

AQUIND Limited

AQUIND INTERCONNECTOR

Habitats Regulations Assessment Report

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(g)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

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- Appendix 2 Pre-Screening for Marine Mammals
- Appendix 3 In combination Projects Tables
- Appendix 4 Marine Consultation Responses
- Appendix 5 Ramsar Screening and Integrity Matrices



ABBREVIATIONS

Abbreviation	Term in full
AA	Appropriate Assessment
AC	Alternating Current
ВАР	Biodiversity Action Plan
BERR	Department for Business Enterprise and Regulatory Reform
BoCC	Birds of Conservation Concern
вто	British Trust for Ornithology
CBRA	Cable Burial Risk Assessment
CIEEM	Chartered Institute for Ecology and Environmental Management
CLV	Cable Lay Vessel
cSACs	Candidate Special Areas of Protection
DC	Direct Current
DCO	Development Consent Order
DO	dissolved oxygen
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EMV	Excavator Mounted Vibrator
ES	Environmental Statement



Abbreviation	Term in full
ESCP	East Solent Coastal Partnership
EU	European Union
GIS	Geographical Information Systems
HDD	Horizontal Directional Drilling
HRA	Habitats Regulations Assessment
HV	High Voltage
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
ICES	International Council for Exploration at Sea
ICOL	Inchcape Offshore Limited
IMO	International Maritime Organisation
INIS	Invasive Non-Indigenous Species
IQI	Infaunal Quality Index
IROPI	Imperative Reasons of Overriding Public Interest
ISM	International Safety Management
JNCC	Joint Nature Conservation Committee
КР	Kilometre Point
LNR	Local Nature Reserve
LPA	Local Planning Authority
LSE	Likely Significant Effect



Abbreviation	Term in full
LWS	Local Wildlife Site
MCZ	Marine Conversation Zone
MFE	Mass Flow Excavation
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
ммо	Marine Management Organisation
MW	Megawatts
NG	National Grid
nmi	Nautical miles
nmi²	Nautical miles squared
ΝΟΑΑ	National Oceanic and Atmospheric Administration
NPPF	National Planning Policy Framework
NSIP	Nationally Significant Infrastructure Project
OOS	Out of Service
OSPAR	Oslo and Paris Conventions
OWF	Offshore Wind Farm
PA	Planning Act
РАН	Pesticides and Polycyclic Hydrocarbons
PCC	Portsmouth City Council
PCI	Project of Common Interest



Abbreviation	Term in full
PINS	Planning Inspectorate
PLGR	pre-lay grapnel run
PTS	permanent threshold shift
RSPB	Royal Society for the Protection of Birds
RTE	Réseau de Transport d'Électricité
SACs	Special Areas of Conservation
SACO	Supplementary Advice on Conservation Objectives
SAMM	Suivi Aérien de la Mégafaune
SCANS	Small Cetaceans in European Atlantic Waters and the North Sea
SCIs	Sites of Community Importance
SEL	sound exposure level
SINC	Site of Importance for Nature Conservation
SNCB	Statutory National Conservation Body
SNH	Scottish Natural Heritage
SoCG	Statement of Common Ground
SPAs	Special Protection Areas
SPL	Sound Pressure Level
SSC	Suspended Sediment Concentrations
SWBGS	Solent Waders and Brent Goose Strategy



Abbreviation	Term in full
ТЈВ	Transition Joint Bay
тос	Total Organic Carbon
TSHD	Trailing Suction Hopper Dredger
UK	United Kingdom
VSC	Voltage Source Converter
WeBS	Wetland Bird Survey
WFD	Water Framework Directive
WSP	WSP Parsons Brickerhoff
ZOI	Zone of Influence
ZSC	Zone Spéciale de Conservation



EXECUTIVE SUMMARY

This Habitats Regulations Assessment Report addresses the requirements, in respect of the AQUIND Interconnector (the Proposed Development), under regulation 5(2)(g) of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 to provide information that will be required by the Competent Authority to enable it to undertake an Habitats Regulations Assessment ('HRA') Screening to determine whether an Appropriate Assessment ('AA') is required, and where one is required, to undertake an AA in accordance with Regulation 63(2) of the Habitats Regulations and 28(3) of the Offshore Habitats Regulations.

AQUIND Interconnector (the 'Project') consists of the construction of a 2,000 MW bidirectional electrical power transmission link between the South Coast of England and Normandy in France and would facilitate the import and export of electricity between the UK and France. The Proposed Development includes that part of the Project located within the UK and the UK Marine Area, for which development consent is sought by the Application.

This assessment – and the Environmental Impact Assessment ('EIA') – uses the Rochdale Envelope approach to consider a range of maximum worst case design parameters for each of the main receptor groups (marine mammals, migratory fish, Annex I habitats and passage/wintering/breeding birds) considered to be potentially impacted by the Proposed Development.

For onshore assessments, the study area includes the onshore and intertidal areas adjacent to the Order limits of the Proposed Development onshore, with all European sites within 10 km considered. Surveys for onshore and intertidal breeding and wintering birds were undertaken within a 500 m buffer from the Proposed Developments's Order Limits.

For the marine assessments, the study areas are receptor specific ranging from the marine area around the Proposed Development, the wider Channel, the UK and French marine areas and rivers that flow into the Channel for Annex I habitats, migratory fish and marine mammals and the mean-maximum foraging range and migratory range of breeding seabirds and passage/wintering seabirds.

Twenty designated sites (SAC, SPA, Ramsar) within the UK, France and Channel Islands were screened as sites for which there was potential for a likely significant effect as a result of the construction, operation and decommissioning of the Proposed Development alone and in combination with other projects and plans.

Following the consideration of likely significant effects, the potential for an adverse effect on the integrity of eleven UK designated sites (SACs and SPA/Ramsars) and eight French designated sites (SPAs, SACs) and a Ramsar in the Channel Islands was assessed for both



the Proposed Development alone and in combination with other plans and projects. Effects considered included disturbance and displacement, indirect effects, and accidental spills and litter on ornithological features; pollution on Annex I habitats, migratory fish and marine mammal features; invasive species, sediment deposition, and increased suspended sediments on Annex I habitats; and increased suspended sediments on migratory fish features.

For the sites and features assessed, it has been concluded that the Proposed Development will not have an adverse effect on site integrity alone or in combination with other projects and plans.

Statutory Nature Conservation Bodies, the Planning Inspectorate and interested parties were consulted and commented on a draft version of this HRA Report. Those comments have been taken into account in producing this final revision of the HRA Report for the Proposed Development.



1. INTRODUCTION

1.1. PURPOSE OF THIS REPORT

- 1.1.1.1. This Habitats Regulations Assessment ('HRA') Report is submitted on behalf of AQUIND Limited (the 'Applicant') to accompany an application (the 'Application') for a Development Consent Order ('DCO') submitted to the Secretary of State ('SoS') for Business, Energy and Industrial Strategy ('BEIS'). The Applicant is a UK-registered company with the sole business of developing and operating AQUIND Interconnector. The application relates to the UK elements of AQUIND Interconnector which constitutes the Proposed Development.
- 1.1.1.2. This HRA Report provides information that will be required by the Competent Authority to enable it to undertake HRA Screening to determine whether an Appropriate Assessment ('AA') is required, and where one is required, to undertake an AA in accordance with regulation 63(2) of the Habitats Regulations and 28(3) of the Offshore Habitats Regulations. This HRA Report is also submitted in accordance with the requirements of regulation 5(2)(g) of the Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulation 2009.

1.2. PROJECT OVERVIEW

1.2.1.1. AQUIND Interconnector consists of the construction of a 2,000 MW bi-directional electrical power transmission link between the South Coast of England and Normandy in France and would facilitate the import and export of electricity between the UK and France, helping to meet the electricity needs of both countries (the "Project"). The Project will have the capacity to transmit 16,000,000 Mwh of electricity, which equates to 5% and 3% of the total consumption of the UK and France respectively. The indicative location of the project is shown in Plate 1.1.



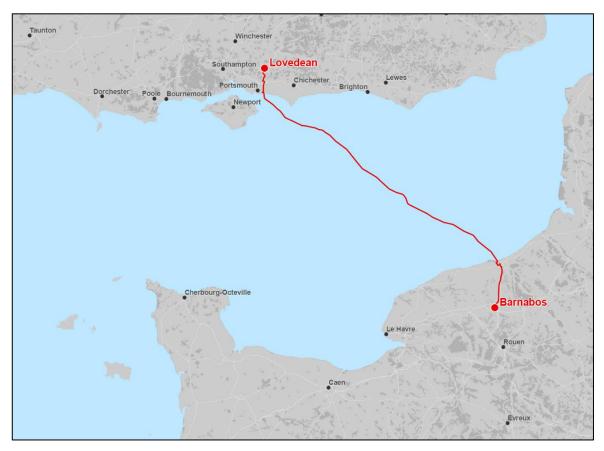


Plate 1.1 - AQUIND Interconnector between the UK and France – indicative location

1.2.1.2.

The Proposed Development includes:

- Works at the existing Lovedean Substation in Hampshire to facilitate the connection of the Proposed Development to the National Electricity Transmission System ('NETS');
- Underground high voltage alternating current ('HVAC') Cables accompanied by a smaller diameter FOC, connecting Lovedean Substation to the proposed Converter Station;
 - A newly constructed Converter Station Area comprising
 - the Converter Station and associated equipment;
 - o a Works Compound and Laydown Area;
 - o an Access Road and associated haul roads;
 - surface water drainage and associated attenuation ponds;
 - o landscape and ecology measures;
 - utilities such as potable water, electricity and telecoms; and

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- the compound comprising the Telecommunications Building(s) and associated equipment.;
- Two pairs of underground Onshore HVDC Cables, each pair accompanied by a smaller diameter Fibre-Optic Cable ('FOC'), to run from the Converter Station to the Landfall site in Eastney (near Portsmouth), approximately 20 km in length;
- Infrastructure to join the Onshore and Marine HVDC Cables together at the Landfall, and two Optical Regeneration Stations ('ORS') (one for each circuit) housed in separate buildings; and
- Two pairs of Marine HVDC Cables, each pair accompanied by a smaller diameter FOC, to run from the Landfall site in Eastney to the boundary of the UK Exclusive Economic Zone ('EEZ').
- 1.2.1.3. Chapter 3 (Description of the Proposed Development) of the Environmental Statement ('ES') (APP-118)) contains a detailed description of the Proposed Development for which development consent is sought by the Applicant.

1.3. STRUCTURE AND CONTENTS OF THIS REPORT

- 1.3.1.1. This report has been written in partnership by Natural Power Consultants and WSP. Natural Power Consultants has undertaken the assessments that relate to the marine works of the Proposed Development and WSP has undertaken the assessments that relate to the onshore works.
- 1.3.1.2. This document comprises the following sections:
 - The Habitats Regulations Assessment Process
 - Project Description
 - Environmental Baseline (Marine)
 - Environmental Baseline (Onshore)
 - Identification of European Sites and Potential Effects
 - Determination of Likely Significant Effects ('LSEs')
 - In combination Assessment
 - Summary of LSEs
 - Determination of Potential Adverse Effects (Marine)
 - Determination of Potential Adverse Effects (Onshore)
 - References



2. THE HABITATS REGULATIONS ASSESSMENT PROCESS

2.1. LEGISLATIVE CONTEXT

- 2.1.1.1. The Habitats Directive (92/43/EEC), on the conservation of natural habitats and of wild fauna and flora, protects habitats and species of European nature conservation importance. The Council Directive (2009/147/EC) on the conservation of wild birds (the 'Birds Directive') seeks to protect all wild birds and also sites important to the protection of wild birds. The Ramsar convention seeks to protect wetlands of international importance, under which the UK has to meet relevant obligations. Together the Habitats Directive, the Birds Directive and the Ramsar Convention establish a network of internationally important sites, designated for their ecological status.
- 2.1.1.2. Special Areas of Conservation ('SACs') are designated under the Habitats Directive and promote the protection of flora, fauna and habitats. Special Protection Areas ('SPAs') are designated under the Birds Directive in order to protect rare, vulnerable and migratory birds. These sites combine to create a Europe-wide 'Natura 2000' network of designated sites. Ramsar sites of wetland importance are protected by the Ramsar Convention.
- 2.1.1.3. Terrestrial areas of the UK and territorial waters out to 12 nautical miles ('nmi') are covered under The Conservation of Habitats and Species Regulations 2017 (herein referred to as the Habitats Regulations) which transpose the Habitats and Birds Directive. The Habitats Regulations protect 'European sites', which in accordance with regulation 8 of the Habitats Regulations comprise SACs, SPAs and Sites of Community Importance ('SCIs').
- 2.1.1.4. The Conservation of Offshore Marine Habitats and Species Regulations 2017 (the Offshore Habitats Regulations) transpose the Habitats and Birds Directives into national law, covering waters beyond 12 nmi, to the extent of the British Fishery Limits and UK Continental Shelf Designated Area. The Offshore Habitats Regulations protect 'European offshore marine sites', as that term is defined by regulation 18 of the Offshore Habitats Regulations.
- 2.1.1.5. In addition, UK Government policy (e.g. National Planning Policy Framework ('NPPF')) states that internationally important wetlands designated under the Ramsar Convention 1971 (Ramsar sites) are afforded the same protection as SPAs and SACs for the purpose of considering development proposals that may affect them.



The Government also affords the same level of protection to proposed SPAs (pSPAs) and candidate SACs ('cSACs') as for fully designated sites.

2.1.1.6. Under the Habitats Regulations and the Offshore Habitats Regulations, before granting approval (i.e. planning permissions, licenses and consents) for a development likely to have a significant effect on any protected site, an AA must be made by a Competent Authority of its implications for the site in view of that site's conservation objectives.

2.2. HABITATS REGULATIONS ASSESSMENT

- 2.2.1.1. The Habitats Regulations and Offshore Habitats Regulations require that wherever a project that is not directly connected to, or necessary for, the management of a European site or a European offshore marine site, as the case may be, is likely to have a significant effect on the conservation objectives of the site (directly, indirectly, alone or in combination with other plans or projects) an AA must be undertaken by the Competent Authority (Regulation 63 of the Habitats Regulations and Regulation 28 of the Offshore Habitats Regulations). The AA must be carried out before any consent or authorisation can be given for the project.
- 2.2.1.2. The Planning Inspectorate ('PINS') Advice Note Ten 'Habitat Regulations Assessment relevant to nationally significant infrastructure projects' (version 8, November 2017), defines the HRA process as a multi stage process that helps determine Likely Significant Effects ('LSE') and (where appropriate) assesses adverse effects on the integrity of a European site (or a European offshore marine site, as the case may be), examine alternative solutions, and provide justification for Imperative Reasons of Overriding Public Interest ('IROPI'). This constitutes a fourstage process as summarised below and illustrated in Plate 2.1.
 - HRA Stage 1 Screening: Screening for LSE (alone or in combination with other projects or plans);
 - HRA Stage 2 Appropriate Assessment: Assessment of implications of identified LSEs on the conservation objectives of a European site to ascertain if the proposal will adversely affect the integrity of a European site;
 - HRA Stage 3 Assessment of Alternative Solutions (where it cannot be ascertained that the proposal will not adversely affect the integrity of a European site); and
 - HRA Stage 4 Assessment of IROPI (where no alternative solutions are identified).



- 2.2.1.3. All four stages of the process are referred to as the Habitats Regulations Assessment (HRA), distinguishing the process as a whole from the one stage within it referred to as the "Appropriate Assessment" (AA).
- 2.2.1.4. The integrity of a site is the coherence of the site's ecological structure and function, across the whole of its area, which enables it to sustain the habitat, complex of habitats and/or populations of species for which the site has been designated¹.
- 2.2.1.5. An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of designation².

² English Nature, 1997 – Habitats Regulations Guidance Note.

¹ European Communities (2000) Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE. EC



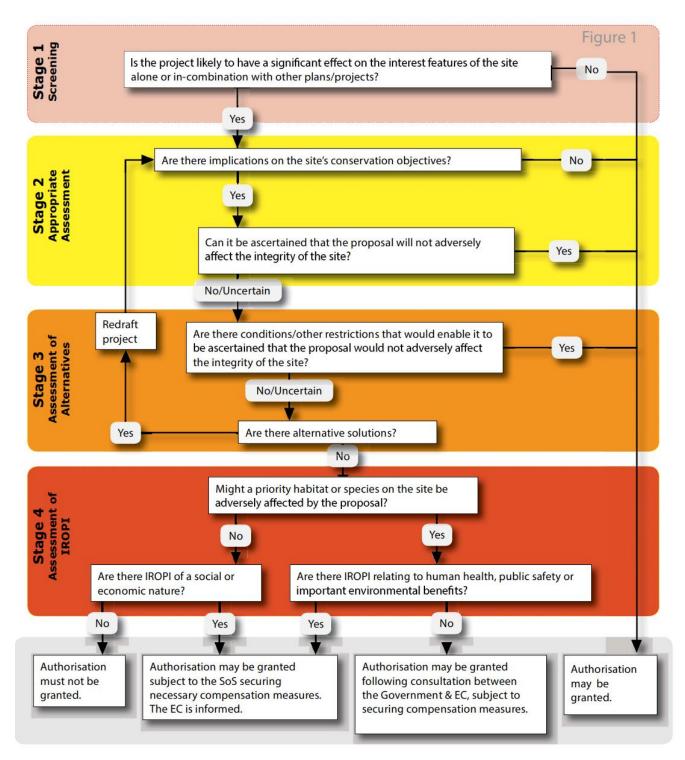


Plate 2.1 - Four Stage HRA Process (PINS, 2017)

WSP/Natural Power

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2.3. APPROACH TO SCREENING

- 2.3.1.1. Screening is a relatively coarse filter to identify those sites and features for which LSE cannot be discounted. For the purposes of this report an initial pre LSE screening stage has been introduced into the process (see Section 6). This stage is essentially a site-identification / selection process, which, while it forms part of the overall LSE determination stage of HRA, has been separated out to refine the list of sites taken forward for a more detailed consideration of LSE in connection with the Proposed Development. Once a site/feature is identified, the screening exercise considers whether or not a likely significant effect can be foreseen, both directly and indirectly. A precautionary approach is followed, where it is not currently possible to exclude a LSE, then the site/feature is progressed to the AA Stage (Stage 2 of the HRA).
- 2.3.1.2. This precautionary approach has been taken in accordance with the PINS Note 05/2018³, disregarding all measures that could be construed as being introduced to avoid or reduce an effect on a European site for the purpose of determining whether any LSEs arise in connection with the Proposed Development.
- 2.3.1.3. With respect to in combination effects, the plans and projects that have been considered have been agreed through discussion with local authorities, the Marine Management Organisation and Statutory Nature Conservation Bodies (SNCBs) who have identified specific projects for inclusion in the in combination assessment. The HRA Report includes, for those sites screened into further assessment, a detailed in combination assessment drawing on the environmental impact assessments (EIAs) (including cumulative assessment) undertaken specifically for relevant plans or projects to understand the magnitude of those effects and whether they may lead to an adverse effect on site integrity.

WSP/Natural Power

³ PINS Note 05/2018, November 2018 – Consideration of avoidance and reduction measures in Habitats Regulations Assessment: People over Wind, Peter Sweetman v Coillte Teoranta.



2.4. CONSULTATION

- 2.4.1.1. AQUIND has taken a positive approach to pre-application consultation with the local community in the vicinity of the location of the Proposed Development and with all relevant stakeholders with the UK.
- 2.4.1.2. Preliminary meetings were held with Natural England on 6 and 13 February 2019 to discuss the onshore and marine environments respectively and the HRA required in connection with the Proposed Development. On 6 February WSP provided a presentation which included discussion on impacts on birds from onshore aspects of the Proposed Development including on SPAs and functionally linked habitat.
- 2.4.1.3. On 13 February, a Natural Power provided a presentation to direct the topics discussed during the meeting which included discussion on sites to be assessed for marine mammals, birds, migratory fish and benthic habitats in relation to the HRA Report.
- 2.4.1.4. Subsequent email communications with Natural England identified that litter and visual disturbance pressures needed to be assessed for tern species within the HRA (email received 13 March 2019). In addition, in July 2019 Natural England advised on the extent of Zones of Influence (ZOI) for marine ornithology;

"For the HRA, mean-max foraging ranges (Thaxter et al., 2012) will be used to assess whether any SPA birds are present within the ZOI for the cable route and other plans/projects. For the ES, a 10 km ZOI will be applied to the cable route for the purpose of screening other plans/projects (based on the understanding that disturbance/displacement can occur up to c.6 km from source). We are content with this difference in approach but have a couple of comments:

- It should be noted that some of the data used in Thaxter et al., (2012) is now out of date, although this principally relates to auks, gulls, gannets and shags - rather than terns which would be the key species of concern for the HRA. We are aware that some subsequent Sandwich tern tracking work has been undertaken, but it may not be published yet - so it might be worth checking.
- Regarding the proposal to apply the ZOI for breeding birds to non-breeding birds, our only thought is to double-check that there are no non-breeding species which have ranges in excess of the breeding bird ranges. Providing this can be confirmed, then the approach sounds suitable."
- 2.4.1.5. Subsequent to the February 2019 meeting, Natural Power also produced and submitted a short consultation document to Natural England (on 2 April 2019) which provided evidence and rationale for the approach taken for pre-screening a number of SACs that possess marine mammal features such that they would not need any further assessment within the HRA.



2.4.1.6. This document was passed to the Natural England marine mammal specialist who responded on the 3 May 2019 by stating;

"The document clearly sets out the rationale for assessing potential connectivity with the four UK marine mammal SACs, concluding that potential impacts upon each of these sites can be screened out. We welcome this additional information and agree with the document's conclusions. Our only comment is to ensure that this information is included in the ES/HRA Report (an appendix would be fine) for the purposes of the audit trail."

- 2.4.1.7. Information detailing the approach and outcomes of the pre-screening of SACS for which marine mammals are features is provided in Appendix 2 of this Report (APP-502).
- 2.4.1.8. The Project will cross between two Member States which are the UK and France. It was included on the third Project of Common Interest list in March 2018, and has also therefore complied with the requirements of the Regulation on guidelines for trans-European energy infrastructure (EU 347/2013) (the Ten-E Regulations) in relation to consultation carried out both in the UK and in France.
- 2.4.1.9. On 2 April 2019, PINS issued a Transboundary Impacts Screening Matrix in accordance with regulation 32 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the "EIA Regulations"), notifying France, Spain, the Netherlands, Belgium, Denmark and Germany that in their view the Proposed Development is likely to have a significant effect on the environment in another EEA State, having taking a precautionary approach and the information provided by the Applicant in their request for an EIA scoping opinion. Spain confirmed they wished to participate in the EIA procedure for examining the DCO application as an interested party. Germany and Denmark confirmed they did not intend to participate in the EIA procedure. Belgium, France and the Netherlands did not respond to the notification provided to them by PINS. Is should be noted that the Secretary of State's duty under regulation 32 of the EIA Regulations continues throughout the application process.
- 2.4.1.10. Natural Power consulted with Natural England, Joint Nature Conservation Committee ('JNCC'), and the Environment Agency on the draft HRA Report in September 2019. The comments received and how they have been considered are detailed in Appendix 4 (Marine Consultation Responses) (APP-504).
- 2.4.1.11. Natural Power also sent a draft copy of this HRA Report to the Alderney Wildlife Trust who acts on behalf of the States of Alderney as administrators for designated sites (see details of their response in Appendix 4). Natural Power also sent a summary of this report to French authorities (Direction régionale de l'Environnement, de l'Aménagement et du Logement) outlining the potential for LSEs on French designated sites.



3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1. INTRODUCTION

3.1.1.1. AQUIND Interconnector (the Project) comprises a new marine and onshore High Voltage Direct Current ('HVDC') power cable transmission link between Normandy in France and Eastney, Hampshire, converter stations in both England and France and infrastructure necessary to facilitate the import and export of electricity between both countries (see Plate 3.1).

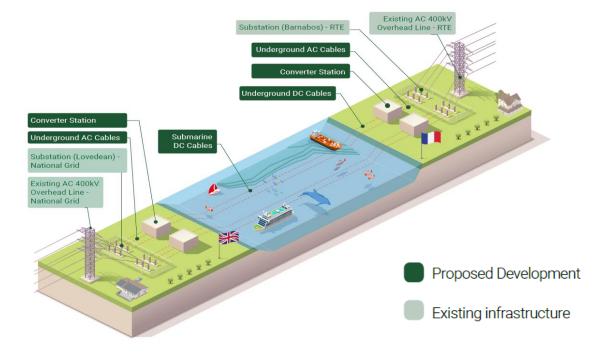


Plate 3.1 - The main elements of AQUIND Interconnector

3.1.1.2. The purpose of the Project is to make a significant contribution towards increasing the cross-border capacity between the UK and France (providing a net capacity of 2,000 megawatts ('MW')). Increasing cross border capacity, through the provision of interconnectors, improves competition in energy markets, delivers security and flexibility of energy supply in both countries as well as helping to fight climate change by integrating more renewable energy sources like solar and wind.



3.1.1.3. The Project will be approximately 238 km in length and comprise the following Marine and Onshore Components in France and UK (see Plate 3.1):

- Marine HVDC Cables;
- Onshore HVDC Cables;
- Converter Stations;
- HVAC Cables;
- FOC and FOC Infrastructure, and
- other associated infrastructure.
- 3.1.1.4. The French and UK elements of the Project require different consents and licences within the respective jurisdictions. It should be noted that a separate assessment in accordance with the Habitats Directive and the Birds Directive in connection to the French elements of the Project has been undertaken to inform the French consenting process.

3.2. THE PROPOSED DEVELOPMENT

- 3.2.1.1. The Proposed Development includes that part of the Project located within the UK and the UK Marine Area, for which development consent is sought by the DCO Application.
- 3.2.1.2. The Proposed Development is broadly comprised of the Marine Components and the Onshore Components.

3.2.2. MARINE COMPONENTS

- 3.2.2.1. The marine elements will comprise four submarine cables between the UK and France, which can be bundled in pairs, together with smaller diameter fibre optics cables. The Marine Cable Route can be divided into the following sections:
 - Approximately 45 km within the UK territorial limit, i.e. 12 nmi from shore;
 - Approximately 64 km from the UK territorial limit to the boundary of the Exclusive Economic Zone ('EEZ');
 - Approximately 44 km from the boundary of the EEZ to the French territorial limit; and
 - Approximately 29 km within the French territorial limit, i.e. 12 nmi from shore.
- 3.2.2.2. The full project description is provided in Chapter 3 (Description of the Proposed Development) of the Environmental Statement ('ES'). A summary of the project description is described below in order to provide an overview of the Proposed Development and context to the HRA.



- 3.2.2.3. More detailed design envelope scenarios assessed per receptor group are presented within the relevant ES Chapters as follows:
 - Chapter 8: Intertidal and Benthic Ecology Habitats;
 - Chapter 9: Fish and Shellfish;
 - Chapter 10: Marine Mammals and Basking Sharks; and
 - Chapter 11: Marine Ornithology.
- 3.2.2.4. Important to note is a key difference between the design parameters used for the Stage 1 HRA assessment (LSE screening in Sections 6 and 7 of this document) and the ES assessments, in order to reflect the European Court of Justice ('ECJ') decision People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17) (April 2018) which adjudged that mitigation should not be applied at LSE screening stage but as part of the AA stage.
- 3.2.2.5. The ES design envelope includes the requirement for the disposal of dredge material (potentially required as a result of sandwave clearance), within the proposed marine disposal area which is located within the Marine Cable Corridor between Kilometre Point ('KP') 21 and KP 109 (see Plate 3-2 below).
- 3.2.2.6. While the rationale for avoiding sediment disposal within the nearshore (landward of KP 21) was to reduce possible effects on water quality including Water Framework Directive ('WFD') waterbodies more broadly (rather than mitigating specific HRA effects), it is considered prudent to treat this approach as mitigation for HRA purposes.
- 3.2.2.7. Accordingly, the ZOI for identifying possible Annex I habitat SACs (Section 6) and for undertaking the LSE assessment (Section 7) uses a 25 km distance which is based upon sediment plumes from disposal taking place anywhere within the Marine Cable Corridor. The requirement for disposal activities to take place within the designated marine disposal area (between KP 21 and KP 109) is applied as mitigation at the AA stage (see Section 10.2.5 for further details) subject to the formal designation of the proposed marine disposal site.

3.2.3. ONSHORE COMPONENTS

- 3.2.3.1. In the UK, the following Onshore Components of the Proposed Development are proposed:
 - Works at the existing National Grid Lovedean substation in Hampshire to facilitate the connection of the Project to the existing Great Britain electrical power transmission network, the National Grid;



- Underground high voltage alternating current (HVAC) cables, connecting the National Grid Lovedean substation to the proposed Converter Station;
- A newly constructed Converter Station Area comprising:
 - the Converter Station and associated equipment;
 - a Works Compound and Laydown Area;
 - o an Access Road and associated haul roads;
 - surface water drainage and associated attenuation ponds;
 - o landscape and ecology measures;
 - utilities such as potable water, electricity and telecoms; and
 - the compound comprising the Telecommunications Building(s) and associated equipment.;
- Two pairs of underground HVDC cables, each of which is paired with a smaller diameter fibre optic cables for data transmission, to run from the Converter Station to the Landfall site in Eastney (near Portsmouth), approximately 20 km in length (each); and
- Infrastructure to join the onshore and marine HVDC cables together at the Landfall, and two Optical Regeneration Stations ('ORS') (one for each circuit) housed in separate buildings.
- 3.2.3.2. The full description of the Proposed Development is provided in Chapter 3 (Description of the Proposed Development) of the Environmental Statement (ES). A summary of this is included in Section 3.2 of this document in order to provide an overview of the Proposed Development and context to the HRA.
- 3.2.3.3. More detailed design envelope scenarios assessed per receptor group are presented within Chapter 16 of the ES: Onshore Ecology.

3.3. MARINE INFRASTRUCTURE

- 3.3.1.1. The Marine Cable Corridor is the corridor encompassing the marine geophysical, benthic and geotechnical survey areas (as shown in Plate 3.2) and is approximately 109 km long. This is 500 m wide from KP 0 to KP 8.6, then 520 m wide from KP 8.6 to the UK/France EEZ Boundary Line. The Marine Cable Corridor is also extended to include a 1,500 m diameter centred on the Atlantic Crossing cable crossing at approximately KP 72.5.
- 3.3.1.2. At the Landfall the ducts will be installed by Horizontal Directional Drilling ('HDD').
 HDD can be used to allow cables to cross under certain constraints along the route namely water ways, railways and environmentally sensitive areas. HDD methodology



will also be used to install the Marine Cables under the intertidal area. It is not determined yet whether the HDD direction will be onshore to marine, marine to onshore, or drilling from both ends. However, all assessments have considered that drilling from offshore to onshore would represent worst case. The HDD entry/exit pit locations will be located between KP 1 and KP 1.6 shown in Plate 3.2 and the majority of works will be undertaken from a jack up vessel. The use of HDD avoids the need for any trenching operations on Eastney Beach or in the nearshore area.

- 3.3.1.3. HDD works will include use of a vibro-hammer (typically an excavator mounted vibrator ('EMV')) to install up to four trestles/lattice frameworks which will be required to support steel casings. Vibration methods are non-percussive. A pipe driving machine (also known as a hydraulic ram) will also be used to install up to four 36" diameter steel casing pipes/casings which will be required for HDD of each duct. Pipe driving machines also use vibration in order to push in/install casing pipes with an auger inside which removes the sediment.
- 3.3.1.4. The Marine Cable Route will be the final route for the cable that lies within the Marine Cable Corridor, comprising two HVDC cable circuits typically 50 m apart.



3.3.1.5. The indicative programme for construction activities for assessments runs from mid-2021 through to the end of 2023.

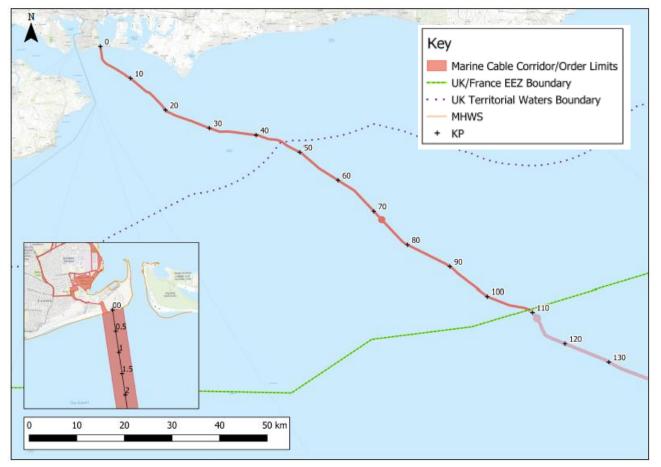


Plate 3.2 - UK Marine Cable Corridor (Mean High Water Springs = MHWS; Mean Low Water Springs = MLWS; KP = Kilometre Point)

3.3.2. ROUTE PREPARATION FOR MARINE CABLES

- 3.3.2.1. Marine geophysical, geotechnical and benthic surveys have been undertaken specifically for the Proposed Development. Analysis of the survey data has identified that different types of preparation will be required prior to the installation of the marine cable:
 - Seabed debris (Out of Service ('OOS') cables, wires, abandoned fishing gear) clearance using a pre-lay grapnel run ('PLGR') will be undertaken to clear seabed debris in advance of the cable lay and burial.
 - Boulders Surface boulders will be removed by ploughing and/or grabs.



- Sandwaves and large ripples where possible, the marine cables will be routed within the Marine Cable Corridor to avoid mobile bedforms and therefore minimise the requirement for clearance. In areas where sandwaves and ripples are present, and where re-routing of the Marine Cables to avoid such features is not possible, two clearance options are being considered to enable the cables to be buried to the required depth; Mass Flow Excavation ('MFE') and dredging (and disposal of material) using a trailing suction hopper dredger ('TSHD') vessel.
- Uneven seabed due to the presence of gulleys, slopes and pits along the Marine Cable Corridor may require the placement of rock and/or the installation of mattresses, prior to cable installation, to create stable seabed surface to enable the safe installation of the Marine Cables.
- Construction of crossing structures over in-service cables that are crossed by the Marine Cables.

3.3.3. MARINE CABLE INSTALLATION

- 3.3.3.1. It is anticipated that the Marine Cables will be installed as two bundled pairs. Options for cable installation are dependent upon the characteristics of the seabed and the presence of seabed features and will be further informed through pre-construction surveys.
- 3.3.3.2. The Marine Cables will be carried on a cable lay vessel ('CLV') either on carousels or in cable tanks. The cables will be pulled via tensioners, overboard the vessel and on to the seabed. Depending on the burial technique adopted, trenching/burial can be simultaneous to cable lay, before cable lay (pre-lay or pre-cut trenching) or after cable lay (free-lay or post-lay burial).

Cable Burial

3.3.3.3. Cable burial can be achieved using ploughs, jet trenchers or mechanical trenchers.It is likely that a combination will be used for the Proposed Development to take into account different water depths and seabed conditions.



Cable Burial Depth

- 3.3.3.4. The Proposed Development requires installation of the four HVDC cables as two cable circuits, likely as bundled pairs. The spacing between two bundled pairs is driven by the operational spacing requirements of the installation equipment and will typically be approximately 50 m between each bundled pair.
- 3.3.3.5. Preliminary estimates suggest that the target depth to achieve burial protection against external hazards in UK waters generally varies from 1.0 m to 3.0 m. These target depths are from a stable seabed level, i.e. after clearance of significant sandwaves and large ripples and they have been informed through the results of the marine surveys and a Cable Burial Risk Assessment ('CBRA') carried out to date.

Non-Burial Protection Measures

3.3.3.6. Where it is not possible to bury the cable under the seabed to the target depth, nonburial protection such as tubular protection, mattressing, rock placement and/or rock/grout bags will be required to protect the cables from anthropogenic (i.e. fishing and vessel anchoring) and natural hazards (i.e. currents and mobile sediments).

Cable Crossings

3.3.3.7. The Marine Cable Corridor crosses one in-service cable; the Atlantic Crossing at KP 72.5 (red circle within the Marine Cable Corridor shown in Plate 3.2) a subsea telecommunications cable which links the USA with three European countries. A cable crossing agreement will be put in place with the relevant parties, in line with the relevant guidance. This agreement will detail the design and methodology for the cable crossing. It is anticipated that non-burial protection methods will be employed at the cable crossing.

Non-Burial Protection for Repair and Maintenance

3.3.3.8. The requirement for additional non-burial protection (currently proposed to be an additional 10% or 11 km of the cable route required) which may be needed during the first 15 years of the operational phase of the Proposed Development has been considered within the assessments undertaken.

3.3.4. MAINTENANCE AND REPAIR

- 3.3.4.1. The Proposed Development has been designed so that routine maintenance to the Marine Cables is not required during their operational lifetime. However, there may be the requirement to undertake unplanned repair works, due to the following events:
 - Mechanical/electrical failure of components within the cables;
 - Exposure of, or damage to, the cables as a result of fishing activities and/or vessel anchoring; and



• Exposure of cables due to changes in seabed morphology (e.g. areas of free spanning) or changes in hydrodynamics (e.g. increase in bed erosion due to dredging works in the vicinity of the Marine Cables).

3.3.5. DECOMMISSIONING OF MARINE CABLES

- 3.3.5.1. The Marine Cables will be designed, manufactured and installed for a minimum service life of 40 years.
- 3.3.5.2. Decommissioning activities would be determined by the relevant legislation and guidance available at the time of decommissioning. In addition, a decommissioning plan will be developed and agreed with The Crown Estate. It is anticipated that a separate Marine Licence application for decommissioning works may be required closer to the time of decommissioning. A decommissioning plan would support the Marine Licence application and provide the level of detail that cannot be provided years in advance.

3.4. ONSHORE INFRASTRUCTURE

- 3.4.1.1. The Onshore Components of the Proposed Development are all elements of the Proposed Development above the Mean Low Water Spring ('MLWS') level (Figure 3-2).
- 3.4.1.2.

HVAC Cables

- 3.4.1.3. To facilitate the connection to the National Grid Lovedean Substation it will be necessary to provide additional electrical infrastructure. The electrical connection equipment at Lovedean Substation is expected to be a combination of Air Insulated Switchgear ('AIS') and Gas Insulated Switchgear ('GIS').
- 3.4.1.4. There will be two 400 kV HVAC cable circuits that will connect the proposed Converter Station to the Lovedean Substation (each comprising three cables). Each HVAC Cable Circuit will sit in a single trench. One connection point is proposed to be located on the western side of the Lovedean substation and the other on the eastern side of the substation for each HVAC cable circuit.
- 3.4.1.5. The HVAC Cable Corridor through which the HVAC onshore cables will be installed is proposed within the area of land between Lovedean Substation and the proposed Converter Station.
- 3.4.1.6. The HVAC Cable Route, providing the link between the Converter Station and the National Electricity Transmission System ('NETS') via Lovedean Substation, will be located within the HVAC Cable Corridor and will be up to 1 km in length. The AC Cables are proposed to exit the Converter Station on its eastern side.



- 3.4.1.7. Installed alongside the AC Cables may be an earth continuity conductor, which is an insulated metallic conductor to provide a path to earth for any fault currents.
- 3.4.1.8. There is also a requirement for a Fibre Optic Cable ('FOC') to be installed alongside each HVAC Cable Circuit in the same trench for control and protection and cable monitoring purposes.
- 3.4.1.9. Electric fields from the AC Cables will be contained by the cable's protective metal sheath.

Converter Station Area

- 3.4.1.10. A Converter Station is required to convert electricity from HVDC, used to transmit electricity between the UK and France, and HVAC, used to transmit electricity within the National Electricity Transmission System in both countries.
- 3.4.1.11. The proposed Converter Station footprint of 200 m x 200 m (4 ha) will be within a securely fenced compound. The finished ground floor slab level would be 300 mm above the Converter Station finished site level (i.e. top of gravel chipping).
- 3.4.1.12. The Converter Station consists of a number of interconnected components which need to be connected sequentially, with the built form for each dictated to a high degree by their function.
- 3.4.1.13. The components are arranged whilst considering the most efficient connection method between them and the minimum spacing of the equipment to ensure safe operation and maintenance.
- 3.4.1.14. The outdoor equipment which forms part of the proposed Converter Station will be similar to the equipment that is found within typical electrical substations, such as the adjacent Lovedean Substation. The 400 kV switchyard (transformers and AC filters will be located outdoors.
- 3.4.1.15. The Converter Station will be lit when necessary using energy efficient luminaries mounted atop mid-hinged columns to provide ease of maintenance. Lighting columns, up to 15 m high (see items 15 and 16 in Plate 3.9) are proposed to illuminate the outdoor areas of the Converter Station during emergency situations, such as an intruder or unplanned maintenance work. The lights are not intended to be used during normal operation.
- 3.4.1.16. Given the topography of the Converter Station Area, bulk earthworks would be required to create a level platform to accommodate the Converter Station.
- 3.4.1.17. Preliminary foundation assessment has concluded that the foundations are likely to be a combination of conventional ground bearing and piles dependent on the location, loading and acceptable settlement and differential settlement.
- 3.4.1.18. The construction of the platform for the main Converter Station site will be one of the initial activities undertaken. It is usual/standard practice for the site establishment,



fencing/hoarding, bulk earthworks (and related drainage works) and site access road works to be undertaken as an initial enabling works preparation contract. This allows construction works to concentrate on the activities which construct the site working platform and access, the completion of which allows the rest of the main site works to commence.

- 3.4.1.19. Landscaping (including reprofiling if/where appropriate and associated planting) is proposed around the perimeter of the Converter Station compound and at other necessary/appropriate locations.
- 3.4.1.20. The FOC Infrastructure will be used for communications between the French and UK Converter Stations in connection with the control and protection systems, and hence is required to be installed with both HVAC and HVDC Cables. Additionally, the FOC will continue to monitor the condition of both the Onshore and Marine Cables.
- 3.4.1.21. To withstand the various physical impacts which the FOC are likely to be subject to associated with transportation, installation and operation in the marine and underground environment and protect the glass fibres located within it, the FOC are required to be of an adequate outer diameter. Within the required outer diameter for the FOC, 192 glass fibres may be installed. Each FOC is required to include a sufficient amount of glass fibres for its use in connection with the primary use of the interconnector and as redundancy for this purpose in the event of individual glass fibre failures. The number of glass fibres required in connection with the primary use of the interconnector and as redundancy for this purpose is less than 192, though this is a multiple of fibres that is commonly produced by manufacturers of such cables.Two Telecommunications Buildings (one for each HVDC Circuit) are proposed to be located in close proximity to the Converter Station to house required telecommunications equipment. The Telecommunications Buildings associated with the FOC are anticipated to be located outside the main Converter Station security fence. This is to enable the equipment to be more easily accessible in connection with the proposed use of fibres for commercial telecommunications purposes.
- 3.4.1.22. Each Telecommunications Building will have a maximum footprint of 8 m long x 4 m wide x 3m high and will also have secure fencing, access and parking for up to two vehicles for maintenance purposes. It is currently anticipated that the compound for the Telecommunications Buildings would have a maximum size of 10 m x 30 m.
- 3.4.1.23. The proposed access to the Converter Station for construction and operation will be taken from Broadway Lane and Day Lane, in the vicinity of the junction of these two highways.
- 3.4.1.24. The Access Road to the Converter Station will be approximately 1.2 km in length, and is expected to be a standard width (no wider than 7.3 m) suitable for



transportation of Heavy Goods Vehicles ('HGVs') and Abnormal Indivisible Loads ('AIL').

Onshore Cable Corridor

- 3.4.1.25. The Onshore Cable Corridor represents the maximum extent of the area within which the Onshore HVDC Cables may be located, otherwise described as the limits of deviation. It is necessary to ensure flexibility for the siting of the Onshore HVDC Cables within the limits of deviation so as to ensure statutory undertaker apparatus can be effectively navigated and the installation of the Onshore HVDC Cables can be optimised by the chosen contractor following the making of the Order.
- 3.4.1.26. Two Onshore HVDC Cable Circuits are proposed to be installed in the Onshore Cable Corridor between Converter Station and the Landfall.
- 3.4.1.27. Each Onshore HVDC Cable Circuit will contain two HVDC Cables and one FOC and will be installed independently from one another. Each circuit could be installed at different times by different contractors.
- 3.4.1.28. Where necessary, a spacing of approximately 5 m is maintained between the trenches, to ensure the thermal independence of each circuit. Each excavated trench would be approximately 0.7 m in width, but could increase to 1 m in order to facilitate the cables being installed deeper, when navigating existing utility services.
- 3.4.1.29. For the majority of the Onshore Cable Route the Onshore HVDC Cables will be installed in excavated trenches. Rather than being laid in the trench, a form of housing (known as cable ducts) will be installed in the trenches. At a later date after sections of ducts have been installed, lengths of cables will be pulled through the ducts.

Due to the significant number of existing utility services within the Onshore Cable Corridor, it is expected that the installation rate for cable ducts for one circuit will be approximately 18 m – 30 m per day on average and typically in 100 m sections, and at approximately 50 m per day in open countryside. These typical installation rates are per gang per shift and are dependent upon the level of obstacles and utility services encountered within the road or constraints that need to be observed to minimise the impacts during construction.

