Eastney Long Sea Outfall (LSO). This pumping station also receives storm flows from the Eastney catchment area. Reject water from the 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 Transfer Tunnel 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 Transfer Tunnel (TT).

Term	Definition
	A new connection point to the Eastney Transfer Tunnel, located at Budds Farm Wastewater Treatment Works (WTW), is required. No additional works to the Eastney TT are proposed as part of the Project.
Ecological Clerk of Works (ECoW)	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 Project to inform the decision-making process by the Secretary of State when determining an application for a Development Consent Order.
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 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 Project or other interventions to leave a positive legacy for the community.
Environmental Mitigation and Enhancement Areas (EMEA)	The 'Environment Mitigation and Enhancement Areas' are shown on the Works Plans (Document reference 2.3, DCO Volume 2) and in the Design Principles Document (Document reference 5.11, DCO Volume 5). The EMEAs will deliver environmental mitigation to mitigate adverse impacts and provide environmental enhancement within the Order Limits. The environmental enhancements **that are not associated with environmental mitigation** will only be implemented subject to securing agreements with landowners**.** EMEAs are in addition to the commitment to reinstate vegetation removed to facilitate construction throughout the Order Limits.
Environmental Statement (ES)	A document reporting the findings of the EIA which describes the likely significant effects arising from the Project on the environment and measures proposed to mitigate any likely significant effects.
Equality Impact Assessment (EqIA)	An EqIA is a systematic assessment of the potential effects of a project or policy on groups of people who share

Term	Definition
(Document reference 7.13, DCO Volume 7)	protected characteristics, as defined in the Equality Act 2010 [4]. It considers whether protected characteristic groups could be affected disproportionately or differentially by a project or policy. The assessment also informs the identification of actions to address any adverse effects and to support the delivery of any beneficial effects. An EqIA helps to demonstrate that an organisation is meeting its obligations under the Equality Act 2010 and provides evidence that equality issues have been taken into account in decision making and given effect.
Flood Zone 2	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding.
Flood Zone 3 (and Flood Zone 3a)	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea flooding.
Flood Zone 3b	Normally Land having a 3.3% or greater annual probability of flooding or land that is designed to flood.
Framework Construction Traffic Management Plan (CTMP) (Document reference 7.2, DCO Volume 7)	Outlines the overarching scope of the individual CTMP document(s) which will be submitted post-consent. The Framework CTMP provides an overarching plan as to how the construction traffic will be managed. It outlines the framework for the detailed CTMP which will be produced and submitted for approval by the relevant authority before construction works can commence. The measures contained in the Framework CTMP are secured by a requirement in Schedule 2 to the draft Development Consent Order. A detailed CTMP 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).
Framework Construction Worker Travel Plan (CWTP) (Appended to the Framework CTMP (Document reference 7.2, DCO Volume 7))	Provides an overarching plan to encourage sustainable travel choices among construction workers. It sets out measures to encourage construction workers to travel by sustainable modes of transport and how construction traffic will be managed. It also sets out any physical works to the public highway or traffic management measures required to enable access for construction vehicles. It sets out the framework for the detailed CWTP documents which will be developed by the Contractor and approved post-consent. The measures contained in the Framework CWTP are secured by a requirement in Schedule 2 to the draft Development Consent Order. A detailed CWTP will be produced and submitted for approval in accordance with requirement contained in Schedule 2 to the draft DCO.

Term	Definition
	The Framework CWTP forms an appendix to the Framework Construction Traffic Management Plan, submitted with the DCO application.
Framework Rights of Way Management Plan (RoWMP) (Appended to the Framework CTMP (Document reference 7.2, DCO Volume 7))	Provides a general overview of management measures that will be used to mitigate the impact of the Project on the Public Rights of Way network. It sets out the framework for the detailed Rights of Way Management Plan(s) which will be developed by the Contractor in accordance with the Framework Rights of Way Management Plan, and submitted for approval separately to the CEMP in accordance with requirement contained in Schedule 2 to the draft Development Consent Order (Document reference 3.1, DCO Volume 3). The Framework Rights of Way Management Plan forms an appendix to the Framework Construction Traffic Management Plan, submitted with the DCO application.
Hampshire Water Transfer and Water Recycling Project	This is the name of the Project, 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 Project.
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 Project 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) [32].
Impact	A change that is caused by an action/activity associated with the Project.
Lowest Observed Adverse Effect Level (LOAEL)	As defined in Noise Policy Statement for England [33] "*The level above which adverse effects on health and quality of life can be detected*".
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

Term	Definition
	of the Contractor or its appointed representatives to manage.
Maximum operation	The period when the Project is operating at maximum flows. During maximum operation, the Water Recycling Plant would produce 60 Megalitres per day (Ml/d) of recycled water, and 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 construction compounds.
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 ES 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 EIA, 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 Project are reflected in the Commitments Register, ES Appendix 5.5 Commitments Register, Volume II (Document reference 6.2, DCO Volume 6).
Noise	No strict definition and is often used interchangeably with Sound. However, it is usually taken to mean noticeable unwanted sound.
Non-hazardous waste	Any waste not defined as 'hazardous' under The Hazardous Waste (England and Wales) Regulations 2005. Also see the definition for (Hazardous Waste').
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 Project, 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).

Term	Definition
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. The Project would transfer source water from Havant Thicket Reservoir to Otterbourne Water Supply Works (WSW). The source water would be treated to strict regulatory standards at Otterbourne WSW prior to being supplied to customers.
Outline Carbon Management Plan (CMP) (Document reference 7.8, DCO Volume 7)	Sets out commitments and incentives to reduce carbon emissions as far as practicable in line with the requirements of the National Policy Statement for water resources infrastructure. The measures contained in the Outline CMP are secured by a requirement in Schedule 2 to the draft Development Consent Order. A detailed CMP 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 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. Detailed CEMP(s) will be developed by the Contractor, in accordance with the Outline Construction Environmental Management Plan, and submitted for approval in accordance with requirement contained 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.
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~~Project and provides the measures required to reduce or remove the risk of introducing or spreading INNS during construction and operation phases
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 Project. 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 draft Development