3.4.1.30. Joint Bays will be required at points along the route, and these will be used for pulling the cable through the cable ducts before joining one section of cable to another. The number of joint bays along the length of the cable route is dictated by the length of cable that can fit on a cable drum (the drum-shape reel on which the cable is stored prior to installation) and limits to the pulling tension required to pull the cable through the ducts. Joint Bays are likely to be required every 600m to 2000m along the Onshore HVDC Cable Circuits and will be positioned in highway verges, fields or car parks, where possible, to limit the need for road closures.



- 3.4.1.31. Link Boxes are typically located alongside a Joint Bay and are accessed via a manhole cover, installed at the same level of the surrounding ground. The dimensions of a Link Box are approximately 0.8 m x 0.8 m x 0.6 m. Link Pillars are frequently used on arable land (instead of Link Boxes) and they are normally located adjacent to hedgerows. They are accessed via doors at the front of the Link Pillar and the dimensions are approximately 1.0 m x 1.0 m x 0.6 m. The Link Boxes (or Pillars) are connected to the metal casing of the joint via underground bonding leads.
- 3.4.1.32. In certain areas the Onshore HVDC Cables will be installed in ducts using HDD or trenchless installation methods.
- 3.4.1.33. A trenchless technique is common for crossing of Network Rail assets in preference to HDD, and for this reason, micro-tunnelling is proposed to cross the railway north of Farlington Playing Fields. This alternative method of trenchless installation enables cables to be installed within ducts or pipes under a feature with minimal impact on that feature.
- 3.4.1.34. HDD is to be used to allow cables to cross under certain constraints along the route, namely waterways and environmentally sensitive areas. The HDD operation drill bores through the ground into which the cable ducts are pulled, through which the HVDC cable circuits will be pulled at a later date. The maximum depth will typically be between 5 m and 20 m, depending upon the length of the crossing and the local ground conditions.
- 3.4.1.35. The HDD operations require a suitable space for the temporary construction area, which can typically be up to approximately 50 m x 50 m depending on the length and size of the HDD works. The HDD operations require a working area to locate the drilling rig, water bowser/pump, generator, layout of ducts/pipes and other construction equipment.
- 3.4.1.36. The HDD bores that are required for each of the four HVDC Cables would have to be suitably spaced to achieve the required cable rating. Typically, this spacing is approximately 5 m between adjacent ducts at the entrance and exit of the HDD and may increase to approximately 15 m depending on burial depth. The maximum width of cable reserve (area required for installing the four individual HVDC Cables with suitable spacing between taking in to account the maximum burial depth) has therefore been assumed to be approximately 60 m.

<u>Landfall</u>

3.4.1.37. The Landfall, located at Fort Cumberland car park south of Fort Cumberland Road in Eastney, was chosen following a detailed site selection process, as described in Chapter 2 of the ES (Consideration of Alternatives). The Landfall forms the transitional area between onshore HVDC cable circuits and the marine HVDC cable



circuits. The marine HVDC cable circuits will be pulled ashore and jointed to the onshore HVDC cable circuits at the Transition Joint Bays ('TJBs').

- 3.4.1.38. HDD has been identified as the most suitable cable installation method at the Landfall, as opposed to open trenching methods. The use of HDD ducts avoids trenching through the beach and ensures that the cables are well protected in the shallow water immediately offshore. Cables installed by trenching could be vulnerable to damage, without the provision of additional protection.
- 3.4.1.39. The landward ends of the ducts will be approximately 200m inland of, and at a higher elevation than, the MHWS mark.
- 3.4.1.40. There will be two TJBs, one per HVDC Circuit. Each TJB will require an excavation of approximately 15 m x 5 m, to a depth of up to 1.75 m. Once the joint is complete, these excavations are backfilled and the land reinstated.
- 3.4.1.41. During the construction works, an area of approximately 15 m x 5 m adjacent to the TJBs is required for the jointing workshop, storage, parking, generator, welfare and security.
- 3.4.1.42. The cables will be pulled into the TJB, ready for jointing. During the cable pulling operation, an area of approximately 15 m x 12 m at either end of the TJBs are required for the cable drum and stand, plus space for delivery and offloading of cable drums (at one end) and the winch and anchor (at the other end).
- 3.4.1.43. The TJB installation works will take approximately 16 weeks (total for both circuits).
- 3.4.1.44. To amplify the signal of the FOC across the full distance of the Cable between the French and UK converter stations, up to two Optical Regeneration Stations ('ORS') (one for each circuit) are to be located within Fort Cumberland car park at Eastney.
- 3.4.1.45. Each ORS building will have dimensions of up to 10 m long x 4 m wide x 4 m high, which would house signal amplification and control equipment associated with the FOC, required to ensure the signal strength is adequate between the UK and French Converter Stations. For safety purposes is necessary for them to be located 10 m apart.
- 3.4.1.46. The ORS compound construction is expected to take 12 weeks.

Decommissioning

3.4.1.47. The Applicant is seeking consent for installation and operation of the Proposed Development for an indefinite period. The Converter Station will be designed, manufactured and installed for a minimum service life of 40 years. Major items of equipment (e.g. transformers, circuit breakers, reactors) are designed to meet the lifetime of the Proposed Development and should remain operational for their design life subject to regular maintenance, inspection and availability of spare parts. If the Proposed Development and associated equipment is deemed to have reached the



end of its design life, then the equipment may be decommissioned in an appropriate manner, and all materials reused and recycled where possible.

3.4.1.48. It is anticipated that the HVDC Cable's operational lifetime will exceed that of the Converter Station equipment, however at the end of the HVDC Cable's asset life, the options for decommissioning will be evaluated. The preferred option with the least environmental impact is to leave the cable in-situ within the buried ducts.

3.5. CONSTRUCTION PROGRAMME

- 3.5.1.1. The indicative worst-case programme, outlined in Table 3.1, has formed the basis of the HRA and allows for a more flexible approach to cable installation to accommodate disruptions and weather down time. In addition, some seabed preparation and marine installation activities may occur in the winter. Seabed preparation may also be phased more closely to cable lay and burial.
- 3.5.1.2. In Table 3.1, the orange bars represent tasks, whilst the green bars represent the individual activities within those tasks. These are current estimates for sequencing of activities, however, in order to maintain flexibility in the construction programme, these individual activities may occur at other times during the period allocated to the overall summary task, although sequencing is likely to remain similar.
- 3.5.1.3. Illustrative durations for activities are also provided, where work relating to the two cable pairs are undertaken separately, this is identified (e.g. pair 1 + pair 2, but they might still be undertaken 'in parallel' in terms of timing). Where they are anticipated to be undertaken at the same time i.e. jointly (e.g. pair 1 and pair 2 in the same operation, which is more likely for sandwave clearance, boulders or cable crossing), they are shown cumulatively.

Table 3.1- Indicative construction programme

			2	021		2	022			2	023			2	024	
Key Task	Related Activities	Indicative Duration (Weeks)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Seabed Clearance /Preparation	All activities															
	Pre-lay grapnel run ('PLGR') and OOS cable recovery	4 (in parallel) 8 (separately)														
	Boulder clearance	15 (jointly)														
	Sandwave clearance	17 (jointly)														
	Cable crossing preparation	1 (jointly)														
Landfall Installation	All activities															
	Preparation, drilling and duct installation	44														
	Transition Joint Bay															
	ORS															
Marine Cable Installation (UK)	All activities															
	Nearshore cable lay and burial	14 (in parallel) 25 (separately)														
	Offshore cable lay	16 (in parallel) 30 (separately)														
	Offshore cable burial	4 (in parallel) 8 (separately)														
	Remedial protection*	21 (in parallel) 42 (separately)														



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			2	021		2	022			20	023			2	2024	
Key Task	Related Activities	Indicative Duration (Weeks)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Cable Crossing	All activities															
	Construction of crossing	2 (jointly)														
Onshore Cable Installation (UK)	All activities															
	Route construction															
	Cable pulling															
	Jointing and terminating															
Converter Station Construction	All activities, including reinstatement															
	Enabling /Diversion Works															
	Main Civils Construction works															
	Mechanical and Electrical Work															
Converter Station Commissioning	All activities															

* This includes transit to and from the quarry, and loadout, and therefore, depending on the actual requirements for remedial works, the total time in the corridor within this window is likely to be 6-10 weeks, and only for a few days on each occasion. If a larger vessel was used, the volumes would be the same, but fewer loads needed, possibly a small overall window and fewer visits to the Marine Cable Corridor, but the visit might be a few days longer.



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3.6. CONSTRUCTION PROGRAMME ONSHORE

- 3.6.1.1. The indicative programme associated with the UK onshore elements of the Proposed Development, outlined in Table 3.2, has informed the HRA and allows for a more flexible approach to cable installation.
- 3.6.1.2. The indicative construction programmes take account of a number of constraints. These include constraints and assumptions associated with traffic management (further detail is contained within the Traffic Management Strategy, within the Transport Assessment APP-449), environmental considerations and public activities and events.
- 3.6.1.3. Environmental constraints have also been taken into consideration and will be built into the phasing of enabling and construction works for the Converter Station site and Onshore Cable Route, notably;
 - Badger breeding season from June-November, refer to Chapter 16 (Onshore Ecology) for further information and the conditions which will be observed.
 - Plant growing season and winter wet season from August to November, at Kings Pond Meadow SINC and Denmead in Section 3, refer to Chapter 16 (Onshore Ecology) for further information,
 - Wintering bird season, from October and March. Refer to Chapter 16 (Onshore Ecology) for further information on wintering birds and the conditions which will be observed.

Table 3.2 - Indicative onshore cable installation programme

Indicative Activity	Indicative Programme
Converter Station Construction	Q3 2021 – Q1 2024
Onshore HVDC Route Construction	Q3 2021 – Q4 2023
Landfall Construction	Q3 2021 – Q4 2023
Onshore HVDC Cable Installation	Q4 2022 – Q4 2023
Converter Station Commissioning	Q4 2023 – Q2 2024



4. ENVIRONMENTAL BASELINE

(MARINE)

4.1. INTRODUCTION

4.1.1.1. The following sections provide an overview of the baseline environment relevant to the assessment of the effects of the Proposed Development on European sites and European offshore marine sites. This information is provided here in order to provide a basis for the assessment presented in Sections 5 and 6.

4.2. MARINE ENVIRONMENT

4.2.1. STUDY AREAS

- 4.2.1.1. The Proposed Development includes both the cable Landfall and the Marine Cable Corridor.
- 4.2.1.2. The 'Landfall' is defined as the HDD entry/exit location off the coast of Eastney, where cables will travel under the intertidal area (inshore from the HDD marine entry/exit point), and the Marine Cables come ashore above MHWS. The Landfall also includes the section of HDD works that crosses underneath the north-west corner of Langstone Harbour (although this section is exempt from requiring a marine licence).
- 4.2.1.3. The Marine Cable Corridor extends from MHWS at Eastney, out to the UK/France EEZ Boundary Line.
- 4.2.1.4. The study area includes the marine area around the Marine Cable Corridor, encompassing the Solent, the sea area around the Isle of Wight and the Southampton coastline as far as the Selsey Bill, with the greatest detail provided within the Marine Cable Corridor and immediate vicinity. Focus is given to SACs located within 10 km of proposed activities, however consideration is also given to SACs designated for benthic habitats within 50 km of activities to establish potential connectivity which also includes sites within French waters. This study area is considered sufficient to encompass the area for potential connectivity with the Proposed Development. The Zone of Influence ('ZOI') has been determined based on the outputs of sediment plume dispersion modelling undertaken to assess the plumes of suspended sediment created during sediment disposal operations resulting from sandwave clearance. The maximum extent of the plume is predicted to extend up to 25 km from the Marine Cable Corridor during dredge disposal activities along an east-west axis. Figures 4.1 and 4.2 (APP-492 and 493) illustrate the sites considered for Annex I habitats and Section 6 of this report provides further detail on how sites were identified for assessment in relation to the ZOI.



4.2.1.5. For mobile features such as fish, marine mammals and marine ornithology, the study areas as shown in Table 4.1. Similar to Annex I habitats, the worst case maximum ZOI of potential effects for mobile features will extend 25 km from the Proposed Development due to indirect effects from suspended sediments, however, it should be noted that not all effects assessed will have ZOIs that extend this far.

Feature Group	Study Area	Justification
Fish (see Figures 4.3 and 4.4)	The Channel including the UK and French marine areas and the rivers that flow into the Channel.	International Council for Exploration at Sea ('ICES') rectangles within the central to eastern channel. Relevant ICES rectangles are shown in Plate 4.1. It is considered that the Proposed Development has potential connectivity with a number of sites as it lies within the migratory range of fish features. Figures 4.3 and 4.4. (APP-494 and 495, Rev 03) illustrate the sites considered and Section 6 of this report provides further details on those sites and the potential effects to migratory fish features.
Marine mammals (see Figures 4.5 and 4.6)	The eastern Channel including the UK and French marine areas	As marine mammals range widely, animals using the UK's eastern Channel region are also likely to use French waters including those which are encompassed by French SACs. It is considered that the potential for connectivity of sites to the Proposed Development is based on the foraging range of seals or likely population range of cetaceans that are features of these sites. Figures 4.5 and 4.6. (APP-496 and 497) illustrate the sites considered and Section 6 of this report provides further details on connectivity.
Marine ornithology (see Figures 4.7 and 4.8)	Breeding colonies. The study area for breeding seabirds is defined by their mean-maximum foraging range (Thaxter <i>et al.</i> , 2012; additional tracking data where this	It is considered that the potential for connectivity of sites to the Proposed Development is based on the mean- maximum foraging range of breeding seabirds that are features of these sites. Figures 4.7 and 4.8. (APP-498, Rev 02 and 499) illustrate the sites considered and Section 6 of this report provides further details on connectivity to those sites.

Table 4.1 - Study areas for mobile species



Feature Group	Study Area	Justification
	supersedes Thaxter <i>et al.</i> , 2012).	
	Passage and wintering birds. The study area for passage and wintering species is defined by their wintering location and known migratory movements.	It is considered that the potential for connectivity to the Proposed Development is based on the wintering location and migratory movements of features of these sites. Figures 4.7 and 4.8. illustrate the sites considered and Section 6 of this report provides further details on connectivity to those sites.



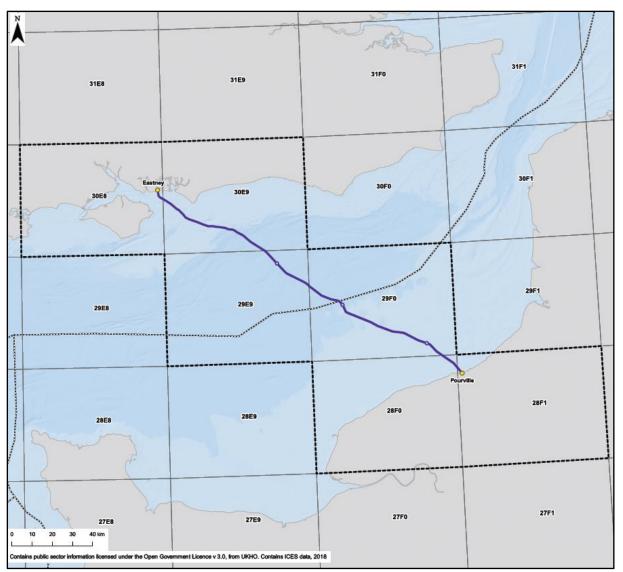


Plate 4.1 - ICES rectangles (bounded by black dotted line) identify the study area for Annex II diadromous migratory fish

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4.2.2. ANNEX I HABITATS

Landfall and Intertidal Environment

- 4.2.2.1. The Landfall exhibits coastal vegetated shingle (Irving, 1996; James *et al.* 2010, EMU Ltd, 2012) which is listed as an Annex I habitat under the Habitats Directive (East Solent Coastal Partnership ('ESCP'), 2012) and this area is designated for its coastal vegetated shingle as part of the Eastney Beach Local Wildlife Site (LWS) (Portsmouth City Council ('PCC'), 2014). However, this habitat is located outside of a SAC.
- 4.2.2.2. The lower shore typically consists of ephemeral green and red seaweeds on variable salinity and/or disturbed eulittoral mixed substrata (LR.FLR.Eph.EphX, A2.821).
- 4.2.2.3. The site-specific survey found that the sediment at the Landfall most closely corresponded to barren or amphipod-dominated mobile sand shores (LS.LSa.MoSa; A2.22).
- 4.2.2.4. Seawalls most closely resembled *Porphyra purpurea* and *Enteromorpha spp.* on sand-scoured mid or lower eulittoral rock (A1.452; LR.FLR.Eph.EntPor), with boulder habitat further down the beach most closely resembled *Fucus spiralis* on sheltered variable salinity upper eulittoral rock (A1.322; LR.LLR.FVS.FspiVS).
- 4.2.2.5. The lower shore community most closely corresponded to the biotope *Laminaria saccharina* with foliose red seaweeds and ascidians on sheltered tide-swept infralittoral rock (A3.224; IR.MIR.KT.LsacT).

Marine Cable Corridor

- 4.2.2.6. A site-specific benthic survey (Appendix 8.1 of the ES in Volume 3, APP-377) identified predominantly sandy habitats in the nearshore (infralittoral fine sand; infralittoral mobile clean sand with sparse fauna; infralittoral mixed sediment) with a small patch of sand ripples in the Solent from 3 stations. The typical community structure is characterised by a range of species including polychaetes, amphipods, bivalves, tunicates, sea anemones and crabs.
- 4.2.2.7. The seabed habitat was ascribed to infralittoral fine sand (A5.23) where the Marine Cable Corridor overlaps with the Solent Maritime SAC. The nearest benthic grab sampling station (Station 1) located 0.3 km from the SAC boundary was identified as resembling infralittoral mixed sediments (A5.43). Station 2 (0.75 km from the SAC boundary, 1 km from the overlap area) was identified as resembling infralittoral mobile clean sand with sparse fauna (A5.231). Compared to published sources, EMODnet predictive habitat maps (EMODnet, 2016) show the sediment composition within the nearshore as predominantly high energy infralittoral sand (SS.SSa.IFiSa or SS.SSa.IMuSa; A5.23 or A5.24) and high energy circalittoral coarse sediment (SS.SCS.CCS; A5.14), high energy circalittoral sand (SS.SSa.CFiSa or



SS.SSa.CMuSa; A5.25 or A5.26) and infralittoral/circalittoral sandy mud (SS.SMu.ISaMu, A5.33; SS.SMu.CSaMu, A5.35).

- 4.2.2.8. Outside of the nearshore area, the most widespread infaunal biotopes according to the benthic survey are offshore circalittoral coarse sediment (SS.SCS.OCS) and *Mediomastus fragilis, Lumbrineris spp.* and venerid bivalves in circalittoral coarse sand or gravel (SS.SCS.CCS.MedLumVen). The geophysical survey data for the area defined several outcrops of hardground intermittently covered by sediment of depths ranging from 5 m to 16 m. Boulder fields are common near to sampling station 21. Although epibenthic communities across the benthic survey area are generally sparse, elevated levels of silt at sampling station 22 have altered the habitat to a mixed substratum occupied by the brittlestars *Ophiothrix fragilis* and/or *Ophiocomina nigra*.
- 4.2.2.9. According to the literature, the UK South Coast region has been classified as large expanses of rock and thin sediment (EMU Ltd., 2012). Sediments within the deeper areas of the Marine Cable Corridor are predicted to be predominantly circalittoral coarse sediment (SS.SCS.CCS; A5.14) and offshore circalittoral coarse sediment (SS.SCS.OCS; A5.15), which is consistent with site specific survey data. Patches of circalittoral sand (SS.SSa.CFiSa or SS.SSa.CMuSa; A5.25 or A5.26), (offshore) circalittoral rock and other hard substrata (CR; A4), infralittoral coarse sediment (LS.LCS; A5.13) and infralittoral sand (SS.SSa.IFiSa or SS.SSa.IMuSa; A5.23 or A5.24) are also expected within the Marine Cable Corridor (EMODnet, 2016).
- 4.2.2.10. Additional habitats predicted within 20 km of the Marine Cable Corridor include infralittoral rock (IR; A3.1, A3.2, A3.3), deep circalittoral sand (SS.SSa.OSa; A5.27), sandy mud (SS.SMu.ISaMu, A5.33; SS.SMu.CSaMu, A5.35), fine mud (SS.SMu.IFiMu, A5.34; SS.SMu.CFiMu, A5.36) and mixed sediments (SS.SMx.IMx, A5.43; SS.SMx.CMx, A5.44; A5.45, SS.SMx.OMx) (EMODnet, 2016).
- 4.2.2.11. Patches of *Sabellaria spinulosa* was the most common species identified in grab samples at sampling stations 5 and 7, although it was not found in amounts required to correlate with any *Sabellaria* biotopes and no reef or encrusting formations were observed.
- 4.2.2.12. The biotope *Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment (SS.SMx.CMx.OphMx) was attributed to Station 22 and considered to have the potential to be representative of Annex I reef with medium resemblance of stony reef, according to Irving (2009), although it is recognised that the area is not within any designated or proposed Marine Conservation Zones ('MCZs') or SAC.
- 4.2.2.13. Rocky outcrops observed in other areas of the Marine Cable Corridor (e.g. sampling stations 7 and 8) were not deemed to be potential Annex I reef as they are poorly colonised and heavily influenced by scour from adjacent coarse sediments.



4.2.2.14. Subtidal sands and gravels (a UK Biodiversity Action Plan ('BAP') priority habitat) were identified across the majority of the benthic survey area.

Special Areas of Conservation (SACs)

4.2.2.15. The following baseline sets out a summary of the protected sites, and their habitats and species found in the vicinity of the Marine Cable Corridor (see Figures 4-1 and 4-2, APP-492 and 493).

Solent Maritime SAC

- 4.2.2.16. The Solent Maritime SAC covers 113.25 km² throughout the Solent (including Langston Harbour and Chichester Harbour) and areas within Southampton Water. The closest section lies immediately east of the Proposed Development, overlapping the Marine Cable Corridor for approximately 163.4 m². However, the Marine Cable Route begins outside of the SAC due to the use of HDD at the Landfall out to between KP 1 and KP 1.6, which exits in the subtidal environment offshore from the SAC (see Section 3.2).
- 4.2.2.17. This Solent Maritime SAC is designated for the following primary features;
 - Estuaries [1130];
 - Spartina swards [1320]; and
 - Atlantic Salt meadows [1330].
- 4.2.2.18. The following Annex I habitats are present as qualifying features but not as a primary reason for selection:
 - Sandbanks which are slightly covered by sea water all the time [1110];
 - Mudflats and sandflats not covered by seawater at low tide [1140];
 - Coastal lagoons [1150] (as a priority feature);
 - Annual vegetation of drift lines [1210]
 - Perennial vegetation of stony banks [1220];
 - Salicornia and other annuals colonising mud and sand [1310]; and
 - Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") [2120].
- 4.2.2.19. In addition, Desmoulin's whorl snail (*Vertigo moulinsiana*) [1016] is present as an Annex II qualifying feature but not a primary reason for site selection, while several intertidal and subtidal habitats are described as subfeatures of primary and qualifying features of the Solent Maritime SAC.



South Wight Maritime SAC

4.2.2.20. South Wight Maritime SAC lies 3.3 km west of the Marine Cable Corridor and covers 198.6 km². It is designated for Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic Coasts [1230] and Submerged or partially submerged sea caves [8330]. Subfeatures include circalittoral rock, infralittoral rock, intertidal rock and subtidal stony reef.

Solent and Isle of Wight Lagoons SAC

- 4.2.2.21. Located at a distance of 5 km from the Marine Cable Corridor, Solent and Isle of Wight Lagoons SAC is designated for Coastal Lagoons [1150] as an Annex I habitat as the primary reason.
- 4.2.2.22. The Solent and Isle of Wight Lagoons SAC includes fourteen coastal lagoons, eight in the marshes in the Keyhaven to Lymington area, one in Langstone Harbour and one at Gilkicker, and four at Bembridge on the Isle of Wight (English Nature, 2005; Bamber *et al.*, 2014).

Wight-Barfleur Reef SAC

4.2.2.23. The Wight-Barfleur Reef SAC is located south of the Isle of Wight approximately 34 km from the Marine Cable Corridor and is designated for Reefs [1170] as the primary reason for site selection.

Studiand to Portland SAC

4.2.2.24. The Studland to Portland SAC lies approximately 70 km to the west of the Marine Cable Corridor off the south coast of Dorset and is designated for Reefs [1170] as a primary reason for site selection (Natural England, 2018).

Bassurelle Sandbank SAC/ Ridens et dunes hydrauliques du détroit du Pasde-Calais Zone Spéciale de Conservation

4.2.2.25. Bassurelle Sandbank SAC is designated for Sandbanks which are slightly covered by sea water all the time [1110]. The Bassurelle Sandbank is an open shelf ridge sandbank formed by tidal currents and is located in the Dover Straight on the boundary between UK and French waters, approximately 60 km east of the UK Marine Cable Corridor at its nearest point and covers 62 km² at a depth range from 8 m to 140 m (JNCC, 2018a; JNCC, 2017a). The French part of this SAC (known as 'ZSC' in French) is called Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC and covers 682.45 km².

Littoral Cauchois SAC

4.2.2.26. An additional SAC located in French waters with close proximity to the Proposed Development is Littoral Cauchois SAC, however this site is located 52.7 km from the UK Marine Cable Corridor at its nearest point (i.e. the EEZ). It is designated for



several Annex I habitats marine and terrestrial features as a primary reason for site selection. The marine habitats include;

- Reefs (Récifs) [1170],
- Vegetated sea cliffs Vegetated sea cliffs of the Atlantic and Baltic coasts [1230].
- 4.2.2.27. The site also includes many terrestrial features including:
 - Perennial vegetation of stony banks [1220]
 - Nutrient-poor shallow waters with aquatic vegetation on sandy plains Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
 - Calcium-rich nutrient-poor lakes, lochs and pools Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140]
 - Naturally nutrient-rich lakes or lochs which are often dominated by pondweed Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation [3150]
 - Wet heathland with Dorset heath and cross-leaved heath Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix* [4020]
 - Dry heaths European dry heaths [4030]
 - Purple moor-grass meadows Molinia meadows on calcareous, peaty or clayeysilt-laden soils (*Molinion caeruleae*) [6410]
 - Tall herb communities Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
 - Lowland hay meadows Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510]
 - Hard-water springs depositing lime Petrifying springs with tufa formation (*Cratoneurion*) [7220]
 - Alkaline fens [7230]
 - Caves not open to the public [8310]
 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
 - Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) [9120]
 - Asperulo-Fagetum beech forests [9130]
 - Tilio-Acerion forests of slopes, screes and ravines [9180]
 - Old acidophilous oak woods with Quercus robur on sandy plains [9190]



- 4.2.2.28. The site is also designated for Annex II species:
 - Great crested newt *Triturus cristatus* [1166].
- 4.2.3. ANNEX II DIADROMOUS MIGRATORY FISH
- 4.2.3.1. The following sets out the baseline for those fish species that are interest features of European designated sites (i.e. SACs).
- 4.2.3.2. Although a large diversity of fish occurs in the Channel only a small number are listed as features of SACs (Annex II species) which also have a marine stage in their lifecycle (see Figures 4-3 and 4-4, APP-494 and APP-495, Rev 03). These species are:
 - Twaite shad (*Alosa fallax*);
 - Allis shad (Alosa alosa);
 - Atlantic salmon (Salmo salar);
 - Sea lamprey (Petromyzon marinus); and
 - River lamprey (Lampetra fluviatilis).
- 4.2.3.3. Although no fish specific surveys were undertaken for the Proposed Development a thorough literature review of publicly available data such as commercial fisheries landings data (by ICES rectangle and ICES Division data) and surveys from other developments in the Channel has been used to inform this baseline.

Allis and Twaite Shad

- 4.2.3.4. Both twaite and allis shad are members of the herring family (*Clupeidae*) and are the only two members of that family that spawn in freshwater in the UK. Shad generally have a westerly distribution in Europe with major rivers flowing into the Atlantic having the largest populations (Maitland *et al.*, 2003). In the UK spawning populations of twaite shad are known to be present in a small number of rivers in Wales and on the England/Wales border which flow into the Severn estuary these include the rivers Tywi, Usk and Wye (Carstairs, 2000). Although twaite shad are present in other rivers further north, no other spawning stocks are known to exist (Maitland & Lyle, 2001).
- 4.2.3.5. Mature allis shad migrate into freshwater during late spring (April to June) and twaite shad in April and May, and spawning takes place over clean gravel for both species. Most allis shad die after spawning although twaite shad may spawn several times in their lives. After one to two years in freshwater, young shad descend down river to the sea where they remain for between three and eight years before returning to freshwater to spawn (Maitland *et al.*, 2003).
- 4.2.3.6. In the Channel commercial fisheries data (average tonnage 2011 2016) (Marine Management Organisation ('MMO'), 2017) shows that shad are caught in both the coastal and offshore ICES rectangles (30E9, 30E8, 29F0 and 29E9) and also in ICES Division VII.7.d confirming they are present in this area (see Plate 4.1). The highest



landings by weight are from the inshore rectangles 30E9 and 30E8 (five-year average 0.21 and 0.13 tonnes respectively, (MMO, 2017). It should be noted however that as shad are protected under the Wildlife and Countryside Act, they are prohibited from being specifically targeted within the UK 12 nmi limit and commercial fisheries data may not be reflective of shad numbers.

4.2.3.7. Surveys to inform the Rampion Offshore Wind Farm ('OWF') DCO application, 12 km east of the Proposed Development, confirm the presence of both the allis shad and twaite shad, where one specimen of each species was captured (RSK, 2012).

Atlantic Salmon

- 4.2.3.8. The Atlantic salmon (from here on referred to as salmon) is widespread in many parts of the British Isles. This species spawns in freshwater in late autumn where the young salmon remain for 1-3 years before migrating to the marine environment as smolts to feed. After between 1-5 years at sea the mature salmon return to their natal river to spawn.
- 4.2.3.9. Rod catch data for several UK rivers (including the Itchen and Avon) flowing into the Channel show the highest catches to occur between May to September (Environment Agency, 2018). This indicates the period when salmon destined for these catchments are actively migrating into freshwater.
- 4.2.3.10. The downstream migration of smolts generally occurs in the UK during April and May however a specific study undertaken on the River Itchen revealed that some smolts also migrate during autumn (September November inclusive) and as late as January (Ridley *et al.*, 2002).
- 4.2.3.11. During their marine stage salmon migration routes in the Channel are not fully understood however studies in Scottish rivers have shown that salmon migrate to feeding grounds around Greenland and the Faroe Islands (Malcolm *et al.*, 2010). This indicates a general northerly marine migration with some variation from river to river (Malcolm *et al.*, 2010).
- 4.2.3.12. Commercial fisheries data shows that salmon were landed in ICES Division VII.7.d in very low weights (five-year average of 0.01 tonnes). However, given the proximity of a number of rivers on the south coast where salmon are known to be present, they are likely to be in the vicinity of the Proposed Development either as adults and/or smolts.

<u>Sea lamprey</u>

4.2.3.13. The sea lamprey is the largest lamprey species in the UK. They are anadromous so live and feed at sea before returning to spawn in the freshwater reaches of rivers. Juvenile lamprey (*ammocoetes*) live in riverine sediment for a number of years before migrating to sea as transformers. Sea lamprey do not have any site fidelity and will spawn in any suitable river.



- 4.2.3.14. The distribution of sea lamprey in the UK is well documented with spawning occurring in rivers on the south east and west coasts of the UK. They are present in much of the Atlantic coastal area of western and northern Europe (Maitland, 2003). Mature sea lamprey enter rivers in early spring and spawn in late May or June in British rivers, with adults dying after spawning. The downstream seaward migration of transformers occurs from late autumn onwards (Scottish Natural Heritage ('SNH'), 2019).
- 4.2.3.15. Sea lamprey have no commercial importance and are therefore not targeted by commercial fishing practices. As a result, this species is not recorded in any landings data by ICES rectangle or ICES Division. It is considered however that given the proximity of the River Avon, where sea lamprey are known to spawn, they are likely to be in proximity to the Proposed Development at certain times of year.

River lamprey

- 4.2.3.16. The river lamprey, although smaller in size, shares similar life cycle characteristics to the sea lamprey. It spawns in the freshwater reaches of rivers during March and April with the ammocoetes living in the sediment for a number of years before migrating back to sea. The young lamprey do not share the oceanic migrations of the sea lamprey but remain mostly in estuarine and coastal environments for several years before returning to freshwater to spawn.
- 4.2.3.17. The distribution of this species is widespread with river lamprey ammocoetes occurring in many rivers from the Great Glen in northern Scotland southwards (Maitland, 2003).
- 4.2.3.18. There is no landings data available for river lamprey as they are not targeted commercially at sea. However, due to their wide distribution around the UK and proximity of a number of rivers to the Proposed Development they are likely to be in the coastal regions of the Channel at certain times of the year.

4.2.4. MARINE MAMMALS

- 4.2.4.1. Due to the mobile nature of marine mammal species, the study area is considered to be the entire eastern Channel region from MHWS out to the UK/French EEZ Boundary Line. However, because marine mammals range widely, animals using the study area are also likely to use French waters including those which are encompassed by French SACs (known as ZSCs in France; see Figures 4-5 and 4-6, APP-496 and 497).
- 4.2.4.2. A variety of marine mammal work has been done in the Channel including line transect survey (cetaceans) and telemetry work (seals). These data sources were examined but no project-specific marine mammal surveys were conducted. The key references for the main data sources are shown in Table 4.2 below.
- 4.2.4.3. The marine mammal fauna of the eastern Channel is poor, both in diversity of species and numbers of animals, compared to other parts of the UK. Information on the main



species which occur in the study area (harbour porpoise, bottlenose dolphin, grey seal and harbour seal) has been summarised in Table 4.2 and is considered to be sufficient to identify the species for which SACs need to be considered and conduct an assessment of LSE given the nature of the Proposed Development and the fact that species occurrence in the Channel is unlikely to change in the short to medium term.

4.2.4.4. A local estimate of species density is available for just one of the four main species which occur in the area – harbour porpoise (0.213 animals per km²; Hammond *et al.*, 2017). This estimate, for the Channel survey block, is low compared to those for neighbouring survey blocks in the southern North Sea where density estimates range from 0.607 to 0.888 animals per km² (Hammond *et al.*, 2017).

Table 4.2 - Summary of information on the main marine mammal species which occur in the eastern Channel

Species	Occurrence	Distribution	Key references
Harbour porpoise (<i>Phocoena</i> <i>phocoena</i>)	Present year round	Widespread	Evans (2006) Hammond <i>et al.</i> (2017)
Bottlenose dolphin (<i>Tursiops truncatus</i>)	Observed most commonly during summer (July- September)	Primarily an inshore species with most sightings within 10 km of land but can also occur offshore	Jones <i>et al.</i> (2004) McClellan <i>et al.</i> (2014) Pettex <i>et al.</i> (2014)
Grey seal (<i>Halichoerus</i> grypus)	Present year round	Widespread	Chesworth <i>et al.</i> (2010) Russell <i>et al.</i>
Harbour seal (<i>Phoca vitulina</i>)	Present year round	Mainly coastal	(2017) Vincent <i>et al.</i> (2017)

4.2.5. MARINE ORNITHOLOGY

- 4.2.5.1. This section sets out the baseline for those designated marine ornithological features which are present seaward of MLWS. A description of the baseline for ornithological features present inland of MLWS (e.g. terrestrial and intertidal features) is presented in Section 5 of this report.
- 4.2.5.2. Given the nature and scale of the Proposed Development, site-specific surveys for marine ornithology were not undertaken following the proportionate approach advocated by Chartered Institute for Ecology and Environmental Management ('CIEEM') (2019). Instead, information on aspects of seabird and inshore waterbird



presence and ecology was collated from the literature to inform the baseline environment.

- 4.2.5.3. The overall abundance of seabirds and inshore waterbirds in UK waters within the Channel is relatively low (Bradbury *et al.*, 2014; Wakefield *et al.*, 2017), with numbers not reaching the necessary thresholds to qualify for marine SPA designation under the Birds Directive (Kober *et al.*, 2010, 2012) (also see Figures 4-7 and 4-8, APP-498, Rev 02 and 499).
- 4.2.5.4. However, species diversity is high, and the Channel is an important area during migration (Steinen *et al.*, 2007). Furthermore, whilst there is little suitable habitat for cliff-nesting seabirds, there are a number of internationally important tern and gull colonies present on the sand and shingle beaches, saltmarshes and offshore islets of the southern English coastline.
- 4.2.5.5. Table 4.3 provides a summary of the marine ornithological baseline as detailed in Chapter 11 Marine Ornithology of the ES for the Proposed Development.

Table 4.3 - Summary of the marine ornithology baseline

· · · · · · · · · · · · · · · · · · ·	
Feature	Abundance and Distribution in the Study Area
Common scoter; and Eider	Barne <i>et al.</i> , (1998) state that common scoters are most abundant off Rye Harbour during the winter, approximately 90 James <i>et al.</i> , (2010) state that only a small number of seaduck observations were recorded during aerial surveys overlapped with the Proposed Development, although these species may have been underestimated during surveys. the Rampion OWF, to the east of the Proposed Development, recorded a peak of 73 common scoters during boar surveys (RSK, 2012). Navitus Bay Wind Park (which had its DCO application rejected in 2015), situated to the west of that <i>c</i> .1,600 common scoters passed through the Channel during spring and autumn migration, with a significant easter 2012a; Navitus Bay Wind Park, 2014). Common eiders are also present in low abundance all along the southern E harbours and estuaries (Royal Society for the Protection of Birds ('RSPB'), 2009). Frost <i>et al.</i> , (2018) report a five Chichester Harbour in October (2012/13-2016/17).
Great northern diver; Black-throated diver; and Red-throated diver	Great northern diver, black-throated diver and red-throated diver all occur in inshore waters of the Channel during the w (WWT, 2013). James <i>et al.</i> , (2010) report that the majority of diver records recorded during aerial surveys across the >50 km to the east of the Proposed Development. Relatively low numbers were recorded during these surveys, w recorded during summer 2008. Low numbers of diver species were also recorded during baseline surveys undertaker red-throated divers was recorded during boat-based surveys undertaken for the Rampion OWF in 2010-12, with sever 2012). At Navitus Bay Wind Park, a single black-throated diver was recorded during a boat-based survey in December
Great crested grebe; Black-necked grebe; Red-necked grebe; and Slavonian grebe	Grebe species are also present in inshore waters of the Channel during the non-breeding season (Barne <i>et al.</i> , 1996 wintering population of Slavonian grebe which utilises the Sussex coast, with nationally important numbers wintering Proposed Development (20-25 individuals; Barne <i>et al.</i> , 1998). There are also known black-necked grebe wintering Harbour (Barne <i>et al.</i> , 1996; RSPB, 2009), in the vicinity of the Landfall. Neither RSK (2012) nor Navitus Bay Wind having been recorded during baseline surveys, reflecting the species' inshore distribution.
Red-breasted merganser	Important numbers of red-breasted merganser are known to winter at Chichester, Langstone and Portsmouth Harbour (2018) state that a five year mean peak of 87 red-breasted merganser (2012/13-2016/17) has been present at Port Langstone Harbours, a five year mean peak of 163 and 228 birds were recorded, respectively (2012/13-2016/17) recorded during baseline surveys at Navitus Bay Wind Park; one in April 2011 and one in November 2011 (Navitus Bay at Rampion OWF (RSK, 2012), again reflecting the more inshore habitat preferences of this species.
Fulmar; Manx shearwater; Balearic shearwater; and Storm petrel	Three of these pelagic species were recorded during aerial surveys of the south coast region in 2007 and 2008 (James and storm petrel. Baseline surveys undertaken for Navitus Bay Wind Park and Rampion OWF also reported low nu through the region during migration (e.g. a peak of four birds during autumn at Navitus Bay; Navitus Bay Wind Park, the southern English coastline year-round, with a high concentration observed to the east of Portsmouth and the 2010). Numerous fulmar nesting sites are present along the coastline in the region, with important numbers breeding >50 km from the Proposed Development (WWT, 2009). Breeding fulmar are also present along the French coastline Normandy (Le Guillou & Debout, 2012), located <i>c</i> .54 km from the Proposed Development. Furthermore, there is Alderney within foraging range of the Proposed Development (D. Clifford 2019, pers. comm.). Both Manx shearwa further north, passing through the Channel during migration. Storm petrel also breeding on Alderney, <i>c</i> .142 km from some birds are also present within the Channel during the breeding season.
Gannet	Gannet are present in the Channel year-round (WWT, 2013). Baseline surveys undertaken for Navitus Bay Wind Pa most frequently recorded species during baseline surveys, with the highest numbers recorded during the breeding so which is consistent with other surveys (e.g. James <i>et al.</i> , 2010; RSK, 2012). Pettex <i>et al.</i> , (2014, 2017) also identified la



0 km east of the Proposed Development. ys undertaken in 2007 and 2008 which s. Surveys undertaken more recently for pat-based surveys, and 210 using aerial of the Proposed Development, estimated terly movement in April (Natural England, English coastline in winter, including in ve year mean peak of two individuals in

winter, albeit in relatively low abundance the south coast region were off Brighton, with 171 noted in winter and two birds taken for proposed OWFs. A peak of 91 ven recorded during aerial surveys (RSK, ber 2009 (Navitus Bay Wind Park, 2014).