Term	Definition
	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).
Operational Environmental Management Plan (OEMP) (Document reference 7.7, DCO Volume 7)	Provides a framework of commitments for the operational stage of the Project. These include general operational practices which have the potential to have an environmental impact, in addition to Project specific environmental mitigations. The measures contained in the OEMP are secured by a requirement in Schedule 2 to the Development Consent Order.
Outline Soil Resource Management Plan (SRMP) (Appendix B of the Outline CEMP (Document reference 7.1, DCO Volume 7))	Provides the overall approach to managing soil resources affected by the construction, operation and maintenance of the Project. The measures contained in the Outline SRMP are secured by a requirement in Schedule 2 to the Development Consent Order. A detailed SRMP will be produced and submitted for approval in accordance with the corresponding requirement relating to the Construction Environmental Management Plan in Schedule 2 to the draft Development Consent Order (Document reference 3.1, DCO Volume 3).
Piling Risk Assessment	A specific risk assessment focused on the potential environmental and structural impacts of piling activities, including the risk of contaminant migration, groundwater pollution, and ground movement. It is typically required where piling is proposed in sensitive locations, such as near water sources or contaminated land.
Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works	An underground pipeline approximately 35km long would transfer approximately 90Ml/d of source water from the Water Recycling Plant (WRP) site to Otterbourne Water Supply Works (WSW). Above-Ground Plant would support the transfer of water from the WRP site to Otterbourne WSW. 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

Term	Definition
Pipelines between Budds Farm Wastewater Treatment Works and the Water Recycling Plant site	Two pipelines between Budds Farm Wastewater Treatment Works (WTW) and the Water Recycling Plant (WRP) site: one to transfer treated wastewater from Budds Farm WTW to the WRP site and the other to transfer reject water from the WRP site to Budds Farm WTW. 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 Project. 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 82Ml/d of treated wastewater to the WRP site. The pipeline from the WRP site to Budds Farm WTW 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 WTW.
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 60Ml/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 WSW.
Preliminary Environmental Information (PEI) Report	The PEI Report sets out the information that “is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development” (Regulation 12(2)(b) of the Environmental Impact Assessment Regulations 2017 [34] as set out in Planning Inspectorate (2025) Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements, Section 8.3 [35]). The PEI Report was consulted on at the Summer 2024 Consultation.
Primary mitigation	Modifications to the location or design of the Project which are a result of design evolution. Modifications which are an inherent part of the Project design for the purpose of

Term	Definition
	avoiding, preventing or minimising likely significant environmental effects. For example, re-routing the Project to avoid passing through an ancient woodland.
Quality and Safety Management System (QSMS)	An integrated management system that combines quality assurance and health and safety procedures to ensure that construction activities meet required standards and legal obligations. The QSMS covers processes for monitoring, auditing, and continuous improvement in both quality and safety performance.
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 full-advanced treatment techniques.
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.
Remediation	An action taken to break or modify the source-pathway-receptor (contaminant) linkage so that the risks are removed or reduced to an acceptable level for the land use under consideration [36].
Root Protection Area (RPA)	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.
Secondary (foreseeable) mitigation	Measures or actions to prevent or reduce any remaining significant adverse environmental effects of the Project identified through the EIA 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.
Site Waste Management Plan (SWMP)	A live document that outlines how construction waste will be forecasted, reduced, managed, and monitored to ensure legal compliance and environmental efficiency. The SWMP records decisions on material resource efficiency, waste segregation, recycling, and disposal throughout the project lifecycle.

Term	Definition
Solent Wader and Brent Goose Strategy Sites (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 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.
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 metre radius from the source, whichever is larger.
Source Protection Zone 1c (SPZ1c)	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 and is where there is protective geology cover, such as clay.
Source water	Water that is used as a source for drinking water. For the Project, this water is treated to strict regulatory standards at the Otterbourne WSW before being supplied to customers.
Special Protection Area (SPA)	A designated area for birds under the European Union Directive on the Conservation of Wild Birds (2009/147/EC) [37].
Spring 2025 Consultation	The statutory consultation held in Spring 2025 to consult on water quality modelling updates, and design refinements made to the Project in response to feedback from the Summer 2024 Consultation and ongoing scheme development.
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 Project. 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 2024 Consultation	The statutory consultation held in 2024 which consulted on the Project, including the draft Order Limits, the pipeline routes, sites for the AGP and WRP, construction compounds and any temporary or permanent access routes.
Tertiary mitigation	Standard industry good practice measures or actions to reduce impacts, regardless of the design process and EIA 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.

Term	Definition
	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 Project.
Waste	Any substance or object which the holder discards or intends to or is required to discard – unusable or unwanted.
Waste hierarchy	The 'waste hierarchy' ranks waste management options according to what is best for the environment. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for reuse, then recycling, then recovery, and last of all disposal (e.g. landfill).
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 Recycling Plant (WRP)	The Water Recycling Plant (WRP) would receive a total maximum volume of approximately 82Ml/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.
Works Plans (Document reference 2.3, DCO Volume 2)	The Works Plans shows the spatial extent of the works that are detailed in Schedule 1 of the draft DCO (Document reference 3.1, DCO Volume 3) to be consented and operated by the Development Consent Order when made.
Zone of Influence (ZoI)	The spatial area over which an effect from a project is likely to be experienced.

List of abbreviations

The Abbreviations table provides definitions of abbreviations used in this Outline CEMP.

Glossary term	Description
AGP	Above-Ground Plant
BPT	Break Pressure Tank
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DFMP	Drilling Fluid Management Plan
DMP	Dust Management Plan
DPF	Diesel Particulate Filters
EA	Environment Agency
EIA	Environmental Impact Assessment
ECoW	Ecological Clerk of Works
EMEA	Environmental Mitigation and Enhancement Area
EMS	Environmental Management System
ES	Environment Statement
FWRA	Foundation Works Risk Assessment
IPS	Intermediate Pumping Stations
INNS	Invasive Non-Native Species
LLFA	Lead Local Flood Authorities
LEMP	Landscape and Ecology Management Plan
LSO	Long Sea Outfall
m	metres
Ml/d	Megalitres per day
MMS	Minerals Management Strategy
mph	Miles per hour
NE	Natural England
NRMM	Non-Road Mobile Machinery
NVPM	Noise and Vibration Management Plan
NVSR	Noise and Vibration Sensitive Receptors
Outline CEMP	Outline Construction Environmental Management Plan
Outline LEMP	Outline Landscape and Ecology Management Plan

Glossary term	Description
OWC	Ordinary Watercourse Consent
PEI	Preliminary Environmental Information
PM_{10}	Particulate Matter 10
PRoW	Public Rights of Way
QSMS	Quality and Safety Management Systems
RAMS	Risk Assessment and Method Statement
RPA	Root Protection Area
SINC	Site of Importance for Nature Conservation
SNRHW	Stable Non-Reactive Hazardous Waste
SRMP	Soil Resource Management Plan
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
TIP	Tree Impacts Plan
UXO	Unexploded Ordnance
WeBS	Wetland Bird Survey
WRP	Water Recycling Plant
WSI	Written Scheme of Investigation
WSW	Water Supply Works
WTW	Wastewater Treatment Works

References

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Appendix A Reduced Working Width & Trenchless Crossing & Tunnelling Schedules & Plans

A.1 Reduced working width schedule and plans

A.1.1 A Schedule of areas of reduced working width is provided in Table A-1. The justification for each location of reduced working width is to limit habitat loss and vegetation removal. There may be multiple reduced working width locations within the same general area, as a means of limiting the impact of the crossing of multiple adjacent receptors. Each item in the Reduced Working Width Schedule (Table A-1) includes "Crossing ID" to facilitate spatial identification.