96; 1998). In particular, there is an overg in Pagham Harbour, *c*.9.5 km from the g sites in Langstone Harbour and Poole nd Park (2014) report grebe species as

ours (Natural England, 2019). Frost *et al.*, Portsmouth Harbour. In Chichester and 7). Two red-breasted mergansers were bay Wind Park, 2014), with none reported

es *et al.*, 2010): fulmar, Manx shearwater numbers of Balearic shearwater passing (, 2014). Fulmar have been observed off e Proposed Development (James *et al.*, ng between Brighton and Beachy Head, line with important numbers breeding in is also a breeding fulmar population on vater and storm petrel breed at colonies om the Proposed Development and thus

Park found that gannet was one of those season (Navitus Bay Wind Park, 2014), I large numbers of gannets in the eastern

WSP/Natural Power

Feature	Abundance and Distribution in the Study Area
	Channel during winter, particularly in the Strait of Dover to the east of the Proposed Development. Most gannets record for OWFs in the region recorded gannets in flight (RSK, 2012; Navitus Bay Wind Park, 2014). This is to be expected foraging species (Snow & Perrins, 1998). Multi-colony tracking data show that breeding adult gannets present in the are most likely to originate from the colony at Les Etacs and Ortac, Alderney, rather than the colony on île Rouzic off <i>et al.</i> , 2013; Warwick-Evans <i>et al.</i> , 2016; D. Clifford 2019, pers. comm.).
Shag; and Cormorant	Cormorants are known to breed at two locations within along the southern English coast in proximity to the Propose western tip of the Isle of Wight, and at Studland Cliffs along the Purbeck Coast, west of the Proposed Development Small numbers of shag also breed along the Purbeck Coast (Lake <i>et al.</i> , 2011) but are otherwise largely absent f Harbours are both important wintering sites for cormorant (Barne <i>et al.</i> , 1996) with Frost <i>et al.</i> , (2018) reporting a five Portsmouth Harbour, with the highest numbers recorded in October. Low densities of both cormorants (0.01-0.09 birds were recorded by Stone <i>et al.</i> , (1995) in coastal areas to the west of the Isle of Wight around Poole Harbour and arou year. Rampion OWF recorded a peak of seven cormorants across its baseline survey campaign (RSK, 2012), whi single cormorant during a boat-based survey in November 2011, and no shags (Navitus Bay Wind Park, 2014).
Great skua; Arctic skua; and Pomarine skua	James <i>et al.</i> , (2010) report that limited numbers of skuas were recorded during aerial survey campaigns in 2007-20 aerial surveys conducted across the Channel as part of the Suivi Aérien de la Mégafaune ('SAMM') campaigns sho skua was highest closer to the French coastline as well the south-western tip of the UK off the Cornish coast (Pettex e undertaken for Rampion OWF in 2010-2012 recorded 148 great skuas, 53 pomarine skuas and 10 Arctic skuas passing 1,114 Arctic skuas and 713 great skuas were considered to pass through the Navitus Bay Wind Park during spring a migration modelling tool (Navitus Bay Wind Park, 2014).
Sandwich tern; Arctic tern; Common tern; Roseate tern; and Little tern	Sandwich terns, common terns, roseate terns and little terns are present on the southern coast of England from April to beaches, saltmarshes and offshore islets (James <i>et al.</i> , 2010). Breeding colonies in the vicinity of the Proposed De Langstone, Pagham and Newtown Harbours, and at North Solent, Hurst Point to Pitts Deep and Lymington to Pylewell 2019). Arctic terns breed at colonies further north but pass through the Channel during migration in the spring and a <i>et al.</i> , (2010) report a total of 358 tern observations from aerial surveys undertaken in summer 2008. Tern records pea surveys undertaken for Rampion OWF (RSK, 2012), with Sandwich terns (n=40), Arctic terns (n=180) and common level, and a further 2,287 terns recorded as 'Arctic/common'. No roseate terns were recorded which may reflect their region compared to other tern species. The lack of little tern records may reflect their inshore feeding distribution (v km; Thaxter <i>et al.</i> , 2012).
Herring gull; Great black-backed gull; Lesser black-backed gull and Yellow-legged gull	Gulls were the most abundant and widely distributed seabird group recorded across the south coast region during as with 14,835 individuals recorded during winter and 6,294 recorded during the summer (James <i>et al.</i> , 2010). More recordent Rampion OWF recorded a total of 34,551 gulls across all surveys. Of those large gulls identified to species level, her 2012). There are no major cliff-based gull colonies in the vicinity of the Proposed Development (Stroud <i>et al.</i> , 1990), we at the cliffs between Brighton and Newhaven (WWT, 2009). However, there are an increasing number of roof-nesting gulls in Dorset and Hampshire (Nager & O'Hanlon, 2016). Many large gull species are present year-round in the Indeed, within Portsmouth Harbour, Frost <i>et al.</i> , (2018) report five-year winter mean peaks for lesser-black-backed black-backed gull (30). Small numbers of yellow-legged gull have been recorded during baseline surveys for Ramp during the non-breeding season (RSK, 2012; Navitus Bay Wind Park, 2014), with a known breeding site located at Pe
Kittiwake; Mediterranean gull;	As with the large gulls, many small gull species are present in the Channel year-round in the vicinity of the Propose such as little gull and kittiwake, numbers increase during the winter as birds breeding at more northerly colonies move <i>et al.</i> , (2018) report five-year winter mean peaks for black-headed gull (2,431) and common gull (192) within Portsmou



rded during baseline surveys undertaken ed as gannets are a wide-ranging aerial ne vicinity of the Proposed Development f Brittany (Soanes *et al.*, 2012; Wakefield

ed Development: at the Needles on the at (Barne *et al.*, 1996; Lake *et al.*, 2011). t from the region. Langstone and Poole ive-year mean peak of 66 cormorants in ds/km²) and shags (0.01-0.49 birds/km²) round the Solent throughout much of the hilst Navitus Bay Wind Park recorded a

2008 across south coast region. Indeed, howed that the encounter rate for great a *et al.*, 2014, 2017). Boat-based surveys ing through the survey area. An estimated and autumn, based on the outputs of a

to August, breeding on sand and shingle Development are present at Chichester, ell (Mitchell *et al.*, 2004; Natural England, autumn (Wernham *et al.*, 2002). James eaked in May during baseline boat-based on terns (n=172) all recorded to species eir relatively low breeding numbers in the (with a mean-max foraging range of 6.3

aerial surveys undertaken in 2007-2008, ecent boat-based surveys undertaken for erring gull was the most abundant (RSK, with the nearest breeding colony located ng lesser-black-backed gulls and herring e vicinity of the Proposed Development. d gull (five), herring gull (170) and great npion OWF and Navitus Bay Wind Park Poole Harbour.

sed Development. However, for species re southwards (Pettex *et al.*, 2017). Frost buth Harbour. Mediterranean gulls breed

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Feature	Abundance and Distribution in the Study Area
Common gull;	in important numbers at Newtown Harbour, North Solent and between Hurst and Lymington, with breeding black-head (Natural England, 2019).
Black-headed gull; and	
Little gull	
Guillemot;	The south coast of England has relatively few cliff-based colonies of auks due to a lack of suitable habitat. However,
Razorbill; and	and puffins breed along the Purbeck Cliffs, c. 60 km west of the Proposed Development (Barne et al., 1996; Lake et that the south coast region represents a more significant resource for auks during the winter months, with relatively
Puffin	year (RSK, 2012; Navitus Bay Wind Park, 2014; Pettex <i>et al.</i> , 2017). Of the three auk species present in the region, g of guillemots peaked in late spring during baseline surveys for Navitus Bay Wind Park and Rampion OWF as birds m more northerly breeding colonies (Navitus Bay Wind Park, 2014).



aded gulls also present at these colonies

er, small numbers of guillemots, razorbills et al., 2011). James et al., (2010) notes ely high number observed at this time of a, guillemot are most abundant. Numbers s moved through the area on passage to

WSP/Natural Power



5. ENVIRONMENTAL BASELINE

(ONSHORE)

5.1. ONSHORE ENVIRONMENT

5.1.1. STUDY AREA

- 5.1.1.1. The study area for the Proposed Development onshore principally includes the Converter Station Area, the Onshore Cable Corridor and the Landfall. To aid design development and environmental assessment the Onshore Cable Corridor has been divided into ten sections. These can be summarised as follows:
 - Section 1 The Converter Station Area The northern section of the Proposed Development comprising the Access Road, Telecommunications Buildings, security fencing, temporary construction compound, car park and laydown areas;
 - Sections 2 9 The Onshore Cable Corridor The Onshore Cable Corridor from the Converter Station Area at Lovedean to the Landfall at Eastney (approximately 20 km); and
 - Section 10 Landfall The Landfall area including the two Optical Regeneration Stations "ORS", construction of underground infrastructure, temporary vehicular routes for construction vehicles, temporary construction compound, car park and laydown areas and construction vehicle movements.
- 5.1.1.2. The Landfall is defined as the HDD entry/exit location off the coast of Eastney, where cables will travel under the intertidal area, and the marine cables come ashore above MHWS.
- 5.1.1.3. The study area includes the onshore and intertidal areas adjacent to the Order limits of the Proposed Development onshore inland of MLWS, with all European sites within 10 km considered (Plate 5.1 and 5.2).



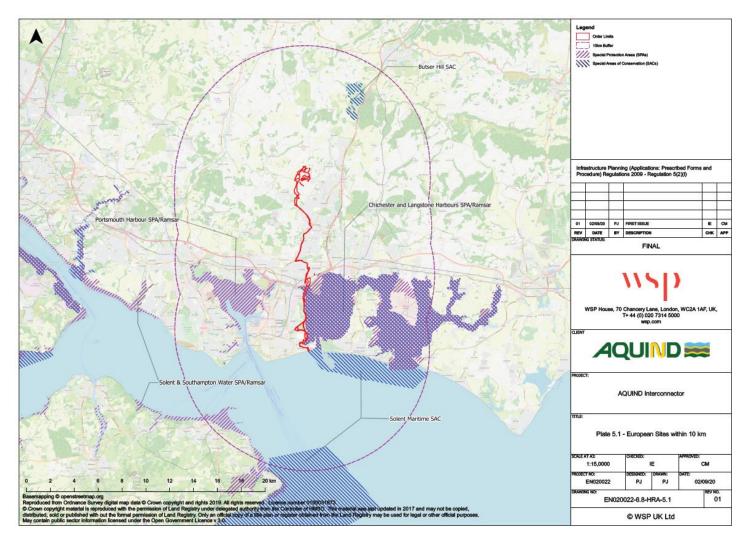


Plate 5.1 – European Sites within 10 km

AQUIND INTERCONNECTOR PINS Ref.: EN020022 Document Ref: Habitats Regulations Assessment Report AQUIND Limited WSP/Natural Power



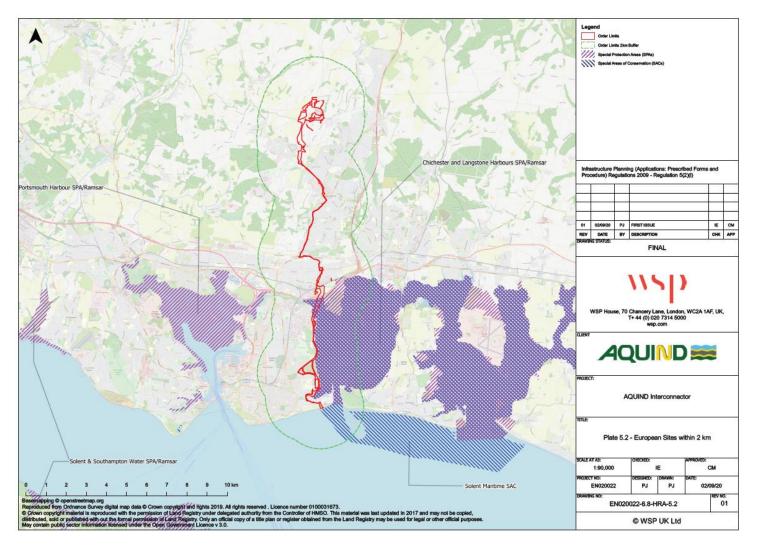


Plate 5.2 – European Sites within 2 km

AQUIND INTERCONNECTOR PINS Ref.: EN020022 Document Ref: Habitats Regulations Assessment Report AQUIND Limited WSP/Natural Power



5.1.2. HABITATS

Converter Station Area

5.1.2.1. The Converter Station Area is located within agricultural land on the edge of the village of Lovedean, Hampshire. The area is mainly composed of arable land (species poor semi-improved grassland) with hedgerows and small pockets of woodland, including ancient woodland, and residential development to the southeast. Habitats present in the Converter Station Area include Semi-natural broadleaved and plantation woodland, semi-improved improved grassland, arable and hedgerows. Full details of these habitats are described in the Preliminary Ecological Appraisal (APP-410) and updated within Chapter 10 of the ES Addendum.

Onshore Cable Corridor

5.1.2.2. The Onshore Cable Corridor largely passes urban areas of Portsmouth, Drayton, Purbrook and Waterlooville and is divided into eight sections (2-9). Scattered trees are present along the Onshore Cable Corridor, as are hedgerows. Habitats in the Onshore Cable Corridor include semi-natural broadleaved woodland, scattered scrub and trees, semi-improved grassland, arable and built-up areas. These habitats are fully described in the Preliminary Ecological Appraisal (APP-410).

Eastney Landfall

- 5.1.2.3. The Landfall is located in the car park south of Fort Cumberland Road, adjacent to the Land West of Fort Cumberland SINC. Fort Cumberland SINC and Scheduled Ancient Monument are located further east. The area also incorporates a section of Eastney Beach, a designated SINC. The Eastney Beach SINC exhibits coastal vegetated shingle which is listed as an Annex I habitat under the Habitats Directive and this area is designated for its coastal vegetated shingle as part of the Eastney Beach LWS (Portsmouth City Council, 2014). This is however located outside of a SAC. The baseline environment regarding habitats in the intertidal zone is fully explored under Marine Environment in Section 4.2.
- 5.1.2.4. Land West of Fort Cumberland SINC includes with habitats comprising semiimproved grassland, coastal heathland and scrub habitats. Eastney Beach SINC is situated to the south which comprises sand/shingle beach with concrete erosion protection and a mosaic of habitats resulting from derelict developments on the landward side; disused buildings, scrub, rough grassland and bare ground.
- 5.1.2.5. Onshore habitat present in the landfall consists of hardstanding with adjacent scrub, semi-improved and amenity grassland. These habitats are fully described in Preliminary Ecological Appraisal (APP-410).



5.1.3. SPECIES

- 5.1.3.1. A number of onshore Project-specific ecological surveys have been undertaken in order to inform the DCO Application. These include the following that had the potential to be relevant to HRA:
 - Preliminary Ecological Appraisal (APP-410)
 comprising a desk study of information obtained from key sources (including on European sites) and an Extended Phase 1 Habitat Survey (JNCC, 2010, CIEEM, 2016);
- 5.1.3.2. Surveys undertaken for both breeding and wintering birds are detailed separately below. Further surveys undertaken that are not considered to have any potential relevance to HRA include those for aquatic (freshwater) ecology, great crested newts, reptiles, badger and dormouse. These features while considered in Chapter 16: Onshore Ecology of the ES (APP-131) do not relate to features of any European Site within the vicinity of the Proposed Development and are therefore not considered in this HRA.

5.1.4. ORNITHOLOGY

5.1.4.1. This section sets out the baseline for those designated ornithological features which are present inland of MLWS. A description of the baseline for marine ornithological features seaward of MLWS is presented in Section 4.2.5.

Landfall and Intertidal Environment

- 5.1.4.2. Surveys during winter and breeding periods on the intertidal habitat adjacent to the Landfall and Onshore Cable Corridor (at Langstone Harbour) were undertaken as indicated in the Breeding Bird Survey Report (APP-420) and the Wintering Bird Survey Report (APP-421).
- 5.1.4.3. Breeding bird surveys were implemented through a vantage-point methodology to target any nesting or foraging locations for little tern, common tern and sandwich tern (qualifying features of Chichester and Langstone Harbours SPA/Ramsar site). The surveyors undertook surveys of 10 minutes in duration with the use of a telescope and binoculars. No tern species were found to be breeding within the Survey Area.
- 5.1.4.4. To determine the composition of the wintering bird community in and around Chichester and Langstone Harbour SPA/Ramsar site, six monthly survey visits were completed between October 2017 and March 2018 (Plate 5.3). These surveys followed prescribed methodology by the British Trust for Ornithology (2010) and Bibby et al., (2000).
- 5.1.4.5. Two different survey types at intertidal habitats were undertaken as described in Table 5.1.



Survey Type	Description
Intertidal survey	This survey methodology used was an adapted version of the standard BTO's Wetland Bird Survey (WeBS) (BTO, 2010), incorporating the direct counts methodology (Bibby et al., 2000). It involved two surveyors walking the western perimeter of the Chichester and Langstone Harbours SPA from Farlington Marshes to Fort Cumberland, the SPA's closest point to the cable route. Surveyors made frequent stops at suitable places to count birds seen and to record their location, taking notes of their behaviour (foraging, loafing, sleeping, preening etc). The survey area was defined applying a 500 m buffer from the Order Limits. The survey was undertaken twice per visit, once at low tide and once at high tide, in order to determine species usage depending on tidal cycle (i.e. foraging areas during low tide, roosts during high tide). The surveys were undertaken monthly between October 2017 and March 2018.
Vantage points at low and high tides	In addition to the above, surveyors spent one hour around high tide and low tide in two locations during the monthly visits, one in the north of the estuary at Farlington Marshes (467786, 104341) and another in the south at Eastney Beach (468108, 98993) counting birds flying over these sites. Surveyors recorded the species, flight direction and number of individuals that passed. The aim was describing the exchange of birds between the Site and the surrounding.

Table 5.1 - Methods used during wintering bird surveys in intertidal habitat



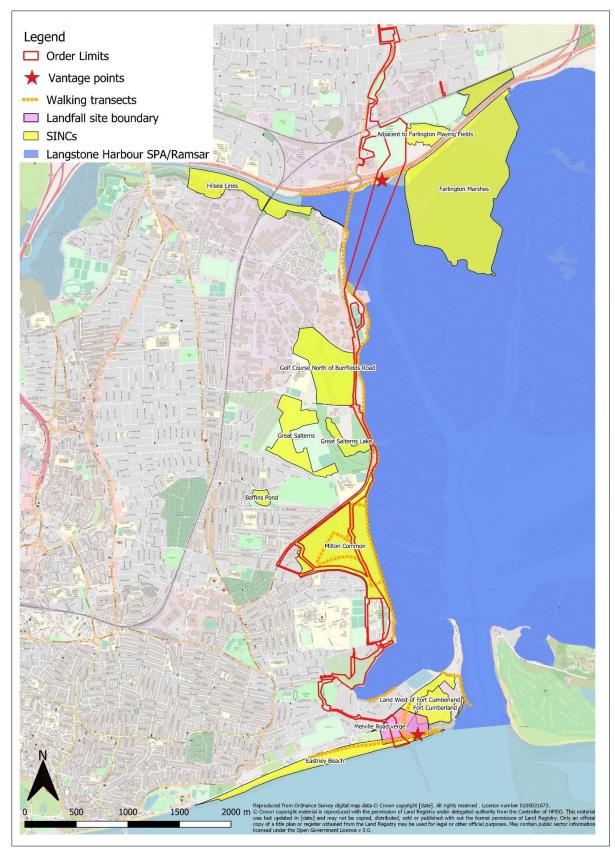


Plate 5.3 – Onshore wintering bird survey locations

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- 5.1.4.6. Forty-five species of bird were identified during intertidal surveys. Peak counts (the highest number of observations of SPA (and/or Ramsar) qualifying species encountered on an individual survey visit) at low and high tide are shown in Table 5-2.
- 5.1.4.7. Peak counts highlight differences in the abundance of bird species across the whole survey area and identify those species which are dominant in the winter bird community, separating them from those which are represented only by small numbers or by single birds. The data show there are two highly abundant species that are features of the SPA (dark-bellied brent goose and dunlin), with numbers of observations significantly greater than the remaining species.
- 5.1.4.8. At low tide birds used the survey area to feed, foraging on the intertidal mudflats exposed by receding water for prey living in the mud and amongst small patches of rocky ground. As the tide came in, most species were observed leaving the survey area to find protection in high tide roosts elsewhere in the local area. Counts of birds were lower at high tide than at low tide for this reason (some species, e.g. dunlin and black-tailed godwit) were only observed at low tide and vacated the area completely during high tide), and few if any high tide roosts were observed. This is likely a function of the man-made seawalls that border Chichester and Langstone Harbour along its western side and the high levels of disturbance along the seawall, it having a popular pedestrian footpath used by the public for leisure, dog walking and running/fitness pursuits. However, some species more tolerant of disturbance and also that forage on more rocky substrates were more abundant at high tide. Sanderling, turnstone and redshank fell into this category, all being more abundant along the western side of the harbour during high tide.
- 5.1.4.9. Although low-tide is key for many species, both tide phases support foraging intertidal birds and there are few high tide roosting opportunities along the western side of the estuary. Results are discussed below on species that are qualifying features of Chichester and Langstone Harbours SPA/Ramsar site.

Dark-bellied Brent Goose

5.1.4.10. This was the most abundant species recorded during survey, and an important winter visitor as over 1% of the world population of the dark-bellied subspecies (*Branta bernicla bernicla*)⁴. This species overwinters in the Solent area with Chichester and Langstone Harbour being a favoured site. Brent geese were observed foraging on mudflats at low-tide, loafing in large groups on the water at high tide, and at both tides flying to/from and foraging terrestrial foraging sites. The number of observations of this species is inflated by its high mobility, with birds frequently flying to and from the harbour causing repeated counting of the same birds. However, using intertidal counts and counts from Solent Waders and Brent Goose Strategy Sites ('SWBGS')

⁴ Carboneras, C., Christie, D.A. & Kirwan, G.M. (2018). Brent Goose (*Branta bernicla*). In: del Hoyo, J., Elliott, A., Sargatal, J., Christie, D.A. & de Juana, E. (eds.). Handbook of the Birds of the World Alive. Lynx Edicions, Barcelona.



(see below) it is possible to conclude that several thousand individual brent geese use the intertidal survey area.

Shelduck

5.1.4.11. Shelduck was relatively abundant during the surveys with peak counts of 45 and 66 and 60 individuals at high and low tide respectively. Shelduck were distributed throughout the intertidal survey area.

Pintail

5.1.4.12. Pintail were also relatively abundant during the surveys although they were only present in smaller numbers until February 2018. Pintail were mostly observed at low tide and a peak count of 75 individuals occurred in February 2018. Pintail localised in their distribution to the area around the A2030 bridge and Farlington Marshes in the north of the survey area.

Shoveler

5.1.4.13. Shoveler were recorded on a single survey only, where two individuals occurred during low tide in December 2017.

Red-breasted Merganser

5.1.4.14. Red-breasted merganser were recorded sporadically during the surveys in low numbers. The peak count of 12 individuals occurred during high tide in November 2017. As this species is a diving duck few individuals were recorded at low tide when the survey area is dominated by intertidal mud.

Teal

5.1.4.15. Teal were consistently recorded during surveys at both high and low tide with peak counts of 33 (high tide December 2017) and 50 (low ide February 2018) respectively. Teal occurred in both intertidal areas in addition to waterbodies within Milton Common.

Grey Plover

5.1.4.16. Grey plover generally occurred only at low tide during the surveys (peak count of 19 in January 2018), with only one sighting at high tide. This species was restricted to intertidal mud habitat mainly in the south of the survey area.

Ringed Plover

5.1.4.17. Ringed plover was moderately common during the surveys (peak counts of 38 at low tide February 2018 and 58 at high tide October 2017), and was able to feed on open mudflats at low tide and close to the harbour wall amongst shingle at high tide.

Dunlin

5.1.4.18. A highly abundant small wader with peak counts of 2,000 birds within the intertidal survey area at low tide; however, this species almost completely vacates mudflats within the survey area at high tide to roost elsewhere. The intertidal survey area is clearly an important foraging area for this species in winter. Dunlin is BoCC Amber listed and one of the qualifying features of the Chichester and Langstone Harbours SPA.



Sanderling

5.1.4.19. Sanderling were found in small numbers during he surveys except March 2018 when
 200 were recorded during high tide. All records were at Eastney Beach with no
 individuals recorded using the intertidal mud in Langstone Harbour.

Bar-tailed Godwit

5.1.4.20. Bar-tailed godwit records were restricted to a single individual during low tide in January 2018.

Black-tailed Godwit

5.1.4.21. Black-tailed godwit were recorded on four low tide surveys with a peak count of 75 birds in October 2017. No individuals of this species were recorded on high tide surveys, indicating that as the tide rises and obscures the mudflat, this species flies out of the survey area to find high tide roosts elsewhere.

Curlew

5.1.4.22. Curlew were common at low tide during the surveys (low tide peak count of 61 individuals in February 2018) with very few sightings at high tide (peak count of 2 individuals). This indicates that as the tide rises and obscures the mudflat, this species fly out of the survey area to find high tide roosts elsewhere.

Redshank

5.1.4.23. Redshank was more abundant at low tide (peak count of 103 in November 2017) than high tide (peak count of 6) as it feeds on intertidal mud and was therefore widespread in the survey area.

Turnstone

5.1.4.24. Turnstone were commonly recorded at high tide surveys with a peak count of 66 individuals in January 2018. During high tide this species were observed feeding around shingle and individuals are pushed towards the harbour wall by the rising tide Turnstone were less regularly recorded at low tide although a peak count of 34 individuals occurred in October 2017.

Sandwich tern

5.1.4.25. This migratory species is a qualifying feature of the Chichester and Langstone Harbour SPA as a breeding species and was seen early in the survey period (October and November 2017) before vacating the area for its winter quarters. It was observed only at low tide, with a peak count of six individuals.

Table 5.2 - Results of 2017/2018 intertidal field surveys by month and tide phase⁵

			-	-		-							
Common name	Latin name	Oct Low Tide	Oct High Tide	Nov Low Tide	Nov High Tide	Dec Low Tide	Dec High Tide	Jan Low Tide	Jan High Tide	Feb Low Tide	Feb High Tide	Mar Low Tide	Mar High Tide
Dark-bellied brent goose	Branta bernicla bernicla	408	172	617	333	970	95	667	795	1598	946	715	967
Shelduck	Tadorna tadorna	0	0	6	45	38	7	45	19	66	0	29	5
Teal	Anas crecca	1	0	23	0	46	33	2	8	50	27	0	16
Pintail	Anas acuta	0	0	0	0	18	4	0	1	75	2	53	6
Shoveler	Spatula clypeata	0	0	0	0	2	0	0	0	0	0	0	0
Red-breasted merganser	Mergus serrator	0	2	3	12	1	2	4	0	2	5	0	0
Ringed plover	Charadrius hiaticula	5	58	12	24	1	0	0	19	31	50	0	0
Grey plover	Pluvialis squatarola	10	0	9	0	4	0	19	0	4	1	3	0
Sanderling	Calidris alba	0	0	0	2	4	2	0	0	0	0	0	200
Dunlin	Calidris alpina	398	1	22	1	404	0	66	0	2014	9	167	0
Black-tailed godwit	Limosa limosa	75	0	2	0	3	0	0	0	0	0	27	0
Bar-tailed godwit	Limosa Iapponica	0	0	0	0	0	0	1	0	0	0	0	0
Curlew	Numenius arquata	18	0	15	0	16	0	24	0	61	0	15	2
Redshank	Tringa totanus	75	0	103	0	51	3	16	5	47	0	25	6
Turnstone	Arenaria interpres	34	0	11	0	17	1	6	66	0	3	1	49
Sandwich tern	Thalasseus sandvicensis	6	0	2	0	0	0	0	0	0	0	0	0

⁵ Shows qualifying features of Chichester and Langstone Harbours SPA only. Appendix 16.14 of the ES provides details of all bird species recorfed during the surveys.



Low Tio Peak Count	de High Peal Cou	Che
1598	967	8283
66	45	260
50	33	206
75	6	159
2	0	2
4	12	31
31	58	200
19	1	50
4	200	208
2014	9	3082
75	0	107
1	0	1
61	2	151
103	6	331
34	66	188
6	0	8

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- 5.1.4.26. Twenty-nine species of bird were observed at the vantage points comprising 3,515 individual bird observations. Broadly, the community of birds in flight was dominated by brent geese.
- 5.1.4.27. At the northern vantage (Farlington Marshes) point the majority of birds were observed flying north out of the harbour, with dark-bellied brent geese and gulls the dominant bird groups. This is likely due to a strong northerly movement of these birds to roost sites within the harbour at dawn to feeding sites inland to the north. Data does not indicate a return flight into the estuary as few of the vantage point counts were undertaken at dusk, whereas one was always undertaken at close to dawn. The northerly movement takes birds across the A27, a busy carriageway.
- 5.1.4.28. The southern vantage point showed that a roughly equal east-west movement of birds along Eastney Beach, with the bird community dominated by brent geese and waders (namely large groups of dunlin), with a significant passage of gulls also. The data show that although some birds fly across the beach to reach the harbour behind, most prefer to follow the coastline to access the harbour via Fort Cumberland/Gunner Point.

Onshore Cable Route

- 5.1.4.29. Breeding bird surveys were undertaken in onshore areas inland of landfall at Eastney Beach, specifically targeting black redstart and Dartford Warbler (APP-420). While these species are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) neither represent qualifying features of any adjacent European sites. The former species was recorded breeding within the survey area. A suite of further common and widespread breeding bird species were located.
- 5.1.4.30. Wintering bird surveys of the same area of terrestrial habitats were also undertaken (APP-421). The majority of birds encountered were common and widespread wintering bird species often found in semi-natural habitats. Three species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were recorded: Dartford Warbler, Cetti's warbler and black redstart.
- 5.1.4.31. To supplement the surveys of intertidal habitats, parallel surveys of Solent Waders and Brent Goose Strategy sites (SWBGS) were surveyed in parallel (APP-421). The SWBGS as defined in King (2010) and Whitfield (2019) is a conservation partnership project, which aims to conserve the internationally important brent goose and wading bird populations within and around the Special Protection Areas and Ramsar wetlands of the Solent coast. These sites are terrestrial habitats that in effect provide functional linkage to the SPAs including Chichester and Langstone Harbours (See Section 6.3). The distribution of SWBGS sites within or adjacent to the Proposed Development are presented in Plate 5.4.
- 5.1.4.32. Surveyors visited 22 sites identified in the SWBGS for the South-East Hampshire Coast. Using direct counts, brent geese, gulls and other species were identified and their numbers and behaviour recorded.



Converter Station Area

5.1.4.33. Breeding bird surveys were completed at the Converter Station Area (APP-420). Species present and confirmed breeding consisted of a suite of widespread species typical of the arable and grassland habitats present. No species recorded were relevant to any regional European sites.



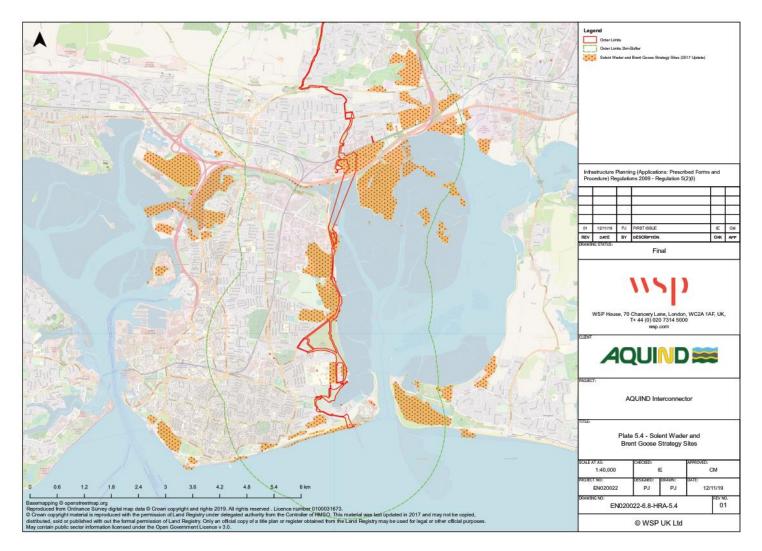


Plate 5.4 – Solent Waders and Brent Goose Strategy Sites

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6. IDENTIFICATION OF EUROPEAN SITES AND POTENTIAL EFFECTS

6.1. OVERVIEW

- 6.1.1.1. Given the linear nature of the Proposed Development and the number of European sites and/or European offshore marine sites that could potentially be affected, an initial pre-LSE screening stage has been introduced into the process. This stage is essentially a site-identification / selection process, which, while it forms part of the overall LSE determination stage of HRA, has been separated out to allow a subsequent focus (in Section 7) on those sites where the Proposed Development is considered to have a potential for a LSE.
- 6.1.1.2. The criteria used in this first stage of selection takes account of the location of the European sites (including Ramsar sites) in relation to Proposed Development, the ZOI of potential effects of the Proposed Development, and the ecology and distribution of qualifying features. These criteria are described in Table 6.1.

Table 6.1 - Criteria used for initial identification of relevant European sites

	Criteria
1	Proposed Development boundaries overlap with European site.
2	European site supports mobile populations of qualifying features (e.g., Annex I birds, Annex II marine mammals, migratory fish, bats and otters) that may interact with potential effects associated with Proposed Development.
3	European sites and/or qualifying features located within the potential ZOI of effects associated with Proposed Development (e.g., habitat loss/disturbance, noise).
4	European sites with primary reasons or qualifying features for site selection recorded during baseline surveys.

- 6.1.1.3. This initial screening will exclude or pre-screen out sites where the Proposed Development is considered to have no potential for a LSE. Sites not excluded at this stage are taken forward for a detailed determination of LSE in Section 7.
- 6.1.1.4. Appendix 1 (APP-501, Rev 002) presents the screening matrices for European Marine Sites (i.e. SPA and SACs) and Appendix 5 (document reference 7.7.10) presents the screening matrices for Ramsars. For Ramsar sites, the features



assessed as part of this HRA are those identified under the criteria applied to the designation of the Ramsar site in the relevant Ramsar Information Sheets. The Natural England Designated Sites View⁶ states that a decision has been made by Defra and Natural England not to produce Conservation Advice packages for Ramsars, instead focussing on the production of High Level Conservation Objectives. As the provisions of the Habitats Regulations relating to Habitat Regulations Assessments (HRAs) extend to Ramsar sites, Natural England considers the Conservation Advice packages for the overlapping European Marine Site designations to be, in most cases, sufficient to support the management of the Ramsar interests. Assessments presented in Sections 7, 8 and 10 of this document for Ramsars have been undertaken in line with this approach.

6.2. INITIAL IDENTIFICATION OF SITES AND FEATURES – MARINE ENVIRONMENT

6.2.1. OVERVIEW

- 6.2.1.1. The approach applied to the initial pre-LSE screening stage is analogous to The Crown Estate's Appropriate Assessment of the Round 3 Plan (Entec, 2009). This identified four categories of European and Ramsar sites for which LSE could not be excluded in the marine environment:
 - SACs and Ramsar sites designated for Annex II diadromous migratory fish;
 - SACs and Ramsar sites designated for Annex II marine mammals;
 - SACs and Ramsar sites designated for marine and coastal habitats; and
 - SPAs and Ramsar sites designated for Annex I and regularly occurring migratory marine birds.
- 6.2.1.2. This section should be read in conjunction with Appendix 1 and Appendix 5 of this report (APP 501, Rev 002 and 7.7.10) which presents the PINS screening matrices for sites that have been pre-screened out for further assessment.

6.2.2. ANNEX I HABITATS

6.2.2.1. The potential for connectivity with the Proposed Development is determined based on the outputs of sediment plume dispersion modelling undertaken to assess the plumes of suspended sediment created during sediment disposal operations resulting from sandwave clearance. The maximum extent of the plume extends up to 25 km from the Marine Cable Corridor during dredge disposal activities along an east-west axis. This extent defines the ZOI for Annex I Habitats (Appendix 6.2 – Modelling Technical Report of the ES Volume 3, APP-368).

⁶ Available online from: <u>https://designatedsites.naturalengland.org.uk/</u>



Pre-Screening of Designated Sites

- 6.2.2.2. The UK Marine Cable Corridor overlaps with Solent Maritime SAC and lies 3.3 km and 4.6 km from South Wight Maritime SAC and Solent and the Isle of Wight Lagoons SAC respectively. These sites therefore have the potential for connectivity. Figures 4-1 and 4-2 (APP-492 and 493) illustrate the locations of sites considered.
- 6.2.2.3. At a minimum distance of 34 km to the south west of the UK Marine Cable Corridor, Wight-Barfleur Reef SAC is positioned outside the ZOI. It is therefore considered that there is no connectivity with Wight-Barfleur Reef SAC and it is screened out of this assessment.
- 6.2.2.4. Bassurelle Sandbank SAC crosses the EEZ and lies in both UK and French waters. The UK Section, the Bassurelle sandbank, is approximately 60 km east of the UK Marine Cable Corridor, while the French part, Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC, is 58.8 km from the Proposed Development. There is therefore no connectivity with the Bassurelle Sandbank SAC (or associated ZSC) and they are therefore screened out of this assessment.
- 6.2.2.5. Studland to Portland SAC is approximately 70 km west of the UK Marine Cable Corridor and it is therefore considered that there is no connectivity with this SAC and it is therefore screened out of this assessment.
- 6.2.2.6. An additional SAC located entirely in French waters with close proximity to the Proposed Development is Littoral Cauchois SAC, however this site is located 52.7 km from the UK Marine Cable Corridor at its nearest point. There is therefore no connectivity with any Annex I habitats present within the Littoral Cauchois SAC, and effects on Annex I habitats within this SAC are screened out of further assessment.

Pre-Screening of Features within Designated Sites

6.2.2.7. Solent Maritime SAC, South Wight Maritime SAC and Solent and Isle of Wight Lagoons are large sites which are not fully encompassed within the ZOI. As such, a detailed assessment of connectivity is undertaken to determine connectivity at a qualifying feature level (see Table 6.2).

Table 6.2 - Pre-screening of Annex I Habitat Qualifying Features

Site	Qualifying Feature
Solent Maritime SAC	Terrestrial features have no connectivity with the proposed marine activities. There is no potential for LSE and these feature basis. This includes annual vegetation of drift lines [1210], perennial vegetation of stony banks [1220], shifting dunes Ammophila arenaria ("white dunes") [2120] and Desmoulin's whorl snail (Vertigo moulinsiana) [1016].
	Coastal lagoons [1150] within the Solent Maritime SAC are located at a minimum distance of 8 km from the Proposed Devisolated from open waters by means of a sluice or seawall and therefore have no connectivity with the proposed activities, pare therefore screened out of the assessment.
	Estuaries [1130] are in close proximity to proposed activities and within the likely ZOI of the passive sediment plume. Conr therefore Estuaries will be assessed for LSE within the assessment.
	Sandbanks which are slightly covered by sea water all the time [1110] are located at the border of the intertidal and sull Corridor with a potential minimum distance of 0.24 km to the HDD entry/exit location (between KP1 and KP1.6). Connectivit Sandbanks which are slightly covered by sea water all the time will be considered for LSE within the assessment.
	Mudflats and sandflats not covered by seawater at low tide [1140] are located within the Marine Cable Corridor with a p to the HDD entry/exit location (between KP1 and KP1.6). Connectivity cannot therefore be excluded, and Mudflats and sand tide will be considered for LSE within the assessment.
	Spartina swards [1320]. Solent Maritime is the only site for smooth cord-grass <i>Spartina alterniflora</i> in the UK and is one of amounts of small cord-grass <i>S. maritima</i> are found. It is also one of the few remaining sites for Townsend's cord-grass (<i>S. x</i> areas of common cord-grass <i>Spartina anglica</i> , all four taxa thus occurring here in close proximity. Connectivity cannot be expected for LSE within the assessment.
	Atlantic salt meadows [1330]. Solent Maritime is a composite site composed of a large number of separate areas of saltme estuary, the salt meadows at this site are notable as being representative of the ungrazed type and support a different range purslane (<i>Atriplex portulacoides</i>), common sea-lavender (<i>Limonium vulgare</i>) and thrift (<i>Armeria maritima</i>). Connectivity can feature will be assessed for LSE within the assessment.
	Salicornia and other annuals colonising mud and sand [1310] for which the area is considered to support a significant p excluded, and therefore this feature will be assessed for LSE within the assessment.
South Wight Maritime SAC	Terrestrial features have no connectivity with marine activities and there is no potential for LSE. This applies to Vegetated s Coasts [1230] and it is therefore screened out of the assessment.
	Submerged or partially submerged sea caves [8330] occur intertidally in the chalk cliffs at the western end of the site bet (minimum 37 km from the Marine Cable Corridor, 50 km by sea) and are outside of the ZOI. Intertidal sea caves are also for Isle of Wight, to the west of the Marine Cable Corridor at a minimum distance of 10 km. Connectivity cannot therefore be ex submerged sea caves will be considered for LSE within the assessment.
	Reefs [1170] are located in the subtidal area to the east of the Isle of Wight, at a minimum distance of 3.3 km from the Mari cannot therefore be excluded, and Reefs will be considered for LSE within the assessment.
Solent and Isle of Wight Lagoons SAC	Located at a distance of 5 km from the Marine Cable Corridor, the Solent and Isle of Wight Lagoons SAC includes fourteen [1150]), the closest of which is located in Langstone Harbour (5 km), followed by Gilkicker (7 km), and four at Bembridge on marine features, but they are isolated from the sea by a sluice or seawall, receiving seawater either through percolation, cul considered that the Solent and Isle of Wight Lagoons site does not have connectivity with the Proposed Development and is assessment.



res are therefore screened out on this es along the shoreline with

evelopment. The lagoons are however precluding the possibility of LSE, and

nnectivity cannot be excluded, and

ubtidal zones within the Marine Cable vity cannot therefore be excluded, and

potential minimum distance of 0.2 km adflats not covered by seawater at low

of only two sites where significant *x townsendii)* and holds extensive excluded, and therefore this feature will

marsh. In contrast to the Severn ge of communities dominated by seannot be excluded, and therefore this

presence. Connectivity cannot be

sea cliffs of the Atlantic and Baltic

between Alum Bay and Freshwater Bay found at the base of Culver Cliff on the excluded and submerged or partially

rine Cable Corridor. Connectivity

n coastal lagoons (**Coastal Lagoons** on the Isle of Wight (8 km). These are ulverts or spring tides. It is therefore is therefore screened out of the

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Summary of Pre-screening

6.2.2.8. Table 6.3 shows where there is no connectivity between the Proposed Development and an SAC and its features, and also those sites/features for which LSE cannot be discounted.

Table 6.3 - European sites designated for Annex I habitats for which no connectivity exists and also for sites where LSE cannot be discounted

European Site	Approximate Distance from the Proposed Development (km)	Qualifying features	Pre-Screened in?
Solent Maritime SAC	0.0	Estuaries [1130]	Yes
UAU		Mudflats and sandflats (not submerged at low tide) [1140]	Yes
		Sandbanks (slightly covered by seawater all the time) [1110]	Yes
		Shifting dunes along the shoreline [2120]	No – terrestrial feature, no connectivity to marine activities
		Coastal lagoons [1150]	No – no connectivity due to isolation from sea and distance from activities
		Annual vegetation of drift lines [1210]	No – terrestrial feature, no connectivity to marine activities
		Perennial vegetation of stony banks [1220]	No – terrestrial feature, no connectivity to marine activities
		Salicornia and other annuals colonising mud and sand [1310]	Yes
		<i>Spartina</i> swards [1320].	Yes
		Atlantic salt meadows [1330].	Yes
		Desmoulin's whorl snail (<i>Vertigo moulinsiana</i>) [1016]	No – terrestrial species, no connectivity to marine activities

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European Site	Approximate Distance from the Proposed Development (km)	Qualifying features	Pre-Screened in?
South Wight Maritime	3.3	Reefs [1170]	Yes
SAC		Vegetated sea cliffs of the Atlantic and Baltic Coasts [1230]	No – terrestrial feature, no connectivity to marine activities
		Submerged or partially submerged sea caves [8330]	Yes
Solent and Isle of Wight Lagoons SAC	4.6	Coastal lagoons [1150]	No – no connectivity due to isolation from sea and distance from activities
Wight- Barfleur Reef SAC	34.0	Reefs [1170]	No – outside the ZOI
Bassurelle Sandbank SAC	60.0	Sandbanks (slightly covered by seawater all the time) [1110]	No – outside the ZOI
Studland to Portland SAC	70.0	Reefs [1170]	No – outside the ZOI
Ridens et dunes hydrauliques du détroit du Pas-de- Calais SAC	58.8	Annex I habitats	No – outside the ZOI
Littoral Cauchois SAC	52.7	Annex I habitats	No – outside the ZOI

6.2.3. ANNEX II DIADRAMOUS MIGRATORY FISH

6.2.3.1. The Proposed Development does not overlap the boundary of any European site which lists Annex II diadromous migratory fish as interest features and therefore no direct effects are expected. It is however, within the migratory range of Annex II fish species from a number of SACs and Ramsars on both the English and French side of the Channel. Pre-screening of sites for potential connectivity considered that all UK sites designated for Annex II diadromous fish species which connect to the



Channel via estuaries or rivers may have connectivity to the project (Figure 4.3, APP-494). For designated sites in French waters, all designated sites within the eastern Channel with Annex II diadromous fish features were considered to have potential for connectivity (Figure 4.4, APP-495, Rev 03). Those sites in French waters, west of the Bay of Seine were considered too distant to have potential for connectivity with the project.

6.2.3.2.

Nine European sites which list Annex II diadromous migratory fish have been identified as requiring further assessment due to potential connectivity with the project (Table 6.4).

Table 6.4 - Designated Sites with Potential for LSE on Annex II diadromous migratory fish

European Site	Approximate Distance from the Proposed Development (km)	Qualifying Features	Pre- Screened In?
River Itchen SAC	27.5	Salmon	Yes
River Avon SAC	51.4	Salmon Sea lamprey	Yes
Littoral Cauchois SAC	52.7	Twaite shad Sea lamprey River lamprey	Yes
Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC/Baie de Somme Ramsar	84.6	River lamprey	Yes
Baie de Canche et Couloir des trois Estuaires SAC	86.5	Allis shad Sea lamprey River lamprey Salmon	Yes
Estuaire de la Seine ZSC/Marais Vernier Ramsar	90	Salmon Twaite shad Sea lamprey River lamprey	Yes
Baie de Seine Orientale SAC	90.9	Allis shad Twaite shad Sea lamprey River lamprey Salmon	Yes
River Axe SAC	168	Sea lamprey	Yes
Plymouth Sound and Estuaries SAC	229	Allis shad	Yes

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6.2.4. MARINE MAMMALS

- 6.2.4.1. The potential for connectivity between the Proposed Development and SACs/Ramsars for which marine mammals are a primary reason for site selection/qualifying feature was assessed based on whether the Proposed Development fell within the likely foraging range of seals or likely population range of cetaceans using these SACs⁷ (Appendix 2 of this report, APP-502 and Figures 4-5 and 4-6, APP-496 and 497). Foraging range information for seals came from telemetry studies (mainly Sharples et al., 2012, Russell et al., 2017 and Vincent et al., 2017). However, telemetry studies have not been conducted for cetaceans in either the UK or France. Therefore, information on likely population range for cetacean species which are a feature of the closest SACs to the Proposed Development was used. For bottlenose dolphins this mainly came from individual identification (photo-ID) data (Pesante et al., 2008; Brereton et al., 2016). For harbour porpoises the Small Cetaceans in European Atlantic Waters and the North Sea ('SCANS') and SCANS II data (model-based density surfaces) were used (Hammond et al., 2013); these have yet to be released for SCANS III.
- 6.2.4.2. The closest UK SACs for each Annex II marine mammal species were as follows:
 - Grey seal Pembrokeshire Marine (542 km);
 - Harbour seal The Wash and North Norfolk Coast (370 km)⁸;
 - Bottlenose dolphin Cardigan Bay (618 km); and
 - Harbour porpoise Southern North Sea (137 km; Figure 4.5).
- 6.2.4.3. None of the UK marine mammal SACs considered were deemed to be close enough to the Proposed Development for there to be potential for connectivity (Appendix 2⁹) and have therefore been pre-screened out.
- 6.2.4.4. There is, however, considered to be potential for connectivity between the Proposed Development and seven French SACs which have been designated for marine mammals and one French Ramsar, for which grey and harbour seals were listed as 'species whose presence explains the international importance of the site', which are located in the eastern Channel (Table 6.5 and Figure 4.6). This is because the Proposed Development is considered to fall within the likely population range of cetacean species and/or the likely foraging range of seal species which are features of these SACs/Ramsars. Due to the potential for transboundary effects, these SACs/Ramsars (Table 6.5) have been pre-screened in for further assessment.

⁷ Ramsar sites for which marine mammals were listed as 'species whose presence explains the international importance of the site' were also considered.

⁸ The Wash Ramsar is also present at this location.

⁹ Natural England confirmed that they agreed with the conclusions of this document on 03/05/2019 by e-mail.



Table 6.5 - Designated Sites with marine mammal features where there is potential for LSE

LSE			
European Site	Approximate closest distance to the Proposed Development by sea (km)	Qualifying Features	Pre-Screened In?
Littoral Cauchois SAC	53	Bottlenose dolphin Harbour porpoise Grey seal Harbour seal	Yes
Ridens et dunes hydrauliques du détroit du Pas-de- Calais SAC	59	Harbour porpoise Grey seal Harbour seal	Yes
Baie de Canche et couloir des trois estuaires SAC	85	Harbour porpoise Grey seal Harbour seal	Yes
Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar ¹⁰	87	Bottlenose dolphin Harbour porpoise Grey seal Harbour seal	Yes
Estuaire de la Seine SAC ¹¹	90	Harbour porpoise Grey seal Harbour seal	Yes
Baie de Seine orientale SAC	91	Bottlenose dolphin Harbour porpoise Grey seal Harbour seal	Yes
Récifs Gris-Nez Blanc- Nez SAC	104	Harbour porpoise Grey seal Harbour seal	Yes
Southern North Sea SAC	137	Harbour porpoise	No
The Wash and North Norfolk Coast SAC	370	Harbour seal	No
Pembrokeshire Marine SAC	542	Grey seal	No

¹⁰ Of the four marine mammal features of the SAC which is in the same location, only grey seal and harbour seal are listed as 'species whose presence explains the international importance of the site' for the Baie de Somme Ramsar.

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¹¹ The Marais Vernier et Vallée de la Risle maritime Ramsar, which lists harbour seal under 'Noteworthy fauna', is in the same location as this SAC.



European Site	Approximate closest distance to the Proposed Development by sea (km)	Qualifying Features	Pre-Screened In?
Cardigan Bay SAC	618	Bottlenose dolphin Grey seal	No

6.2.5. MARINE ORNITHOLOGY

- 6.2.5.1. The Birds Directive provides for the protection, management and control of all species of naturally occurring wild birds in the European territory of Member States. SPAs are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive (2009). They are classified for rare and vulnerable birds (as listed on Annex I of the Directive) and for regularly occurring migratory species. UK Government policy states that Ramsar sites (designated under the Ramsar Convention 1971) and pSPAs are afforded the same protection as SPAs for the purpose of considering development proposals that may affect them.
- 6.2.5.2. The Proposed Development passes through the Solent and Dorset Coast SPA from the Landfall at Eastney out to approximately to KP16. This site is proposed to protect the marine foraging areas of qualifying interest features from colonies within adjacent classified SPAs: Poole Harbour SPA, Solent and Southampton Water SPA/Ramsar and Chichester and Langstone Harbour SPA/Ramsar. The qualifying interest features are common tern, Sandwich tern and little tern, with the site supporting more than 1% of the Great British breeding population of each species. Given that the UK Marine Cable Corridor passes through this SPA, there is potential for LSE and this site has been pre-screened in for further assessment.
- 6.2.5.3. Table 6.6 summarises the pre-screening on the Solent and Dorset Coast SPA features, in addition to other marine ornithology features known to be present within the study area.
- 6.2.5.4. The potential for LSE on features which are present above MLWS (e.g. terrestrial and intertidal species) is assessed separately in Section 6.3 (Onshore). It is considered that there is no route to impact on these features from activities within the UK Marine Cable Corridor and they are therefore not considered further within the marine section.
- 6.2.5.5. Where a mean-maximum foraging range, or more recent tracking data (where available), has been used to assess the potential for breeding seabirds to interact with the Proposed Development, the distance calculated is based on the boundary of the SPA/Ramsar site to the boundary of the Proposed Development.
- 6.2.5.6. In discussions with Natural England, pressures and effects on most supporting habitats were screened out of the assessment but it was requested that the potential for LSE on supporting habitat (water column) was considered in addition to marine



ornithology features for UK SPA and Ramsar sites (see Appendix 4 APP-504 and Consultation Report APP-025).

- 6.2.5.7. Following the initial pre-LSE screening stage outlined in Table 6.6 below, the following European sites have been screened out from further assessment as due to the distance of the sites from the Proposed Development and the mean-maximum foraging range of their features, it is considered that there is no potential for connectivity with the Proposed Development (see Figures 4.7 and 4.8):
 - Dungeness, Romney Marsh and Rye Bay SPA/Ramsar site;
 - Poole Harbour SPA; and
 - Estuaire et Marais de la Basse Seine SPA/Marais Vernier Ramsar.

Relevant SPA/Ramsar	Indicative distance from SPA/Ramsar to Proposed Development	Features present in the study area	Use of Proposed Development	Mean-maximum breeding season foraging range (Thaxter <i>et al.</i> , 2012)	Pre-scre
Solent and Dorset Coast SPA	0.0 km*	Sandwich tern (B)	Summer visitor present in moderate densities within inshore waters between March and September.	49.0 km	Yes, qual distance
		Common tern (B)	Summer visitor present in moderate densities within inshore waters between April and September.	15.2 km	Yes, qual distance
		Little tern (B)	Summer visitor present in low to moderate densities within coastal waters between April and September.	6.3 km	Yes, qual distance
		Supporting habitat (water column)	N/A	N/A	Yes, supp
Chichester and Langstone Harbours	0.1 km	Red-breasted merganser (W)	Present in inshore waters during the winter, with concentrations in Chichester, Langstone and Portsmouth Harbours.	N/A	Yes, qual distance
SPA/Ramsar site		Sandwich tern (B)	Summer visitor present in moderate densities within inshore waters between March and September.	49.0 km	Yes, qual the Propo
		Common tern (B)	Summer visitor present in moderate densities within inshore waters between April and September.	15.2 km	Yes, qual distance
		Little tern (B)	Summer visitor present in low to moderate densities within coastal waters between April and September.	6.3 km	Yes, qual distance
		Supporting habitat (water column)	N/A	N/A	Yes, supp
Portsmouth Harbour SPA/Ramsar site	4.9 km	Red-breasted merganser (W)	Present in inshore waters during the winter, with concentrations in Chichester, Langstone and Portsmouth Harbours.	N/A	Yes, qual distance
		Supporting habitat (water column)	N/A	N/A	Yes, supp
Solent and Southampton Water SPA/Ramsar site	6.6 km	Sandwich tern (B)	Summer visitor present in moderate densities within inshore waters between March and September.	49.0 km	Yes, qual distance
		Common tern (B)	Summer visitor present in moderate densities within inshore waters between April and September.	15.2 km	Yes, qual distance
		Roseate tern (B)	Summer visitor present in very low densities within inshore waters between May and August.	16.6 km	Yes, qual distance

Table 6.6 - Potential for LSE on SPA and	nd Ramsar marine ornithological features
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Relevant SPA/Ramsar	Indicative distance from SPA/Ramsar to Proposed Development	Features present in the study area	Use of Proposed Development	Mean-maximum breeding season foraging range (Thaxter <i>et al.</i> , 2012)	Pre-scre
		Little tern (B)	Summer visitor present in low to moderate densities within coastal waters between April and September.	6.3 km	Yes, qual distance
		Mediterranean gull (B)	Present year-round in low-moderate densities, predominantly in coastal waters.	20.0 km	Yes, qual distance of
		Supporting habitat (water column)	N/A	N/A	Yes, supp
Pagham Harbour SPA/Ramsar site	9.5 km	Common tern (B)	Summer visitor present in moderate densities within inshore waters between April and September.	15.2 km	Yes, qual distance of
		Little tern (B)	Summer visitor present in low to moderate densities within coastal waters between April and September.	6.3 km	No, no co and Prop
		Supporting habitat (water column)	N/A	N/A	Yes, supp
Littoral-Seino Marin SPA	n 30.6 km	Common scoter (W)	Present from early autumn through the winter months at low densities, largely in inshore waters. Higher densities occur elsewhere along the southern coast of England.	N/A	No, no co and Prop
		Eider (W)	Present in low densities largely in inshore waters during mid-winter.	N/A	No, no co and Prop
		Red-throated diver (W)	Present during winter at a low density in coastal waters.	N/A	No, no co and Prop
		Great northern diver (W)	Scarce winter visitor, present in very low densities in coastal waters.	N/A	No, no co and Prop
		Black-throated diver (W)	Scarce winter visitor, present in very low densities in coastal waters.	N/A	No, no co and Prop
		Great crested grebe (W)	Present in inshore waters during winter at a low density	N/A	No, no co and Prop
		Black-necked grebe (W)	Present along the Hampshire and Dorset coastlines, particularly in Langstone and Poole Harbours	N/A	No, no co and Prop
		Slavonian grebe (W)	Present along the Sussex coast in relatively low densities, particularly in Pagham Harbour.	N/A	No, no co and Prop
		Red-breasted merganser (W)	Present in inshore waters during the winter, with concentrations in Chichester, Langstone and Portsmouth Harbours.	N/A	No, no co and Prop
		Fulmar (B)	Present throughout the Channel year-round, but widely distributed at sea, with relatively low densities present in study area.	400.0 km	Yes, qual distance



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Relevant SPA/Ramsar	Indicative distance from SPA/Ramsar to Proposed Development	Features present in the study area	Use of Proposed Development	Mean-maximum breeding season foraging range (Thaxter <i>et al.</i> , 2012)	Pre-scree
		Manx shearwater (P)	Peak numbers present during passage periods with low densities also present during the breeding season.	N/A	No, no co and Propo
		Balearic shearwater (P)	Low densities present during passage, peaking in autumn.	N/A	No, no co and Propo
		Storm petrel (P)	Low densities present year-round, peaking during migration.	N/A	No, no co and Propo
		Gannet (W)	Moderate densities present throughout the Channel year-round.	N/A	No, no co and Propo
		Cormorant (B)	Low-moderate densities present year-round in inshore waters.	25.0 km	No, no co and Propo
		Shag (B)	Low densities present year-round in inshore waters	14.5 km	No, no co and Propo
		Great skua (P)	Low densities present during passage.	N/A	No, no co and Propo
		Arctic skua (P)	Low densities present during passage.	N/A	No, no co and Propo
		Pomarine skua (P)	Very low densities present during passage.	N/A	No, no co and Propo
		Sandwich tern (P)	Summer visitor present in moderate densities within inshore waters between March and September.	N/A	No, no co and Propo
		Common tern (P)	Summer visitor present in moderate densities within inshore waters between April and September.	N/A	No, no co and Propo
		Arctic tern (P)	Low densities present during passage as birds breeding at more northerly colonies pass through the Channel.	N/A	No, no co and Propo
		Little tern (P)	Summer visitor present in low to moderate densities within coastal waters between April and September.	N/A	No, no co and Propo
		Great black-backed gull (B)	Present year-round in low-moderate densities throughout the Channel.	61.1 km**	Yes, quali distance d
		Herring gull (B)	Present year-round in moderate densities throughout the Channel.	61.1 km	Yes, quali distance d
		Lesser black-backed gull (W)	Present year-round in moderate densities throughout the Channel.	N/A	No, no co and Propo
		Kittiwake (B)	Present throughout the Channel year-round with higher densities present in the winter.	60.0 km	Yes, quali distance c



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Relevant SPA/Ramsar	Indicative distance from SPA/Ramsar to Proposed Development	Features present in the study area	Use of Proposed Development	Mean-maximum breeding season foraging range (Thaxter <i>et al.</i> , 2012)	Pre-scre
		Mediterranean gull (W)	Present year-round in low-moderate densities, predominantly in coastal waters.	N/A	No, no co and Prop
		Little gull (W)	Present throughout the Channel in low densities during migration.	N/A	No, no co and Prop
		Guillemot (W)	Present throughout the Channel year-round in moderate densities. Higher densities present in the winter.	N/A	No, no co and Prop
		Razorbill (W)	Present throughout the Channel year-round in low-moderate densities. Higher densities present in the winter.	N/A	No, no co and Prop
Dungeness, Romney Marsh and Rye Bay	61.0 km	Sandwich tern (B)	Summer visitor present in moderate densities within inshore waters between March and September.	49.0 km	No, no co and Prop
SPA/Ramsar site		Common tern (B)	Summer visitor present in moderate densities within inshore waters between April and September.	season foraging range (Thaxter et al., 2012)es,N/ANo, andN/ANo, andN/ANo, andIn nt in nt inN/ANo, andIn nt in thinN/ANo, andIn nt in thinN/ANo, andIn nt in thinN/ANo, andIn es49.0 kmNo, andes15.2 kmNo, andes,20.0 kmNo, andes,20.0 kmNo, andes,15.2 kmNo, andes,20.0 kmNo, andes,15.2 kmNo, andes,20.0 kmNo, andes,15.2 kmNo, andes,20.0 kmNo, and <trt< td=""><td>No, no co and Prop</td></trt<>	No, no co and Prop
		Little tern (B)	Summer visitor present in low to moderate densities within coastal waters between April and September.	6.3 km	No, no co and Prop
		Mediterranean gull (B)	Present year-round in low-moderate densities, predominantly in coastal waters.	20.0 km	No, no co and Prop
		Supporting habitat (water column)	N/A	N/A	No, no co and Prop
Poole Harbour SPA	63.8 km	Sandwich tern (B)	Summer visitor present in moderate densities within inshore waters between March and September.	49.0 km	No, no co and Prop
		Common tern (B)	Summer visitor present in moderate densities within inshore waters between April and September.	15.2 km	No, no co and Prop
		Mediterranean gull (B)			No, no co and Prop
		Supporting habitat (water column)	N/A	N/A	No, no co and Prop
Estuaire et Marais de la Basse Seine SPA/ZPS	86.9 km	Common scoter (W)	Present from early autumn through the winter months at low densities, largely in inshore waters. Higher densities occur elsewhere along the southern coast of England.	N/A	No, no co and Prop
		Eider (W)	Present in low densities largely in inshore waters during mid-winter	N/A	No, no co and Prop



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Relevant SPA/Ramsar	Indicative distance from SPA/Ramsar to Proposed Development	Features present in the study area	Use of Proposed Development	Mean-maximum breeding season foraging range (Thaxter <i>et al.</i> , 2012)	Pre-scree
		Red-throated diver (W)	Present during winter at a low density in coastal waters.	N/A	No, no co and Propo
		Great northern diver (W)	Scarce winter visitor, present in very low densities in coastal waters.	N/A	No, no co and Propo
		Black-throated diver (W)	Scarce winter visitor, present in very low densities in coastal waters.	N/A	No, no co and Propo
		Cormorant (W)	Low-moderate densities present year-round in inshore waters.	N/A	No, no co and Propo
		Great crested grebe (W)	Present in inshore waters during winter at a low density	N/A	No, no co and Propo
		Red-necked grebe (W)	Present in inshore waters during winter at a low density	N/A	No, no co and Propo
		Slavonian grebe (W)	Present along the Sussex coast in relatively low densities, particularly in Pagham Harbour.	N/A	No, no co and Propo
		Red-breasted merganser (W)	Present in inshore waters during the winter, with concentrations in Chichester, Langstone and Portsmouth Harbours.	N/A	No, no co and Propo
		Great skua (P)	Low densities present during passage.	N/A	No, no co and Propo
		Arctic skua (P)	Low densities present during passage.	N/A	No, no co and Propo
		Sandwich tern (P)	Summer visitor present in moderate densities within inshore waters between March and September.	49.0 km	No, no co and Propo
		Common tern (P)	Summer visitor present in moderate densities within inshore waters between April and September.	15.2 km	No, no co and Propo
		Arctic tern (P)	Low densities present during passage as birds breeding at more northerly colonies pass through the Channel.	N/A	No, no co and Propo
		Mediterranean gull (P)	Present year-round in low-moderate densities, predominantly in coastal waters.	20.0 km	No, no co and Propo
		Little gull (P)	Present throughout the Channel in low densities during migration.	N/A	No, no co and Propo
		Guillemot (W)	Present throughout the Channel year-round in moderate densities. Higher densities present in the winter.	N/A	No, no co and Propo
		Razorbill (W)	Present throughout the Channel year-round in low-moderate densities. Higher densities present in the winter.	N/A	No, no co and Propo



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Relevant SPA/Ramsar	Indicative distance from SPA/Ramsar to Proposed Development	Features present in the study area	Use of Proposed Development	Mean-maximum breeding season foraging range (Thaxter <i>et al.</i> , 2012)	Pre-scre
Alderney West Coast and Burhou Islands Ramsar site	142.0 km	Storm petrel (B)	Peak numbers present during passage periods with low densities also present during the breeding season.	>65.0 km	Yes, qual distance
		Gannet (B)	Gannets are present in the Channel year- round, being one of the most frequently recorded species encountered. Peak numbers occur during the breeding season	229.4 km**	Yes, qual distance
		Great black-backed gull (B)	Present year-round in low-moderate densities throughout the Channel.	61.1 km***	No, no co and Prop
		Cormorant (B)	Low-moderate densities present year-round in inshore waters.	25.0 km	No, no co and Prop
		Shag (B)	Low densities present year-round in inshore waters	14.5 km	No, no co and Prop
		Herring gull (B)	Present year-round in moderate densities throughout the Channel.	61.1 km	No, no co and Prop
		Lesser black-backed gull (B)	Present year-round in moderate densities throughout the Channel.	141.0 km	Yes, qual distance
		Kittiwake (B)	Present throughout the Channel year-round with higher densities present in the winter. This species is no longer present within this Ramsar (D. Clifford 2019, pers. comm.).	60.0 km	No, no co and Prop and spec the Rams
		Guillemot (B)	Present throughout the Channel year-round in moderate densities. Higher densities present in the winter.	84.2 km	No, no co and Prop
		Razorbill (B)	Present throughout the Channel year-round in low-moderate densities. Higher densities present in the winter.	48.5 km	No, no co and Prop
		Puffin (B)	Present throughout the Channel year-round in low-moderate densities. Higher densities present in the winter.	105.4 km	No, no co and Prop

Key: (B) = breeding; (W) = wintering; (P) = passage; * = Proposed Development overlaps with this designated site; ** = considered to be conservative based on mean-maximum foraging ranges of gannets breeding at Les Etacs and Ortac, Alderney, as presented in Warwick-Evans *et al.*, (2016); *** = in the absence of a species-specific mean-max foraging range, herring gull was used as a proxy for great black-backed gull. Herring gull was considered to be the most suitable model species, as lesser black-backed gull (*Larus fuscus*) is a long distant migrant (unlike great black-backed gull) and is morphologically adapted to longer flights (Snow & Perrins 1998; Klaassen *et al.*, 2011). The mean maximum foraging range cited for herring gull is 61.1 ± 44 km (Thaxter *et al.*, 2012).



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6.3. INITIAL IDENTIFICATION OF SITES AND FEATURES – ONSHORE ENVIRONMENT

6.3.1. SITES DESIGNATED FOR ANNEX I HABITATS

- 6.3.1.1. Any site that includes Annex I habitats that is directly affected by the Proposed Development would be screened into assessment along with all its interest features. In this instance, 'directly' means where the Onshore Cable Corridor search area passes through the European site.
- 6.3.1.2. It is expected that works in the onshore environment from the Proposed Development (see Section 3.4) will have limited connectivity to any habitats that are not immediately adjacent through a lack of hydrological connectivity and the nature of the construction methodologies applied.
- 6.3.1.3. An element of the onshore cable corridor also crosses the Solent Maritime SAC (Plate 5.2) and there is therefore potential for connectivity. The SAC is a large site that is not fully encompassed by any ZOI from the onshore elements of the Proposed Development. Features that are present below MLWS are fully assessed under Annex I habitats in the marine environment sections see Section 6.2.2.
- 6.3.1.4. Further European sites in the marine and coastal environment that have been identified, include Solent and Isle of Wight Lagoon SAC (6 km from the onshore cable corridor) and South Wight Maritime SAC (8.1 km from the Onshore Cable Corridor). These sites are both fully considered within the marine environment sections of this HRA see Section 6.2.2.
- 6.3.1.5. Butser Hill SAC lies 5.6 km from the Converter Station Area. This European Site is situated on the east Hampshire chalk which forms part of the South Downs. Much of the site consists of CG2 *Festuca ovina Avenula pratense* grassland. The site has a varied range of slope gradients and aspects which has a strong influence on the vegetation composition. A particular feature of the site is its lower plant assemblage. It has the richest terricolous lichen flora of any chalk grassland site in England, and also supports the distinctive *Scapanietum asperae* or southern hepatic mat association of leafy liverworts and mosses on north-facing chalk slopes. This association is very rare in the UK and Butser Hill supports the largest known example. The site exhibits various transitions between semi-natural dry grassland, chalk heath, mixed scrub and 91J0 *Taxus baccata* woods.
- 6.3.1.6. Considering the distance between the Proposed Development and Butser Hill SAC there is concluded to be no connectivity and no potential for Likely significant effects.

6.3.2. SITES DESIGNATED FOR ANNEX II SPECIES

6.3.2.1. Any site that includes Annex II species that is directly affected by the Proposed Development would be screened into the assessment along with its Annex II species features. On this basis the term 'directly' refers to where the onshore elements of the Proposed Development are within or directly adjacent to the European Site.



- 6.3.2.2. Further consideration is given to Annex II ecological features that are distinctly mobile which therefore have a wider potential for connectivity with the Proposed Development. CIEEM (2016) provides the appropriate guidance for taking into account species distribution and ecology. Areas of search for these species include:
 - Bats Sites within 10km of the onshore elements of the Proposed Development would be screened into the Assessment; and
 - Otters Sites within 5 km of the onshore elements Proposed Development would be screened into the Assessment.
- 6.3.2.3. No European Site lies within 10 km of the onshore elements of the Proposed Development that supports terrestrial Annex II species.

6.3.3. SITES DESIGNATED FOR ORNITHOLOGICAL FEATURES

- 6.3.3.1. Any European sites that are directly affected by the Proposed Development have been screened into the assessment along with its ornithological features. As with Annex II features, the term 'directly' refers to where to Sites which overlap or are adjacent to the onshore elements of the Proposed Development.
- 6.3.3.2. In addition, sites designated for ornithological features which are located within 10 km of the Proposed Development have also been included for assessment. Foraging range of breeding seabirds (e.g. Thaxter *et al.*, 2012) has not been included as criteria for screening for the onshore element of the Proposed Development due to the limited potential for interaction with onshore works. These criteria are, however, fundamental in determining screening conclusions with regards to the marine components of the Proposed Development (see Section 6.2.5).
- 6.3.3.3. The Proposed Development passes through and borders Chichester and Langstone Harbours SPA and is immediately adjacent to the Solent and Dorset Coast SPA. As the SPA is designated for foraging areas for breeding tern species this is considered to have connectivity with the marine elements of the Proposed Development only. A similar consideration is also given to features which are ordinarily present in the marine environment only (i.e. below MLWS) such as red-breasted merganser. These features are fully considered within the marine ornithology sections of this HRA – see Section 6.2.5.
- 6.3.3.4. Table 6.7 provides a summary of sites and ornithological features that lie within 10 km of the onshore elements of the Proposed Development.

elevant SPA/Ramsar	Distance from SPA/Ramsar to Proposed Development	Features	Potential for LSE?
hichester and Langstone Harbours PA/Ramsar site ¹²	0.0 km, partly overlapping	Sandwich tern (B*) Little tern (B***) Common tern (B*) Pintail (W*) Shoveler (W*) Wigeon (W*) Turnstone (W*) Dark-bellied brent goose (W***) Sanderling (W*) Dunlin (W***) Ringed Plover (W***) Grey plover (W***) Bar-tailed godwit (W) Black-tailed godwit (W**) Red-breasted merganser (W***) Curlew (W*) Shelduck (W***) Redshank (W***) Waterfowl assemblage (W***)	Yes – onshore elements directly a merganser is however considered assessment of marine ornithology onshore elements of the Proposed
elent and Dorset Coast SPA	0.0 km, adjacent	Sandwich tern (B) Little tern (B) Common tern (B)	No - This site is proposed to prote interest features from colonies wit Chichester and Langstone Harbou connectivity with the onshore com considered to occur.
ortsmouth Harbour SPA/Ramsar site	2.2 km	Dark-bellied brent goose (W***) Dunlin (W*) Black-tailed godwit (W*) Red-breasted merganser (W*)	Yes – while direct impacts to the S occur outwith the site adjacent to t merganser is considered to be a fe of marine ornithology and no LSE components of the Proposed Deve
elent and Southampton Water A/Ramsar site	7.1 km	Teal (W***) Dark-bellied brent goose (W***) Ringed plover (W*) Mediterranean gull (B***) Black-tailed godwit (W***) Little tern (B*) Roseate tern (B*) Common tern (B*) Sandwich tern (B*) Waterfowl Assemblage (W***)	No - although Solent and Dorset c foraging tern species from this SP the SPA area adjacent to the onsh as detailed in the Departmental Br With regards wintering bird feature so that impacts from the onshore of not considered likely.
ey: B – breeding feature; W – wintering	feature; P – Passage feature. ; *** –	Roseat Commo Sandwi Waterfo	te tern (B*) on tern (B*) ich tern (B*) owl Assemblage (W***)

Table 6.7 - Potential for LSE on SPA and Ramsar ornithological features from onshore components of the Proposed Development

¹² Additional species listed on the SPA Review (2001) include Little Egret (P/W), black-tailed godwit (W)



adjacent to the SPA. Red-breasted ed to be a feature of relevance only to the by and no LSE is considered with respect to ed Development.

otect the marine foraging areas of qualifying within adjacent classified SPAs including ours SPA and as such no potential mponents of the Proposed Development are

Site itself are unlikely, features are likely to the Proposed Development. Red-breasted feature of relevance only to the assessment E is considered with respect to onshore velopment.

coast SPA features include provision for PA, these are considered not likely to reach shore element of the Proposed Development Brief for the SPA (Natural England, 2016). Irres, the SPA/Ramsar is sufficiently distant e element of the Proposed Development are

WSP/Natural Power



6.4. POTENTIAL EFFECTS – MARINE ENVIRONMENT

- 6.4.1.1. The following sections should be read in conjunction with Appendix 1 and Appendix 5 (APP-501, Rev 002 and 7.7.10) of this report. Appendix 1 presents the screening matrices for European Marine Sites (e.g. SACs and SPAs) and Appendix 5 presents the screening matrices for Ramsars.
- 6.4.1.2. For Ramsar sites, the features assessed are those features under the criteria applied to the designation of the Ramsar site in the relevant Ramsar Information Sheets. The Natural England Designated Sites View¹³ states that a decision has been made by Defra and Natural England not to produce Conservation Advice packages, instead focussing on the production of High Level Conservation Objectives. As the provisions on the Habitats Regulations relating to HRA extends to Ramsar sites, Natural England considers the Conservation Advice packages for the overlapping European Marine Site designations to be, in most cases, sufficient to support the management of the Ramsar interests. Assessments presented in Sections 7, 8 and 10 of this document for Ramsars have been undertaken in line with this approach.

6.4.2. ANNEX I HABITATS

- 6.4.2.1. Where there is no connectivity between the Proposed Development and qualifying features of SACs, LSE can be discounted. Features of sites where potential connectivity cannot be discounted have been taken forward to a more detailed LSE screening assessment (see Table 6.3).
- 6.4.2.2. Natural England's Advice on Operations matrix lists a number of pressures for power cables (laying, burial and protection; operation and maintenance; decommissioning) and cables (HDD) in relation to designated sites (Natural England, 2020). Information on potential pressures associated with cabling activities was available from the Natural England Designated Sites View for Advice on Operations for the following European sites:
 - Solent Maritime¹⁴
 - South Wight Maritime¹⁵
- 6.4.2.3. Each pressure identified is given a risk level (Medium-High risk or Low risk), assessed against each interest feature of a designated site and an interaction type assigned (S

 ¹³ Available online from: <u>https://designatedsites.naturalengland.org.uk/</u>
 ¹⁴

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030059&SiteName=sole nt%20maritime&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IF CAArea=&NumMarineSeasonality= Dated 13th March 2020

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030061&SiteName=sout h%20wight&SiteNameDisplay=South+Wight+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=& IFCAArea=&NumMarineSeasonality=Dated 13th March 2020



– Sensitive; IE – Insufficient evidence to assess; NA – Not assessed; NS – Not sensitive at the benchmark).

- 6.4.2.4. For all the UK SACs being considered as part of the LSE screening stage, those pressures (both Medium-High risk or Low risk) for which Annex I habitats have been classed as 'sensitive', 'Insufficient Evidence' or "Not Assessed" have been included in the assessment.
- 6.4.2.5. Given the broad spectrum of pressures itemised on the Advice on Operations matrix in relation to power cables, identified pressures have been categorised into effects which can then be assessed (Table 6.8).

Table 6.8 - Predicted effects of the marine elements of the Proposed Development on relevant Annex I habitat Qualifying Features [C = construction phase O = operation phase D = decommissioning phase]

Site	Qualifying Feature	Pressure
Solent	Estuaries	Abrasion/disturbance of the substrate on the surface of the seabed (C, O, D)
Maritime SAC		Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion (C, O, D)
		Vibration (C, O, D)
		Changes in suspended solids (water clarity) (C, O, D)
		Deoxygenation (C, O, D)
		Nutrient enrichment (C, O, D)
		Organic Enrichment (C)
		Smothering and siltation rate changes (light) (C, O, D)
		Smothering and siltation rate changes (Heavy) (C, O)
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)
		Habitat structure changes - removal of substratum (extraction) (C, D)
		Physical change (to another seabed type) (C, O, D)
		Physical change (to another sediment type) (C, O, D)
		Physical loss (to land or freshwater habitat) (C, O)
		Litter (C, O, D)
		Introduction of other substances (solid, liquid or gas) (C)
		Hydrocarbon & Pesticides and Polycyclic Hydrocarbons ('PAH') contamination (C, O, D)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)
		Introduction of light (C, O, D)
		Introduction or spread of invasive non-indigenous species ('INIS') (C, O, D)
		Barrier to species movement (C, O)
		Electromagnetic changes (O)
		Temperature decrease (O)
		Temperature increase (O)
		Water flow (tidal current) changes, including sediment transport considerations (C, O, D)
		Wave exposure changes (C)
		Emergence regime changes, including tidal level change considerations (C)
	Mudflats and sand	Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion (C, O, D)
	flats not	Abrasion/disturbance of the substrate on the surface of the seabed (C, O, D)
	submerged at low	Changes in suspended solids (water clarity) (C, O, D)
	tide	Deoxygenation (C, O, D)
		Nutrient enrichment (C, O, D)
		Organic Enrichment (C)
		Transition elements & organo-metal (e.g. TBT) contamination (C , O , D)
		$(\mathbf{v}, \mathbf{v}, \mathbf{v})$



Effect
Habitat disturbance
Increased Suspended Sediment Concentration (SSC)
Deposition of sediment (smothering)
Resuspension of contaminated sediments Habitat loss
Pollution
Increased light (Pollution)
Invasive species
Electromagnetic Field (EMF)
Temperature changes
Hydrodynamic changes
Habitat disturbance
Increased SSC
Resuspension of contaminated sediments

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Site	Qualifying Feature	Pressure
		Smothering and siltation rate changes (light) (C, O, D)
		Smothering and siltation rate changes (Heavy) (C)
		Habitat structure changes - removal of substratum (extraction) (C, D)
		Physical change (to another sediment type) (C, O, D)
		Physical Change (to another Seabed type) (C)
		Physical loss (to land or freshwater habitat) (C, O)
		Litter (C, O, D)
		Introduction of other substances (solid, liquid or gas) (C)
		Hydrocarbon & PAH contamination (C, O, D)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)
		Introduction of light (C, O, D)
		Introduction or spread of INIS (C, O, D)
		Electromagnetic changes (O)
		Temperature decrease (O)
		Temperature increase (O)
		Water flow (tidal current) changes, including sediment transport considerations (C, O, D)
		Wave exposure changes (C)
		Emergence regime changes, including tidal level change considerations (C)
	Sandbanks slightly	Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion (C, O, D)
	covered by	Abrasion/disturbance of the substrate on the surface of the seabed (C, O, D)
	seawater all the time	Changes in suspended solids (water clarity) (C, O, D)
	une	Deoxygenation (C, O, D)
		Organic Enrichment (C)
		Nutrient enrichment (C, O, D)
		Smothering and siltation rate changes (light) (C, O, D)
		Smothering and siltation rate changes (Heavy) (C)
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)
		Habitat structure changes - removal of substratum (extraction) (C, D)
		Physical change (to another seabed type) (C, O, D)
		Physical change (to another sediment type) (C, O, D)
		Physical loss (to land or freshwater habitat) (C, O)
		Litter (C, O, D)
		Introduction of other substances (solid, liquid or gas) (C)
		Hydrocarbon & PAH contamination (C, O, D)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)
		Introduction of light (C, O, D)
		Introduction or spread of INIS (C, O, D)



Deposition of sediment (smothering) Habitat Loss

Pollution

Increased light (Pollution) Invasive species EMF Temperature changes

Hydrodynamic changes

Habitat disturbance

Increased SSC

Deposition of sediment (smothering) Resuspension of contaminated sediments Habitat loss

Pollution

Increased light (Pollution) Invasive species

WSP/Natural Power

Site	Qualifying Feature	Pressure
		Electromagnetic changes (O)
		Temperature decrease (O)
		Temperature increase (O)
		Water flow (tidal current) changes, including sediment transport considerations (C, O, D)
		Wave exposure changes (C,)
		Emergence regime changes, including tidal level change considerations (C)
	Spartina swards	Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion (C, O, D)
	-,	Abrasion/disturbance of the substrate on the surface of the seabed (C, O, D)
		Vibration (C, O, D)
		Changes in suspended solids (water clarity) (C, O, D)
		Smothering and siltation rate changes (Heavy) (C)
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)
		Habitat structure changes - removal of substratum (extraction) (C, D)
		Physical change (to another sediment type) (C, O, D)
		Physical loss (to land or freshwater habitat) (C, O)
		Litter (C, O, D)
		Introduction of other substances (solid, liquid or gas) (C)
		Hydrocarbon & PAH contamination (C, O, D)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)
		Introduction or spread of INIS (C, O, D)
		Barrier to species movement (C, O)
		Electromagnetic changes (O)
		Temperature decrease (O)
		Temperature increase (O)
		Emergence Regime Changes (C)
	Atlantic salt	Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion (C, O, D)
	meadows	Abrasion/disturbance of the substrate on the surface of the seabed (C, O, D)
		Vibration (C, O, D)
		Changes in suspended solids (water clarity) (C, O, D)
		Smothering and siltation rate changes (Heavy) (C)
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)
		Habitat structure changes - removal of substratum (extraction) (C, D)
		Physical change (to another sediment type) (C, O, D)
		Physical loss (to land or freshwater habitat) (C, O)
		Litter (C, O, D)



Effect
EMF
Temperature changes
remperature changes
Hydrodynamic changes
Habitat disturbance
 Increased SSC
Deposition of sediment
(smothering)
Resuspension of
contaminated sediments
Habitat loss
Pollution
 Invasive species
EMF
 Temperature changes
Hydrodynamic changes
Habitat disturbance
Increased SSC
Deposition of sediment
(smothering)
Resuspension of contaminated sediments
Habitat loss
Pollution

WSP/Natural Power

Site	Qualifying Feature	Pressure
		Introduction of other substances (solid, liquid or gas) (C)
		Hydrocarbon & PAH contamination (C, O, D)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)
		Introduction or spread of INIS (C, O, D)
		Barrier to species movement (C, O)
		Electromagnetic changes (O)
		Temperature decrease (O)
		Temperature increase (O)
		Emergence Regime Changes (C)
	Salicornia and other annuals	Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion (C, O, D) Abrasion/disturbance of the substrate on the surface of the seabed (C, O, D)
	colonising mud and	Vibration (C, O, D)
	sand	Changes in suspended solids (water clarity) (C, O, D)
		Smothering and siltation rate changes (Heavy) (C)
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)
		Habitat structure changes - removal of substratum (extraction) (C, D)
		Physical change (to another sediment type) (C, O, D)
		Physical loss (to land or freshwater habitat) (C, O)
		Litter (C, O, D)
		Introduction of other substances (solid, liquid or gas) (C)
		Hydrocarbon & PAH contamination (C, O, D)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)
		Introduction or spread of INIS (C, O, D)
		Barrier to species movement (C, O)
		Electromagnetic changes (O)
		Temperature decrease (O)
		Temperature increase (O)
		Emergence Regime Changes (C)
South Wight Maritime	Reefs	Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion (C, O, D)
Wantine		Abrasion/disturbance of the substrate on the surface of the seabed (C, O, D)
		Changes in suspended solids (water clarity) (C, O, D)
		Deoxygenation (C, O, D)
		Organic enrichment (C)
		Nutrient enrichment (C, O, D)
		Transition elements & organo-metal (e.g. TBT) contamination (C , O , D)
		$(\mathbf{C}, \mathbf{V}, \mathbf{D})$



Invasive species EMF

Temperature changes

Hydrodynamic changes Habitat disturbance

Increased SSC Deposition of sediment (smothering) Resuspension of contaminated sediments Habitat loss

Pollution

Invasive species EMF

Temperature changes

Hydrodynamic changes Habitat disturbance

Increased SSC

Resuspension of contaminated sediments

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Site	Qualifying Feature	Pressure
		Smothering and siltation rate changes (light) (C, O, D)
		Smothering and siltation rate changes (Heavy) (C)
		Habitat structure changes - removal of substratum (extraction) (C, D)
		Physical change (to another seabed type) (C, O, D)
		Physical change (to another sediment type) (C)
		Physical loss (to land or freshwater habitat) (C, O)
		Litter (C, O, D)
		Introduction of other substances (solid, liquid or gas) (C)
		Hydrocarbon & PAH contamination (C, O, D)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)
		Introduction of light (C, O, D)
		Introduction or spread of INIS (C, O, D) Underwater noise changes (C, O, D)
		Barrier to species movement (C)
		Electromagnetic changes (O)
		Temperature decrease (O)
		Temperature increase (O)
		Water flow (tidal current) changes, including sediment transport considerations (C, O, D)
		Emergence Regime Changes (C)
		Wave exposure changes (C)
	Submerged or	Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion (C, O, D)
	partially	Abrasion/disturbance of the substrate on the surface of the seabed (C, O, D)
	submerged sea	Changes in suspended solids (water clarity) (C, O, D)
	caves	Deoxygenation (C, O, D)
		Nutrient enrichment (C, O, D)
		Smothering and siltation rate changes (light) (C, O, D)
		Smothering and Siltation rate changes (heavy) (C)
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)
		Habitat structure changes - removal of substratum (extraction) (C, D)
		Physical change (to another seabed type) (C, O, D)
		Physical loss (to land or freshwater habitat) (C, O)
		Litter (C, O, D)
		Hydrocarbon & PAH contamination (C, O, D)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)
		Introduction of light (C, O)
		Introduction or spread of INIS (C, O, D)
		Electromagnetic changes (O)
		Temperature decrease (O)



Deposition of sediment (smothering) Habitat loss

Pollution

Increased light (Pollution) Invasive species Noise and vibration EMF

Temperature changes

Hydrodynamic changes

Habitat disturbance

Increased SSC

Deposition of sediment (smothering) Resuspension of contaminated sediments Habitat loss

Pollution

Increased light (Pollution) Invasive species EMF Temperature changes

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Site	Qualifying Feature	Pressure
		Temperature increase (O)
		Water flow (tidal current) changes, including sediment transport considerations (C, O, D)
		Emergence Regime Changes (C)



Hydrodynamic changes

WSP/Natural Power



6.4.3. ANNEX II DIADROMOUS MIGRATORY FISH

- 6.4.3.1. Natural England's Advice on Operations matrix lists a number of pressures for power cables (laying, burial and protection; operation and maintenance; decommissioning) and cables (HDD) in relation to designated sites (Natural England, 2020).
- 6.4.3.2. These pressures are given a risk level (low or Medium-High Risk) and are assessed against each interest feature of a designated site.
- 6.4.3.3. Those pressures for which Annex II diadromous fish species have been classed as 'sensitive', 'Insufficient Evidence' or 'N/A' have been included in the effects assessed for each of the SACs being considered as part of the LSE screening stage.
- 6.4.3.4. Given the broad spectrum of pressures itemised on the Advice on Operations matrix in relation to power cables and HDD they have then been categorised into effects which can then be assessed (Table 6.9). Where possible effects will reflect those identified in the Chapter 9 Fish and Shellfish of the ES (APP-124) for the Proposed Development.
- 6.4.3.5. It should be noted that not all the designated sites listed in Table 6.9 have an Advice on Operations matrix. Where this occurs a different designated site (proxy site) with the same Annex II diadromous fish species has been selected and using the same operations (power cable and HDD), the pressures and sensitivities have been recorded. Proxy sites used are defined in Table 6.9. In addition, where no proxy site is available for a specific species (e.g. salmon) the pressures for a comparable species (e.g. shad) have been used.
- 6.4.3.6. Although the potential effect of habitat loss is included in Table 6.9 it only relates to the loss of habitat from within a European site. Those SACs/Ramsars which list Annex II diadromous migratory fish are located outside the Proposed Development (the nearest site is 27.5 km away) and therefore there is no pathway for this effect to occur. As such, this effect will not be considered further in the determination of LSE.
- 6.4.3.7. Information on potential pressures associated with cabling activities was available from the Natural England Designated Sites View for Advice on Operations for Plymouth Sound and Estuaries SAC¹⁶
- 6.4.3.8. Designated sites where no Advice on Operations were available and a proxy site has been used are as follows:
 - River Itchen SAC¹⁷

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https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0013111&SiteName=ply mouth%20sound&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerso n=&SeaArea=&IFCAArea=&NumMarineSeasonality=4 {Accessed: August 2020}

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0013111&SiteName=ply mouth%20sound&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerso n=&SeaArea=&IFCAArea=&NumMarineSeasonality=4 {Accessed: August 2020}



- River Avon SAC^{18,19}
- River Axe SAC²⁰
- Baie de Canche et Couloir des trois Estuaires SAC^{21,22}
- Baie de Seine Orientale SAC^{23,24}
- Littoral Cauchois SAC^{25,26}
- Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC/Baie de Somme Ramsar^{27,28}
- 18

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https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0013111&SiteName=ply

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https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0013111&SiteName=ply mouth%20sound&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerso n=&SeaArea=&IFCAArea=&NumMarineSeasonality=4 19

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030170&SiteName=hum ber&SiteNameDisplay=Humber+Estuary+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=& NumMarineSeasonality=8 (Accessed: August 2020)

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030170&SiteName=hum ber&SiteNameDisplay=Humber+Estuary+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=& NumMarineSeasonality=8 (Accessed: August 2020)

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030170&SiteName=hum ber&SiteNameDisplay=Humber+Estuary+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=& NumMarineSeasonality=8 (Accessed: August 2020)

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0013111&SiteName=ply mouth%20sound&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerso n=&SeaArea=&IFCAArea=&NumMarineSeasonality=4 {Accessed: August 2020}

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030170&SiteName=hum ber&SiteNameDisplay=Humber+Estuary+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=& NumMarineSeasonality=8 (Accessed: August 2020)

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0013111&SiteName=ply mouth%20sound&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerso n=&SeaArea=&IFCAArea=&NumMarineSeasonality=4 {Accessed: August 2020}

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030170&SiteName=hum ber&SiteNameDisplay=Humber+Estuary+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=& NumMarineSeasonality=8 (Accessed: August 2020)

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0013111&SiteName=ply mouth%20sound&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerso n=&SeaArea=&IFCAArea=&NumMarineSeasonality=4 {Accessed: August 2020}

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030170&SiteName=hum ber&SiteNameDisplay=Humber+Estuary+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=& NumMarineSeasonality=8 (Accessed: August 2020)



Estuaires de la Seine SAC/Marais Vernier Ramsar^{29,30}

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https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0030170&SiteName=hum ber&SiteNameDisplay=Humber+Estuary+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=& NumMarineSeasonality=8

mouth%20sound&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerso n=&SeaArea=&IFCAArea=&NumMarineSeasonality=4 {Accessed: August 2020}

https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0013111&SiteName=ply mouth%20sound&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerso n=&SeaArea=&IFCAArea=&NumMarineSeasonality=4

Qualifying Feature	Site	Pressure	Effect	
Salmon	River Itchen SAC*	Changes in suspended solids (water clarity) (C, O, D)	Increased SSC	
	River Avon SAC*	Deoxygenation (O, D) and barrier to species movement (C)		
	Baie de Canche et Couloir des trois Estuaires SAC*	Collision below water with static or moving objects not naturally found in the marine environment (C, O, D)	Physical injury	
	Baie de Seine Orientale SAC*	Habitat structure changes - removal of substratum (extraction) (C, D)	Habitat loss	
	Estuaires de la Seine SAC/Marais Vernier	Introduction or spread of INIS (C, O, D)	Invasive species	
	Ramsar*	Hydrocarbon and PAH contamination (C, O, D) Litter (C, O, D)	Pollution events	
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)		
		Introduction of other substances (solid, liquid or gas) (C)		
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)		
		Underwater noise changes (C, O, D)	Noise and vibration	
		Vibration (C, O, D)		
		Visual Disturbance (C, O, D)	Visual disturbance	
		Barrier to species movement (O)	EMF	
		Electromagnetic changes (O)		
		Temperature decrease (O)	Temperature changes	
		Temperature increase (O)		
Illis Shad	Plymouth Sound and Estuaries SAC	Changes in suspended solids (water clarity) (C, O, D)	Increased SSC	
	Baie de Canche et Couloir des trois	Deoxygenation (O, D) and barrier to species movement (C)		
	Estuaires SAC* Baie de Seine Orientale SAC*	Collision below water with static or moving objects not naturally found in the marine environment (C, O, D)	Physical injury	
		Habitat structure changes - removal of substratum (extraction) (C, D)	Habitat loss	
		Introduction or spread of INIS (C, O, D)	Invasive species	
		Hydrocarbon and PAH contamination (C, O, D)	Pollution events	
		Litter (C, O, D)		
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)		
		Introduction of other substances (solid, liquid or gas) (C)		
		Transition elements & organo-metal (e.g. TBT) contamination (C,O, D)		
		Underwater noise changes (C, O, D)	Noise and vibration	
		Vibration (C, O, D)		
		Visual Disturbance (C, O, D)	Visual disturbance	
		Barrier to species movement (O)	EMF	
		Electromagnetic changes (O)		
		Temperature decrease (O)	Temperature changes	
		Temperature increase (O)		
Twaite Shad	Littoral Cauchois SAC*	Changes in suspended solids (water clarity) (C, O, D)	Increased SSC	

Table 6.9 - Predicted effects of the marine elements of the Proposed Development on relevant Annex II Migratory Fish Qualifying Features



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Qualifying Feature	Site	Pressure	Effect
	Baie de Seine Orientale SAC*	Deoxygenation (C, O, D) and barrier to species movement (C)	
	Estuaires de la Seine SAC/Marais Vernier Ramsar*	Collision below water with static or moving objects not naturally found in the marine environment (C, O, D)	Physical injury
		Habitat structure changes - removal of substratum (extraction) (C, D)	Habitat loss
		Introduction or spread of INIS (C, O, D)	Invasive species
		Hydrocarbon and PAH contamination (C, O, D)	Pollution events
		Litter (C, O, D)	
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) (C, O, D)	
		Introduction of other substances (solid, liquid or gas) (C)	
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)	
		Underwater noise changes (C, O, D)	Noise and vibration
		Vibration (C, O, D)	
		Visual Disturbance (C, O, D)	Visual disturbance
		Barrier to species movement (O)	EMF
		Electromagnetic changes (O)	
		Temperature decrease (O)	Temperature changes
		Temperature increase (O)	
Sea lamprey	River Avon SAC**	Deoxygenation (O, D) and barrier to species movement (C)	Increased SSC
	River Axe SAC** Littoral Cauchois SAC**	Collision below water with static or moving objects not naturally found in the marine environment (C, O, D)	Physical injury
	Estuaires et Littoral Picards (Baies de	Habitat structure changes - removal of substratum (extraction) (C, D)	Habitat loss
	Somme et d'Authie) SAC	Introduction or spread of INIS (C, O, D)	Invasive species
	Baie de Canche et Couloir des trois Estuaires SAC** Baie de Seine Orientale SAC** Estuaires de la Seine ZSC/Marais Vernier Ramsar **	Hydrocarbon & PAH contamination (C, O, D)	Pollution events
		Litter (C, O, D)	
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals (C, O, D)	
		Introduction of other substances (solid, liquid or gas) (C)	
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)	
		Underwater noise changes (C, O, D)	Noise and vibration
		Vibration (C, O, D)	
		Barrier to species movement (O)	EMF
		Electromagnetic changes (O)	
		Temperature decrease (O)	Temperature changes
		Temperature increase (O)	
River Lamprey	Littoral Cauchois SAC**	Deoxygenation (O, D) and barrier to species movement (C)	Increased SSC
	Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC**	Collision below water with static or moving objects not naturally found in the marine environment (C, O, D)	Physical injury
	Baie de Canche et Couloir des trois	Habitat structure changes - removal of substratum (extraction) (C, D)	Habitat loss
	Estuaires SAC**	Introduction or spread of INIS (C, O, D)	Invasive species



Qualifying Feature	Site	Pressure	Effect
	Baie de Seine Orientale SAC**	Hydrocarbon & PAH contamination (C, O, D)	Pollution events
	Estuaires de la Seine SAC/Marais Vernier Ramsar**	Litter (C, O, D)	
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals (C, O, D)	
		Introduction of other substances (solid, liquid or gas) (C)	
		Transition elements & organo-metal (e.g. TBT) contamination (C, O, D)	
		Underwater noise changes (C, O, D)	Noise and vibration
		Vibration (C, O, D)	
		Barrier to species movement (O)	EMF
		Electromagnetic changes (O)	
		Temperature decrease (O)	Temperature changes
		Temperature increase (O)	

* - Plymouth sound and estuary SAC used as proxy due to unavailability of advice on operation information for site.