Table A-1 Primary mitigation measures – Reduced Working Width Schedule

Crossing ID
Pipeline between the Water Recycling Plant site and Otterbourne Water Supply Works
Section E: Portsdown Hill to Boarhunt
RWW_E_1
RWW_E_2
RWW_E_3
RWW_E_4
RWW_E_5
RWW_E_6
RWW_E_7
RWW_E_8
RWW_E_9
RWW_E_10
RWW_E_11
RWW_E_12
RWW_E_13
RWW_E_14

Crossing ID
RWW_E_15
RWW_E_16
Section F: Boarhunt to Crockerhill
RWW_F_1
RWW_F_2
RWW_F_3
RWW_F_4
RWW_F_5
RWW_F_6
RWW_F_7
Section G: Crockerhill to Wickham
RWW_G_1
RWW_G_2
RWW_G_3
RWW_G_4
RWW_G_5
RWW_G_6
RWW_G_7
RWW_G_8
RWW_G_9
RWW_G_10
Section H: Wickham to Shedfield

Crossing ID
RWW_H_1
RWW_H_2
RWW_H_3
RWW_H_4
RWW_H_5
RWW_H_6
RWW_H_7
RWW_H_8
RWW_H_9
RWW_H_10
Section J: Shedfield to the River Hamble
RWW_J_1
RWW_J_2
RWW_J_3
RWW_J_4
RWW_J_5
RWW_J_6
RWW_J_7
RWW_J_8
RWW_J_9

Crossing ID
RWW_J_10
RWW_J_11
Section K: The River Hamble to Lower Upham
RWW_K_1
RWW_K_2
RWW_K_3
RWW_K_4
RWW_K_5
RWW_K_6
RWW_K_7
RWW_K_8
RWW_K_9
RWW_K_10
RWW_K_11
RWW_K_12
RWW_K_13
RWW_K_14
RWW_K_15
RWW_K_16
RWW_K_17
RWW_K_18
RWW_K_19

Crossing ID
RWW_K_20
RWW_K_21
RWW_K_22
Section L: Lower Upham to Brambridge
RWW_L_1
RWW_L_2
RWW_L_3
RWW_L_4
RWW_L_5
RWW_L_6
RWW_L_7
RWW_L_8
RWW_L_9
RWW_L_10
RWW_L_11
RWW_L_12
RWW_L_13
RWW_L_14
RWW_L_15
RWW_L_16
RWW_L_17
RWW_L_18

Crossing ID
RWW_L_19
RWW_L_20
RWW_L_21
RWW_L_22
Section M: Brambridge to Otterbourne Water Supply Works
RWW_M_1
RWW_M_2
RWW_M_3
RWW_M_4
RWW_M_5

A.2 Trenchless crossing and tunnelling schedule and plans

A.2.1 A Schedule of the locations where trenchless and tunnelled construction methods are used is provided in Table A-2. Each item in the Trenchless Crossing and Tunnelling Schedule (Table A-2) includes “Crossing ID” to facilitate spatial identification.

Table A-2 Primary mitigation measures - Trenchless Crossing and Tunnelling Schedule

Crossing ID	Location/Features Crossed	Crossing Type	Justification
Pipelines between Budds Farm Wastewater Treatment Works (WTW) and the WRP			
TC_C_1	Hermitage Stream Harts Farm Way	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce indirect impacts to the watercourse and the A27.

Crossing ID	Location/Features Crossed	Crossing Type	Justification
Pipelines between the Water Recycling Plant (WRP) site and Bedhampton Springs			
TC_B_1	A27	Trenchless	Trenchless construction would be used to avoid disruption to the A27.
TC_B_2	Mill Lane	Trenchless	Trenchless construction would be used to avoid disruption to Mill Lane, vegetation and a watercourse.
Section D of the Pipeline between the WRP site and Otterbourne Water Supply Works (WSW)			
TC_D_1	A27	Tunnel	Tunnelled construction would be used in Section D of the Pipeline between the WRP site and Otterbourne WTW to avoid surface works within Drayton, Farlington and Widley which is a densely populated area.
	Havant Road (A2030)		
	Farlington Avenue		
	London Road (A3)		
	Portsdown Hill Road (B2177)		
Section F of the Pipeline between the WRP site and Otterbourne WSW			
TC_F_1	River Wallington	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce indirect impacts to the watercourse.
Section G of the Pipeline between the WRP site and Otterbourne WSW			
TC_G_1	Hoad's Hill (A32)	Trenchless	Trenchless construction would be used to avoid disruption to this road.

Crossing ID	Location/Features Crossed	Crossing Type	Justification
TC_G_2a	Mayles Lane River Meon	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce indirect impacts to the watercourse.
TC_G_2b	Mayles Lane River Meon	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce indirect impacts to the watercourse.
TC_G_3	Winchester Road (A334)	Trenchless	Trenchless construction would be used to avoid disruption to this road.
Section H of the Pipeline between the WRP site and Otterbourne WSW			
TC_H_1	Access road east of High Street in Shirrell Heath High Street	Trenchless	Open-cut trench construction of the Pipeline would not be possible within this access road. Therefore, trenchless construction would be used.
TC_H_2	Winchester Road (B2177) St Annes Lane	Trenchless	Trenchless construction would be used to avoid disruption to this road.
Section J of the Pipeline between the WRP site and Otterbourne WSW			
TC_J_1	Botley Road (B3035) River Hamble	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce indirect impacts to the watercourse, and avoid disruption to the road.
Section K of the Pipeline between the WRP site and Otterbourne WSW			

Crossing ID	Location/Features Crossed	Crossing Type	Justification
TC_K_1	Winters Hill	Trenchless	Trenchless construction would been used to reduce loss of vegetation at the southern boundary of parkland north of Winters Hill.
Section L of the Pipeline between the WRP site and Otterbourne WSW			
TC_L_1	Residential garden and paddocks north of Low Hill Farm.	Trenchless	Trenchless construction would be used to avoid construction work within the residential garden in this location.
TC_L_2	Winchester Road (B3354)	Trenchless	Trenchless construction would be used to avoid disruption to this road.
TC_L_3	Bow Lake	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce indirect impacts to the watercourse.
TC_L_4	Upstream tributary of the River Itchen north of Wardle Road	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce indirect impacts to the watercourse and the River Itchen Special Area of Conservation (SAC).
Section M of the Pipeline between the WRP site and Otterbourne WSW			
TC_M_1	Highbridge Road (B3335)	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce indirect impacts to the watercourse and River Itchen SAC. Trenchless construction would also be used to avoid disruption to the railway.
	River Itchen		
	South-West Main Line Railway		
TC_M_2	Upstream tributary of the River Itchen at Otterbourne	Trenchless	Trenchless construction would be used to avoid direct impacts and reduce

Crossing ID	Location/Features Crossed	Crossing Type	Justification
			indirect impacts to the watercourse and the River Itchen SAC.

A.3 Restricted trenchless construction schedule and plans

A.3.1 A Schedule of the location where trenchless and tunnelled construction methods are restricted is provided in Table A-3 The pipeline would be installed using open cut construction or be above ground to reduce interaction with the area of Groundwater Source Protection Zone 1 associated with Bedhampton Springs.

Table A-3 Primary mitigation measures – Restricted Trenchless Construction Schedule

Crossing ID	Location/Features crossed	Crossing type	Justification
Pipelines between the Water Recycling Plant (WRP) site and Bedhampton Springs			
RTC_B_1	Bedhampton Springs	Not trenchless	Trenchless construction would risk adverse effects on an area of Groundwater Source Protection Zone 1 in the vicinity of Bedhampton Springs.

Appendix B Outline Soil Resource Management Plan

B.1 Executive summary

B.1.1 This document is the Outline Soil Resource Management Plan (SRMP) for the construction, operation and maintenance of the Hampshire Water Transfer and Water Recycling Project (the Project).

B.1.2 It sets out the overall approach to managing soil resources affected by the Project and the measures that will be developed in more detail in the detailed SRMP which will be produced for the Project following the appointment of the Contractor prior to the commencement of construction.

B.1.3 The Outline SRMP provides details of relevant policies and guidance relating to soil resources and their management, particularly within the National Policy Statement for Water Resources Infrastructure, the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites and the Good Practice for Handling Soils.

B.1.4 The Outline SRMP provides relevant background information to soils within the Project, including climate, geology, altitude, topography, soil type and land use. It then describes the seven soil types that have been identified from survey work and categorises these according to their resilience to structural damage from handling. This is intended to assist in planning the works in the detailed SRMP.

B.1.5 The Outline SRMP sets out the principles of good practice for handling soils and appropriate soil handling methods for stripping, stockpiling and reinstatement of soils that will need to be developed and included within the detailed SRMP, and the monitoring procedures that will need to be undertaken.

B.2 Introduction

Purpose of document

B.2.1 This document provides an Outline Soil Resource Management Plan (SRMP) for the construction, operation and maintenance of the Hampshire Water Transfer and Water Recycling Project (the Project). It includes the overall approach to managing soil resources affected by the Project. The Outline SRMP is an appendix to the Outline Construction Environmental Management Plan.

B.2.2 This Outline SRMP sets out the measures that will be developed in more detail in the detailed SRMP, the production of which would be secured through the Development Consent Order (DCO), as well as setting out the monitoring and recording activities to ensure that these measures are carried out.

B.2.3 The detailed SRMP will be produced for the Project following the appointment of the Contractor prior to the commencement of construction. This Outline SRMP provides the structure of the detailed SRMP and the types of controls that are anticipated to be included to deliver the Project.

B.2.4 This Outline SRMP follows receipt of comments from Natural England in April 2025 on the first draft of the Outline SRMP. These comments have been discussed and agreed with Natural England via a Technical Working Group meeting and have been incorporated into this document.

The Project

B.2.5 The Project comprises the construction, operation and maintenance of the following components:

1. Water Recycling Plant (WRP) and associated pumping stations.
2. Pipelines between Budds Farm Wastewater Treatment Works (WTW) and 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.
4. Pipeline between the WRP site and Otterbourne Water Supply Works (WSW).
5. Above Ground Plant (AGP) comprising Intermediate Pumping Stations and Break Pressure Tanks located along the Pipeline between the WRP site and Otterbourne WSW.

B.2.6 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.
2. The existing Eastney Long Sea Outfall, Eastney Pumping Station, and associated Eastney Transfer Tunnel for the release of reject water from the WRP site.
3. Pipelines and other related works (which have been consented separately by Portsmouth Water) for the transfer of recycled water and source water between Bedhampton Springs and Havant Thicket Reservoir.

B.2.7 The construction and operation of the Project would be supported by other temporary and permanent works.

B.2.8 The Project will require the demolition, disassembly and/or temporary relocation of a number of small structures.

B.2.9 A detailed description of the Project can be found in Environmental Statement (ES) Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6). The Application Glossary (Document reference 1.7, DCO Volume 1) sets out the abbreviations and definitions used in the DCO application for the Project.

B.2.10 The Project crosses the administrative boundaries of East Hampshire District, Eastleigh Borough, Fareham Borough, Havant Borough, Portsmouth City and Winchester City.

B.2.11 The eastern end of the Order Limits, from the Havant Thicket Reservoir to the urban edge of Havant is non-agricultural. From Junction 5 of the A3(M) running westwards, the land is primarily in agricultural use, most of which is arable. Other land affected by the Project includes Wickham Park Golf Club.

B.2.12 The Order Limits for the Project are shown in (ES) Figure 1.1 Location of the Project and Order Limits, Volume III (Document reference 6.3, DCO Volume 6).

Project team roles and responsibilities

B.2.13 The Contractor will have overall responsibility for managing the soil resources and the specific roles and responsibilities required. These will be set out in the detailed SRMP to be prepared by the Contractor but are likely to involve:

1. An Agricultural Liaison Officer (ALO) who will act as a liaison between the landowners and the Contractor.
2. A suitably qualified soil practitioner who will undertake such tasks as the on-site assessments of soil suitability for handling, or who will otherwise be able to advise the Contractor on how to undertake the necessary tests.