**- Humber estuary SAC used as proxy due to unavailability of advice on operation information for site.

C = construction phase, **O** = operation phase, **D** = decommissioning phase



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6.4.4. MARINE MAMMALS

- 6.4.4.1. All the UK SACs for marine mammals were pre-screened out within Section 6.2.
- 6.4.4.2. For the French SACs/Ramsars, the 'documents d'objectifs'/site management plans were accessed (where they existed). However, equivalent activities/pressures information to that available for UK SACs was not presented within these documents. Therefore, the potential for LSE on the marine mammal features of the French SACs/Ramsars was assessed using the more detailed Advice on Operations information from UK SACs for the same marine mammal qualifying features.
- 6.4.4.3. Both low and medium-high risk pressures were considered. Pressures which were not assessed (NA) or for which there was insufficient evidence (IE) of feature sensitivity were also considered in addition to those pressures for which the evidence base suggests the feature is sensitive (S).
- 6.4.4.4. Pressures relating to the supporting habitats³¹ of the marine mammal species (both UK and French sites) were not considered because the Proposed Development is too far for there to be any potential effect on the supporting habitats within the sites.
- 6.4.4.5. The pressures were grouped by effect type (see Table 6.10 below) and have been presented in the assessment of LSE (Section 7) and PINS matrices (Appendix 1, APP-501, Rev 002) as:
 - Auditory injury;
 - Disturbance;
 - Collision;
 - Indirect effects; and
 - Pollution.
- 6.4.4.6. Although no pressures which may lead to either auditory injury or pollution were listed for either bottlenose dolphin (information taken from the Conservation Objectives and Advice on Operations document for the Cardigan Bay SAC) or grey seal (information taken from the Conservation Objectives and Advice on Operations document for the Pembrokeshire Marine SAC), the potential for LSE as a result of both auditory injury and pollution was assessed for sites where these species are features.

³¹ The supporting habitats for marine mammals are considered to be coastal lagoons, intertidal coarse sediment, intertidal mixed sediments, intertidal mud, intertidal sand and muddy sand and water column as per the Advice on Operations for cables for The Wash and North Norfolk Coast SAC

⁽https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0017075&SiteName=the +wash&SiteNameDisplay=The+Wash+and+North+Norfolk+Coast+SAC&countyCode=&responsiblePerson=& SeaArea=&IFCAArea) [accessed August 2020]. During consultation, Natural England requested that the supporting habitat 'water column' be considered for UK SACs.

Features	Site	Pressure	Effect
Bottlenose dolphin ³²	Estuaires et littoral picards (baies de Somme et d'Authie) SAC	No pressures listed	Auditory injury
	Littoral Cauchois SAC	Physical disturbance: displacement, visual, noise	Disturbance
	Baie de Seine orientale SAC	Potential electro-magnetic effects of electrical cables (operational phase only)	
		Physical disturbance: collision, noise, visual	
		Physical disturbance: collision, noise, visual	Collision
		Geophysical regime: addition of artificial substrate; local modification of water movement	Indirect effects
		Geophysical regime: vessel wash - substrate erosion, local modification of wave exposure regime	
		Scour effect on benthic habitats from cables due to wave action	
		Fundamental environmental parameters: turbidity	
		No pressures listed	Pollution
Harbour porpoise ³³	Récifs Gris-Nez Blanc-Nez SAC	Anthropogenic underwater sound - mortality, internal injury, disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging, navigation, breeding, socialising), habitat change/loss	Auditory injury
	Ridens et dunes hydrauliques du détroit du		
	Pas-de-Calais SAC	Anthropogenic underwater sound - mortality, internal injury, disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging,	Disturbance
	Baie de Canche et couloir des trois estuaires SAC	navigation, breeding, socialising), habitat change/loss	
	Estuaires et littoral picards (baies de Somme	Death or injury by collision - mortality, injury	Collision
	et d'Authie) SAC	Anthropogenic underwater sound - mortality, internal injury, disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging,	Indirect effects
	Littoral Cauchois SAC	navigation, breeding, socialising), habitat change/loss	
	Baie de Seine orientale SAC	Contaminants - effects on water and prey quality, bioaccumulation through	Pollution
	Estuaire de la Seine SAC	contaminated prey ingestion, health issues (e.g. on reproduction)	

Table 6.10 - Pressures listed for the different UK SACs and the corresponding effects which were assessed for all marine mammal sites. The pressures relate to all phases of the project (i.e. construction operation and decommissioning) unless otherwise stated



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³² Information on pressures for the relevant activities (considered to be Power/communication cables; Shipping: vessel traffic) taken from Table 3 of the Cardigan Bay SAC document (https://cdn.naturalresources.wales/media/687993/eng-cardigan-bay-reg-37-report-2018.pdf?mode=pad&rnd=131929023330000000).

³³ Information on pressures for the relevant activities (considered to be Discharge/run-off from landfill, terrestrial/offshore industries; Shipping; Dredging and disposal; Geophysical surveys) taken from Table 2 and Table A1 of the Southern North Sea SAC Conservation Advice and Advice on Operations document (http://jncc.defra.gov.uk/pdf/SNorthSea_ConsAdvice.pdf).

Features	Site	Pressure	Effect
Grey seal ³⁴	Récifs Gris-Nez Blanc-Nez SAC	No pressures listed	Auditory injury
	Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC	Physical disturbance: displacement, visual, noise Potential electro-magnetic effects of electrical cables (operational phase only) Physical disturbance: collision, noise, visual	Disturbance
	Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar	Physical disturbance: collision, noise, visual	Collision
	Littoral Cauchois SAC Baie de Seine orientale SAC	Geophysical regime: addition of artificial substrate; local modification of water movement	Indirect effects
	Estuaire de la Seine SAC	Geophysical regime: vessel wash - substrate erosion, local modification of wave exposure regime Fundamental environmental parameters: turbidity	
		No pressures listed	Pollution
Harbour seal ³⁵	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC	Underwater noise changes Vibration	Auditory injury
	 Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC 	Above water noise Introduction of light Underwater noise changes Vibration Visual disturbance Barrier to species movement (operational phase only for power cables, construction phase only for HDD)	Disturbance
		Collision below water with static or moving objects not naturally found in the marine environment	Collision

 ³⁴ Information on pressures for the relevant activities (considered to be Power/communication cables; Shipping: vessel traffic (commercial)) taken from Table 3 of the Pembrokeshire Marine SAC document (<u>https://cdn.naturalresources.wales/media/687999/eng-pembrokeshire-marine-reg-37-report-2018.pdf?mode=pad&rnd=13192902498000000</u>).
 ³⁵ Information on pressures for the relevant activities (considered to be Cables – Power cable: Laying, burial and protection; Cables – Power cable: Operation and maintenance; Cables – Power cable: Decommissioning; Cables – Cables: HDD) taken from the Advice on Operations page of Natural England's Designated Sites View website for The Wash and North Norfolk Coast SAC (<u>https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK0017075&SiteName=the%20wash&SiteNameDisplay=The+Wash+and+North+Norfolk+Coast+SAC&countyCode=&responsiblePerson=&SeaArea=&IF CAArea=&NumMarineSeasonality=2) (accessed August 2020).
</u>



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Features	Site	Pressure	Effect
		Introduction or spread of INIS	Indirect effects
		Hydrocarbon and PAH contamination	Pollution
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals)	
		Transition elements and organo-metal (e.g. TBT) contamination	
		Introduction of other substances (solid, liquid or gas) (not listed for power cables, construction phase only for HDD)	





6.4.5. MARINE ORNITHOLOGY

- 6.4.5.1. Information on potential pressures associated with cabling activities was available from the Natural England Designated Sites View for Advice on Operations for the following European sites:
 - Chichester and Langstone Harbours SPA³⁶;
 - Portsmouth Harbour SPA³⁷;
 - Solent and Southampton Water SPA³⁸; and
 - Pagham Harbour SPA³⁹.
- 6.4.5.2. Potential pressures identified for these European sites were applied to those features of European sites and Ramsars where Advice on Operations was not available. This approach was applied to:
 - Solent and Dorset Coast SPA;
 - Alderney West Coast and Burhou Islands Ramsar; and
 - Littoral Seino-Marin ZPS/SPA.
- 6.4.5.3. Cabling activities considered included:
 - Cables Cables: HDD;
 - Cables Power cable: Laying, burial and protection;
 - Cables Power cable: Operation and maintenance; and
 - Cables Power cable: Decommissioning.
- 6.4.5.4. Both low and medium-high risk pressures were considered, including those pressures for which the evidence base suggests that a feature may be sensitive (S), as well as those pressures for which there was insufficient evidence (IE) or where the pressure was not assessed (NA) for feature sensitivity. For transboundary sites, feature sensitivity (interaction type) was not available.

³⁶<u>https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9011011&SiteName=chi</u> chester&SiteNameDisplay=Chichester+and+Langstone+Harbours+SPA&countyCode=&responsiblePerson=& SeaArea=&IFCAArea=&NumMarineSeasonality=18 (Accessed August 2020)

³⁷<u>https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9011051&SiteName=portsmouth&SiteNameDisplay=Portsmouth+Harbour+SPA&countyCode=&responsiblePerson=&SeaArea=&IFC AArea=&NumMarineSeasonality=4 (Accessed August 2020)</u>

³⁸<u>https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9011061&SiteName=sol</u> ent&SiteNameDisplay=Solent+and+Southampton+Water+SPA&countyCode=&responsiblePerson=&SeaArea =&IFCAArea=&NumMarineSeasonality=9 (Accessed August 2020)

³⁹<u>https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9012041&SiteName=pagham&SiteNameDisplay=Pagham+Harbour+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea =&NumMarineSeasonality=4 (Accessed August 2020)</u>



6.4.5.5. Given the broad spectrum of pressures identified (see Table 6.11), pressures were grouped into those effects identified in the Chapter 11 Marine Ornithology of the ES (APP-126) for the Proposed Development.

Table 6.11 - Potential effects on marine ornithology features across all phases of the Proposed Development. The pressures relate to all phases of the project (i.e. construction, operation and decommissioning) unless otherwise stated.

Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features	Transboundary site interaction
olent and Dorset Coast PA		Above water noise	Disturbance and displacement	Sandwich tern Common tern Little tern	-
		Underwater noise changes		Sandwich tern Common tern Little tern Supporting habitat (water column)	-
		Visual disturbance		Sandwich tern Common tern Little tern Supporting habitat (water column)	-
		Introduction of light		Sandwich tern Common tern Little tern Supporting habitat (water column)	-
		Vibration		Supporting habitat (water column)	-
		Barrier to species movement (Operational phase and HDD in construction phase only)		Little tern Supporting habitat (water column)	-
		Collision above water with static or moving objects	Collision*	Sandwich tern Common tern Little tern	-
		Collision below water with static or moving objects		Sandwich tern Common tern Little tern	-
		Changes in suspended solids (water clarity)		Sandwich tern Common tern Little tern Supporting habitat (water column)	-
		Deoxygenation		Supporting habitat (water column)	-
		Nutrient enrichment		Supporting habitat (water column)	-
		Habitat structure changes – removal of substratum		Supporting habitat (water column)	-



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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		(Construction and decommissioning phases only)		
		Physical loss (to land or freshwater) (Operational phase and cable lay/burial/protection period of construction phase only)		Supporting habitat (water column)
		Water flow (tidal current) changes, including sediment transport considerations		Sandwich tern Common tern Little tern Supporting habitat (water column)
		Emergence regime changes, including tidal level change considerations (HDD in construction phase only)		Sandwich tern Common tern Little tern Supporting habitat (water column)
		Transition elements and organometal contamination		Sandwich tern Common tern Little tern Supporting habitat (water column)
		Wave Exposure changes (HDD period of construction phase only)		Supporting habitat (water column)
		Organic enrichment (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another seabed type) (HDD in construction phase only)		Supporting habitat (water column)
		Physical change (to another sediment type) (HDD in construction phase only)		Supporting habitat (water column)
		Electromagnetic changes (Operational phase only)		Supporting habitat (water column)
		Temperature decreases (Operational phase only)		Supporting habitat (water column)
		Temperature increases (Operational phase only)		Supporting habitat (water column)
		Hydrocarbon and Polycyclic Aromatic Hydrocarbon ('PAH') contaminants	Accidental spills	Sandwich tern Common tern Little tern



Transboundary site interaction
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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
				Supporting habitat (water column)
		Synthetic compound contamination (incl. pesticides, antifoulants and pharmaceuticals)		Sandwich tern Common tern Little tern Supporting habitat (water column)
		Introduction of other substance (solid, liquid, gas) (HDD in construction phase only)		Sandwich tern Common tern Little tern Supporting habitat (water column)
		Litter	Litter	Sandwich tern Common tern Little tern Supporting habitat (water column)
		Introduction or spread of INIS	INIS	Sandwich tern Common tern Little tern Supporting habitat (water column)
Chichester and Langstone Harbours SPA/Ramsar site	0.1 km	Visual disturbance	Disturbance and displacement	Red-breasted merganser Sandwich tern Common tern Little tern Supporting habitat (water column)
		Above water noise		Red-breasted merganser Sandwich tern Common tern Little tern
		Underwater noise changes		Sandwich tern Common tern Little tern Red-breasted merganser Supporting habitat (water column)
		Introduction of light		Sandwich tern Common tern Little tern Red-breasted merganser



Transboundary site interaction
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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
				Supporting habitat (water column)
		Vibration		Supporting habitat (water column)
		Barrier to species movement (Operational phase and HDD in construction phase only)		Little tern Red-breasted merganser Supporting habitat (water column)
		Collision above water with static or moving objects	Collision*	Red-breasted merganser Sandwich tern Common tern Little tern
		Collision below water with static or moving objects		Red-breasted merganser Sandwich tern Common tern Little tern
		Changes in suspended solids (water clarity)	Indirect effects	Red-breasted merganser Sandwich tern Common tern Little tern Supporting habitat (water column)
		Deoxygenation		Supporting habitat (water column)
		Nutrient enrichment		Supporting habitat (water column)
		Habitat structure changes – removal of substratum (Construction and decommissioning phases only)		Supporting habitat (water column)
		Physical loss (to land or freshwater) (Operational phase and cable lay/burial/protection period of construction phase only)		Supporting habitat (water column)
		Water flow (tidal current) changes, including sediment transport considerations		Red-breasted merganser Sandwich tern Common tern Little tern Supporting habitat (water column)



Transboundary site interaction
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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Emergence regime changes, including tidal level change considerations (HDD period of construction phase only)		Red-breasted merganser Sandwich tern Common tern Little tern Supporting habitat (water column)
		Transition elements and organometal contamination		Red-breasted merganser Sandwich tern Common tern Little tern Supporting habitat (water column)
		Wave Exposure changes (HDD period of construction phase only)		Red-breasted merganser Supporting habitat (water column)
		Organic enrichment (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another seabed type) (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another sediment type) (HDD period of construction phase only)		Supporting habitat (water column)
		Electromagnetic changes (Operational phase only)		Supporting habitat (water column)
		Temperature decreases (Operational phase only)		Supporting habitat (water column)
		Temperature increases (Operational phase only)		Supporting habitat (water column)
		Hydrocarbon and PAH contaminants	Accidental spills	Red-breasted merganser Sandwich tern Common tern Little tern
		Synthetic compound contamination (incl. pesticides, antifoulants and pharmaceuticals)		Red-breasted merganser Sandwich tern Common tern Little tern Supporting habitat (water column)
		Introduction of other substance (solid, liquid, gas) (HDD period of construction phase only)		Sandwich tern Common tern Little tern



Transboundary site interaction
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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
				Red-breasted merganser Supporting habitat (water column)
		Litter	Litter	Red-breasted merganser Sandwich tern Common tern Little tern Supporting habitat (water column)
		Introduction or spread of INIS	INIS**	Sandwich tern Common tern Little tern Supporting habitat (water column)
Portsmouth Harbour SPA/Ramsar site	4.9 km	Visual disturbance	Disturbance and displacement	Red-breasted merganser Supporting habitat (water column)
		Above water noise		Red-breasted merganser
		Underwater noise changes		Red-breasted merganser Supporting habitat (water column)
		Introduction of light		Red-breasted merganser Supporting habitat (water column)
		Vibration		Supporting habitat (water column)
		Barrier to species movement (Operational phase and HDD period of construction phase only)		Red-breasted merganser Supporting habitat (water column)
		Collision above water with static or moving objects	Collision*	Red-breasted merganser
		Collision below water with static or moving objects		Red-breasted merganser
		Changes in suspended solids (water clarity)		Red-breasted merganser Supporting habitat (water column)
		Deoxygenation		Supporting habitat (water column)
		Nutrient enrichment		Supporting habitat (water column)



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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Habitat structure changes – removal of substratum (Construction and decommissioning phases only)		Supporting habitat (water column)
		Physical loss (to land or freshwater) (Operational phase and cable lay/burial/protection period of construction phase only)		Supporting habitat (water column)
		Water flow (tidal current) changes, including sediment transport considerations		Red-breasted merganser Supporting habitat (water column)
		Emergence regime changes, including tidal level change considerations (HDD period of construction phase only)		Red-breasted merganser Supporting habitat (water column)
		Transition elements and organometal contamination		Red-breasted merganser Supporting habitat (water column)
		Wave Exposure changes (HDD period of construction phase only)		Red-breasted merganser Supporting habitat (water column)
		Organic enrichment (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another seabed type) (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another sediment type) (HDD period of construction phase only)		Supporting habitat (water column)
		Electromagnetic changes (Operational phase only)		Supporting habitat (water column)
		Temperature decreases (Operational phase only)		Supporting habitat (water column)
		Temperature increases (Operational phase only)		Supporting habitat (water column)
		Hydrocarbon and PAH contaminants	Accidental spills	Red-breasted merganser Supporting habitat (water column)
		Synthetic compound contamination (incl. pesticides,		Red-breasted merganser



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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		antifoulants and pharmaceuticals) Introduction of other substances (solid, liquid, gas)		Supporting habitat (water column) Red-breasted merganser Supporting habitat (water column)
		Litter	Litter	Red-breasted merganser Supporting habitat (water column)
		Introduction or spread of INIS	INIS**	Supporting habitat (water column)
Solent and Southampton Water SPA/Ramsar site	6.6 km	Above water noise	Disturbance and displacement	Sandwich tern Common tern Roseate tern Little tern Mediterranean gull
		Underwater noise changes		Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
		Visual disturbance		Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
		Introduction of light		Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
		Vibration		Supporting habitat (water column)
		Barrier to species movement (Operational phase and HDD period of construction phase only)		Little tern Supporting habitat (water column)



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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Collision above water with static or moving objects	Collision*	Sandwich tern Common tern Roseate tern Little tern Mediterranean gull
		Collision below water with static or moving objects		Sandwich tern Common tern Roseate tern Little tern Mediterranean gull
		Changes in suspended solids (water clarity)	Indirect effects	Sandwich tern Common tern Roseate tern Little tern Supporting habitat (water column)
		Deoxygenation		Supporting habitat (water column)
		Nutrient enrichment		Supporting habitat (water column)
		Habitat structure changes – removal of substratum (Construction and decommissioning phases only)		Supporting habitat (water column)
		Physical loss (to land or freshwater) (Operational phase and cable lay/burial/protection period of construction phase only)		Supporting habitat (water column)
		Water flow (tidal current) changes, including sediment transport considerations		Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
		Emergence regime changes, including tidal level change considerations (HDD period of construction phase only)		Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)



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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Transition elements and organometal contamination		Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
		Wave Exposure changes (HDD period of construction phase only)		Supporting habitat (water column)
		Organic enrichment (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another seabed type) (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another sediment type) (HDD period of construction phase only)		Supporting habitat (water column)
		Electromagnetic changes (Operational phase only)		Supporting habitat (water column)
		Temperature decreases (Operational phase only)		Supporting habitat (water column)
		Temperature increases (Operational phase only)	-	Supporting habitat (water column)
		Hydrocarbon and PAH contaminants	Accidental spills	Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
		Synthetic compound contamination (incl. pesticides, antifoulants and pharmaceuticals)		Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
		Introduction of other substance (solid, liquid, gas) (HDD period of construction phase only)		Sandwich tern Common tern Roseate tern Little tern



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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
				Mediterranean gull Supporting habitat (water column)
		Litter	Litter	Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
		Introduction or spread of INIS	INIS	Sandwich tern Common tern Roseate tern Little tern Mediterranean gull Supporting habitat (water column)
Pagham Harbour	9.5 km	Above water noise	Disturbance and	Common tern
SPA/Ramsar site		Underwater noise	displacement	Common tern Supporting habitat (water column)
		Visual disturbance		Common tern Supporting habitat (water column)
		Introduction of light		Common tern Supporting habitat (water column)
		Vibration		Supporting habitat (water column)
		Barrier to species movement (Operational phase and HDD period of construction phase only)		Supporting habitat (water column)
		Collision above water with static or moving objects	Collision*	Common tern
		Collision below water with static or moving objects		Common tern
		Changes in suspended solids (water clarity)	Indirect effects	Common tern Supporting habitat (water column)
		Deoxygenation		Supporting habitat (water column)



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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Nutrient enrichment		Supporting habitat (water column)
		Habitat structure changes – removal of substratum (Construction and decommissioning phases only)		Supporting habitat (water column)
		Physical loss (to land or freshwater) (Operational phase and cable lay/burial/protection period of construction phase only)		Supporting habitat (water column)
		Water flow (tidal current) changes, including sediment transport considerations		Common tern Supporting habitat (water column)
		Emergence regime changes, including tidal level change considerations (HDD period of construction phase only)		Common tern Supporting habitat (water column)
		Transition elements and organometal contamination		Common tern Supporting habitat (water column)
		Wave Exposure changes (HDD period of construction phase only)		Supporting habitat (water column)
		Organic enrichment (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another seabed type) (HDD period of construction phase only)		Supporting habitat (water column)
		Physical change (to another sediment type) (HDD period of construction phase only)		Supporting habitat (water column)
		Electromagnetic changes (Operational phase only)		Supporting habitat (water column)
		Temperature decreases (Operational phase only)		Supporting habitat (water column)
		Temperature increases (Operational phase only)		Supporting habitat (water column)
		Hydrocarbon and PAH contaminants	Accidental spills	Common tern Supporting habitat (water column)



Transboundary site interaction
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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Synthetic compound contamination (incl. pesticides, antifoulants and pharmaceuticals)		Common tern Supporting habitat (water column)
		Introduction of other substance (solid, liquid, gas) (HDD period of construction phase only)		Common tern Supporting habitat (water column)
		Litter	Litter	Common tern Supporting habitat (water column)
		Introduction or spread of INIS	INIS	Common tern Supporting habitat (water column)
Littoral Seino-Marin SPA	30.6 km	Above water noise	Disturbance and displacement	-
		Visual disturbance		-
		Underwater noise changes		-
		Introduction of light		-
		Vibration		
		Barrier to species movement (Operational phase and HDD period of construction phase only)		





column)

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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Collision above water with static or moving objects	Collision	-
		Collision below water with static or moving objects		-
		Changes in suspended solids (water clarity)	Indirect effects	-
		Deoxygenation		
		Nutrient enrichment		
		Habitat structure changes – removal of substratum (Construction and decommissioning phases only)		
		Physical loss (to land or freshwater) (Operational phase and cable lay/burial/protection period of construction phase only)		
		Water flow (tidal current) changes, including sediment transport considerations		-
		Emergence regime changes, including tidal level change considerations (HDD period of construction phase only)		-
		Transition elements and organometal contamination		-



Transboundary site interaction

Fulmar Great black-backed gull Herring gull Kittiwake	
Fulmar Great black-backed gull Herring gull Kittiwake	
Fulmar Great black-backed gull Herring gull Kittiwake Supporting habitat (water	
column)	
Supporting habitat (water column)	
Supporting habitat (water column)	
Supporting habitat (water column)	
Supporting habitat (water column)	
Fulmar Great black-backed gull Herring gull Kittiwake Supporting habitat (water	
column) Fulmar Great black-backed gull Herring gull Kittiwake Supporting habitat (water column)	
Fulmar Great black-backed gull Herring gull Kittiwake	

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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Wave Exposure changes (HDD period of construction phase only)		
		Organic enrichment (HDD period of construction phase only)		
		Physical change (to another seabed type) (HDD period of construction phase only)		
		Physical change (to another sediment type) (HDD period of construction phase only)		
		Electromagnetic changes (Operational phase only)		
		Temperature decreases (Operational phase only)		
		Temperature increases (Operational phase only)		
		Hydrocarbon and PAH contaminants	Accidental spills	-
		Synthetic compound contamination (incl. pesticides, antifoulants and pharmaceuticals)		-
		Introduction of other substance (solid, liquid, gas) (HDD period of construction phase only)		
		Litter	Litter	-



Transboundary site
interaction

Supporting habitat (water column)
Supporting habitat (water column)
Fulmar Great black-backed gull Herring gull Kittiwake
Supporting habitat (water column)
Fulmar Great black-backed gull Herring gull Kittiwake
Supporting habitat (water column)
Supporting habitat (water column)
Fulmar Great black-backed gull Herring gull Kittiwake
Supporting habitat (water column)

Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Introduction or spread of INIS	INIS	-
Alderney West Coast and Burhou Islands Ramsar	142.0 km	Above water noise	Disturbance and displacement	-
		Visual disturbance		-
		Underwater noise changes		-
		Introduction of light		-
		Vibration		
		Barrier to species movement (Operational phase and HDD period of construction phase only)		
		Collision above water with static or moving objects		-
		Collision below water with static or moving objects		-
		Changes in suspended solids (water clarity)		-



Transboundary site interaction

Fulmar Great black-backed gull Herring gull Kittiwake Supporting habitat (water column)
Gannet Storm petrel Lesser black-backed gull
Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)
Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)
Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)
Supporting habitat (water column)
Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)
Gannet Storm petrel Lesser black-backed gull
Gannet Storm petrel Lesser black-backed gull
Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)

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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Deoxygenation		
		Nutrient enrichment		
		Habitat structure changes – removal of substratum (Construction and decommissioning phases only)		
		Physical loss (to land or freshwater) (Operational phase and cable lay/burial/protection period of construction phase only)		
		Water flow (tidal current) changes, including sediment transport considerations		-
		Emergence regime changes, including tidal level change considerations (HDD period of construction phase only)		-
		Transition elements and organometal contamination		-
		Wave Exposure changes (HDD period of construction phase only)		
		Organic enrichment (HDD period of construction phase only)		
		Physical change (to another seabed type) (HDD period of construction phase only)		
		Physical change (to another sediment type) (HDD period of construction phase only)		
		Electromagnetic changes (Operational phase only)		



Transboundary site interaction

Supporting habitat (water column) Supporting habitat (water column) Supporting habitat (water column)

Supporting habitat (water column)

Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)

Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column) Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column) Supporting habitat (water column)

Supporting habitat (water column)

Supporting habitat (water column)

Supporting habitat (water column)

Supporting habitat (water column)

WSP/Natural Power

Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Temperature decreases (Operational phase only)		
		Temperature increases (Operational phase only)		
		Hydrocarbon and PAH contaminants	Accidental spills	-
		Synthetic compound contamination (incl. pesticides, antifoulants, Pharmaceuticals)		-
		Introduction of other substance (solid, liquid, gas) (HDD period of construction phase only)		
		Litter	Litter	-
		Introduction or spread of INIS	INIS	-

Key: * Collision not identified as a pressure-effect interaction for supporting habitat (water column) in Natural England Advice on Operations; ** INIS not identi interaction for red-breasted merganser in Natural England Advice on Operations.



	Transboundary site interaction
	Supporting habitat (water column)
	Supporting habitat (water column)
	Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)
	Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)
	Supporting habitat (water column)
	Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)
	Gannet Storm petrel Lesser black-backed gull Supporting habitat (water column)
tified	as a pressure-effect

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6.5. POTENTIAL EFFECTS – ONSHORE ENVIRONMENT

- 6.5.1.1. A number of environmental impacts have been identified and assessed in Chapter 16 of the ES (Onshore Ecology) for the Proposed Development. These have been reviewed alongside information on potential pressures and threats on features of relevant designated sites in order to determine a list of potential effects for the purposes of HRA. Details on potential pressures and threats are available from Natural England Designated Sites View for Advice on Operations for the following European sites:
 - Chichester and Langstone Harbours SPA/Ramsar^{40,41}; and
 - Portsmouth Harbour SPA/Ramsar^{42,43};
- 6.5.1.2. Potential pressures identified for these European sites were applied to those features of European sites where Advice on Operations was not available. This approach was applied to the black-tailed godwit feature of Chichester and Langstone Harbours Ramsar site.
- 6.5.1.3. In line with the listed pressures with respect to the marine environment, pressures are grouped into those effects identified in Chapter 16 (Onshore Ecology) of the ES for the Proposed Development, (as summarised inTable 6.12 below).
- 6.5.1.4. Table 6.12 considers both low and medium-high risk pressures, including those pressures for which the evidence base suggests that a feature may be sensitive (S), as well as those pressures for which there was insufficient evidence (IE) or where the pressure was not assessed (NA) for feature sensitivity.
- 6.5.1.5. There are considered to be limited pathways for impacts on supporting habitats of relevant European sites to occur as a result of any activity from onshore elements of the Proposed Development. Table 6.12 identifies supporting habitats for relevant sites where low and medium-high risk pressures are noted within Natural England's Designated Sites View for Advice on Operations. Supporting habitats within Table 6.12 are not identified individually.

⁴⁰<u>https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9011011&SiteName=chichester&SiteNameDisplay=Chichester+and+Langstone+Harbours+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=18 (Accessed August 2020)</u>
⁴¹ https://rsis.ramsar.org/ris/378 (Accessed August 2020)

⁴²<u>https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9011051&SiteName=po</u> rtsmouth&SiteNameDisplay=Portsmouth+Harbour+SPA&countyCode=&responsiblePerson=&SeaArea=&IFC AArea=&NumMarineSeasonality=4 (Accessed August 2020)

⁴³ <u>https://rsis.ramsar.org/ris/720</u> (Accessed August 2020)

Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
Development Chichester and Langstone Harbours SPA/Ramsar site 0.1 km		Visual disturbance	Disturbance and displacement	Sandwich tern Little tern Common tern Pintail Shoveler Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover Ringed Plover Bar-tailed godwit Black-tailed godwit Curlew Shelduck Redshank Waterfowl assemblage
		Above water noise		Sandwich tern Little tern Common tern Pintail Shoveler Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover Ringed Plover Bar-tailed godwit Black-tailed godwit Curlew Shelduck Redshank Waterfowl assemblage
		Introduction of light		Sandwich tern Little tern Common tern Pintail Shoveler

Table 6.12 - Potential effects on onshore ecology across all phases of the Proposed Development





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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
				Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover Ringed Plover Bar-tailed godwit Black-tailed godwit Curlew Shelduck Redshank Waterfowl assemblage
		Vibration (construction phase only)		Supporting habitat (freshwa and coastal grazing marsh)
		Physical loss (to land or freshwater (construction phase only)	Indirect effects	Supporting habitat (freshwa and coastal grazing marsh)
		Transition elements and organometal contamination		Sandwich tern Little tern Common tern Pintail Shoveler Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover Ringed Plover Bar-tailed godwit Black-tailed godwit Curlew Shelduck Redshank Watefowl assemblage Supporting habitat (freshwa and coastal grazing marsh)
		Hydrocarbon and PAH contaminants	Accidental spills	Sandwich tern Little tern Common tern



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Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Synthetic compound contamination (incl. pesticides, antifoulants and pharmaceuticals)		PintailShovelerTealWigeonTurnstoneDark-bellied brent gooseSanderlingDunlinGrey ploverRinged PloverBar-tailed godwitBlack-tailed godwitCurlewShelduckRedshankWaterfowl assemblageSupporting habitat (freshwatand coastal grazing marsh)Sandwich ternLittle ternCommon ternPintailShovelerTealWigeonTurnstoneDark-bellied brent gooseSanderlingDunlinGrey ploverRinged PloverBar-tailed godwitBlack-tailed godwitBlack-tailed godwitBlack-tailed godwitShelduckRedshankWaterfowl assemblageSupporting habitat (freshwatand coastal grazing marsh)
		Litter	Litter	Sandwich tern Little tern Common tern Pintail





Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
				Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover Ringed Plover Bar-tailed godwit Black-tailed godwit Curlew Shelduck Redshank Waterfowl assemblage Supporting habitat (freshwa and coastal grazing marsh)
		Introduction or spread of INIS	INIS**	Sandwich tern Little tern Common tern Pintail Wigeon Turnstone Dark-bellied brent goose Dunlin Grey plover Shelduck Redshank Waterfowl assemblage Supporting habitat (freshwa and coastal grazing marsh)
Portsmouth Harbour SPA/Ramsar site	4.9 km	Visual disturbance	Disturbance and displacement	Dark-bellied brent goose Dunlin Black-tailed godwit
		Above water noise		Dark-bellied brent goose Dunlin Black-tailed godwit
		Introduction of light		Dark-bellied brent goose Dunlin Black-tailed godwit
		Vibration		Supporting habitat (freshwa and coastal grazing marsh)





Relevant SPA/Ramsar site	Indicative distance from SPA/Ramsar to Proposed Development	Pressure	Effect	Features
		Physical loss (to land or freshwater)	Indirect effects	Supporting habitat (freshwa and coastal grazing marsh)
		Transition elements and organometal contamination		Supporting habitat (freshwa and coastal grazing marsh)
		Hydrocarbon and PAH contaminants	Accidental spills	Dark-bellied brent goose Dunlin Black-tailed godwit Supporting habitat (freshwar and coastal grazing marsh)
		Synthetic compound contamination (incl. pesticides, antifoulants and pharmaceuticals)		Dark-bellied brent goose Dunlin Black-tailed godwit Supporting habitat (freshwar and coastal grazing marsh)
		Litter	Litter	Dark-bellied brent goose Dunlin Black-tailed godwit Supporting habitat (freshwat and coastal grazing marsh)
		Introduction or spread of INIS	INIS**	Dark-bellied brent goose Dunlin Black-tailed godwit Supporting habitat (freshwat and coastal grazing marsh)



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7. DETERMINATION OF LIKELY SIGNIFICANT EFFECTS

7.1. OVERVIEW

- 7.1.1.1. Following the initial pre-screening stage, more detailed information can be used to assess the LSE on the sites and features screened in for further assessment in Section 6.
- 7.1.1.2. Assessments are undertaken using the screening matrices presented in Appendix 1 and Appendix 5 (APP-501, Rev 002 and 7.7.10) which assess the European Marine Sites (i.e. SACs and SPAs) and Ramsars respectively. The matrices present assessment of likely effects on site features from the Proposed Development alone and in combination with other projects (see Section 8).
- 7.1.1.3. The following assessments utilise information presented in Section 4 and Section 5 of this document and the ES to determine whether no LSE can be concluded on the European sites and features.
- 7.1.1.4. Where it was not possible to determine no LSE on a designated site, they have been considered further as part of the AA (Section 10).

7.2. ASSESSMENT OF LSE – MARINE ENVIRONMENT

7.2.1. ANNEX I HABITATS

7.2.1.1. An assessment of LSE on designated marine Annex I habitat features during the construction, operation and decommissioning phases of the Proposed Development is provided in Table 7.1.