B.2.14 The ALO will be appointed by the Undertaker prior to the commencement of the construction works and will be the primary contact for ongoing engagement with owners, their agents and occupiers of land about practical agricultural matters before and during the construction process. There may be more than one ALO if required. A 24-hour contact number will be in use during the construction phase for use by landowners, occupiers and their agents in the event of emergency.

B.2.15 Post-construction, the ALO will remain appointed for up to one year in order to manage remediation issues.

B.2.16 The scope of works for the ALO will include but is not limited to:

1. Coordinating drainage surveys and assisting in sharing pre and post construction drainage schemes with landowners, occupiers and their agents in advance of construction for their consideration.
2. Undertaking and preparing the Record of Condition capturing the condition of land prior to entry being taken prior to commencement of the construction works (and prior to commencement of intrusive surveys or pre-construction works as necessary).
3. Advising the Project on risks relating to the translocation of soil diseases, where necessary, and assisting in ensuring appropriate protective provisions are implemented.
4. Arranging meetings with the landowners, occupiers and their agents where considered necessary.
5. Undertaking pre-construction liaison with landowners, occupiers and their agents to reduce disruption, where practicable, to existing farming regimes and timings of activities.
6. Undertaking site inspections during construction to monitor working practices including implementation of soil handling methodologies.
7. Discussing and agreeing reinstatement measures between the Undertaker and land interests following completion of the construction works.
8. Ensuring landowners, occupiers and their agents are consulted in respect of requirements for field entrances and crossing points across the construction working width, particularly to severed land parcels.

Structure of the Soil Resource Management Plan

B.2.17 The detailed SRMP to be prepared by the Contractor will include:

1. Details of relevant policies and guidance relating to soil resources and their management.
2. Relevant background information, including climate, geology, altitude, topography, soil type and land use.
3. Descriptions of the soil resources identified along the pipeline route, and at the (WRP) site and (AGP) sites.
4. Appropriate soil handling methods for stripping, stockpiling and reinstatement of soils.
5. Monitoring procedures.

B.3 Relevant policy and guidance

B.3.1 Relevant policies for soil protection include:

1. National Policy Statement for Water Resources Infrastructure (NPSWRI) paragraphs 4.10.3, 4.10.4, 4.10.14, 4.10.17, 4.10.25 and 4.12.7 [38].
2. National Planning Policy Framework (NPPF) paragraph 187 [39].
3. Defra Soil Strategy for England [40].

B.3.2 Those policies identified within the NPSWRI [38] indicate that applicants should use poorer quality agricultural land where possible to reduce impacts on soil quality (except where doing so would be inconsistent with other sustainability considerations). Assessments of agricultural land should be supported by relevant survey information to confirm the agricultural land grade. Applicants should also identify any effects on soil quality and show how they would reduce those effects, including by proposing appropriate mitigation measures.

B.3.3 The NPSWRI also indicates that applicants can reduce the direct effects of a project by the application of good design principles, including the protection of soils during construction, with reference made to the Defra Construction Code of Practice [41].

B.3.4 For decision making, the NPSWRI indicates that the Secretary of State will take into account the economic and other benefits of the Best and Most Versatile agricultural land and ensure the applicant has put forward appropriate mitigation measures to reduce impacts on soils or soil resources.

B.3.5 Paragraph 187 of the NPPF [39] indicates that planning decisions should protect and enhance soils (in a manner commensurate with their statutory status or identified quality in the development plan). It also provides that new developments should be prevented from contributing to, or being put at risk from, unacceptable levels of soil pollution.

B.3.6 Relevant guidance notes for soil protection include:

1. Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites [41].

2. Institute of Quarrying, Good Practice for Handling Soils in Mineral Workings [42] which is an update of the Ministry of Agriculture, Fisheries and Food (MAFF) Good Practice Guidance for Handling Soils [43].
3. Natural England, Guide to assessing development proposal on agricultural land [44].
4. British Society of Soil Science, Working with Soil Guidance Note Document 3: Benefitting from Soil Management in Development and Construction [45].
5. Institute of Environmental Management and Assessment (IEMA), A New Perspective on Land and Soil in Environmental Assessment [46].
6. Soils in Planning and Construction Task Force, Building on soil sustainability: Principles for soils in planning and construction [47].

B.3.7 The relevant guidance listed generally sets out the principles of good soil management, with also practical guidance offered by the Code of Practice [41] and the Good Practice Guide [42].

B.4 Scope

B.4.1 The detailed SRMP will apply to the management of all soils during the construction phase of the Project in order to reflect the Government's commitment in its Soil Strategy [40] and its 25 Year Environment Plan [48] for all soils to be managed sustainably. Although most soil resources that will be affected by the Project are in agricultural use, the detailed SRMP will apply to all soil resources and all land uses that may be impacted by the Project.

B.4.2 Although specifically designed for the construction phase, the soil protection measures contained within the detailed SRMP can also be applied to any monitoring, maintenance, repair or replacement works that need to occur during the operation of the Project and that affect soil resources. The measures will also be relevant to works during the decommissioning phase, subject to relevant statutory requirements and relevant good practice measures in place at that time.

B.4.3 Soil management methodologies to be included within the detailed SRMP, include:

1. Soil handling methods (stripping, stockpiling and reinstatement) for any soils that will be disturbed temporarily or permanently by the construction of the Project.
2. Monitoring procedures required for all soils (disturbed or those left in situ) during the construction of the Project, including details of roles and responsibilities.
3. Restoration methods for land that is disturbed temporarily during construction and subsequently returned to agricultural use for the operation of the Project.
4. Any measures required to ameliorate soils to ensure the original land quality is achieved upon reinstatement.
5. Monitoring required during the operation of the Project.

B.5 Sources of information

B.5.1 Representative soil samples within the Order Limits were obtained from the Ground Investigations, amounting to 50 topsoil samples, 38 upper subsoil samples and 9 lower subsoil samples, all taken from known depths. The samples were analysed by Reading Agricultural Consultants Limited and described according to the Soil Survey Field Handbook which is the recognised source for describing soil profiles and characteristics according to the Agricultural Land Classification (ALC) guidelines [49].

B.5.2 The following characteristics were assessed for each soil sample:

1. Soil texture.
2. Stone content.
3. Colour (including localised mottling).
4. Consistency.
5. Structural condition.
6. Free carbonate.

B.5.3 Fifteen topsoil samples were submitted for further laboratory determination of particle size distribution, pH, organic matter content and nutrient contents (Phosphorus (P), Potassium (K) and Magnesium (Mg)).

B.5.4 The soil characteristics recorded were then analysed according to the ALC guidelines and used to refine the ALC mapping.

B.5.5 The areas proposed for the AGP sites that would represent a loss of soil and/or agricultural resource during the lifetime of the Project have also been surveyed and three additional samples have been submitted for laboratory analysis. The results of the AGP sites are included in the ALC baseline survey report, which is contained in ES Appendix 12.1 Agricultural Land Quality (Document reference 6.2, DCO Volume 6).

B.5.6 For the detailed SRMP, the Contractor will need to undertake pre- and post-construction soil surveys which will be carried out by competent soil specialists to identify and describe the physical characteristics of the soils to be disturbed and ensure that they are reinstated in the same condition. The scope of the survey will need to be defined in the detailed SRMP as the data requirements and density of sampling will vary according to the nature and duration of the works proposed and the degree of soil disturbance at any particular location but the data required is likely to include relevant topographic features (relief, slope, aspect, micro-relief) and (for all soil horizons):

1. Soil depths;
2. Soil textures;
3. Soil colour (matrix and mottling);
4. Stone content;
5. Soil consistency;
6. Soil structures.

B.6 Description of soils in the Order Limits

B.6.1 The analysis undertaken has identified seven main soil types within the Order Limits. The types are broadly defined as follows:

1. Shallow loam over chalk.
2. Permeable clay loams.
3. Shallow loam over slowly permeable clay.
4. Deep loam over slowly permeable sandy clay.
5. Slowly permeable loam over clay.
6. Slowly permeable clay.
7. Sandy topsoil over very stony clayey sand.

B.6.2 Each type is summarised below in Table B-1.

Table B-1 Summary of soil types

Type	Topsoil	Subsoil	ALC Grade
Shallow loam over chalk	Dark greyish brown, calcareous, slightly stony, medium clay loam	Light grey, extremely calcareous, very stony, heavy clay loam upper subsoil over chalk. Wetness Class I (well drained)	Grade 1
Permeable clay loams	Brown, non-calcareous, moderately stony, medium clay loam	Brown, non-calcareous, slightly stony, heavy clay loam. Wetness Class II (moderately well drained)	Grade 2
Shallow loam over slowly permeable clay	Dark greyish brown, non-calcareous, very slightly stony, medium clay loam	Brown, non-calcareous, slightly stony clay Wetness Class IV (poorly drained)	Subgrade 3b
Deep loam over slowly permeable sandy clay	Dark brown, non-calcareous, stoneless, sandy silt loam	Brown, non-calcareous, very slightly stony, sandy clay loam upper subsoil. Dark yellowish brown, non-calcareous, very stony, sandy clay Wetness Class II (moderately well drained)	Grade 1
Slowly permeable loam over clay	Dark greyish brown, non-calcareous, very slightly stony, medium clay loam	Grey, non-calcareous, stoneless clay Wetness Class IV (poorly drained)	Subgrade 3b

Type	Topsoil	Subsoil	ALC Grade
Slowly permeable clay	Very dark grey, non-calcareous, very slightly stony clay or silty clay	Dark greyish brown, non-calcareous, stoneless, clay Wetness Class IV (poorly drained)	Grade 4
Sandy topsoil over very stony clayey sand	Very dark greyish brown, non-calcareous, very slightly stony, medium sandy loam	Greyish brown, non-calcareous, stoneless, clayey sand Wetness Class II (moderately well drained)	Grade 2

B.7 Characterisation of soil types

B.7.1 The sensitivity of soils to handling, stockpiling and reuse is determined by their texture, wetness class and local agro-climatic conditions, particularly the number of days when soils are at field capacity and can accept no further rainfall.

B.7.2 Soils, when in a wet condition, generally have a lower strength and less resistance to compression and smearing than when dry. Lower strength when soils are wet also affects the bearing capacity of soils and their ability to support the safe and efficient operation of machines than when in a dry state.

B.7.3 In terms of resilience and susceptibility to soil wetness, the clay content of the soil largely determines the change from a solid to a plastic state (the water content at which this occurs is the plastic limit). This is the point at which increasing soil wetness reduces the cohesion and strength of the soil and its resistance to compression and smearing.

B.7.4 Whilst coarse textured sandy soils are not inherently plastic when wet, they are still prone to compaction when in a wet condition. Hence, handling all soils when wet will have adverse effects on plant root growth and soil profile permeability.

B.7.5 Significant wind erosion is restricted to a relatively narrow range of susceptible soil types but can result in the loss of topsoil, seeds, seedlings and fertiliser, and cause damage by abrasion to remaining plants. The risk is greatest in spring or early summer on flat or gently sloping land where light textured, bare or sparsely vegetated soil is exposed to strong wind and the surface is dry. The soils most at risk are sands and loamy sands with a high fine sand content, organic sand, sandy and loamy peats and peats. The presence of stones reduces erosion risk to some extent.

B.7.6 The IEMA [46] has characterised the sensitivity of topsoil and subsoil resources based on its resilience to structural damage, as shown in Table B-2.

Table B-2 Sensitivity of soil types (from IEMA)

Sensitivity of topsoil and subsoil	Soil texture, Field Capacity Days and Wetness Class
High sensitivity	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and

Sensitivity of topsoil and subsoil	Soil texture, Field Capacity Days and Wetness Class
(low resilience to structural damage)	organo-mineral and peaty soils where the Field Capacity Days (FCD) are 150 or greater. Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where the FCDs are 225 or greater. All soils in Wetness Classes V or VI.
Medium sensitivity (medium resilience to structural damage)	Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils where the FCDs are fewer than 150. Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225. Sands, loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in Wetness Classes III and IV.
Low sensitivity (high resilience to structural damage)	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in Wetness Classes I and II.

B.7.7 FCDs at five locations at roughly equal intervals along the pipeline route (at Southwick, Crockerhill, Shirrell Heath, Winters Hill and Lower Upham) vary from 166 to 180 days, with an average (mean) of 173 days. This is higher than the average for lowland England (150 FCD).

B.7.8 The heavy textured soils (those with a high clay fraction) within the Order Limits are therefore categorised as high sensitivity and low resilience to structural damage, and the medium textured soils are categorised as medium sensitivity and medium resilience to structural damage. All coarse textured soils are categorised as low sensitivity and high resilience to structural damage, other than in respect of susceptibility to wind erosion.