SAC	Effect	Feature	LSE?	Justification
Solent Maritime	Habitat disturbance	Estuaries [1130]	N	Only habitats located within the Marine Cable Corridor wil a result of direct impacts from construction activities. The
		Sandbanks which are slightly covered by sea water all the time [1110]	N	Solent Maritime SAC, covering approximately 163.4 m ² ne KP0.76.
		Mudflats and sandflats not covered by seawater at low tide [1140]	N	However, the project design only proposes the use of I exit/entry point located between KP1.0 and KP1.6 (app SAC). Therefore, there is no pathway for the Proposed
		Spartina swards [1320]	N	disturbance to the SAC.
		Atlantic salt meadows [1330]	Ν	Therefore, there is no potential for habitat disturbance to ALSE.
		Salicornia and other annuals colonising mud and sand [1310]	N	
	Increased SSC	Estuaries [1130]	Y	During dredge disposal, peak SSC of 1000 mgl ⁻¹ could ari
		Sandbanks which are slightly covered by sea water all the time [1110]	Y	but coarser sediment expected to fall out of suspension que significant reductions of SSC within hours of disposal at e release, the passive plume which is transported beyond the president of an experimental with the dimensioner of a second
		Mudflats and sandflats not covered by seawater at low tide [1140]	Y	region of approximately 20 mgl ⁻¹ , transported in the direct distance of <i>c</i> . 25km. SSC is predicted to reduce to $<1-6$ days following completion of disposal activities.
		Spartina swards [1320]	Y	Other cable installation activities (including for repair and to raise SSC in the vicinity of the work. It is predicted that
		Atlantic salt meadows [1330]	Y	observed locally (i.e. within 2 km of the cable trench or HI potentially persist for several hours following completion of
		Salicornia and other annuals colonising mud and sand [1310]	Υ	plumes are also likely to be transported up to 5 km away f concentrations of 5 to 10 mgl ⁻¹ are predicted. SSC is expe- within a few days following completion of these activities. be transported up to 6-10 km in the nearshore area, howe low (< 5 mgl ⁻¹) and therefore not discernible above natural
				Due to the close proximity of the Solent Maritime SAC (ind of which is located less than 1 km from the Marine Cable for increased levels of SSC to be present within the SAC, ruled out for any feature (at any project phase) which has
	Deposition of	Estuaries [1130]	Y	Sediment deposition from disposal activities will be local to
	sediment (smothering)	Sandbanks which are slightly covered by sea water all the time [1110]	Y	m), with deposits of coarser sediments potentially observed across an area the direction of the prevailing flow at the time of release,
		Mudflats and sandflats not covered by seawater at low tide [1140]	Y	sediments will be redistributed and any deposition outside

Table 7.1 - Assessment of LSE on designated Annex I features as a result of the Proposed Development across all phases of development



vill be affected by habitat disturbance as e Marine Cable Corridor overlaps the near the Landfall between KP0 and

DD Landfall methodology, with the HDD ox. 0.24 km from the boundary of the Development to result in habitat

Annex I habitats, and no potential for

arise within 1 km from the release point quickly (almost immediately) with each location. Beyond 1 km from this is likely to generate SSC in the ction of the prevailing flow out to a 6 mgl⁻¹ within the timeframe of a few

d maintenance) also have the potential at peak SSCs of up to 200 mgl⁻¹ may be HDD pit) and these concentrations could of construction activities. Sediment y from the trench or pit at which point pected to return to background levels s. The finest sediments will potentially wever SSCs at these distances will be ral variation.

including Langstone harbour, the mouth e Corridor), and the resulting potential C, it is considered that LSE cannot be as connectivity to the work.

to the point of release (i.e. within 1000 ved to depths of between 10 mm and of a few hundred metres, elongated in relative to the release site. Finer de the Marine Cable Corridor will be

WSP/Natural Power

SAC	Effect	Feature	LSE?	Justification
		Spartina swards [1320]	Y	transient and negligible, with any settled material being qu tidal flows.
		Atlantic salt meadows [1330]	Y	Other cable installation activities (including for repair and r
		Salicornia and other annuals colonising mud and sand [1310]	Y	to result in sediment deposition. Due to the close proximity of the Solent Maritime SAC (incomposition of which is located less than a kilometre from the Marine C potential for deposition within the SAC, it is considered that be ruled out.
		Due to the use of HDD at cable Landfall, marine activities		
		Sandbanks which are slightly covered by sea water all the time [1110]	N	be undertaken only in the Marine Cable Corridor beyond the located between KP1.0 to KP1.6, outside the overlap area (boundary of SAC at approx. KP0.76). This includes excav
		Mudflats and sandflats not covered by seawater at low tide [1140]	N	 HDD exit/entry point. Habitat loss as a result of sediment deposition has been c deposition will not result in potential for habitat loss via cha
		Spartina swards [1320]	N	seabed type as any deposition that does occur will be of s be of a level to cause a change in seabed type or profile (s
		Atlantic salt meadows [1330]	N	deposition for details of predicted levels).
		Salicornia and other annuals colonising mud and sand [1310]	licornia and other annuals colonising N potential for LSE	Therefore, there is no potential for Annex I habitat loss wit potential for LSE.
	Pollution	Estuaries [1130]	Y	Marine litter is any manufactured or processed solid mater discarded, disposed or abandoned (excluding legitimate d
		Sandbanks which are slightly covered by sea water all the time [1110]	Y	coastal environment including plastics, metals, timber, rop degraded components, e.g. microplastic particles (Natural can be physical (smothering), biological (ingestion, including
		Mudflats and sandflats not covered by seawater at low tide [1140]	Y	entangling; physical damage; accumulation of chemicals) contamination).
		Spartina swards [1320]	Y	Marine litter can be released into the marine environment accidentally (inappropriate storage) or deliberately (Potts a
		Atlantic salt meadows [1330]	Y	Mouat, 2009). Shipping related litter contributes approximate beaches.
		Salicornia and other annuals colonising mud and sand [1310]	Y	Deliberate discharges of oil or oil/water mixtures and synth prohibited in all waters around the UK and its approaches. occur. Drilling fluid, usually consisting of water and clay material Whilst methods can be employed to minimise the risk, leal into the environment can occur.



quickly redistributed under the forcing of

d maintenance) also have the potential

ncluding Langstone harbour, the mouth e Cable Corridor), and the resulting hat LSE (at any project phase) cannot

es that can result in a loss of habitat will I the HDD entry/exit point which will be ea with the Solent Maritime SAC avation of seabed sediments at the

considered. It is determined that any hange to another sediment type or similar sediment types and would not (see assessment of LSE for sediment

vithin the Solent Maritime SAC, and no

terial from anthropogenic activities disposal) once it enters the marine and ope, fishing gear etc. and their al England, 2019). Ecological effects ding uptake of microplastics; and/or chemical (leaching,

nt by shipping vessels either s and Hasting, 2011; Lozano and mately 2% of the litter found on UK

nthetic compounds from ships are es. However, accidental discharges still

al (bentonite) will be used as a lubricant. eakage or outbreaks of these materials

WSP/Natural Power

SAC	Effect	Feature	LSE?	Justification
			-	It is therefore considered that the potential for LSE as a re cannot be ruled out.
	Resuspension of	Estuaries [1130]	Ν	Results from the subtidal contaminated sediment survey (
	contaminated sediments	Sandbanks which are slightly covered by sea water all the time [1110]	N	Sediment Quality), indicate that the sediments within the M significantly elevated levels of contaminants with no record Cefas Action Level 2. In addition, for all contaminants other
		Mudflats and sandflats not covered by seawater at low tide [1140]	N	Action Level 1 was recorded. Arsenic did exceed Action Le at one of these was it above the Oslo and Paris Convention Assessment Concentration) however these appear isolate
		Spartina swards [1320]	N	 pattern or common source. Evidence from the nearby IFA2 interconnector and Rampi
		Atlantic salt meadows [1330]	N	the wider area is not heavily contaminated.
	Invasive species	Salicornia and other annuals colonising mud and sand [1310]	Ν	The lack of contamination in the nearshore sediments with indicates that there is a very low risk of sediment borne co water column. As such, it is therefore concluded that there this effect.
		Estuaries [1130]	Y	The introduction and INIS can occur directly through the reinto the environment via activities, e.g. through release of
		Sandbanks which are slightly covered by sea water all the time [1110]	Y	hull of ships even if recently cleaned or anti-fouled (Interna 2012; Davidson <i>et al.</i> , 2010), or indirectly by creating oppo spread (e.g. habitat creation or disturbance), thereby allow
		Mudflats and sandflats not covered by seawater at low tide [1140]	Y	species. The Proposed Development will increase local traffic, dist
		Spartina swards [1320]	Y	hard substrate (in the form of cable protection), which has introduction and spread of INIS. However, this area is a b
		Atlantic salt meadows [1330]	Y	possesses significant hard substrate modifications for nav measures.
		Salicornia and other annuals colonising mud and sand [1310]	Y	There are several INIS species known to be present in the slipper limpet (<i>Crepidula fornicate</i>), Pacific oyster (<i>Crasso</i> mitten crabs (<i>Eriocheir sinensis</i>), wire weed (<i>Sargassum r</i> (<i>styela clava</i>) (Eno <i>et al.</i> , 1997; GB Non-Native Species S
				It is therefore considered that the potential for LSE as a re
	EMF	Estuaries [1130]	N	EMF effects will not extend outwith the Marine Cable Corr feature are likely. Therefore, there is no potential for LSE.
		Sandbanks which are slightly covered by sea water all the time [1110]	Ν	This feature may be present directly over the operating ca burial depth under the SAC is 5 m. At this depth, the predi including Geostatic field) (Chapter 3 Description of the Pro- is broadly equivalent to the background geostatic field.



result of pollution (including litter)

v (Chapter 7 Marine Water and e Marine Cable Corridor do not contain ords of any contaminant exceeding her than Arsenic, no exceedance of Level 1 at two locations (although only tions ('OSPAR') Background ted areas and with no indication of a

pion OWF projects also suggests that

ithin the Marine Cable Corridor contaminants being re-released into the ere is no potential for LSE to arise from

e release of individuals of INIS species of ballast water (Ware, 2009), on the rnational Maritime Organisation (IMO), portunities for organisms to settle or owing for them to out-compete native

sturb the seabed and introduce new as the potential to influence the busy shipping channel and already avigation, ports and flood protection

he Marine Cable Corridor, such as the sostrea (Magallana) gigas), Chinese in muticum), and the leathery sea squirt Secretariat, 2019).

result of INIS cannot be ruled out.

rridor and as such no effects on this E.

cable. Due to the use of HDD, the target dicted EMF will be 2 μ T (50 μ T Proposed Development, APP-118). This

WSP/Natural Power

SAC	Effect	Feature	LSE?	Justification
				The majority of the research relating to the environmental in birds and fish, also electro-sensitive marine species su 2010). Although some invertebrate species are thought to there is no evidence to indicate that EMF has any detrime Therefore, due to the negligible change in EMF compared there is no potential for LSE.
		Mudflats and sandflats not covered by seawater at low tide [1140]	N	This feature may be present directly over the operating ca burial depth under the SAC is 5 m. At this depth, the preci- including Geostatic field) (Chapter 3 (Description of the P Environment Statement). This is broadly equivalent to the
				The majority of the research relating to the environmental in birds and fish, also electro-sensitive marine species su 2010). Although some invertebrate species are thought to there is no evidence to indicate that EMF has any detrime Therefore, due to the negligible change in EMF compared there is no potential for LSE.
		Spartina swards [1320]	N	EMF effects will not extend outwith the Marine Cable Cor feature are likely. Therefore, there is no potential for LSE
		Atlantic salt meadows [1330]	N	EMF effects will not extend outwith the Marine Cable Cor feature are likely. Therefore, there is no potential for LSE
		Salicornia and other annuals colonising mud and sand [1310]	N	EMF effects will not extend outwith the Marine Cable Cor feature are likely. Therefore, there is no potential for LSE
	Increased light Pollution	Estuaries [1130]	N	Increased pressure may potentially result from navigation during construction repair and maintenance activities. Lig
		Sandbanks which are slightly covered by sea water all the time [1110]	N	working conditions on site, therefore only habitats within, metres) to the Marine Cable Corridor are considered to h construction activities.
		Mudflats and sandflats not covered by seawater at low tide [1140]	Ν	Lighting can cause disorientation or displace sensitive sp organisms have some sensitivity to light (Tillin, 2016a; Til effects relating to this potential impact are only relevant to planned in SPAs which have sensitive species that could the year (OSPAR, 2008; Shell Offshore Inc., 2011; Hill, 1 Commission, 2009; Royal Haskoning, 2011; Montevecch Due to the use of HDD below the intertidal area, marine a undertaken only in the Marine Cable Corridor at or beyon be located between KP1.0 to KP1.6. This is outside the of SAC (boundary of which lies at approx. KP0.76). Therefore



tal effects of EMF is migratory behaviour such as elasmobranchs (Gill and Bartlett, to be electro or magneto-sensitive, mental effects on benthic organisms. red to background levels it is concluded

cable. Due to the use of HDD, the target edicted EMF will be 2 μ T (50 μ T Proposed Development) of the ne background geostatic field.

tal effects of EMF is migratory behaviour such as elasmobranchs (Gill and Bartlett, to be electro or magneto-sensitive, mental effects on benthic organisms. red to background levels, it is concluded

orridor and as such no effects on this SE.

orridor and as such no effects on this SE.

orridor and as such no effects on this SE.

on and operational lighting on vessels ighting is required to enable safe n, or in very close proximity (tens of have the potential to be affected during

species (Natural England, 2019). Benthic Fillin, 2016d), however the majority of to birds, where night operations are d be present and at sensitive times of 1992; Dwyer *et al.*, 2013; European thi, 2006).

activities which require lighting will be ond the HDD entry/exit point, which will e overlap area with the Solent Maritime fore, there is no potential for LSE.

WSP/Natural Power

SAC	Effect	Feature	LSE?	Justification
	Temperature changes	Estuaries [1130]	N	Temperature effects will not extend outwith the Marine Ca on this feature are likely. Therefore, there is no potential
		Sandbanks which are slightly covered by sea water all the time [1110]	N	Operation of the cables will result in heat being emitted from of the surrounding environment. Heat losses reduce the en- the cables have been designed to minimise thermal loss. proximity of the cable and quickly dissipate (Aecom Interta- emission and its effects will depend on the type of cables environment (OSPAR Commission, 2012).
				 Thermal resistance for the soil surrounding a buried cable burial depth. A study undertaken to inform the Nemo Link 2013) calculated that localised temperature increases in the buried to a depth of 2.5 m would be 1.2°C at 30 cm depth 2.2 m directly above the cable, 30 cm below the seabed se conservative calculation of temperature increases for burn Interconnector project (Brakelmann and Stammen, 2016; cable installation in German waters showed the potential depth of 0.2 m above an operating cable as a worst-case undertaken for NorthConnect project (2018) predicted that 0.5 m would result in a temperature rise of 1°C above bac directly above the cable, decreasing with distance. Further information presented within the ES Addendum result in Cables support the findings from other studies cables for the Proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a state of the proposed Development will be buried to a state of the proposed Development will be buried to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a to a state of the proposed Development will be buried to a sta
				assessment demonstrates that any substantial temperature the seabed. Further, HDD methods propose target burial feature) is 5 m. HDD methods resulting in cable burial to temperature locally, however the cable will be contained distance to the surface sediments, it is concluded that tem detectable at the surface. Therefore, there is no potential
		Mudflats and sandflats not covered by seawater at low tide [1140]	N	As explained above when considering the possible effects slightly covered by sea water all the time, it is considered detectable at the surface (due to HDD methods resulting 5 m). Therefore, there is no potential for LSE.
		Spartina swards [1320]	Ν	Temperature effects will not extend outwith the Marine Ca on this feature are likely. Therefore, there is no potential
		Atlantic salt meadows [1330]	Ν	Temperature effects will not extend outwith the Marine Ca on this feature are likely. Therefore, there is no potential
		Salicornia and other annuals colonising mud and sand [1310]	N	Temperature effects will not extend outwith the Marine Ca on this feature are likely. Therefore, there is no potential



Cable Corridor and as such no effects al for LSE.

from the cable and subsequent warming e efficiency of the cable and as a result, s. Heating effects will be localised to the ertek, 2011; Nemo Link, 2013). Thermal es, transmission rate and the receiving

ble usually increases with increasing the nk Interconnector project (Nemo Link, in the seabed above the bundled cables oth above the cable (i.e. at a distance of d surface) and 0.7°C at 10 cm. A undled cables conducted for Viking Link 6; Viking Link, 2017) for the purpose of al for an increase of 2°C at a sediment se scenario. In contrast, a study hat bundled cables buried at a depth of background levels at the seabed level

regarding potential heat emissions from es (document reference 7.8.1). The a target burial depth of 1 m, and thermal iture increase will not be detectable at al depth beneath the SAC (and this o 5 m are likely to maintain a higher d within a duct and when considering the emperature increases will not be al for LSE.

cts of heat on Sandbanks which are ed that temperature increases will not be g in burial under the qualifying feature of

Cable Corridor and as such no effects al for LSE.

Cable Corridor and as such no effects al for LSE.

Cable Corridor and as such no effects al for LSE.

WSP/Natural Power

SAC	Effect	Feature	LSE?	Justification
	Hydrodynamic	Estuaries [1130]	N	A number of activities can affect hydrodynamic processes protection, removal of bedforms or the creation of depress
	changes	Sandbanks which are slightly covered by sea water all the time [1110]	N	operations. More detail on the predicted hydrodynamic ch Development can be found in Chapter 6 (Physical Proces
		Mudflats and sandflats not covered by seawater at low tide [1140]	N	The Physical Processes assessment concluded that any h small, highly localised and temporary resulting from near h elevated turbulence intensities as a result of the work.
		Spartina swards [1320]	N	All work will be undertaken at and beyond the HDD entry/
		Atlantic salt meadows [1330]	N	outside of the overlap area with the Solent Maritime SAC and there is adequate distance between the HDD and SA
		Salicornia and other annuals colonising mud and sand [1310]	N	effects of any hydrodynamic changes within, effecting the negligible. Therefore, there is no potential for LSE.
South Wight Maritime	Habitat disturbance	Submerged or partially submerged sea caves [8330]	N	No work associated with the Proposed Development will ta Maritime SAC. Therefore, there is no potential for habitat
		Reefs [1170]	N	
	Increased SSC	Submerged or partially submerged sea caves [8330]	Y	During dredge disposal, peak SSC of 1000 mgl ⁻¹ could ari but coarser sediment expected to fall out of suspension que significant reductions of SSC within hours of disposal at ear release, the passive plume which is transported beyond the region of approximately 20 mgl ⁻¹ , transported in the direct distance of c. 25km. SSC is predicted to reduce to $<1 - 6$ completion of disposal activities. Background SSC coasta Physical Processes).
				Other cable installation activities (including for repair and it to raise SSC in the vicinity of the work. It is predicted that observed locally (i.e. within 2 km of the cable trench or HE potentially persist for several hours following completion of plumes are also likely to be transported up to 5 km away from concentrations of 5 to 10 mgl ⁻¹ are predicted. SSC is experiminent of the sectivities. The transported up to 6-10 km in the nearshore area, howe low (< 5 mgl ⁻¹) and therefore not discernible above natural. The closest example of this feature is 10 km from the UK considered that the potential for LSE (at any stage) on this
		Reefs [1170]	Y	During dredge disposal, peak SSC of 1000 mgl ⁻¹ could ari but coarser sediment expected to fall out of suspension que significant reductions of SSC within hours of disposal at ear release, the passive plume which is transported beyond the



es including installation of cable ssions created through installation changes resulting from the Proposed esses) of the ES Volume 1 (APP-121).

/ hydrodynamic changes will be very r bed flow velocities and slightly

y/exit point KP1.0-KP1.6, and therefore C (which is located at approx. KP 0.76), AC (0.24 km) that it is predicted that the e qualifying features of the SAC are

I take place within the South Wight at disturbance, and no potential for LSE.

arise within 1 km from the release point quickly (almost immediately) with each location. Beyond 1 km from this is likely to generate SSC in the ction of the prevailing flow out to a 6 mgl⁻¹ within a few days following tal areas is 5 to 75 mgl⁻¹ (Chapter 6

d maintenance) also have the potential at peak SSCs of up to 200 mgl⁻¹ may be HDD pit) and these concentrations could of construction activities. Sediment y from the trench or pit at which point bected to return to background levels s. The finest sediments will potentially wever SSCs at these distances will be ral variation.

K Marine Cable Corridor and it is his feature cannot be ruled out.

arise within 1 km from the release point quickly (almost immediately) with each location. Beyond 1 km from this is likely to generate SSC in the

WSP/Natural Power

SAC	Effect	Feature	LSE?	Justification
				region of approximately 20 mgl ⁻¹ , transported in the direct distance of c. 25km. SSC is predicted to reduce to backge timeframe of a few days following completion of disposal Other cable installation activities (including for repair and to raise SSC in the vicinity of the work. It is predicted that observed locally (i.e. within 2 km of the cable trench or HI potentially persist for several hours following completion of plumes are also likely to be transported up to 5 km away concentrations of 5 to 10 mgl ⁻¹ are predicted. SSC is expe- within a few days following completion of these activities. be transported up to 6-10 km in the nearshore area, howe low (< 5 mgl ⁻¹) and therefore not discernible above natura The closest example of this feature is 3.3 km from the Ma considered that the potential for LSE (at any stage) on thi
	Deposition of sediment (smothering)	Submerged or partially submerged sea caves [8330]	Y	 Sediment deposition from disposal activities will be local to m), with deposits of coarser sediments potentially observed 1.5 m, with greatest deposition observed across an area of the direction of the prevailing flow at the time of release, r Other cable installation activities (including for repair and to result in sediment deposition. Finer sediments will be redistributed and any deposition of predicted to be transient and negligible, with any settled m under the forcing of tidal flows. Due to the distance from the proposed activities (10 km), stage) on this feature cannot be ruled out.
		Reefs [1170]	Υ	 Sediment deposition from disposal activities will be local to m), with deposits of coarser sediments potentially observed 1.5 m, with greatest deposition observed across an area of the direction of the prevailing flow at the time of release, m. Finer sediments will be redistributed and any deposition of predicted to be transient and negligible, with any settled munder the forcing of tidal flows. Other cable installation activities (including for repair and to result in sediment deposition. Due to the distance from the proposed activities (3.3 km), stage) on this feature cannot be ruled out.
	Habitat loss	Submerged or partially submerged sea caves [8330]	Ν	No work will be undertaken within the South Wight Maritin potential for habitat loss, and no potential for LSE.



ction of the prevailing flow out to a ground levels (<1 - 6 mg/l) within the al activities.

d maintenance) also have the potential at peak SSCs of up to 200 mgl⁻¹ may be HDD pit) and these concentrations could n of construction activities. Sediment y from the trench or pit at which point pected to return to background levels s. The finest sediments will potentially wever SSCs at these distances will be ral variation.

larine Cable Corridor and it is his feature cannot be ruled out.

I to the point of release (i.e. within 1000 ved to depths of between 10 mm and a of a few hundred metres, elongated in , relative to the release site.

d maintenance) also have the potential

outside the Marine Cable Corridor are material being quickly redistributed

, it is considered that LSE (at any

I to the point of release (i.e. within 1000 ved to depths of between 10 mm and a of a few hundred metres, elongated in a relative to the release site.

outside the Marine Cable Corridor are material being quickly redistributed

d maintenance) also have the potential

n), it is considered that LSE (at any

time SAC and therefore there is no

WSP/Natural Power

SAC	Effect	Feature	LSE?	Justification
		Reefs [1170]	N	Habitat loss as a result of sediment deposition has been of any deposition will not result in potential for habitat loss vi seabed type as any deposition that does occur will be of s be of a level to cause a change in seabed type or profile (deposition for details of predicted levels).
	Pollution	Submerged or partially submerged sea caves [8330]	Y	Marine litter is any manufactured or processed solid mate discarded, disposed or abandoned (excluding legitimate of coastal environment including plastics, metals, timber, rop
		Reefs [1170]	Υ	 degraded components, e.g. microplastic particles (Natural can be physical (smothering), biological (ingestion, include entangling; physical damage; accumulation of chemicals) contamination). Marine litter can be released into the marine environment accidentally (inappropriate storage) or deliberately (Potts Mouat, 2009). Shipping related litter contributes approximabeaches. Deliberate discharges of oil or oil/water mixtures and synth prohibited in all waters around the UK and its approaches occur. Drilling fluid, usually consisting of water and clay material Whilst methods can be employed to minimise the risk, lead into the environment can occur. It is therefore considered that the potential for LSE as a restrict of the synthesis of the environment can occur.
				cannot be ruled out.
Invasive species Submerged or partially submerged sea caves [8330]	Y	The introduction and spread of INIS can occur directly species into the environment via activities, e.g. throug on the hull of ships even if recently cleaned or anti-fou		
		Reefs [1170]	Υ	 indirectly by creating opportunities for organisms to settle disturbance), thereby allowing for them to out-compete national settle disturbance), thereby allowing for them to out-compete national substrate (in the form of cable protection), which has introduction and spread of INIS. However, this area is a big possesses significant hard substrate modifications for national settles. There are several INIS species known to be present in the slipper limpet, <i>Crepidula fornicata</i>, Pacific oyster (<i>Crasson mitten crabs (Eriocheir sinensis</i>), wire weed (<i>Sargassum (styela clava</i>) (Eno <i>et al.</i>, 1997; GB Non-Native Species Settles and the state of t



a considered but it is determined that via change to another sediment type or f similar sediment types, and would not e (see assessment of LSE for sediment

aterial from anthropogenic activities e disposal) once it enters the marine and rope, fishing gear etc. and their ral England, 2019). Ecological effects uding uptake of microplastics; (s) and/or chemical (leaching,

ent by shipping vessels either ts and Hasting, 2011; Lozano and imately 2% of the litter found on UK

Inthetic compounds from ships are es. However, accidental discharges still

al (bentonite) will be used as a lubricant. eakage or outbreaks of these materials

result of pollution (including litter)

hrough the release of individuals of INIS release of ballast water (Ware, 2009), ed (IMO, 2012; Davidson *et al.*, 2010), or le or spread (e.g. habitat creation or native species.

sturb the seabed and introduce new as the potential to influence the a busy shipping channel and already avigation, ports and flood protection

the Marine Cable Corridor, such as the costrea (Magallana) gigas), Chinese in muticum), and the leathery sea squirt a Secretariat, 2019).

WSP/Natural Power

SAC	Effect	Feature	LSE?	Justification
				It is therefore considered that the potential for LSE as a re
	EMF	Submerged or partially submerged sea caves [8330]	N	EMF effects will not extend outwith the Marine Cable Corr feature are likely. Therefore, there is no potential for LSE
		Reefs [1170]	Ν	EMF effects will not extend outwith the Marine Cable Corr feature are likely. Therefore, there is no potential for LSE.
	Increased light Pollution	Submerged or partially submerged sea caves [8330]	Ν	The South Wight Maritime SAC lies over 3 km from the Pr potential for increased light to be present at a level that mark
		Reefs [1170]	Ν	Therefore, it is concluded that there is no potential for LSE
	Resuspension of contaminated	Submerged or partially submerged sea caves [8330]	Ν	Results from the subtidal contaminated sediment survey (Sediment Quality), indicate that the sediments within the N
	sediments	Reefs [1170]	Ν	 significantly elevated levels of contaminants with no record Cefas Action Level 2. In addition, for all contaminants other Action Level 1 was recorded. Arsenic did exceed Action L at one of these was it above the OSPAR Background Asset these appear isolated areas and with no indication of a particle from the nearby IFA2 interconnector and Rampi the wider area is not heavily contaminated despite the lon military activity in the area. The lack of contamination in the nearshore sediments with indicates that there is a very low risk of sediment borne convator water column. As such, it is therefore concluded that there
	Temperature changes	Submerged or partially submerged sea caves [8330]	N	Temperature effects will not extend outwith the Marine Ca on this feature are likely. Therefore, there is no potential f
		Reefs [1170]	N	
	Hydrodynamic changes	Submerged or partially submerged sea caves [8330]	N	A number of activities can affect hydrodynamic processes the removal of bedforms, and from depressions created th detail on the predicted hydrodynamic changes resulting fro
		Reefs [1170]	N	found in Chapter 6 Physical Processes.



- result of INIS cannot be ruled out.
- prridor and as such no effects on this E.
- prridor and as such no effects on this E.
- Proposed Development, and there is no may affect Annex I habitat features. SE.
- (Chapter 7 Marine Water and Marine Cable Corridor do not contain ords of any contaminant exceeding ther than Arsenic, no exceedance of Level 1 at two locations (although only ssessment Concentration) however pattern or common source.
- pion OWF projects also suggests that ong history of port, heavy shipping, and
- vithin the Marine Cable Corridor contaminants being re-released into the ere is no potential for LSE.
- Cable Corridor and as such no effects al for LSE.
- es, from installation of rock protection, through installation operations. More from the Proposed Development can be

SAC	Effect	Feature	LSE?	Justification
				The Physical Processes assessment concluded that any I small, highly localised and temporary resulting from near elevated turbulence intensities as a result of the work. The Proposed Development is over 3 km from the bounda predicted that that any effects due to any hydrodynamic c is concluded that there is no potential for LSE.
	Noise and Vibration	Reefs [1170]	Ν	Vessel movement is an important source of underwater ne Activities resulting in vibration include trenching for cable Enterprise and Regulatory Reform (BERR), 2008; Robinse (Robinson <i>et al.</i> , 2011). This pressure is only relevant to b time on land for breeding purposes (haul-outs), and is not however for intertidal rock habitats, some benthic species crabs). Any noise and vibration from cable installation will and elevations above background are unlikely to extend b (Nedwell <i>et al.</i> , 2003). Therefore, it is concluded that ther



y hydrodynamic changes will be very ar bed flow velocities and slightly

ndary of the SAC, and it is therefore changes are negligible, and therefore it

noise (OSPAR Commission, 2009). e laying (Department for Business nson *et al.*, 2011), and dredging b birds and sea mammals that spend tot relevant to most benthic habitats, es can perceive noise and vibration (e.g. vill be of low magnitude (OSPAR, 2009) d beyond the Marine Cable Corridor there is no potential for LSE.

WSP/Natural Power



7.2.2. ANNEX II DIADROMOUS MIGRATORY FISH

<u>Salmon</u>

- 7.2.2.1. Salmon are an interest feature of a number of SACs/Ramsar where connectivity may exist with the potential effects identified for the Proposed Development. All sites within the study area which list salmon as qualifying features are listed below:
 - River Itchen SAC;
 - River Avon SAC;
 - Estuaire de la Seine SAC/Marias Vernier Ramsar;
 - Baie de Canche et Couloir des trois Estuaires SAC; and
 - Baie de Seine Orientale SAC.
- 7.2.2.2. Salmon have a high degree of site fidelity and will return as adults to spawn in the same river where they were born. It is considered that although salmon are destined for specific rivers in the UK (or France) they are the same species and therefore sensitive to the same effects.
- 7.2.2.3. Effects for which salmon have been identified as potentially sensitive (Table 7.2) for both the construction (and decommissioning) and also operational (maintenance and repair) phases of the Proposed Development (Table 7.3) are as follows:
- 7.2.2.4. Construction (and decommissioning)
 - Increased SSC;
 - Physical injury;
 - Invasive species;
 - Pollution events;
 - Noise and vibration; and
 - Visual disturbance.
- 7.2.2.5. Operation (repair and maintenance)
 - Increased Suspended Sediment Concentrations (SSC);
 - Physical injury;
 - Invasive species;
 - Pollution events;
 - Noise and vibration;
 - Visual disturbance;
 - EMF; and



- Temperature changes.
- 7.2.2.6. Once installation is complete the buried (or protected) cables will have a life expectancy of at least 40 years. The Proposed Development has been designed so that routine maintenance to the Marine Cables is not required during their operational lifetime. However, there may be the requirement to undertake unplanned repair works. Therefore, during the operation phase of the Proposed Development, the effects are expected to be no greater than that of the construction phase.
- 7.2.2.7. Where those effects assessed for construction are not considered to lead to LSE on the features of this site during construction (or decommissioning), they will not be assessed again for operation. Two additional effects relevant to salmon and specific to the operational phase of a power cable are EMFs and temperature changes, and these effects will be assessed accordingly.

SAC/ZSC/Ramsar	Effect	Assessment
River Itchen River Avon Estuaire de la Seine SAC/Marais Vernier Ramsar	Increased SSC	The potential impact of increased SSC relates to the sediment released as a result of the cable installation and a works such as dredge and disposal activities, route clearance and rock placement for both the Marine Cable Con Landfall. Salmon are known to use the coast for migration and there is the possibility that an increase in SSC could pose a migration or cause respiratory effects from depleted oxygen. LSE cannot be fully ruled out for this impact and it works respirators from French sites are not considered to be affected as SSC increases are not predicted to reference to salmon migration. Therefore, no LSE is determined for Estuaire de la Seine SAC/Marais Vernier Ramsar, et Couloir des trois Estuaires and Baie de Seine Orientale SACs.
Baie de Canche et Couloir des trois Baie de Seine Orientale	Physical injury	The construction (and decommissioning) phase of the Proposed Development will require the use of construction may pose a collision risk to salmon. It is considered however that as this species (both adult and smolts) is highly has the innate ability to avoid areas of increased vessel traffic the possibility of this impact is occurring is extrem addition, there is a lack of publicly available literature on this subject which indicates it is not an area of increased vessel traffic the impact occurring is considered to be extremely loce of the effects are predicted to be negligible. It is therefore concluded that the impact will not lead to LSE on the River I Avon, Estuaire de la Seine SAC/Marais Vernier Ramsar, Baie de Canche et Couloir des trois Estuaires and Baie Orientale.
	Invasive species	The introduction of invasive species can be harmful to indigenous populations in locations where they do not nat a number of vessels will be required for the construction (and operation and decommissioning) of the cables and equipment, there is the possibility that invasive species may be introduced via biofouling or ballast water which a salmon. The introduction of non-native migratory fish species has the potential to increase competition for spawning grou domestic salmon stocks and potentially reduce recruitment. In addition, the introduction of non-native parasites of negative effects on salmon stocks. An example of this is the capture of non-native pink salmon (<i>Oncorhynchus</i> y Scottish and Northumberland rivers (Tweed and Tyne) although this cannot be attributed to ship ballast water bu adult migration across the North Sea from North Norway. There is a lack publicly available literature on the introd native parasites which are harmful to salmon. It is considered unlikely that non-native species will be introduced as a result of construction vessels operating in offshore sections of the Proposed Development, and it is highly unlikely that any of these will be harmful to salmon. It is concluded therefore that the potential introduction of non-native species as a result of the Proposed Develop will not lead to an LSE on the River Itchen SAC, River Avon SAC, Estuaire de la Seine SAC/Marais Vernier Ram Canche et Couloir des trois Estuaires SAC and Baie de Seine Orientale SAC.
	Pollution Events	Pollution as a result of installation (operational and decommissioning) activities such as litter and contamination PAH, pesticides, anti-foulants, pharmaceuticals) from installation vessels and release of liquids (bentonite) from operations may have effects on salmon (and smolts) whilst they are migrating to or from their natal rivers. LSE c ruled out for this impact and it will be progressed to AA stage.

Table 7.2 - LSE Assessment for Salmon during Construction and Decommissioning from the Proposed Development



	Potential for LSE? Y/N
associated orridor and	Y (UK sites only)
e a barrier to their will be	
result in a barrier r, Baie de Canche	
on vessels which hly mobile and mely low. In or concern. low and the Itchen, River ie de Seine	Ν
aturally occur. As nd associated are harmful to	Ν
ounds with could also have s <i>gorbuscha</i>) in out rather an oduction on non-	
in the near and non.	
opment alone, msar, Baie de	
n (hydrocarbons, n HDD cannot be fully	Y

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SAC/ZSC/Ramsar	Effect	Assessment	Potential for LSE? Y/N
		Historic pollution in the form of contaminated sediments (i.e. transition elements and organo-metals) is not considered to have the potential to lead to LSE as the area of work is not highly contaminated.	
	Noise and vibration	The impact of noise and vibration may occur as a result of cable installation (and decommissioning) activities (cable laying and cable protection) and Landfall activities (HDD, vibro-hammering of four 36" steel casings and support lattices).	N
		Salmon are classed as hearing generalists with the swim bladder playing no part in hearing. Hawkins <i>et al.</i> (1978) showed that salmon have a relatively low sensitivity to noise with a narrow frequency span and limited ability to discriminate between sounds. In addition, Harding <i>et al.</i> (2016) found an absence of stress response in captive fish exposed to piling playback in tank-based experiments.	
		Generally, the maximum sound pressure levels (SPLs) relating to installation of a marine cable are moderate to low (OSPAR, 2009). Nedwell <i>et al.</i> (2003) found that the noise emitted from cable trenching at North Hoyle OWF was 123 dB re 1 µPa (at a range of 160 m).	
		Both HDD and vibro hammering/pile driving (used for steel casings and supporting trestles at the Landfall) are considered to produce substantially less underwater noise than impact piling. Nedwell <i>et al.</i> (2012) found that underwater noise monitoring of HDD operating 39 m below a river resulted in levels of 129.5 dB re 1 µPa on the riverbed. It was noted however that due to the shallow water conditions the sound attenuated rapidly, in addition there was no shipping noise present. It is likely that HDD operations for the Proposed Development will be result in similar noise levels. Nedwell <i>et al.</i> (2003) found no discernible increase in underwater noise from an active vibropiling rig at a distance of 417.4 m against the background noise of Town Quay, Southampton with caged brown trout (<i>Salmo trutta</i>) showing no reaction to active vibro piling even at close range (<50m).	
		Popper <i>et al.</i> (2014) recommended guidelines for assessing shipping and other continuous noises, with cable laying, vibro piling and HDD considered to fall within this category. Fish with swim bladders not involved in hearing, such as salmon, were assigned a low risk to mortality, potential mortal injury and recoverable injury near to the source from continuous sound sources.	
		Given salmon's low sensitivity to underwater noise and vibration, construction (operation and decommissioning) these are not considered to result in any significant barrier effects.	
		As salmon have a low sensitivity to noise / vibration and are at low risk from mortality and injury as a result of trenching operations, HDD and vibro piling it is concluded that this impact as a result of the Proposed Development alone, will not lead to LSE on the River Itchen SAC, River Avon SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar, Baie de Canche et Couloir des trois Estuaires and Baie de Seine Orientale SACs.	
	Visual Disturbance	The impact of visual disturbance during installation (and decommissioning) to salmon could potentially occur due to the increase in vessels including jack up vessels as part of HDD works, installation equipment on the seabed (grapnels, displacement ploughs, trenching tools including MFE) and attachment lines / anchors.	N
		Salmon, like most fish, are highly adapted to detect changes in the visual environment with visual stimuli such as vessels potentially evoking a disturbance response which may incur unnecessary stress and use of energy. The common reaction to a potentially harmful situation is to escape and gain distance from the source; with fish this is often presented by fleeing to deeper water (Ali, 1961). Flight behaviours are characterised by fast-start swimming which is a high energy burst and rapid acceleration in swimming speed usually away from the disturbance (Domenici and Blake, 1997). The duration of response and therefore stress, is a reflection of the potential risk versus the cost of avoidance with stress levels increasing dependent on the time the fish is exposed to the stimuli (Endler, 1991).	



SAC/ZSC/Ramsa	Effect	Assessment	Potential for LSE? Y/N
		Bui <i>et al.</i> (2013) found that surface disturbance in a cage of farmed salmon elicited avoidance of the surface by individuals but, it did not produce flight responses and elevated swimming speeds seen in other stimuli such as the introduction of light. With this in mind it is likely that salmon in the Solent are accustomed to vessel traffic (due to the area being subject to high shipping / vessel movements) and the presence of vessels towing equipment (e.g. commercial fishing vessels) and will simply navigate round or under any installation vessels with minimal stress.	
		In light of the above it is concluded that salmon will be largely unaffected by this impact as a result of the Proposed Development alone, and this impact is predicted not to result in a LSE on the River Itchen SAC, River Avon SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar, Baie de Canche et Couloir des trois Estuaires SAC and Baie de Seine Orientale SAC.	



SAC/ZSC/Ramsar	Effect	Assessment
River Itchen	EMF	The potential impact of EMF could occur as a result of the operation of the HVDC interconnector cables. The prostrength for EMF around the cables is 42 μ T at 1 m depth, with the proposed minimum burial depth for the cable
River Avon Estuaire de la		Adult salmon although generally surface dwelling are known to pass through a range of water depths whilst at s al., 2014); this is also true for smolts which swim close to the surface although they have been observed to mak changes in swimming depths (Westerberg, 1982; Reddin <i>et al.</i> , 2006). Given their propensity to dive both adult s smolts may be exposed to EMF produced by the operational cables installed as part of the Proposed Developm
Seine SAC/Marais Vernier Ramsar Baie de Canche et Couloir des trois		The effects of EMF on salmon was studied by Armstrong <i>et al.</i> (2015) who exposed captive salmon to EMF. The that there was no identifiable behavioural response from salmon to a magnetic field of 95 μ T. This magnetic field double than that predicted for the Proposed Development (42 μ T) so no behavioural response is expected. In ad surface and pelagic nature of both salmon and smolts suggests they do not spend a great deal of time on or near and therefore exposure to the low levels of EMF predicted is unlikely but if it does occur any impact will be of sh transiting across the cables.
Baie de Seine Orientale		In light of the above evidence it is concluded the effects from EMF as a result of the operation of the Proposed E alone, will not lead to a LSE on the Salmon from the River Itchen SAC, River Avon SAC, Estuaire de la Seine Sa Vernier Ramsar, Baie de Canche et Couloir des trois Estuaires SAC and Baie de Seine Orientale SAC.
	Temperature Change	Heat is generated as electricity passes through cables as a result of the resistance of the conductor material. It i during operation a small amount of heat will be produced by the Proposed Development.
		The effect of heat from subsea cables on salmon is not well documented however a study undertaken for the Net (Nemo Link, 2013) cable calculated that localised temperature increases in the seabed above the cable would or 0.3 m depth and 0.7°C at 0.1 m depth from the seabed surface. Information presented within the ES Addendum potential heat emissions from the Marine Cables support the findings from other studies (document reference 7. for the Proposed Development will be buried to a target burial depth of 1 m, and the thermal assessment desom substantial temperature increase will not be detectable at the seabed. In addition, salmon (and smolts) generally the sea surface so interaction with any temperature increasesfrom the Proposed Development is unlikely.
		Given the minimal emission of heat which is expected to have little to no effect on salmon this impact will not lea River Itchen, River Avon, Estuaire de la Seine SAC/Marais Vernier Ramsar, Baie de Canche et Couloir des trois Baie de Seine Orientale.

Table 7.3 - LSE Assessment for Salmon during Operation (including Repair and Maintenance)



	Potential for LSE? Y/N
predicted field les being 1 m.	Ν
sea (Godfrey <i>et</i> ke regular rapid t salmon and ment.	
he results showed eld is more than addition, the sea ear the seabed short duration while Development	
SAC/Marais	
t is expected that	Ν
Nemo link HVDC only be 1.2°C at m regarding 7.8.1). The cables mnstrates that any Ily swim near to	
ead to LSE on the is Estuaires and	

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Allis Shad and Twaite Shad

- 7.2.2.8. Both allis and twaite shad have almost identical physiology and exhibit similar biological traits such as being migratory and spawning in freshwater. As the same potential effects are identified for both species they have been assessed together in the following section.
- 7.2.2.9. Allis shad are an interest feature of a number of SACs where connectivity may exist with the potential effects identified for the Proposed Development. Twaite shad are also a feature of three French SACs and a Ramsar. All SACs within the study area which list twaite and/or allis shad as qualifying features are listed below:
 - Plymouth Sound and Estuaries SAC (allis shad);
 - Estuaire de la Seine SAC/Marais Vernier Ramsar (twaite shad);
 - Baie de Canche et Couloir des trois Estuaires SAC (allis shad);
 - Baie de Seine Orientale SAC (both allis and twaite shad); and
 - Littoral Cauchois SAC (twaite shad).
- 7.2.2.10. There is some evidence that this species returns to its natal river to spawn with some genetic integrity (Quignard *et al.*, 1991) with Martin *et al.* (2015) showing a high level of site fidelity for these species. It is likely therefore that individual allis and twaite shad are destined for a particular catchment or SAC.
- 7.2.2.11. Effects for which both shad species have been identified as potentially sensitive (Table 7.4) for both the construction (and decommissioning) and also operational (Repair and Maintenance) phases of the Proposed Development (Table 7.5) are as follows:
- 7.2.2.12. Construction (and decommissioning)
 - Increased SSC;
 - Physical injury;
 - Invasive species;
 - Pollution events;
 - Noise and vibration; and
 - Visual disturbance.
- 7.2.2.13. Operation (repair and maintenance)
 - Increased SSC;
 - Physical injury;
 - Invasive species;
 - Pollution events;



- Noise and vibration;
- EMF; and
- Temperature changes.
- 7.2.2.14. Once installation is complete the buried (or protected) cables will have a life expectancy of at least 40 years. The Proposed Development has been designed so that routine maintenance to the Marine Cables is not required during their operational lifetime. However, there may be the requirement to undertake unplanned repair works. Therefore, during the operation phase of the Proposed Development, the effects are expected to be no greater than that of the construction phase.
- 7.2.2.15. Where those effects assessed are not considered to lead to LSE on the features of this site during construction (or decommissioning), they will not be assessed again for operation as it is considered that no LSE will arise. Two additional effects relevant to shad and specific to the operational phase of a power cable are EMF and temperature changes, and these effects will be assessed accordingly.

SAC/ZSC/Ramsar	Effect	Assessment	Potential for LSE? Y/N
Allis shad: Plymouth Sound and	Increased SSC	The potential impact of increased SSC relates to the sediment released as a result of the burial of the cable and associated works such as dredging (both offshore and at Landfall), the deposit of dredged material, route clearance and rock placement.	Ν
Estuaries SAC Baie de Canche et Couloir des trois Estuaires SAC Baie de Seine Orientale SAC		The worst case for increased SSC is considered to arise through deposit of dredge material which may be required for sandwave clearance, prior to cable installation. During dredge disposal, peak SSC of 1000 mgl ⁻¹ could arise within 1 km from the release point but coarser sediment expected to fall out of suspension quickly (almost immediately) with significant reductions of SSC within hours of disposal at each location. Beyond 1 km from release, the passive plume which is transported beyond this is likely to generate SSC in the region of approximately 20 mgl ⁻¹ , transported in the direction of the prevailing flow out to a distance of c. 25km. SSC is predicted to reduce to background levels (<1 – 6 mg/l) within the timeframe of a few days following completion of disposal activities.	
Twaite shad: Baie de Seine Orientale		Shad are known to be present in all ICES rectangles in the Channel with numbers identified in commercial fisheries data. This is likely to include both allis and twaite shad. Given their wide dispersal within the Channel they are potentially at risk from increased SSC from the Proposed Development both coastally and offshore. SSC could pose a barrier to their migration or respiratory effects from depleted oxygen.	
SAC Estuaire de la Seine SAC/Marais Vernier Ramsar Littoral Cauchois SAC		Publicly available literature on the effects of suspended sediment on both shad species is scarce however Kjelland <i>et al.</i> (2015) identified that fish in general are more likely to undergo sub lethal stress from SSC as they have the ability to move away from an impacted area. In addition, both shad species spawn in a riverine environment so will be inherently tolerant of naturally high and variable background levels of suspended. Both allis and twaite shad are most likely to navigate around or through areas of elevated sediment with minimal impact on their migration.	
		With this in mind and considering the relatively localised (peak SSCs are experienced within 1 km from disposal event) and short and temporary nature (reducing to background levels in minutes to days) of this effect, no barrier to allis and twaite shad migration is expected. It is concluded therefore that the increase in SSC from construction will not lead to LSE on the Plymouth Sound and Estuaries SAC, Baie de Canche et Couloir des trois Estuaires SAC, Baie de Seine Orientale SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar and Littoral Cauchois SAC.	
	Physical injury	The construction (operation & maintenance and decommissioning) phase of the Proposed Development will require the use of construction vessels which may pose a collision risk to allis and twaite shad.	Ν
		It is considered however that as both allis and twaite shad are highly mobile and therefore have the ability to avoid areas of increased vessel traffic (which are predicted to be relatively low when compared to background levels of traffic in the Solent area), the potential for physical injury to occur is extremely low. Although a potential route to impact technically exists, the likelihood is predicted to be very low and the effects are predicted to be negligible. Therefore, it is concluded that the Proposed Development alone, will not lead to a LSE on the Plymouth Sound and Estuaries SAC, Baie de Canche et Couloir des trois Estuaires SAC, Baie de Seine Orientale SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar and Littoral Cauchois SAC.	
	Invasive species	The introduction of invasive species can be harmful to indigenous populations in locations where they do not naturally occur. As a number of vessels will be required for the installation (and pre installation) of the cable there is the possibility that invasive species may be introduced via biofouling or ballast water which are harmful to allis and twaite shad.	Ν
		The introduction of non-native migratory fish species has the potential to increase competition for spawning grounds, predate on eggs or juvenile domestic allis and twaite shad stocks and potentially reduce recruitment. In addition, the introduction of non-native parasites could also have negative effects on allis and twaite shad stocks. Maitland (2003) highlighted that rainbow trout (<i>Oncorhynchus mykiss</i>) which have escaped from fish farms can be an issue in allis and twaite shad rivers, however	

Table 7.4 - LSE Assessment for Allis Shad and Twaite Shad during Construction and Decommissioning of the Proposed Development alone



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SAC/ZSC/Ramsar	Effect	Assessment	Potential for LSE? Y/N
		there is no publicly available literature on vessel born non-native species which are specifically harmful to allis and twaite shad. This is also true for non-native parasites.	
		Although unlikely it is possible that non-native species may be introduced as a result of installation vessels operating in the near and offshore sections of the Proposed Development, however it is highly unlikely that any of these will be harmful to allis and twaite shad. It is concluded therefore that the potential introduction of non-native species will not lead to a LSE on the Plymouth Sound and Estuaries SAC, Baie de Canche et Couloir des trois Estuaires SAC, Baie de Seine Orientale SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar and Littoral Cauchois SAC.	
	Pollution Events	Pollution as a result of installation (operational and decommissioning) activities such as litter and contamination (hydrocarbons, Pesticides and PAHs), pesticides, anti-foulants, pharmaceuticals, transition elements and organo-metals) from installation vessels and release of liquids (bentonite) from HDD operations may have effects on allis and twaite shad whilst they are migrating to or from their natal rivers. As LSE cannot be fully ruled out this effect will be progressed to AA stage.	Y
		Historic pollution in the form of contaminated sediments (i.e. transition elements and organo-metals) as a result of re- suspension is not considered to have the potential to lead to LSE as the area is not highly contaminated.	
	Noise and vibration	The impact of noise and vibration may occur as a result of cable installation (and decommissioning) activities (cable laying and cable protection) and Landfall activities (HDD, vibro hammering/pile driving of four 36" steel casings and support lattices).	Ν
		Although no noise emissions for the Proposed Development are available Nedwell <i>et al.</i> (2003) found that the noise emitted from cable trenching at North Hoyle OWF was 123 dB re 1 μ Pa (at a range of 160 m).	
		In terms of noise and vibration from Landfall activities Nedwell <i>et al.</i> (2012) found that underwater noise monitoring of HDD operating 39 m below a river resulted in levels of 129.5 dB re 1 μ Pa on the river bed and Nedwell <i>et al.</i> (2003) found no discernible increase in underwater noise from an active vibropiling rig at a distance of 417.4m against the background noise of Town Quay, Southampton.	
		Both allis and twaite shad are a member of the herring family (Clupeidae) and are considered to be hearing specialists due to the coupling of the ear to the swim bladder. Mann et al, (2001) suggests this species has a hearing range between 10 Hz and 180 kHz. Popper <i>et al.</i> (2014) recommended guidelines for shipping and other continuous noises, with cable laying, HDD and vibropiling considered to fall within this category. Fish with a swim bladder involved in hearing (primarily pressure detection), such as allis and twaite shad, were assigned a low risk to mortality and potential mortal injury. In addition, recoverable injury may occur at 170 dB re 1 µPa for 48 hours and temporary threshold shift ('TTS') at 158 dB re 1 µPa for 12 hours from continuous sound sources.	
		When comparing the expected noise levels from cable trenching (as identified by Nedwell <i>et al.</i> , 2003) and HDD with the guidelines by Popper <i>et al.</i> (2014) the risk of recoverable injury or TSS will only occur if an individual is closer than 160 m to the source for a period of hours. As both shad species are highly mobile and capable of hearing underwater noise, they are likely to move away from the impact before injury or TTS occurs. In addition, allis and twaite shad are generally pelagic and unlikely to be in proximity to the seabed, where cable trenching will occur, for any length of time.	
		In light of this, the potential impact of noise and vibration form both cable installation and Landfall activities will not lead to an LSE on the Plymouth Sound and Estuaries SAC, Baie de Canche et Couloir des trois Estuaires SAC, Baie de Seine Orientale SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar and Littoral Cauchois SAC.	