B.7.9 There are no soils in Wetness Class V or VI within the Order Limits, so no soils are categorised as high sensitivity solely on their Wetness Class.

B.8 Soil disturbance

B.8.1 In order to retain the long-term potential of the temporarily disturbed land and to safeguard soil resources as part of the overall sustainability of the Project, it is important that the soil is able to retain as many of its important functions and services (ecosystem services) as possible through careful soil management during the installation of the pipeline and construction of the AGP and WRP. Where possible all soil and peat resources should be sustainably re-used as part of the Project within the Order Limits.

B.8.2 The proposed method of the pipeline installation across the agricultural land is primarily open-cut excavation (other than where trenchless crossings of rivers and roads, for example, impact on agricultural land). Open-cut excavation would

involve stripping the topsoil and subsoil and placing it next to the pipeline route within the same land holding where possible, installing the pipe, then backfilling the exposed trench with the original soils in the correct sequence. This disturbance is temporary and short-term.

B.8.3 Topsoil stripping would also be required from areas proposed for access tracks, construction compound locations, and the locations of any subsoil stockpiles. This disturbance is temporary and medium-term.

B.8.4 Topsoil stripping would also be required from the WRP site and AGP sites. This disturbance is permanent and long-term.

B.8.5 The specific area and volume of topsoil and subsoil of each soil type to be excavated from the areas proposed for access, construction compounds, subsoil stockpiles and the WRP site and AGP sites, and where the excavated soils would be stored will be confirmed in the detailed SRMP.

B.8.6 For the soils excavated from the areas proposed for access, construction compounds, subsoil stockpiles and the WRP site and AGP sites, the detailed SRMP will also describe where and for how long these soils would be stockpiled; how soil within the stockpiles would be managed, having regard to different soil types and neighbouring land uses; and how and when the soils would be reused within or removed from the Project.

B.9 Soil handling methods

Soil stripping methods and suitability criteria

Principles

B.9.1 Soil stripping, handling, storage and reinstatement procedures should conform with the relevant guidance set out in section B.3 (or any replacement guidance), particularly the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites [41] and the Good Practice Guide for Handling Soils in Mineral Workings [42]. Although the Good Practice Guide is designed specifically for mineral workings, it is the replacement of the earlier MAFF Good Practice Guidance for Handling Soils [43], and has wider applicability to developments other than mineral workings.

B.9.2 The main impacts on soils during construction occur as a result of trafficking by vehicles and plant, and excavating and handling soils in inappropriate conditions, largely when the ground conditions and soils are too wet. These can both cause damage to soil structure from compaction and smearing, which can be difficult to ameliorate.

B.9.3 The following general good practice measures should be adopted and employed by the Contractor to avoid damage to soil structure, and should be included in the detailed SRMP:

1. Suitably qualified soil scientists should be appointed by the Contractor to oversee and define all soil management good practice measures set out in this Outline SRMP.
2. Soil resources should be clearly identified (usually by texture and/or colour) to avoid mixing of topsoils with subsoils when excavating and filling the trenches.

3. No trafficking of vehicles/plant or materials storage should occur on reinstated soil.
4. Disturbance to soils should be reduced at all stages; for example, avoiding unnecessary repeat movements over the same ground.
5. Multiple handling of soils should be avoided.
6. Soil handling, including tracking over the soil with machinery, should only take place in suitable soil moisture and weather conditions.
7. Soils should only be stored in designated stockpiles.
8. Records of soil handling operations and stockpiles should be kept.

Soil moisture conditions for handling

B.9.4 Handling soils in appropriate moisture conditions will avoid damage to soil structure, particularly from compaction and smearing. As high sensitivity and low resilience soil textures are confirmed within the Order Limits, adherence to the moisture conditions for handling is extremely important.

B.9.5 The Good Practice Guide for Handling Soils [42] provides indicative regional summaries of the optimal times for soil handling based on soil moisture deficits, FCD and soil textures. Within this model, the Project is within climatic zone 2. The indicative months when soils might be in a sufficiently dry condition to move are shown in Table B-3.

B.9.6 This guide is intended to assist with planning soil handling and movement operations at an early stage and broad scale for projects. It can also assist in communicating the likely requirements for access with landowners. It should not be relied on in practice when deciding operationally whether to proceed with soil handling on the ground, given the actual variation in weather events and soil moisture conditions from year to year and within years.

B.9.7 Nevertheless, in planning soil handling operations for the Project, it is evident that there is likely to be a smaller window when the heavier textured subsoils are suitable for handling.

Table B-3 Indicative months when soils are sufficiently dry for handling (from Good Practice Guide for Handling Soils [42])

Soil Clay Content	Indicative Handling Window
Topsoil (0-30cm)	
Less than 10% clay	Late March to early November
10-27% clay	Early May to early November
More than 27% clay	Not given
Upper subsoil (30-60cm)	
Less than 10% clay	Mid April to early November
10-27% clay	Early May to early November
More than 27% clay	Early June to early November
Lower subsoil (more than 60cm)	
Less than 10% clay	Mid April to early November

Soil Clay Content	Indicative Handling Window
10-18% clay	Early May to early November
18-27% clay	Early June to early November
More than 27% clay	Early June to mid October

B.9.8 It is important to note that soil handling operations should be completed in time to enable a new vegetation cover to become established on reinstated land (or on the surface of a stockpile) prior to the onset of winter in order to keep the soils in as dry a condition as possible and prevent erosion over winter.

B.9.9 The above gives a broad indication of when soils are likely to be suitable to be moved but the Contractor must set out the procedures for assessing on-site whether soils are in a suitably dry condition for handling in the detailed SRMP.

B.9.10 The initial testing should be carried out by professional soil surveyors, arranged by the Contractor, but suitably trained site operatives can carry out and record the testing during operations, with periodic reviews undertaken by the professional soil surveyors. The frequency of reviews will be confirmed in the detailed SRMP.