SAC/ZSC/Ramsar	Effect	Assessment	Potential for LSE? Y/N
	Visual Disturbance	The impact of visual disturbance during installation (and decommissioning) to both allis and twaite shad could potentially occur due to the increase in vessels on the sea surface, installation equipment on the seabed (grapnels, displacement ploughs, trenching tools) and attachment lines.	Ν
		Allis and twaite shad, like most fish, are highly adapted to detect changes in the visual environment with visual stimuli such as vessels potentially evoking a disturbance response which may incur unnecessary stress and use of energy. The common reaction to a potentially harmful situation is to escape and gain distance from the source with fish this is often presented by fleeing to deeper water (Ali, 1961). Flight behaviours are characterised by fast-start swimming which is a high energy burst and rapid acceleration in swimming speed usually away from the disturbance (Domenici and Blake, 1997). The duration of response and therefore stress, is a reflection of the potential risk versus the cost of avoidance with stress levels increasing dependent on the time the fish is exposed to the stimuli (Endler, 1991).	
		There is limited (if any) literature on the effects of visual disturbance from vessels on both species of shad. It is however considered that they will exhibit a similar response to most fish which is to navigate around or under the vessel. The effects of this are unlikely to be stressful with the Solent being a busy shipping area and both species of shad likely to be habituated to such disturbance.	
		In light of this the potential impact from visual disturbance will not lead to an LSE on the Plymouth Sound and Estuaries SAC, Baie de Canche et Couloir des trois Estuaires SAC, Baie de Seine Orientale SAC, Estuarie de la Seine SAC/Marais Vernier Ramsar and Littoral Cauchois SAC.	



SAC/ZSC/Ramsar	Effect	Assessment	Potential for LSE? Y/N
Allis Shad: Plymouth Sound and Estuaries SAC Baie de Canche et Couloir des trois Estuaires SAC Baie de Seine Orientale SAC Twaite Shad: Baie de Seine Orientale SAC	EMF	 The potential impact of EMF could occur as a result of the operation of the Proposed Development. The predicted field strength for EMF around the cables is 42 µT at 1 m depth. As this is the minimum buried depth of the cables proposed this is considered to be the worst case. Publicly available literature on the effects of EMF on both species of shad is scarce (or non-existent). Elasmobranches on the other hand are known to be electroreceptive due to the presence of Ampullae of Lorenzini which allow this group of fishes to detect very weak voltage gradients which are used for prey detection. Both allis and twaite shad do not possess ampullary organs but rely on sight and sensory detection to find prey. They are also pelagic and do not depend on the seabed for feeding and are therefore unlikely to be exposed to EMF from the Proposed Development. In light of the above, the potential impact of EMF will not lead to LSE on the Plymouth Sound and 	Ν
Estuaire de la Seine SAC/Marais Vernier Ramsar		Estuaries SAC, Baie de Canche et Couloir des trois Estuaires SAC, Baie de Seine Orientale SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar and Littoral Cauchois SAC.	
Littoral Cauchois SAC	Temperature Change	 Heat occurs during the transport of electricity through cables as a result of the resistance of the conductor material. It is expected that during operation a small amount of heat will be produced by the Proposed Development. There is little (if any) publicly available literature on the effects of heat from subsea cables on both species of shad. However, Hundt <i>et al.</i> (2015) investigated the effect of heat on larval stages of allis and twaite shad in freshwater which showed that optimal temperatures for growth performance was between 24 °C and 28 °C. Although this relates to freshwater, the larval stages of fish are often the most sensitive to any impact with adults likely to be more tolerant. A study undertaken for the Nemo link HVDC (Nemo Link, 2013) cable calculated that localised temperature increases in the seabed above the cable would only be 1.2°C at 0.3 m depth and 0.7°C at 0.1 m depth from the seabed surface. Information presented within the ES Addendum regarding potential heat emissions from the UK Marine Cables support the findings from other studies (document reference 7.8.1). The cables for the Proposed Development will be buried to a minimum depth of 1 m and the thermal assessment deomnstrates that any substantial temperature increase will not be detectable at the seabed. In addition, allis and twaite shad generally swim near to the sea surface so interaction with any heat emissions from the Proposed Development is unlikely. Given the minimal emission of heat expected which is expected to have little to no effect on allis and twaite shad this impact will not lead to LSE on the Plymouth Sound and Estuaries SAC, Baie de Canche et Couloir des trois Estuaires SAC, Baie de Seine Orientale SAC, Estuaire de la Seine SAC Marais Vernier Ramsar and Littoral Cauchois SAC. 	Ν

Table 7.5 - LSE Assessment for allis and twaite shad during Operation (including Repair and Maintenance)



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Sea Lamprey and River Lamprey

- 7.2.2.16. Both sea and river lamprey have similar physiology and exhibit similar biological traits such as being migratory and spawning in freshwater. As the same potential effects are identified for both species they have been assessed together in the following section.
- 7.2.2.17. Sea lamprey and river lamprey are an interest feature of a number of SACs and a Ramsar where connectivity may exist with the potential effects identified for the Proposed Development. All sites within the study area which list sea lamprey and/or river lamprey as qualifying features are listed below:
 - River Avon SAC (sea lamprey);
 - River Axe SAC (sea lamprey);
 - Littoral Cauchois SAC (sea lamprey and river lamprey);
 - Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC (river lamprey);
 - Estuaire de la Seine SAC/Marais Vernier Ramsar (sea lamprey and river lamprey);
 - Baie de Canche et Couloir des trois Estuaires SAC (sea lamprey and river lamprey); and
 - Baie de Seine Orientale SAC (sea lamprey and river lamprey).
- 7.2.2.18. Sea lamprey show limited site fidelity which is thought to be due to its parasitic adult life phase as cohorts become widely dispersed through transport by the diverse range of species they parasitize (Waldman *et al.*, 2008). There is therefore no way of attributing individuals to specific SACs. Despite this novel approach to spawning site selection, sea lamprey belong to the same species and are therefore sensitive to the same effects regardless of the SAC for which they are qualifying feature.
- 7.2.2.19. River lamprey on the other hand are generally considered to use estuaries and coastal environments during their adult stages however the degree of spawning site fidelity is unknown.
- 7.2.2.20. Effects for which both sea and river lamprey have been identified as potentially sensitive (Table 7.6) for both the construction (and Decommissioning) and also operational (Repair and Maintenance) phases of the Proposed Development (Table 7.7) are as follows:
- 7.2.2.21. Construction (and decommissioning)
 - Increased SSC;
 - Physical injury;
 - Invasive species;
 - Pollution events; and



- Noise and vibration.
- 7.2.2.22. Operation (repair and maintenance)
 - Increased SSC;
 - Physical injury;
 - Invasive species;
 - Pollution events;
 - Noise and vibration;
 - EMF; and
 - Temperature changes.
- 7.2.2.23. Once installation is complete the buried (or protected) cables will have a life expectancy of at least 40 years. The Proposed Development has been designed so that routine maintenance to the Marine Cables is not required during their operational lifetime. However, there may be the requirement to undertake unplanned repair works. Therefore, during the operation phase of the Proposed Development, the effects are expected to be no greater than that of the construction phase.
- 7.2.2.24. Where those effects assessed are not considered to lead to LSE on the features of this site during construction (or decommissioning), they will not be assessed again for operation as it is considered that no LSE will arise. One additional effect relevant to lamprey species and specific to the operational phase of a power cable is EMF, and this effect will be assessed accordingly.

Table 7.6 - LSE Assessment for Sea lamprey and River lamp	rey during Construction and Decommissioning
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SAC/ZSC/Ramsar	Effect	Assessment	Potential for LSE? Y/N
Sea Lamprey: River Avon SAC	Increased SSC	The potential impact of increased SSC relates to the sediment released as a result of the cable installation and associated works such as dredge and disposal activities, route clearance and rock placement for both the Marine Cable Corridor and Landfall.	Y (UK sites only)
River Axe SAC Littoral Cauchois SAC Estuaire de la Seine SAC/Marais Vernier Ramsar Baie de Canche et Couloir des trois Estuaires SAC		Lamprey are known to use the coastal waters and there is the possibility that an increase in SSC could pose a barrier to their migration or cause respiratory effects from depleted oxygen. As LSE cannot be fully ruled for the River Axe and River Avon, this impact will be progressed to AA stage. Due to the distance between the French sites, it is not considered that increases in SSC will result in any significant effect on the qualifying features e.g. barrier effects.	
 Baie de Seine Orientale SAC River Lamprey: Littoral Cauchois SAC Estuaire de la Seine SAC/Marais Vernier Ramsar Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC Baie de Canche et Couloir des trois 	Physical injury	The construction (and decommissioning) phase of the Proposed Development will require the use of construction vessels which may pose a collision risk to lamprey. It is considered however that given lampreys (both adult and transformers) are highly mobile and therefore have the innate ability to avoid areas of increased vessel traffic the possibility of this impact is extremely low. Although a potential route to impact exists this will not lead to LSE on the River Avon SAC, River Axe SAC, Littoral Cauchois SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar, Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC, Baie de Canche et Couloir des trois Estuaires SAC and Baie de Seine Orientale SAC.	Ν
Estuaires SAC Baie de Seine Orientale SAC	Invasive species	The introduction of invasive species can be harmful to indigenous populations in locations where they do not naturally occur. As a number of vessels will be required for the installation (and pre- installation) of the cable there is the possibility that invasive species may be introduced via biofouling or ballast water which are harmful to both sea and river lamprey. The introduction of non-native migratory fish species has the potential to increase competition for spawning grounds with domestic lamprey stocks and potentially reduce recruitment. In addition, the introduction of non-native parasites could also have negative effects on lamprey stocks. There is no publicly available literature on vessel born non-native species which are specifically harmful to lamprey. In addition, only a few parasites have been recorded from lampreys and nothing is known about their effect (Maitland, 2003). Although unlikely it is possible that non-native species may be introduced as a result of installation vessels operating in the near and offshore sections of the Proposed Development, however it is highly unlikely that any of these will be harmful to sea and river lamprey. It is concluded therefore that the potential introduction of non-native species will not lead to LSE River Avon SAC, River Axe SAC, Littoral Cauchois SAC, Estuaire de la Seine SAC/Marais Vernier Ramsar, Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC, Baie de Canche et Couloir des trois Estuaires SAC and Baie de Seine Orientale SAC.	Ν



SAC/ZSC/Ramsar	Effect	Assessment	Potential for LSE? Y/N
	Pollution Events	 Pollution as a result of installation (operational and decommissioning) activities such as litter and contamination (hydrocarbons, Pesticides and PAHs), pesticides, anti-foulants, pharmaceuticals, transition elements and organo-metals) from installation vessels and release of liquids (bentonite) from HDD operations may have effects on lamprey (and transformers) whilst they are migrating to or from freshwater. As LSE cannot be fully ruled out this effect will be progressed to AA stage. Historic pollution in the form of contaminated sediments (i.e. transition elements and organometals) is not considered to have the potential to lead to LSE i.e. as a result of re-suspension, as the area is not highly contaminated. 	Y
	Noise and vibration	The impact of noise and vibration may occur as a result of cable installation (and decommissioning) activities (cable laying and cable protection) and Landfall activities (HDD, vibro hammering/pile driving of four 36" steel casings and support lattices). Lamprey are considered to be hearing generalists, with a maximum hearing range of no more than several hundred Hz (Popper, 2005). Therefore, behavioural or physiological effects on lamprey are considered to only occur when the organism is very close to a powerful noise source (Popper, 2005; Popper and Hastings 2009). A powerful noise source could be produced by piling however no piling will be required for the Proposed Development with the loudest source of noise expected to be from mechanical trenching (123 dB re 1 µPa at a range of 160 m). Popper <i>et al.</i> (2014) recommended guidelines for shipping and other continuous noises, with cable laying, vibro piling and HDD considered to fall within this category. Fish with no swim bladder (particle motion detection), such as sea lamprey, were assigned a low risk to mortality, potential mortal injury and recoverable injury near to the source from continuous sound sources. Given that lamprey have a low sensitivity to noise and vibration they are at low risk from mortality and mortal injury as a result of trenching operations, HDD and vibropiling and it is concluded that this impact will not lead to LSE on the river Avon, river Axe, Littoral Cauchois, Estuaire de la Seine SAC/Marais Vernier Ramsar, Estuaires et Littoral Picards (Baies de Somme et d'Authie), Baie de Canche et Couloir des trois Estuaires and Baie de Seine Orientale SAC.	Ν



SAC/ZSC/Ramsar	Effect	Assessment
Sea Lamprey: River Avon River Axe	EMF	The potential impact of EMF could occur as a result of the oper of the Proposed Development. The predicted field strength for B around the cables is 42 μ T at 1 m depth. As this is the minimum buried depth of the cables thus far proposed this is considered the worst case.
Littoral Cauchois Estuaire de la Seine SAC/Marais Vernier Ramsar Baie de Canche et Couloir des trois Estuaires Baie de Seine Orientale River Lamprey: Littoral Cauchois Estuaire de la Seine SAC/Marais Vernier Ramsar Estuaires et Littoral Picards (Baies de Somme et d'Authie) Baie de Canche et Couloir des trois Estuaires Baie de Seine Orientale		The effects of EMF on lamprey is not well documented. Elasmobranches on the other hand are known to be electroreceptive due to the presence of Ampullae of Lorenzini v allow this group of fishes to detect very weak voltage gradients Lamprey also possess ampullary organs on their heads and bo Brodznick <i>et al.</i> (1983) showed that these are sensitive to weak frequency electric fields. However, there is no evidence that lampreys respond to magnetic B fields and no responses to cal induced electric fields have been recorded. Lamprey utilise both the pelagic and benthic zones whilst at sea and coastally (and in estuaries) (Hardisty, 1986). It is therefore possible that on their spawning migration back to freshwater the will encounter low levels (42 µT at the seabed) of EMF from the Proposed Development. However, given that that there is no evidence that shows a behavioural response from these specie EMF from cables their migration is unlikely to be affected. It is concluded that EMF as a result of the Proposed Developm will not lead to LSE on the River Avon, River Axe, Littoral Cauc Estuaire de la Seine SAC/Marais Vernier Ramsar, Estuaires et Littoral Picards (Baies de Somme et d'Authie), Baie de Canche Couloir des trois Estuaires and Baie de Seine Orientale ZSC/S
	Temperature changes	Heat is generated as electricity passes through cables as a rest the resistance of the conductor material. It is expected that duri operation a small amount of heat will be produced by the Proper Development. The effect of heat from subsea cables on lamprey is not well documented however a study undertaken for the Nemo link HV (Nemo Link, 2013) cable calculated that localised temperature increases in the seabed above the cable would only be 1.2°C at m depth and 0.7°C at 0.1 m depth from the seabed surface. Information presented within the ES Addendum regarding poten heat emissions from the Marine Cables supports the findings fr these studies (document reference 7.8.1). The cables for the Proposed Development will be buried to a target burial depth of m, and the thermal assessment demonstrates that any substant temperature increase will not be detectable at the seabed. In addition, lamprey are highly mobile and not dependent on the

Table 7.7 - LSE Assessment for Sea lamprey and River lamprey during Operation (including Repair and Maintenance)



	Potential for LSE? Y/N
eration EMF m d to be	Ν
which s. odies. ak, low	
able	
ea e ney ie	
es to	
nent chois, et e et SACs.	
sult of ring oosed	Ν
VDC e at 0.3	
ential rom	
of 1 ntial	

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SAC/ZSC/Ramsar	Effect	Assessment
		seabed so interaction with any heat, from the Proposed Development is unlikely.
		Given the minimal emissions of heat from the Marine Cables whis expected to have little to no effect on lamprey this impact will lead to LSE on the River Avon, River Axe, Littoral Cauchois, Estuaire de la Seine SAC/Marais Vernier Ramsar, Baie de Candet Couloir des trois Estuaires, Baie de Seine Orientale and Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC



	Potential for LSE? Y/N
which ill not	
anche	
Cs.	



7.2.3. MARINE MAMMALS

- 7.2.3.1. This section considers the potential for LSE from the effects identified in Section 6 on the marine mammal species identified in Section 4. Information from the ES has been used to inform the LSE screening assessment which is presented in Table 7.8.
- 7.2.3.2. The seven pre-screened in European designated sites (i.e. those with which there is potential for connectivity) identified in Section 6 have been grouped and considered together for each species. The species have also been grouped and considered together for each effect because there is little difference in susceptibility between species.
- 7.2.3.3. As summarised in Table 7.8 below, it is concluded that there is no LSE for the Proposed Development alone for any of the marine mammal features for any of the SACs/Ramsars identified as part of this HRA from the following potential effects: auditory injury, disturbance, collision and indirect effects.
- 7.2.3.4. The potential for pollution events to have LSE cannot be ruled out therefore pollution has been taken through to the next stage of the assessment (see Section 10).

Table 7.8 - Assessment of LSE on Natura 2000/Ramsar marine mammal features resulting from the Proposed Development alone. This assessment relates to all phases of the project (i.e. construction, operation and decommissioning) unless otherwise stated

Effect	Species	Relevant SACs/ZSC/Ramsar	LSE?	Justification		
Auditory injury	Bottlenose dolphin	Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC	N	Noise from use of geophysical survey and The sound emitted by some geophysical the potential to induce the onset of perma		
	Harbour porpoise	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	injury, at very close range (i.e. within 1 m) in Oceanic and Atmospheric Administration (used; see Section 10.6.1 of Chapter 10 the As animals are very unlikely to occur at very of the vessels carrying the equipment, it is potential for the sound emitted by geophys		
	Grey seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	 to induce the onset of PTS. <u>Noise from seabed preparation work, cable</u> The M-weighted sound exposure level ('SE (PTS onset) is predicted to occur for noise work, cable installation activities and vesses metre (Inchcape Offshore Limited ('ICOL'), There is therefore negligible potential for an noise from the proposed seabed preparation and vessels (see Section 10.3.2 of Chapter approach used). <u>Noise from HDD work (construction phase</u> Due to the very low levels of noise measure 2012), there is considered to be negligible onset; see Section 10.3.2 of Chapter 10 of used). <u>Noise from potential vibro-hammering and (construction phase only)</u>: Due to the low levels of noise emitted by ty the potential for auditory injury (PTS onset) (NOAA (2018) PTS onset thresholds used; the ES for detail of the approach used). Therefore, no LSE as a result of auditory dolphin, harbour porpoise, grey seal and 		
	Harbour seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν			
Disturbance	Bottlenose dolphin	Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC	Ν	Proposed Development alone. Noise from use of geophysical survey and		



d positioning equipment: survey and positioning equipment has anent threshold shift ('PTS'), i.e. auditory) if source levels are high (National ('NOAA') (2018) PTS onset thresholds he ES for detail of the approach used).

very close range, i.e. within a few metres is considered that there is negligible sical survey and positioning equipment

ble installation activities and vessels: SEL') ranges out to which auditory injury se from the proposed seabed preparation sels are predicted to be less than one .'), 2013; Natural Power, 2018).

auditory injury as a result of increased tion work, cable installation activities ter 10 of the ES for detail of the

se only): ured during HDD work (Nedwell et al., e potential for auditory injury (PTS of the ES for detail of the approach

d sheet piling at the HDD locations

typical EMV and pipe driving machines, et) is considered to be nil even at source ed; see Section 10.6.1 of Chapter 10 of

ory injury is concluded for bottlenose and harbour seal as a result of the

d positioning equipment:

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Effect	Species	Relevant SACs/ZSC/Ramsar	LSE?	Justification
		Baie de Seine orientale SAC		The sound emitted by some geophysical su
	Harbour porpoise	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	the potential to disturb marine mammals i within their hearing range. Although there small number of individuals, any effects a reversible (animals are likely to return to a documented by Thompson <i>et al.</i> , 2013) w being available in the meantime. Given th the vicinity of the Proposed Development,
	Grey seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	potential for significant disturbance. <u>Noise from seabed preparation work, cable</u> Disturbance ranges as a result of increased activities and vessels proposed are likely to Natural Power, 2018). There is therefore ne disturbance as a result of noise from the pri- Furthermore, any effects are likely to be ter
	Harbour seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	N	 Furthermore, any effects are likely to be tealternative local habitat being available in the alternative local habitat being available in the alternatity in the alternative lo



survey and positioning equipment has if the frequency/frequencies used fall is potential for disturbance of a very are predicted to be temporary and affected sites within a few hours as with suitable alternative local habitat he low abundance of marine mammals in , there is considered to be negligible

le installation activities and vessels: ed anthropogenic noise from the to be small (<1 to 140 m; ICOL, 2013; negligible potential for significant proposed work/activities and vessels. emporary and reversible with suitable the meantime.

<u>e only)</u>: Due to the very low levels of ell *et al.*, 2012), there is considered to

d sheet piling at the HDD locations

typical EMV and pipe driving machines, to underwater noise is considered to be

<u>')</u>:

MF include temporary behavioural haviour as a result of the presence of w metres (i.e. be very small scale and ffect (Normandeau *et al.*, 2011). There cant disturbance as a result of the

ction phase only): The potential for ns within these seven sites in response etween the Proposed Development and

bance is concluded for bottlenose nd harbour seal as a result of the

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Effect	Species	Relevant SACs/ZSC/Ramsar	LSE?	Justification		
Collision	Bottlenose dolphin	Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC	N	Vessel strikes are a known cause of mortal for subsequent infection) in marine mamma species under consideration are considered		
	Harbour porpoise	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	whales and have been shown to avoid ship Due to the nature of the Proposed Develop following a pre-defined linear route when w vessels will either be stationary, travelling a transiting in a predictable manner. Therefo their path and avoid them, which will great		
	Grey seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	addition, any animals present will already b vessel movements present in the study are movements/day in summer and 300 vessel Chapter 13 Shipping, Navigation and Other APP-128). Therefore, the potential for signf is considered to be negligible. Therefore, no LSE as a result of collision		
	Harbour seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	dolphin, harbour porpoise, grey seal and Proposed Development alone.		
Indirect effects	Bottlenose dolphin	Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC	Ν	Indirect effects such as changes in suspective construction (operation and decommission activities (such as dredging/MFE) have the subscript of the subscript o		
	Harbour porpoise	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	availability/quality and alter marine mamma therefore fitness. However, marine mammals are recorded for suspension levels are high, such as estuari for foraging (Bailey and Thompson, 2010). visual cues to hunt (they use echolocation)			
	Grey seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	hydrodynamic stimuli through their whiskers and sound (Dehnhardt <i>et al.</i> , 1998; 2001), i will continue to forage in areas of high sedin other than visual ones. It is also predicted the Proposed Development will reduce down to so any potential effects would only be short		



ality and physical injury (with potential nals, particularly large whales. The red to be more agile than the large ips e.g. Palka and Hammond (2001).

opment, the large vessels will be working and the small to medium sized at low to moderate working speeds or ore, it will be easy for animals to predict atly reduce the risk of collision. In be habituated to the high levels of rea (which is *circa* 450 vessel el movements/day in winter (see er Marine Users of the ES Volume 1, nficant effects resulting from collisions

ons is concluded for bottlenose nd harbour seal as a result of the

ended sediment levels as a result of ning) including seabed preparation ne potential to affect prey nal foraging behaviour/success and

foraging in areas where sediment aries, and may in fact target such areas). Because cetaceans do not rely on n) and seals are sensitive to ers rather than relying solely on sight b, it is expected that marine mammals diment load, relying on sensory cues d that increases in SSC as a result of the to background levels within a few days port term and temporary.

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Effect	Species	Relevant SACs/ZSC/Ramsar	LSE?	Justification		
	Harbour seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Ν	Furthermore, because marine mammals ra habitats, any short-term local level change to result in a reduction in fitness or breedin Therefore, no LSE as a result of indirect dolphin, harbour porpoise, grey seal an Proposed Development alone.		
Pollution	Bottlenose dolphin	Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC	Potential pollution as a result of the Proposition broad types: Contamination as a result of undisposal of litter.			
	Harbour porpoise	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Y	Pollution may have short-term/direct effected as a result of an unplanned s (Kastelein and Lavaleije, 1992) or anima (Baulch and Perry, 2014). Pollution may also have long-term/indirect		
	Grey seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Y	contaminated prey items are ingested. Bec apex predators, bioaccumulation as a resu items may occur (Wells <i>et al.</i> , 2005). This r reduced reproductive success. Historic pollution in the form of contaminate and organo-metals) is not considered to have resuspension of sediments, to a LSE as the		
	Harbour seal	Récifs Gris-Nez Blanc-Nez SAC Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC Baie de Canche et couloir des trois estuaires SAC Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar Littoral Cauchois SAC Baie de Seine orientale SAC Estuaire de la Seine SAC	Y	contaminated. The potential for pollution to result in a porpoise, grey seal and harbour seal a Development alone cannot be ruled ou taken through to the next stage of the a		



range widely and forage in a variety of ges in prey availability/quality are unlikely ling success.

ect effects is concluded for bottlenose and harbour seal as a result of the

osed Development may be split into two f unplanned spills and the unplanned

cts on marine mammals if water quality bill (Lane *et al.*, 2015), litter is ingested Is become entangled in marine debris

et effects on marine mammals if ecause marine mammals are long-lived sult of ingestion of contaminated prey as may lead to health issues such as

ated sediments (i.e. transition elements have the potential to lead i.e. through the area is not considered to be highly

a LSE on bottlenose dolphin, harbour as a result of the Proposed ut and therefore pollution has been assessment (see Section 10).

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7.2.4. MARINE ORNITHOLOGY

7.2.4.1. An assessment of LSE on designated marine ornithological features during the construction, operation and decommissioning phases of the Proposed Development is provided in Table 7.9.

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
Solent and Dorset Coast SPA	A Disturbance and displacement Indirect effects	Little tern	Y	Foraging little terns are considered to be of moderate sensiti (Garthe & Hüppop, 2004; Bradbury <i>et al.</i> , 2014). Due to the (Parsons <i>et al.</i> , 2015), the presence of vessels and associat development may displace this feature from favoured foragin visual disturbance and unpredictable noise events, particular construction.
		Sandwich tern	Ν	Foraging Sandwich terns are considered to be of low sensitinand associated activities (Garthe & Hüppop, 2004; Bradbury are known to forage within the Solent where vessel traffic leve 2014; Natural England, 2016; Natural England, 2019c). It is due to the Proposed Development is low when compared to It is therefore considered that Sandwich terns will habituate that and associated activities during all phases of development and associated activities during all phases and associated activities during all phases and associated activities during all phases as a specific during all phases and associated activities during all phases as a specific during a
		Common tern	Ν	Foraging common terns are considered to be of low sensitive and associated activities (Garthe & Hüppop, 2004; Bradbury are known to forage within the Solent where vessel traffic lev 2014; Natural England, 2016; Natural England, 2019c). It is due to the Proposed Development is low when compared to It is therefore considered that as the increase in traffic result low, common terns will habituate to the increased presence during all phases of development and LSE can be ruled out.
		Supporting habitat (water column)	Ν	Disturbance and displacement of prey species present within of development is considered to be negligible since it is likely Solent are accustomed to vessel traffic and the presence of commercial fishing vessels) and will simply navigate round of maintenance vessels. Any effects resulting from possible inco considered to be of limited spatial extent and short lived (red and LSE can be ruled out
		Little tern	Y	Little terns are visual foragers (Parsons <i>et al.</i> , 2015) and are turbidity which can make it harder to see prey from the seas moderately sensitive to habitat disturbance and subsequent (Bradbury <i>et al.</i> , 2014). Increases in suspended sediment as works, cable burial activities and cable maintenance within the within this species' restricted foraging range.
		Sandwich tern	Y	Sandwich terns are visual foragers and are likely to be affect can make it harder to see prey from the sea surface. They a sensitive to habitat disturbance and therefore to potential eff 2014).

Table 7.9 - Assessment of LSE on designated marine ornithological features as a result of the Proposed Development across all phases of development



itivity to disturbance from vessel traffic e species' restricted foraging range ated activities during all phases of ing habitat within this SPA through both arly in relation to HDD works during

itivity to disturbance from vessel traffic ry et al., 2014). Indeed, Sandwich terns evels are already high (Wilson et al., s considered that the increase in traffic to the existing vessel activity in the area. to the increased presence of vessels and LSE can be ruled out.

vity to disturbance from vessel traffic ry et al., 2014). Indeed, common terns evels are already high (Wilson et al., s considered that the increase in traffic to the existing vessel activity in the area. Iting from the Proposed Development is e of vessels and associated activities t..

nin the water column during all phases ely that fish species present in the of vessels towing equipment (e.g. or under any construction or ncreases in suspended sediment are educe to background levels within days)

re likely to be affected by an increase in surface. They are considered to be nt potential effects on prey species as a result of seabed preparation, HDD this SPA may affect prey availability

ected by an increase in turbidity which are considered to be moderately effects on prey species (Bradbury et al.,

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
				Increases in suspended sediment as a result of seabed prepactivities and cable maintenance within this SPA may affect foraging range (Wilson <i>et al.</i> , 2014).
		Common tern	Υ	Common terns are visual foragers and are likely to be affect can make it harder to see prey from the sea surface. They a sensitive to habitat disturbance and therefore to potential eff 2014). Increases in suspended sediment as a result of seab burial activities and cable maintenance within this SPA may species' foraging range (Wilson <i>et al.</i> , 2014).
		Supporting habitat (water column)	Y	Increases in suspended sediment as a result of seabed prepactivities and cable maintenance may increase turbidity of the availability though changes in primary production by phytopla visual foraging features to see prey from the sea surface.
	Collision	Little tern	Ν	Structures or devices which have the potential to pose an ab will not be introduced during any development phase. Surface not considered to be vulnerable to below water collisions (Fu- ruled out.
		Sandwich tern	Ν	Structures or devices which have the potential to pose an ab terns will not be introduced during any development phase. terns are not considered to be vulnerable to below water coll can be ruled out.
		Common tern	Ν	Structures or devices which have the potential to pose an at terns will not be introduced during any development phase. terns are not considered to be vulnerable to below water coll can be ruled out.
		Little tern	N	There is no pathway for activities associated with the Proposition non-indigenous predators (e.g. mink) to little tern breeding constrained in Chichester and Langstone Harbours.
		Sandwich tern	N	There is no pathway for activities associated with the Proposition non-indigenous predators (e.g. mink) to Sandwich tern breed will not be berthed in Chichester and Langstone Harbours.
		Common tern	N	There is no pathway for activities associated with the Propo invasive non-indigenous predators (e.g. mink) to common te vessels will not be berthed in Chichester and Langstone Har
		Supporting habitat (water column)	Ν	Invasive species (e.g. Chinese mitten crabs, slipper limpets into the water column via biofouling or ballast water from ves habitat structure and those with versatile diets can cause de natives and therefore altering the community structure and for However, given that all three tern species predate on a rang



eparation, HDD works, cable burial ct prey availability within this species'

cted by an increase in turbidity which are considered to be moderately effects on prey species (Bradbury *et al.*, abed preparation, HDD works, cable ay affect prey availability within this

eparation, HDD works, cable burial this supporting habitat, altering prey plankton, as well as making it harder for

above water collision risk to little terns ace feeding species including terns are Furness *et al.*, 2012) and LSE can be

above water collision risk to Sandwich . Surface feeding species including ollisions (Furness *et al.*, 2012) and LSE

above water collision risk to common . Surface feeding species including ollisions (Furness *et al.*, 2012) and LSE

osed Development to introduce invasive colonies, since vessels will not be

oosed Development to introduce invasive eeding colonies, since installation vessels

posed Development to introduce tern breeding colonies, since installation larbours.

ts and Pacific oyster) may be introduced ressels. Invasive species can affect detrimental impacts by outcompeting d food chain (Orlova *et al.*, 2006). nge of prey species including sandeels,

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
				herring and sprats which are highly mobile, these species w in prey communities and LSE can be ruled out.
	Accidental spills	Little tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect little terns when in contac oiling resulting in mortality.
		Sandwich tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect Sandwich terns when in direct oiling resulting in mortality.
		Common tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect common terns when in co direct oiling resulting in mortality.
		Supporting habitat (water column)	Y	Unplanned oil or chemical spillages from vessels may occur can cause sublethal impacts on juvenile fish growth and sur availability.
	Litter	Little tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect little terns when utilising the sea surface throu in mortality.
		Sandwich tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect Sandwich terns when utilising the sea surface resulting in mortality.
		Common tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect common terns when utilising the sea surface to resulting in mortality.
		Supporting habitat (water column)	Y	Unplanned disposal of industrial or user plastic during all de directly affect prey species within the water column through mortality.
0	Disturbance and displacement	Red-breasted merganser	Υ	Red-breasted merganser feed and roost on the water in both between October and March (Natural England, 2019a). This moderate sensitivity to disturbance (Bradbury <i>et al.</i> , 2014; G both visual disturbance and unpredictable noise events, par during construction in Langstone Harbour could result in dis temporary displacement.
		Little tern	Y	Foraging little terns are considered to be of moderate sensit (Garthe & Hüppop, 2004; Bradbury <i>et al.</i> , 2014). Due to the (Parsons <i>et al.</i> , 2015), the increased presence of vessels ar phases of development may displace this feature from favou



will not be affected by localised changes

ur during all development phases. Spills act with the sea surface through direct

ur during all development phases. Spills n contact with the sea surface through

ur during all development phases. Spills contact with the sea surface through

ur during all development phases. Oil urvival, thus potentially affecting prey

development phases has the potential to bugh ingestion or entanglement resulting

development phases has the potential to ce through ingestion or entanglement

development phases has the potential to e through ingestion or entanglement

development phases has the potential to hingestion or entanglement resulting in

oth Chichester and Langstone Harbours his feature is considered to be of Gittings & O'Donoghue, 2016). As such, articularly in relation to HDD works isturbance of the feature and possible

sitivity to disturbance from vessel traffic e species' restricted foraging range and associated activities during all oured foraging habitat within this SPA

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
				through both visual disturbance and unpredictable noise eve works during construction.
	Indirect effects	Sandwich tern	N	Foraging Sandwich terns are considered to be of low sensitive and associated activities (Garthe & Hüppop, 2004; Bradbury are known to forage within Chichester and Langstone Harbor England, 2016; Natural England, 2019a). It is therefore consist habituate to the increased presence of vessels and associated development and LSE can be ruled out.
		Common tern	Ν	Foraging common terns are considered to be of low sensitivi and associated activities (Garthe & Hüppop, 2004; Bradbury are known to forage within Chichester and Langstone Harbo England, 2016; Natural England, 2019a). It is therefore cons habituate to the increased presence of vessels and associate development and LSE can be ruled out.
		Supporting habitat (water column)	N	Disturbance and displacement of prey species present within of development is considered to be negligible since it is likely Solent are accustomed to vessel traffic and the presence of commercial fishing vessels) and will simply navigate round o maintenance vessels and LSE can be ruled out.
		Red-breasted merganser	Y	Red-breasted mergansers are visual foragers and are likely turbidity which can make it harder to see prey in the water comoderately sensitive to habitat disturbance and subsequent <i>al.</i> , 2014). Increases in suspended sediment as a result of seburial activities and cable maintenance may affect prey available within Langstone and Chichester Harbours.
		Little tern	Y	Little terns are visual foragers and are likely to be affected by make it harder to see prey from the sea surface. They are con- habitat disturbance and therefore potential effects on prey (B suspended sediment within Langstone Harbour as a result of addition to cable burial and maintenance activities outwith La availability within this species' restricted foraging range (Pars
		Sandwich tern	Y	Sandwich terns are visual foragers and are likely to be affect can make it harder to see prey from the sea surface. They are sensitive to habitat disturbance and therefore potential effect Increases in suspended sediment within Langstone Harbour HDD works, in addition to cable burial and maintenance active affect prey availability within this species' foraging range (Wi
		Common tern	Y	Common terns are visual foragers and are likely to be affected can make it harder to see prey from the sea surface. They are



vents, particularly in relation to HDD

tivity to disturbance from vessel traffic ry *et al.*, 2014). Indeed, Sandwich terns ours (Wilson *et al.*, 2014; Natural usidered that Sandwich terns will ated activities during all phases of

vity to disturbance from vessel traffic ry *et al.*, 2014). Indeed, common terns ours (Wilson *et al.*, 2014; Natural nsidered that common terns will ated activities during all phases of

in the water column during all phases by that fish species present in the f vessels towing equipment (e.g. or under any construction or

y to be affected by an increase in column. They are considered to be it potential effects on prey (Bradbury *et* seabed preparation, HDD works, cable ailability within favoured foraging areas

by an increase in turbidity which can considered to be moderately sensitive to (Bradbury *et al.*, 2014). Increases in of seabed preparation, HDD works, in Langstone Harbour, may affect prey arsons *et al.*, 2015).

ected by an increase in turbidity which are considered to be moderately ects on prey (Bradbury *et al.*, 2014). ur as a result of seabed preparation, etivities outwith Langstone Harbour, may Vilson *et al.*, 2014).

cted by an increase in turbidity which are considered to be moderately

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
				sensitive to habitat disturbance and therefore potential effect Increases in suspended sediment within Langstone Harbour HDD works, in addition to cable burial and maintenance acti affect prey availability within this species' foraging range (W
		Supporting habitat (water column)	Y	Increases in suspended sediment as a result of seabed prepactivities and cable maintenance may increase turbidity of the availability though changes in primary production by phytople visual foraging features to see prey from the sea surface.
	Collision	Red-breasted merganser	N	Structures or devices which have the potential to pose an all will not be introduced during any development phase. Based that red-breasted mergansers are moderately sensitive to be devices within the water column associated with the Propose close proximity to an operating vessel. It is considered that r vessel operations and therefore LSE can be ruled out.
		Little tern	N	Structures or devices which have the potential to pose an ab will not be introduced during any phase of development. Sur are not considered to be vulnerable to below water collisions
		Sandwich tern	N	Structures or devices which have the potential to pose an at terns will not be introduced during any phase of developmen terns are not considered to be vulnerable to below water col
		Common tern	N	Structures or devices which have the potential to pose an at terns will not be introduced during any development phase. terns are not considered to be vulnerable to below water col
	INIS	Little tern	N	There is no pathway for offshore construction work activities Development to introduce invasive non-indigenous predator colonies, since vessels will not be berthed in Chichester and
		Sandwich tern	N	There is no pathway for offshore construction work activities Development to introduce invasive non-indigenous predators breeding colonies, since vessels will not be berthed in Chich
		Common tern	N	There is no pathway for offshore construction work activities Development to introduce invasive non-indigenous predator colonies since vessels will not be berthed in Chichester and
		Supporting habitat (water column)	N	Invasive species (e.g. Chinese mitten crabs, slipper limpets into the water column via biofouling or ballast water from ves habitat structure and those with versatile diets can cause de natives and therefore altering the community structure and f However, given that all three tern species predate on a rang



ects on prey (Bradbury *et al.*, 2014). our as a result of seabed preparation, ctivities outwith Langstone Harbour, may Wilson *et al.*, 2014).

eparation, HDD works, cable burial this supporting habitat, altering prey plankton, as well as making it harder for

above water collision risk to this feature ed on Furness *et al.*, (2012), it is likely below water collisions. Structures or sed Development will only be used in a red-breasted mergansers will avoid

above water collision risk to little terns urface feeding species including terns ns (Furness *et al.*, 2012).

above water collision risk to Sandwich ent. Surface feeding species including ollisions (Furness *et al.*, 2012).

above water collision risk to common . Surface feeding species including ollisions (Furness *et al.*, 2012).

es associated with the Proposed ors (e.g. mink) to little tern breeding nd Langstone Harbours.

es associated with the Proposed ors (e.g. mink) to Sandwich tern chester and Langstone Harbours.

es associated with the Proposed ors (e.g. mink) to common tern breeding ad Langstone Harbours.

ts and Pacific oyster) may be introduced ressels. Invasive species can affect detrimental impacts by outcompeting d food chain (Orlova *et al.*, 2006). nge of prey species including sandeels,

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
				herring and sprats which are highly mobile, species will not prey communities and LSE can be ruled out.
	Accidental spills	Red-breasted merganser	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect red-breasted mergansers direct oiling resulting in mortality.
		Little tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect little terns when in contac oiling resulting in mortality.
		Sandwich tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect Sandwich terns when in direct oiling resulting in mortality.
		Common tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect common terns when in codirect oiling resulting in mortality.
	Litter	Supporting habitat (water column)	Y	Unplanned oil or chemical spillages from vessels may occur can cause sublethal impacts on juvenile fish growth and sur availability.
		Red-breasted merganser	Y	Unplanned disposal of industrial or user plastic during all de directly affect red-breasted mergansers when utilising the se entanglement resulting in mortality.
		Little tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect little terns when utilising the sea surface throu in mortality.
		Sandwich tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect Sandwich terns when utilising the sea surface resulting in mortality.
	Common tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect common terns when utilising the sea surface t resulting in mortality.	
		Supporting habitat (water column)	Y	Unplanned disposal of industrial or user plastic during all de directly affect prey species within the water column through mortality.
Portsmouth Harbour SPA/Ramsar site	Disturbance and displacement	Red-breasted merganser	Ν	Red-breasted merganser feed and roost on the water in Por and April (Natural England, 2019b). This feature is consider disturbance (Bradbury <i>et al.</i> , 2014; Gittings & O'Donoghue, Proposed Development (including a rolling safe passage dis activities) and favoured foraging and roosting areas in Ports



- ot be affected by localised changes in
- ur during all development phases. Spills ers utilising the sea surface through
- ur during all development phases. Spills act with the sea surface through direct
- ur during all development phases. Spills n contact with the sea surface through
- ur during all development phases. Spills contact with the sea surface through
- ur during all development phases. Oil urvival, thus potentially affecting prey
- development phases has the potential to sea surface through ingestion or
- development phases has the potential to bugh ingestion or entanglement resulting
- development phases has the potential to ce through ingestion or entanglement
- development phases has the potential to e through ingestion or entanglement
- development phases has the potential to hingestion or entanglement resulting in
- ortsmouth Harbour between November ered to be of moderate sensitivity to e, 2016). The distance between the distance of 700 m for associated vessel tsmouth Harbour (coastal distance of >5

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
			-	km) is considered to be such as to ensure no significant dist breasted mergansers utilising this SPA (e.g. Schwemmer <i>et</i>
		Supporting habitat (water column)	Ν	Disturbance and displacement of prey species present within of development is considered to be negligible since it is likely Solent are accustomed to vessel traffic and the presence of commercial fishing vessels) and will simply navigate round of maintenance vessels and LSE can be ruled out.
	Indirect effects	Red-breasted merganser	Ν	Red-breasted mergansers are visual foragers and are likely turbidity which can make it harder to see prey in the water co moderately sensitive to habitat disturbance and to subseque (Bradbury <i>et al.</i> , 2014). Increases in suspended sediment as works, cable burial activities and cable maintenance are exp return to within comparable background concentrations withis the Proposed Development and favoured foraging and roost (coastal distance of >5 km), it is considered that there is no p development phase and LSE can be ruled out.
		Supporting habitat (water column)	Ν	Increases in suspended sediment as a result of seabed prep activities and cable maintenance are expected to be highly lo availability in the water column at Portsmouth Harbour due to
	Collision	Red-breasted merganser	Ν	Structures or devices which have the potential to pose an ab- will not be introduced during any development phase. Based that red-breasted mergansers are moderately sensitive to be devices within the water column associated with the Propose close proximity to an operating vessel. It is considered that reversel vessel operations and therefore the risk of below water collise out.
	INIS	Supporting habitat (water column)	Ν	Invasive species (e.g. Chinese mitten crabs, slipper limpets into the water column via biofouling or ballast water from ves habitat structure and those with versatile diets can cause de natives and therefore altering the community structure and for However, given that all three tern species predate on a rang herring and sprats which are highly mobile, species will not b prey communities and LSE can be ruled out.
	Accidental spills	Red-breasted merganser	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect red-breasted mergansers through direct oiling resulting in mortality.
		Supporting habitat (water column)	Y	Unplanned oil or chemical spillages from vessels may occur can cause sublethal impacts on juvenile fish growth and surv availability.