B.9.11 The tests should be undertaken in the field, with samples taken from at least five locations in the soil handling area and at each soil horizon to the full depth of the horizon to be stripped. The tests comprise visual examination of the soil and physical assessment of the soil consistency. The criteria are taken from the Good Practice Guide for Handling Soils [42] and are set out below in Table B-4 and Table B-5

Table B-4 Visual examination test for suitably dry soils (from Good Practice Guide for Handling Soils)

Visual examination	Action
If the soil is wet, films of water are visible on the surface of soil particles or aggregates (e.g. clods or peds)	No soil handling to take place
If a clod or ped is squeezed in the hand and readily deforms into a cohesive 'ball'	No soil handling to take place
If the sample is moist (i.e. there is a slight dampness when squeezed in the hand) but it does not significantly change colour (darken) on further wetting, and clods break up/crumble readily when squeezed in the hand rather than forming into a ball	Soil handling can take place
If the sample is dry, it looks dry and changes colour (darkens) if water is added, and it is brittle	Soil handling can take place

Table B-5 Consistency test for suitably dry soils (from Good Practice Guide for Handling Soils)

Consistency tests (not applicable to sands and coarse loams)	Action
First test: Attempt to mould soil sample into a ball by hand:	
Impossible because soil is too dry and hard	Soil handling can take place
Impossible because soil is too loose and dry	Soil handling can take place

Consistency tests (not applicable to sands and coarse loams)	Action
Impossible because the soil is too loose and wet	No soil handling to take place
Possible - Go to second test	
Second test: Attempt to roll ball into a 3mm diameter thread by hand:	
Impossible because soil crumbles or collapses	Soil handling can take place
Possible	No soil handling to take place

B.9.12 The Contractor must also include a rainfall protocol in the detailed SRMP for stopping and restarting soil handling operations. The following guidelines are commonly used and are taken from the Good Practice Guide for Handling Soils [42], assuming that the soils are in a suitably dry condition (following the above tests in Table B-4 and Table B-5) before the rainfall event:

1. In light drizzle, soil handling may continue for up to four hours unless the soils are already at/near to their moisture limit.
2. In light rain, soil handling must cease after 15 minutes.
3. In heavy rain and intense showers, soil handling shall cease immediately.

B.9.13 Once the rainfall event has passed, the visual examination and consistency tests should be applied to determine if soil handling operations can restart, provided that the ground is free from ponding and ground conditions are safe to do so.

B.9.14 These are general guidelines, and decisions to proceed or stop should be made at the local site level and based on the actual wetness state of the soils being handled.

Preparatory works

B.9.15 Before commencing any work on-site that involves vehicles running over ground, the Contractor will ensure that the following areas are marked and signposted within the Order Limits:

- Construction exclusion zones around trees.
- Areas from which soils will be stripped.
- Locations of topsoil and subsoil stockpiles.
- Access routes.

Topsoil stripping method

B.9.16 Any areas required temporarily, for example for construction compounds or machinery storage, should normally be stripped of topsoil. Topsoils should be stripped in accordance with good practice as set out in the Good Practice Guide for Handling Soils [42] or any subsequent revision, and which will be described further in the detailed SRMP.

B.9.17 Likely plant required will include excavators, tracked dozers and dump trucks in accordance with the Good Practice Guide for Handling Soils [42] or any subsequent revision.

B.9.18 The locations and depths of topsoils to be stripped will be confirmed in the detailed SRMP as the information becomes available.

Subsoil stripping method

B.9.19 Subsoils should be stripped in accordance with good practice as set out in the Good Practice Guide for Handling Soils [42] or any subsequent revision, and which will be described further in the detailed SRMP.

B.9.20 Likely plant required will include excavators, tracked dozers and dump trucks in accordance with the Good Practice Guide for Handling Soils [42] or any subsequent revision.

B.9.21 The locations and depths of subsoils to be stripped will be confirmed in the detailed SRMP as the information becomes available.

Stockpiling

Location of stockpiles

B.9.22 The locations of topsoil and subsoil stockpiles will be determined in the detailed SRMP as the information becomes available.

Building stockpiles

B.9.23 Stockpiles should be built according to the good practice methodologies as set out in the Good Practice Guide for Handling Soils [42] or any subsequent revision, and which will be described further in the detailed SRMP.

B.9.24 Stockpiled soils may need to be sampled and the nutrient status ascertained in order to inform potential suitability for re-use.

Maintenance of stockpiles

B.9.25 For each stockpile a plan must be kept and maintained, detailing:

1. Material type (topsoil or subsoil).
2. Date/time when soil was stockpiled and weather conditions.
3. Volume of material.
4. Stockpile location.
5. Source location of material.
6. Management of stockpile, particularly in respect of weed control and other biosecurity considerations.

Reinstatement

B.9.26 Reinstatement of the soils over the pipeline should occur as soon as reasonably practicable after installation of the pipeline, and as agreed with the landowner, such

that the soil handling conditions are likely to be similar at the point of excavation and reinstatement.

B.9.27 Liaison will take place between the ALO, Contractor and landowners to agree the timing and management of the reinstatement of soil over the pipeline.

B.9.28 For soil replacement, the use of bulldozers should be confined to reinstating the topsoil only since any compaction in the topsoil can be readily addressed by normal cultivation; subsoils should be loose tipped in accordance with Sheet D of the Good Practice Guide for Handling Soils [42] in order to optimise the infiltration of water, air and roots through the replaced subsoil.

B.9.29 The soils must be reinstated in order, i.e. subsoil first then topsoil. Normally, any surplus material from the pipeline void that would need to be removed from site would be subsoil, retaining the full topsoil resource on-site, although there may be occasions where the landowner is seeking to restore land to a particular habitat that requires less topsoil resource. These matters and the process for agreement with landowners would be set out in the detailed SRMP.

B.9.30 Reinstatement of soils from any construction compound areas and access tracks that have been stockpiled should involve excavating and replacing the soil according to good practice guidance set out in the Good Practice Guide for Handling Soils [42] or any subsequent revision, and which will be described further in the detailed SRMP.

B.10 Monitoring procedures during construction

B.10.1 This section of the detailed SRMP will set out the monitoring procedures to be included as a minimum during construction.

B.10.2 Monitoring procedures during construction will apply to all soils that are to be reinstated, for example those disturbed for construction compounds, access ways and the pipeline.

B.10.3 Guidelines for monitoring the soil resource during construction will be included in the detailed SRMP. Continuous, live monitoring by the Contractor of soil handling/weather conditions, as well as visual monitoring of ground conditions, will be required.

B.10.4 Monitoring the soil resource during construction will primarily involve the Contractor who is responsible for ensuring the detailed SRMP is adhered to. Periodic monitoring by a suitably qualified soil practitioner may also be required.

B.10.5 All reinstated soils will be assessed by or on behalf of the Contractor and signed off by the Contractor to record that the soils and land are in a suitable condition to hand back to the landowner. Site meetings will take place with the landowner following completion of the works to confirm that the landowner is reasonably satisfied with the reinstatement of land. Any defects identified and agreed between the landowner, Contractor and ALO will be ameliorated by the Contractor prior to handing back the land.


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