sturbance or displacement of redet al., 2011) and LSE can be ruled out.

hin the water column during all phases ely that fish species present in the of vessels towing equipment (e.g. d or under any construction or

ly to be affected by an increase in column. They are considered to be uent potential effects on prey species as a result of seabed preparation, HDD xpected to be highly localised and to thin days. Given the distance between osting grounds in Portsmouth Harbour o potential for impact during any

eparation, HDD works, cable burial / localised and unlikely to alter prey e to distance and LSE can be ruled out.

above water collision risk to this feature ed on Furness *et al.*, (2012), it is likely below water collisions. Structures or osed Development will only be used in t red-breasted mergansers will avoid llision is negligible and LSE can be ruled

ts and Pacific oyster) may be introduced vessels. Invasive species can affect detrimental impacts by outcompeting d food chain (Orlova *et al.,* 2006). Inge of prey species including sandeels, of be affected by localised changes in

ur during any development phase. Spills ers when in contact with the sea surface

ur during all development phases. Oil urvival, thus potentially affecting prey

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
	Litter	Red-breasted merganser	Y	Unplanned disposal of industrial or user plastic during any d directly affect red-breasted mergansers when utilising the se entanglement resulting in mortality.
		Supporting habitat (water column)	Y	Unplanned disposal of industrial or user plastic during all devide directly affect prey species within the water column through mortality.
Solent and Southampton Disturbance and displacement Water SPA/Ramsar site Disturbance and displacement	Disturbance and displacement	Little tern	Ν	Important breeding areas within this SPA include Hurst Point sites including North Solent, Lymington to Pylewell, and New 2019c). Important foraging areas within this SPA include Hur Estuary off the Isle of Wight. Given that these areas are local Development, it is considered that there is no potential for im- based on the species' restricted foraging range (Parsons <i>et</i> a
		Common tern	Ν	Foraging common terns are considered to be of low sensitive and associated activities (Garthe & Hüppop, 2004; Bradbury are known to forage within the Solent where vessel traffic lev 2014; Natural England, 2016; Natural England, 2019c). It is terns will habituate to the increased presence of vessels and phases of development and LSE can be ruled out.
		Sandwich tern	N	Foraging Sandwich terns are considered to be of low sensiti and associated activities (Garthe & Hüppop, 2004; Bradbury are known to forage within the Solent where vessel traffic lev 2014; Natural England, 2016; Natural England, 2019c). It is terns will habituate to the increased presence of vessels and phases of development and LSE can be ruled out.
		Roseate tern	Ν	This feature no longer breeds in this SPA (Piec, 2018), with Southampton Water during the last five years (last recorded nesting habitat creation is currently being undertaken for this (Lymington-Keyhaven), it is considered that there is no potential the distance between this potential breeding site and the Pro- the species' foraging range (16.6 \pm 11.6 km; Thaxter <i>et al.</i> , 2
		Mediterranean gull	Ν	Important breeding areas within the SPA include Newtown H River Estuary, and the North Solent (Natural England, 2019) at Eastney. Gull species are consistently scored as being an disturbance from vessel traffic (Garthe & Hüppop, 2004; Bra Mediterranean gulls forage in a variety of habitats where ant England, 2016; Natural England, 2019c). It is therefore cons the increased presence of vessels and associated activities LSE can be ruled out.



development phase has the potential to sea surface through ingestion or

evelopment phases has the potential to h ingestion or entanglement resulting in

hint-Pitts Deep, with less frequently used ewtown Harbour (Natural England, Hurst Point-Pitts Deep, and the Medina cated >15 km from the Proposed impact during any development phase et al., 2015) and LSE can be ruled out.

tivity to disturbance from vessel traffic iry *et al.*, 2014). Indeed, common terns levels are already high (Wilson *et al.*, is therefore considered that common nd associated activities during all

sitivity to disturbance from vessel traffic ary *et al.*, 2014). Indeed, Sandwich terns levels are already high (Wilson *et al.*, is therefore considered that Sandwich nd associated activities during all

th only a single individual recorded in ed in 2011; Frost *et al.*, 2018). Whilst his species in the Western Solent tential for impact on this feature due to Proposed Development (*c*.30 km) and , 2012) and LSE can be ruled out.

h Harbour, Hurst Castle to Lymington 9c), all located >20 km from the Landfall amongst the least sensitive species to radbury *et al.*, 2014). Indeed, inthropogenic activities occur (Natural nsidered that this feature will habituate to es during all phases of development and

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Supporting habitat (water column)	N	Disturbance and displacement of prey species present within of development is considered to be negligible since it is likely Solent are accustomed to vessel traffic and the presence of commercial fishing vessels) and will simply navigate round of maintenance vessels and LSE can be ruled out.
	Indirect effects	Little tern	Ν	Important breeding areas within this SPA include Hurst Point sites including North Solent, Lymington to Pylewell, and New 2019c). Important foraging areas within this SPA include Hur Estuary off the Isle of Wight. Given that these areas are loca Development, it is considered that there is no potential for im foraging range (Parsons <i>et al.</i> , 2015) and LSE can be ruled of
		Common tern	N	Common terns are visual foragers (Wilson <i>et al.</i> , 2014) and a in turbidity which can make it harder to see prey from the sea moderately sensitive to habitat disturbance and subsequent (Bradbury <i>et al.</i> , 2014). However, any impact from suspende development phases is considered to be highly localised rela (Thaxter <i>et al.</i> , 2012; Wilson <i>et al.</i> , 2014), with equivalent for immediate vicinity of the Proposed Development and LSE ca
		Sandwich tern	N	Sandwich terns are visual foragers (Wilson <i>et al.</i> , 2014) and increase in turbidity which can make it harder to see prey from considered to be moderately sensitive to habitat disturbance prey species (Bradbury <i>et al.</i> , 2014). However, any impact for across all development phases is considered to be highly loor range (Thaxter <i>et al.</i> , 2012; Wilson <i>et al.</i> , 2014), with equivalement and LSE can
		Roseate tern	Ν	This feature no longer breeds in this SPA (Piec, 2018), with Southampton Water during the last five years (last recorded nesting habitat creation is currently being undertaken for this (Lymington-Keyhaven), it is considered that there is no poter the distance between this potential breeding site and the Pro- the species' foraging range (16.6 \pm 11.6 km; Thaxter <i>et al.</i> , 2
		Mediterranean gull	N	Mediterranean gulls are visual foragers and are likely to be a which can make it harder to see prey. Activities associated w Development have the potential to release sediment during s repair and maintenance works. The area covered by suspen limited spatial extent and will return back to baseline concen plasticity shown by Mediterranean gulls in their foraging beha items in both terrestrial and coastal environments; Natural En- feeding habitat is available elsewhere in the vicinity of the Pr potential for impact and LSE can be ruled out.



hin the water column during all phases ely that fish species present in the of vessels towing equipment (e.g. or under any construction or

nt-Pitts Deep, with less frequently used ewtown Harbour (Natural England, urst Point-Pitts Deep, and the Medina cated >15 km from the Proposed mpact based on the species' restricted d out.

d are likely to be affected by an increase ea surface. They are considered to be at potential effects on prey species ded sediment release across all elative to the species' foraging range oraging habitat elsewhere in the can be ruled out.

d are likely to be affected by an rom the sea surface. They are ce and therefore to potential effects on from suspended sediment release ocalised relative to the species' foraging ralent foraging habitat elsewhere in the can be ruled out.

n only a single individual recorded in d in 2011; Frost *et al.*, 2018). Whilst his species in the Western Solent ential for impact on this feature due to roposed Development (*c*.30 km) and 2012) and LSE can be ruled out.

affected by an increase in turbidity with all phases of the Proposed g seabed preparation, cable burial, ended material is considered to be of entrations within days. Given the shaviour (taking a wide variety of prey England, 2019c), and that alternative Proposed Development there is no

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Supporting habitat (water column)	Ν	Increases in suspended sediment as a result of seabed prep activities and cable maintenance are expected to be highly lo availability in the water column at Portsmouth Harbour due to
	Collision	Little tern	Ν	Structures or devices which have the potential to pose an ab will not be introduced during any development phase. Surface not considered to be vulnerable to below water collisions (Fu
		Common tern	N	Structures or devices which have the potential to pose an ab terns will not be introduced during any development phase. terns are not considered to be vulnerable to below water coll
		Sandwich tern	Ν	Structures or devices which have the potential to pose an ab terns will not be introduced during any development phase. terns are not considered to be vulnerable to below water coll
		Roseate tern	Ν	This feature no longer breeds in this SPA (Piec, 2018), with Southampton Water during the last five years (last recorded or devices which have the potential to pose an above water be introduced during any development phase. Surface feeding considered to be vulnerable to below water collisions (Furner
		Mediterranean gull	Ν	Structures or devices which have the potential to pose an at Mediterranean gulls will not be introduced during any develo including gulls are not considered to be vulnerable to below
	INIS	Little tern	Ν	There is no pathway for offshore works associated with the F invasive non-indigenous predators (e.g. mink) to the mainlar the Solent and Southampton Waters SPA due to distance.
		Common tern	Ν	There is no pathway for offshore works associated with the F invasive non-indigenous predators (e.g. mink) to the mainlar within the Solent and Southampton Waters SPA due to dista
		Sandwich tern	Ν	There is no pathway for offshore works associated with the F invasive non-indigenous predators (e.g. mink) to the mainlar within the Solent and Southampton Waters SPA due to dista
		Roseate tern	Ν	There is no pathway for offshore works associated with the F invasive non-indigenous predators (e.g. mink) to newly creat tern breeding colonies within the Solent and Southampton W
		Mediterranean gull	Ν	There is no pathway for offshore works associated with the F invasive non-indigenous predators (e.g. mink) to the mainlar colonies within the Solent and Southampton Waters SPA du



eparation, HDD works, cable burial localised and unlikely to alter prey to distance and LSE can be ruled out.

above water collision risk to little terns face feeding species including terns are Furness *et al.*, 2012).

above water collision risk to common e. Surface feeding species including ollisions (Furness *et al.*, 2012).

above water collision risk to Sandwich e. Surface feeding species including collisions (Furness *et al.*, 2012).

th only a single individual recorded in ed in 2011; Frost *et al.*, 2018). Structures er collision risk to roseate terns will not eding species including terns are not ness *et al.*, 2012).

above water collision risk to elopment phase. Surface feeding species w water collisions (Furness *et al.*, 2012).

Proposed Development to introduce and little tern breeding colonies within

Proposed Development to introduce and common tern breeding colonies tance.

Proposed Development to introduce and Sandwich tern breeding colonies tance.

e Proposed Development to introduce ated and traditional mainland roseate Waters SPA due to distance.

Proposed Development to introduce and Mediterranean gull breeding lue to distance.

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Supporting habitat (water column)	N	Invasive species (e.g. Chinese mitten crabs, slipper limpets into the water column via biofouling or ballast water from ves habitat structure and those with versatile diets can cause de natives and therefore altering the community structure and fe However, given that all three tern species predate on a rang herring and sprats which are highly mobile, these species we in prey communities and LSE can be ruled out.
	Accidental spills	Little tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect little terns when in contac oiling resulting in mortality.
		Common tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect common terns when in co direct oiling resulting in mortality.
		Sandwich tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect Sandwich terns when in o direct oiling resulting in mortality.
		Roseate tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect roseate terns when in con direct oiling resulting in mortality.
		Mediterranean gull	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect Mediterranean gulls when through direct oiling resulting in mortality.
		Supporting habitat (water column)	Y	Unplanned oil or chemical spillages from vessels may occur can cause sublethal impacts on juvenile fish growth and sur- availability.
	Litter	Little tern	Y	Unplanned disposal of industrial or user plastic during all de- directly affect little terns when utilising the sea surface throug in mortality.
		Common tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect common terns when utilising the sea surface t resulting in mortality.
		Sandwich tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect Sandwich terns when utilising the sea surface resulting in mortality.
		Roseate tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect roseate terns when utilising the sea surface th resulting in mortality.



s and Pacific oyster) may be introduced essels. Invasive species can affect detrimental impacts by outcompeting I food chain (Orlova *et al.*, 2006). nge of prey species including sandeels, will not be affected by localised changes

ur during all development phases. Spills act with the sea surface through direct

ur during all development phases. Spills contact with the sea surface through

ur during all development phases. Spills a contact with the sea surface through

ur during all development phases. Spills contact with the sea surface through

ur during all development phases. Spills nen in contact with the sea surface

ur during all development phases. Oil urvival, thus potentially affecting prey

evelopment phases has the potential to ugh ingestion or entanglement resulting

evelopment phases has the potential to through ingestion or entanglement

evelopment phases has the potential to e through ingestion or entanglement

levelopment phases has the potential to through ingestion or entanglement

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
	•	Mediterranean gull	Y	Unplanned disposal of industrial or user plastic during all de- directly affect Mediterranean gulls when utilising the sea sur- entanglement resulting in mortality.
		Supporting habitat (water column)	Y	Unplanned disposal of industrial or user plastic during all de- directly affect prey species within the water column through mortality.
Pagham Harbour SPA/Ramsar site	Disturbance and displacement	Common tern	Ν	Foraging common terns are considered to be of low sensitive and associated activities (Garthe & Hüppop, 2004; Bradbury are known to forage within Pagham Harbour and the wider S already high (Wilson <i>et al.</i> , 2014; Natural England, 2016; Na considered that common tern will habituate to the increased activities during all phases of development and LSE can be
		Supporting habitat (water column)	Ν	Disturbance and displacement of prey species present within of development is considered to be negligible since it is likely Solent are accustomed to vessel traffic and the presence of commercial fishing vessels) and will simply navigate round of maintenance vessels and LSE can be ruled out.
	Indirect effects	Common tern	N	Common terns are visual foragers and are likely to be affect can make it harder to see prey from the sea surface. They a sensitive to habitat disturbance and therefore to potential eff 2014). However, any impact is considered to be highly locali range across all development phases, with equivalent foragi vicinity of the Proposed Development and LSE can be ruled
		Supporting habitat (water column)	Ν	Increases in suspended sediment as a result of seabed prepactivities and cable maintenance are expected to be highly le availability in the water column at Portsmouth Harbour due to
	Collision	Common tern	Ν	Structures or devices which have the potential to pose an at terns will not be introduced during any development phase. terns are not considered to be vulnerable to below water col
	INIS	Common tern	Ν	There is no pathway for offshore works associated with the F invasive non-indigenous predators (e.g. mink) to the mainlar Pagham Harbour SPA due to distance.
		Supporting habitat (water column)	Ν	Invasive species (e.g. Chinese mitten crabs, slipper limpets into the water column via biofouling or ballast water from ves habitat structure and those with versatile diets can cause de natives and therefore altering the community structure and fe However, given that all three tern species predate on a rang herring and sprats which are highly mobile, species will not b prey communities and LSE can be ruled out.



evelopment phases has the potential to urface through ingestion or

evelopment phases has the potential to n ingestion or entanglement resulting in

tivity to disturbance from vessel traffic iry *et al.*, 2014). Indeed, common terns r Solent where vessel traffic levels are Natural England, 2019d). It is therefore ed presence of vessels and associated e ruled out.

hin the water column during all phases ely that fish species present in the of vessels towing equipment (e.g. d or under any construction or

cted by an increase in turbidity which are considered to be moderately effects on prey species (Bradbury *et al.*, alised relative to the species' foraging ging habitat elsewhere in the immediate ed out.

eparation, HDD works, cable burial localised and unlikely to alter prey to distance and LSE can be ruled out.

above water collision risk to common e. Surface feeding species including collisions (Furness *et al.*, 2012).

Proposed Development to introduce and common tern breeding colony within

s and Pacific oyster) may be introduced essels. Invasive species can affect letrimental impacts by outcompeting food chain (Orlova *et al.,* 2006). age of prey species including sandeels, t be affected by localised changes in

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
	Accidental spills	Common tern	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect common terns when in c direct oiling resulting in mortality.
		Supporting habitat (water column)	Y	Unplanned oil or chemical spillages from vessels may occur can cause sublethal impacts on juvenile fish growth and sur availability.
	Litter	Common tern	Y	Unplanned disposal of industrial or user plastic during all de directly affect common terns when utilising the sea surface t resulting in mortality.
		Supporting habitat (water column)	Y	Unplanned disposal of industrial or user plastic during all de directly affect prey species within the water column through mortality.
Littoral Seino-Marin SPA	Disturbance and displacement	Fulmar	Ν	Given their wide-ranging foraging behaviour (Thaxter <i>et al.</i> , from vessel traffic and associated activities (Garthe & Hüppe the distance between the SPA and the Proposed Developm fulmar and LSE can be ruled out.
		Kittiwake	N	Given their wide-ranging foraging behaviour (Thaxter <i>et al.</i> , from vessel traffic and associated activities (Garthe & Hüpp the distance between the SPA and the Proposed Developm kittiwake and LSE can be ruled out.
		Herring gull	N	Given their wide-ranging foraging behaviour (Thaxter <i>et al.</i> , from vessel traffic and associated activities (Garthe & Hüpp the distance between the SPA and the Proposed Developm herring gull and LSE can be ruled out.
		Great black-backed gull	Ν	Given their wide-ranging foraging behaviour (Thaxter <i>et al.</i> , from vessel traffic and associated activities (Garthe & Hüppe the distance between the SPA and the Proposed Developm great black-backed gull and LSE can be ruled out.
	Indirect effects	Fulmar	Ν	Given their wide-ranging, pelagic and opportunistic foraging well as their plasticity in diet (e.g. Phillips <i>et al.</i> , 1999), the seffects of sediment release on benthic prey availability there and LSE can be ruled out.
		Kittiwake	Ν	Given their wide-ranging, pelagic foraging behaviour (Thaxt low sensitivity to vessel traffic (Garthe & Hüppop, 2004; Bra highly mobile shoaling fish (Natural England, 2012b), the sh effect of sediment release on benthic prey availability there and LSE can be ruled out.



ur during all development phases. Spills contact with the sea surface through

ur during all development phases. Oil urvival, thus potentially affecting prey

levelopment phases has the potential to through ingestion or entanglement

levelopment phases has the potential to hingestion or entanglement resulting in

I., 2012), low sensitivity to disturbance pop, 2004; Bradbury *et al.*, 2014), and ment, there is no potential for impact on

I., 2012), low sensitivity to disturbance pop, 2004; Bradbury *et al.*, 2014), and ment, there is no potential for impact on

I., 2012), low sensitivity to disturbance pop, 2004; Bradbury *et al.*, 2014), and ment, there is no potential for impact on

I., 2012), low sensitivity to disturbance pop, 2004; Bradbury *et al.*, 2014), and ment, there is no potential for impact on

ng behaviour (Thaxter *et al.*, 2012), as short-term, temporary and localised re is no potential for impact on fulmar

xter *et al*; 2012; Ponchon *et al.*, 2015), radbury *et al.*, 2014), and reliance on short-term, temporary and localised e is no potential for impact to kittiwake

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Herring gull	N	Herring gulls utilise terrestrial, intertidal and marine habitats is prey species including invertebrates, small fish and carrion (in plasticity shown by herring gulls in their foraging behaviour (in term, temporary and localised effect of sediment release on potential for impact to this feature and LSE can be ruled out.
		Great black-backed gull	N	Given their wide-ranging, pelagic foraging behaviour (Thaxte traffic (Garthe & Hüppop, 2004; Bradbury <i>et al.</i> , 2014), and p short-term, temporary and localised effect of sediment releas no potential for impact to this feature and LSE can be ruled of
	Collision	Fulmar	N	Structures or devices which have the potential to pose an ab not be introduced during any development phase. Surface fe not considered to be vulnerable to below water collisions (Fu
		Kittiwake	N	Structures or devices which have the potential to pose an ab not be introduced during any development phase. Surface fe not considered to be vulnerable to below water collisions (Fu
		Herring gull	N	Structures or devices which have the potential to pose an ab will not be introduced during any development phase. Surface not considered to be vulnerable to below water collisions (Fu
		Great black-backed gull	N	Structures or devices which have the potential to pose an ab backed gulls will not be introduced during any development including gulls are not considered to be vulnerable to below
	INIS	Fulmar	N	There is no pathway for marine works associated with the Print invasive non-indigenous predators (e.g. mink) to the mainlar Littoral Seino-Marin SPA due to distance.
		Kittiwake	N	There is no pathway for marine works associated with the Print invasive non-indigenous predators (e.g. mink) to the mainlar Littoral Seino-Marin SPA due to distance.
		Herring gull	Ν	There is no pathway for marine works associated with the Print invasive non-indigenous predators (e.g. mink) to the mainlar the Littoral Seino-Marin SPA due to distance.
		Great black-backed gull	Ν	There is no pathway for marine works associated with the Prince invasive non-indigenous predators (e.g. mink) to the mainlar colony within the Littoral Seino-Marin SPA due to distance.
	Accidental spills	Fulmar	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect fulmars when in contact v oiling resulting in mortality.



s for foraging, taking a wide variety of (including fishery discards). Given the (Natural England, 2019d), the shortn benthic prey availability there is no it.

ter *et al*; 2012), low sensitivity to vessel plasticity in diet (JNCC, 2016a), the ase on benthic prey availability there is out.

bove water collision risk to fulmars will feeding species including fulmars are Furness *et al.*, 2012).

above water collision risk to kittiwake will feeding species including kittiwakes are Furness *et al.*, 2012).

above water collision risk to herring gulls ace feeding species including gulls are Furness *et al.*, 2012).

above water collision risk to great blackt phase. Surface feeding species v water collisions (Furness *et al.*, 2012).

Proposed Development to introduce and fulmar breeding colony within the

Proposed Development to introduce and kittiwake breeding colony within the

Proposed Development to introduce and herring gull breeding colony within

Proposed Development to introduce and great black-backed gull breeding

r during all development phases. Spills with the sea surface through direct

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Kittiwake	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect kittiwakes when in contac oiling resulting in mortality.
		Herring gull	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect herring gulls when in cor oiling resulting in mortality.
		Great black-backed gull	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect great black-backed gulls through direct oiling resulting in mortality.
	Litter	Fulmar	Y	Unplanned disposal of industrial or user plastic during all de directly affect fulmars when utilising the sea surface through mortality.
		Kittiwake	Y	Unplanned disposal of industrial or user plastic during all de directly affect kittiwakes when utilising the sea surface throu in mortality.
		Herring gull	Y	Unplanned disposal of industrial or user plastic during all de directly affect herring gulls when utilising the sea surface the resulting in mortality.
		Great black-backed gull	Y	Unplanned disposal of industrial or user plastic during all de directly affect great black-backed gulls when utilising the se entanglement resulting in mortality.
Alderney West and Burhou Islands Ramsar site	Disturbance and displacement	Gannet	Ν	Given their wide-ranging foraging behaviour (Thaxter <i>et al.</i> , Evans <i>et al.</i> , 2016) and low sensitivity to disturbance from ve (Garthe & Hüppop, 2004; Bradbury <i>et al.</i> , 2014), there is no
		Storm petrel	N	Given their wide-ranging foraging behaviour (Wernham <i>et a</i> sensitivity to disturbance from vessel traffic and associated Bradbury <i>et al.</i> , 2014), there is no potential for impact on sto
		Lesser black-backed gull	N	Given their wide-ranging foraging behaviour across terrestri (Thaxter <i>et al.</i> , 2012) and low sensitivity to disturbance from (Garthe & Hüppop, 2004; Bradbury <i>et al.</i> , 2014), there is no backed gull.
	Indirect effects	Gannet	N	Given their wide-ranging, pelagic foraging behaviour (Thaxte Warwick-Evans <i>et al.</i> , 2016) and reliance on highly mobile s discards (JNCC, 2016b), the short-term, temporary and locate benthic prey availability there is no potential for impact to the



ur during all development phases. Spills act with the sea surface through direct

ur during all development phases. Spills ontact with the sea surface through direct

ur during all development phases. Spills Is when in contact with the sea surface

development phases has the potential to gh ingestion or entanglement resulting in

development phases has the potential to bugh ingestion or entanglement resulting

development phases has the potential to hrough ingestion or entanglement

development phases has the potential to ea surface through ingestion or

., 2012; Wakefield *et al.*, 2013; Warwickvessel traffic and associated activities to potential for impact on gannet.

al., 2002; Thaxter *et al.*, 2012;) and low d activities (Garthe & Hüppop, 2004; storm petrel.

trial, intertidal and marine environments m vessel traffic and associated activities to potential for impact on lesser black-

xter *et al.*, 2012; Wakefield *et al.*, 2013; schooling fish, squid and fishery calised effect of sediment release on his feature and LSE can be ruled out.

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Storm petrel	N	Storm petrels range widely across marine habitats to forage <i>et al.</i> , 2012), feeding on small fish and zooplankton gleaned known to feed on intertidal crustaceans. Given their plasticity localised effect of sediment release activity on benthic prey a impact to this feature and LSE can be ruled out.
		Lesser black-backed gull	N	Lesser black-backed gulls utilise terrestrial, intertidal and ma wide variety of prey species including invertebrates, small fis discards). Given the plasticity shown by lesser black-backed (Natural England, 2019d), the short-term, temporary and loc benthic prey availability there is no potential for impact to thi
	Collision	Gannet	Ν	Structures or devices which have the potential to pose an all not be introduced during any development phase. Whilst div considered to be vulnerable to below water collisions (Furne impact is considered to be negligible given the wide-foraging highly localised and temporary area of potential impact from activities and LSE can be ruled out.
		Storm petrel	N	Structures or devices which have the potential to pose an all petrels will not be introduced during any development phase petrels are not considered to be vulnerable to below water c
		Lesser black-backed gull	N	Structures or devices which have the potential to pose an at black-backed gulls will not be introduced during any develop including gulls are not considered to be vulnerable to below
	INIS	Gannet	Ν	There is no pathway for marine works associated with the P invasive non-indigenous predators (e.g. mink) to the gannet distance between this site and the Proposed Development.
		Storm petrel	N	There is no pathway for marine works associated with the P invasive non-indigenous predators (e.g. mink) to the storm b distance between this site and the Proposed Development.
		Lesser black-backed gull	N	There is no pathway for marine works associated with the P invasive non-indigenous predators (e.g. mink) to the lesser b Alderney given the distance between this site and the Propo
	Accidental spills	Gannet	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect gannets when in contact oiling resulting in mortality.
		Storm petrel	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect storm petrels when in con direct oiling resulting in mortality.



e during the breeding season (Thaxter of from the sea surface. Inshore they are sity in diet, the short-term, temporary and y availability there is no potential for

narine habitats for foraging, taking a fish and carrion (including fishery ed gulls in their foraging behaviour ocalised effect of sediment release on his feature and LSE can be ruled out.

above water collision risk to gannets will diving species such as gannets are ness *et al.*, 2012), the potential for ing range of this species compared to the m cable laying, repair and maintenance

above water collision risk to storm se. Surface feeding species including collisions (Furness *et al.*, 2012).

above water collision risk to lesser opment phase. Surface feeding species w water collisions (Furness *et al.*, 2012).

Proposed Development to introduce et breeding colony on Alderney given the .

Proposed Development to introduce breeding colony on Alderney given the .

Proposed Development to introduce black-backed gull breeding colony on bosed Development.

ur during all development phases. Spills ct with the sea surface through direct

ur during all development phases. Spills contact with the sea surface through

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Lesser black-backed gull	Y	Unplanned oil or chemical spillages from vessels may occur have the potential to directly affect lesser black-backed gulls through direct oiling resulting in mortality.
	Litter	Gannet	Y	Unplanned disposal of industrial or user plastic during all develocity affect gannets when utilising the sea surface through mortality.
		Storm petrel	Y	Unplanned disposal of industrial or user plastic during all develocity affect storm petrels when utilising the sea surface the resulting in mortality.
		Lesser black-backed gull	Y	Unplanned disposal of industrial or user plastic during all development directly affect lesser black-backed gulls when utilising the second entanglement resulting in mortality.



ur during all development phases. Spills Ils when in contact with the sea surface

evelopment phases has the potential to gh ingestion or entanglement resulting in

levelopment phases has the potential to through ingestion or entanglement

evelopment phases has the potential to sea surface through ingestion or

WSP/Natural Power



7.3. ASSESSMENT OF LSE – ONSHORE ENVIRONMENT

7.3.1.1. An assessment of LSE on designated onshore ecological features during the construction, operation and decommissioning phases of the Proposed Development is provided in Table 7.10.

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
Chichester and Langstone Harbours SPA/Ramsar site	Disturbance and displacement	Little tern	Ν	Foraging little terns are considered to be of moderate sensitivity to disture 2004; Bradbury <i>et al.</i> , 2014) although their sensitivity to disturbance from tern colonies exist within both Chichester and Langstone Harbours, spec did not locate any breeding individuals or indeed foraging flights as detail 420). Therefore, little terns are not expected to be exposed to disturbance the Proposed Development.
		Sandwich tern	Ν	Foraging Sandwich terns are considered to be of low sensitivity to disturb activities (Garthe & Hüppop, 2004; Bradbury <i>et al.</i> , 2014), although their activities is uncertain. Indeed, Sandwich terns are known to breed and for Harbours (Wilson <i>et al.</i> , 2014; Natural England, 2016; Natural England, 2 Development did not locate any breeding individuals or indeed foraging for Report (APP-420). Therefore, Sandwich terns are not expected to be ex- effects from any phase of the Proposed Development.
		Common tern	Ν	Foraging common terns are considered to be of low sensitivity to disturb activities (Garthe & Hüppop, 2004; Bradbury <i>et al.</i> , 2014) although their s activities is uncertain. Common terns are known to breed and forage with (Wilson <i>et al.</i> , 2014; Natural England, 2016; Natural England, 2019a. Sp did not locate any breeding individuals or indeed foraging flights as detai 420). Therefore, common terns are not expected to be exposed to distur- phase of the Proposed Development.
		Dark-bellied brent goose Redshank Shelduck	Y	Visual disturbance is considered to be of a limited magnitude as a result an urban setting and recent research has established that disturbance de an estuary close to conurbations (Goss-Custard <i>et al.</i> , 2019). Onshore we considered to result in any light spillage into the SPA. Dark-bellied brent goose, redshank and shelduck are however considered (Cutts <i>et al.</i> , 2013). Specific surveys of intertidal habitat adjacent to the of Development recording each of these species in abundance while dark-built utilising multiple identified terrestrial strategy sites as detailed in the Wint Therefore, noise from construction and decommissioning works from one could result in disturbance of the feature and possible temporary displace
		Pintail Shoveler Teal Wigeon Bar-tailed godwit Black-tailed godwit	Y	Visual disturbance is considered to be of a limited magnitude as a result an urban setting and recent research has established that disturbance de an estuary close to conurbations (Goss-Custard <i>et al.</i> , 2019). Onshore we considered to result in any light spillage into the SPA. Pintail, shoveler, teal and wigeon were not included in Cutts et. al. (2013) ecological niche to shoveler, wigeon and pintail) is considered to be more assumed for the purposes of this assessment that these four species of disturbance effects. Curlew, grey plover and bar-tailed godwit are also de

Table 7.10 - Assessment of LSE on designated onshore ecology features across all phases of the Proposed Development



turbance from vessel traffic (Garthe & Hüppop, om onshore activities is uncertain. While little becific surveys for the Proposed Development tailed in the Breeding Bird Survey Report (APPince and displacement effects from any phase of

urbance from vessel traffic and associated eir sensitivity to disturbance from onshore forage within both Chichester and Langstone I, 2019a. Specific surveys for the Proposed g flights as detailed in the Breeding Bird Survey exposed to disturbance and displacement

rbance from vessel traffic and associated ir sensitivity to disturbance from onshore vithin both Chichester and Langstone Harbours Specific surveys for the Proposed Development tailed in the Breeding Bird Survey Report (APPurbance and displacement effects from any

It of the Proposed Development. The SPA is in does not have a significant impact on waders in works from the Proposed Development are not

ered highly sensitive to disturbance effects e onshore element of the Proposed k-bellied brent geese were also recorded intering Bird Survey Report (APP-421). onshore elements of the Proposed Development acement.

It of the Proposed Development. The SPA is in does not have a significant impact on waders in works from the Proposed Development are not

13); mallard (a dabbling duck with similar oderately sensitive however. It is therefore of wildfowl are moderately sensitive to deemed to be moderately sensitive to

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Curlew Grey plover		disturbance (Cutts <i>et al.</i> , 2013 – where the findings relating to black-tailed tailed). All these species were recorded in varying numbers in intertidal a Proposed Development as detailed in the Wintering Bird Survey Report (construction and decommissioning works from onshore elements of the F disturbance of the feature and possible temporary displacement.
		Turnstone Sanderling Ringed plover Dunlin	Ν	Visual disturbance is considered to be of a limited magnitude as a result of an urban setting and recent research has established that disturbance do an estuary close to conurbations (Goss-Custard <i>et al.</i> , 2019). Cutts <i>et al.</i> (2013) determines that turnstone, sanderling, ringed plover and Although all these species were found to be present in intertidal habitat and Development as detailed in the Wintering Bird Survey Report (APP-421) tolerant of any disturbance mechanisms from the Proposed Development
		Waterfowl assemblage	Y	The cited waterfowl assemblage for the SPA includes contributions from sensitive to disturbance. Therefore, noise from construction and decomm Proposed Development could result in disturbance of the assemblage an
		Supporting habitat (freshwater and coastal grazing marsh)	Ν	Disturbance and displacement of supporting habitat relevant to onshore e marsh) is considered to be negligible since it is considered that the habitation of the second statement of the second statem
	Indirect effects	Sandwich tern Little tern Common tern Pintail Shoveler Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover Ringed plover Bar-tailed godwit Curlew Shelduck Redshank Waterfowl assemblage	Ν	Wading and wildfowl species are not expected to be affected by any char sediment as a result of HDD works, cable burial activities and cable main and return to within comparable background concentrations within days. affected by an increase in turbidity which can make it harder to see prey be moderately sensitive to habitat disturbance and subsequent potential However, given the distance between the Proposed Development and far terns species, it is considered that there is no potential for impact during a



ed godwit are taken here as proxy for barareas adjacent to the onshore works of the (APP-421). Therefore, noise from Proposed Development could result in

t of the Proposed Development. The SPA is in does not have a significant impact on waders in

and dunlin are of low sensitivity to disturbance. adjacent to onshore works of the Proposed) these species are considered to be extremely ent and are likely to rapidly habituate.

n species that are highly or moderately missioning works from onshore elements of the and possible temporary displacement.

e ecology (freshwater and coastal grazing itats present are not sensitive to vibration.

anges to prey species. Increases in suspended intenance is expected to be highly localised s. Terns are visual foragers and are likely to be y in the water column. They are considered to al effects on prey (Bradbury *et al.*, 2014). favoured foraging and breeding grounds of g any development phase.

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Supporting habitat (freshwater and coastal grazing marsh)	Y	Onshore works have the potential to result in temporary loss of supporting construction phase.
	Accidental spills	Sandwich tern Little tern Common tern Pintail Shoveler Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover Ringed plover Bar-tailed godwit Curlew Shelduck Redshank Waterfowl assemblage	Y	Unplanned oil or chemical spillages from construction activity may occur Spills have the potential to directly affect all SPA features when in contac resulting in mortality.
		Supporting habitat (freshwater and coastal grazing marsh)	Y	Unplanned oil or chemical spillages from construction activity may occur Spills have the potential to directly affect supporting habitats and prey sp
	Indirect effects	Sandwich tern Little tern Common tern Pintail Shoveler Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover Ringed plover	Ν	Wading and wildfowl species are not expected to be affected by any char suspended sediment as a result of HDD works, cable burial activities and localised and return to within comparable background concentrations wit likely to be affected by an increase in turbidity which can make it harder to considered to be moderately sensitive to habitat disturbance and subseq 2014). Given the distance between the Proposed Development and favor species, it is considered that there is no potential for impact during any d



ting / functionally linked habitat during the

ur during construction and decommissioning. tact supporting habitat through direct oiling

ur during construction and decommissioning. species resulting in mortality.

hanges in water turbidity. Increases in and cable maintenance is expected to be highly within days. Terns are visual foragers and are er to see prey in the water column. They are equent potential effects on prey (Bradbury *et al.*, youred foraging and breeding grounds of tern development phase.

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Bar-tailed godwit Curlew Shelduck Redshank Waterfowl assemblage		
		Supporting habitat (freshwater and coastal grazing marsh)	Ν	Onshore works are not expected to lead to increases in suspended sedir effects on supporting habitats and prey species are therefore expected.
	INIS	Sandwich tern Little tern Common tern Pintail Wigeon Turnstone Dark-bellied brent goose Dunlin Grey plover Shelduck Redshank Waterfowl assemblage Supporting habitat (freshwater and coastal grazing marsh)	Ν	There is no pathway for onshore construction work activities associated invasive non-indigenous predators to tern breeding colonies. There is als non-indigenous species affecting other wader and wildfowl species in ad
	Litter	Sandwich tern Little tern Common tern Pintail Shoveler Teal Wigeon Turnstone Dark-bellied brent goose Sanderling Dunlin Grey plover	Y	Unplanned disposal of industrial or user plastic during all development plate features and supporting habitat when utilising intertidal habitat through in



diment as a result of onshore works, and no

d with the Proposed Development to introduce also considered to be no pathway of invasive addition to supporting habitat.

phases has the potential to directly affect SPA ingestion or entanglement resulting in mortality.

WSP/Natural Power

Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
		Ringed plover Bar-tailed godwit Curlew Shelduck Redshank Waterfowl assemblage Supporting habitat (freshwater and coastal grazing marsh)		
Portsmouth Harbour SPA/Ramsar site	Disturbance and displacement	Dark-bellied brent goose	Y	Visual disturbance is considered to be of a limited magnitude as a result an urban setting and recent research has established that disturbance de an estuary close to conurbations (Goss-Custard <i>et al.</i> , 2019). Onshore we considered to result in any light spillage into the SPA. Dark-bellied brent goose, is however considered highly sensitive to distur- noise disturbance effects will not reach the SPA there is considered poter represented by SWBGS sites. Therefore, noise from construction and de of the Proposed Development could result in disturbance of the feature a
In		Dunlin Black-tailed godwit Supporting habitat (freshwater and coastal grazing marsh)	Ν	Visual disturbance is considered to be of a limited magnitude as a result an urban setting and recent research has established that disturbance d an estuary close to conurbations (Goss-Custard <i>et al.</i> , 2019). Onshore w considered to result in any light spillage into the SPA. The functionally linked habitat of SWBGS sites potentially impacted by t be utilised by any species apart from dark-bellied brent goose (as detailed The SWBGS sites concerned consist of recreational grassland which is and black-tailed godwit. Disturbance and displacement of supporting has and coastal grazing marsh) is considered to be negligible since it is consi- sensitive to vibration.
	Indirect effects	Dark-bellied brent goose Dunlin Black-tailed godwit	Ν	Given the distance between the Proposed Development and favoured for SPA, it is considered that there is no pathway for potential impact on qua
		Supporting habitat (freshwater and coastal grazing marsh)	Y	Onshore works have the potential to result in temporary loss during the o (functionally linked SWBGS sites) that is outside of the SPA.



It of the Proposed Development. The SPA is in does not have a significant impact on waders in works from the Proposed Development are not

turbance effects (Cutts *et al.,* 2013). While stential for it to effect functionally linked habitat decommissioning works from onshore elements and possible temporary displacement.

It of the Proposed Development. The SPA is in does not have a significant impact on waders in works from the Proposed Development are not

/ the Proposed Development was found not to iled in the Wintering Birds Report APP-421). s unsuitable for wading species such as dunlin abitat relevant to onshore ecology (freshwater nsidered that the habitats present are not

foraging, breeding and roosting grounds of the ualifying features or supporting habitat.

construction phase of supporting habitat

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Relevant SPA/Ramsar site	Effect	Feature	LSE?	Justification
	INIS	Dark-bellied brent goose Dunlin Black-tailed godwit Supporting habitat	N	Given the distance between the Proposed Development and favoured for SPA, it is considered that there is no pathway for potential impact on eith through invasive non-indigenous species.
	Accidental spills	Dark-bellied brent goose Dunlin Black-tailed godwit Supporting habitat	Y	Unplanned oil or chemical spillages from construction activity may occur Spills have the potential to directly affect all SPA features and supporting through direct oiling resulting in mortality.
	Litter	Dark-bellied brent goose Dunlin Black-tailed godwit Supporting habitat	Y	Unplanned disposal of industrial or user plastic during all development plate features and supporting habitat when utilising intertidal habitat through in



foraging, breeding and roosting grounds of the ither qualifying features or supporting habitat

ur during construction and decommissioning. ng habitat when in contact supporting habitat

phases has the potential to directly affect SPA ingestion or entanglement resulting in mortality.

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8. IN COMBINATION EFFECTS

8.1. OVERVIEW

- 8.1.1.1. PINS Advice Note Ten: Habitats Regulations Assessment (version 8, November 2017) indicates that an appraisal of the effects of any other plans or projects which, in combination with the Proposed Development, might be likely to have a significant effect on the European site(s) should be undertaken. The scope of this appraisal should be clearly agreed with SNCBs.
- 8.1.1.2. The advice notes that the following projects/plans should be considered;
 - projects that are under construction;
 - permitted application(s) not yet implemented;
 - submitted application(s) not yet determined;
 - all refusals subject to appeal procedures not yet determined;
 - projects on the National Infrastructure's programme of projects; and
 - projects identified in the relevant development plan (and emerging development plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited and the degree of uncertainty which may be present.
- 8.1.1.3. In the context of the Proposed Development, a three-tiered approach has been used that is considered to encompass the projects/plans listed above;
 - Tier 1: The Proposed Development considered alongside other project/plans currently under construction and/or those consented but not yet implemented, and/or those submitted but not yet determined and/or those currently operational that were not operational when baseline data was collected, and/or those that are operational but have an ongoing effect;
 - Tier 2: Projects/plans on the National Infrastructure Programme of Projects where a Scoping Report has been submitted; and
 - Tier 3: Projects/plans on the PINS Programme of Projects where a Scoping Report has not been submitted; (where appropriate) projects identified in the relevant Development Plan (and emerging Development Plans -with appropriate weight being given as they move closer to adoption); and projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward (PINS, 2015).



- 8.1.1.4. The projects and plans shown in tables in Appendix 3 (In Combination Marine Projects, APP-503) were selected as relevant to the assessment of in combination effects for marine sites and have been sourced from interrogation of the MMO Marine Information System, PINS Programme of Projects, The Crown Estate maps and Geographical Information Systems ('GIS') database and relevant Local Planning Authority ('LPA') planning portals.
- 8.1.1.5. This list was compiled on 31 May 2020 considered to be sufficient for undertaking an appraisal of the effects of any other marine plans or projects, in combination with the Proposed Development. Figure 8.1 (APP-500) illustrates the locations of all the marine projects considered and listed in the tables in Appendix 3.
- 8.1.1.6. Distances shown in Appendix 3 (Tables 1-4 for marine projects and Table 5 for onshore projects) are approximate and are measured from the closest point of the project or plan as shown on the MMO Marine Information System (where relevant) or planning information to the closest point of the Proposed Development.
- 8.1.1.7. A scoping report for Rampion Offshore Wind Farm Extension (Rampion 2) was submitted to PINS in July 2020. The location of the Rampion 2 project is displayed on Figure 8.1 as Project ID No. 3 (APP-500).
- 8.1.1.8. Since the scoping report has been submitted, the Applicant has undertaken a review of the information contained within the Rampion 2 Scoping Report and has also submitted a consultation response on the report to PINS as a Consultation Body under Regulation 11 of the Infrastructure Planning (EIA) Regulations 2017. In undertaking this review and in providing this response, it is evident that the design and timescales of Rampion 2 remain very much in the early stages and the information within the scoping report is not sufficient for a meaningful assessment to be undertaken.
- 8.1.1.9. Assessments are undertaken using the PINS screening matrices presented in Appendix 1 and Appendix 5 (APP-501, Rev 002 and 7.7.10) which present assessment of likely effects on European marine site and Ramsar features (both marine and onshore) from the Proposed Development alone (see Section 7) and in combination with other projects.

8.2. MARINE ENVIRONMENT

8.2.1. ANNEX I HABITATS

8.2.1.1. As there will be no work undertaken within any SAC (recognising the use of HDD under Solent Maritime SAC), the potential for in combination effects is only considered to arise from indirect effects, and of these only increased SSC and sediment deposition are considered to have potential to lead to potentially significant in-combination effects. All other effects are of such limited magnitude that it is considered that no potential for in combination effects exists that could lead to LSE. As all features of the Solent Maritime SAC and South Wight Maritime SAC with

connectivity have been screened in due to potential for LSE arising from SSC and deposited sediments from the Proposed Development alone, no in-combination assessment is deemed to be required at LSE stage. In-combination effects will be considered as part of the shadow AA.

AQUIND

8.2.2. ANNEX II DIADROMOUS MIGRATORY FISH

- 8.2.2.1. The Annex II diadromous migratory fish in combination assessment has been presented in the PINS matrices (see Appendix 1 and Appendix 5). The contribution of the Proposed Development to potential in combination effects was assessed. The in-combination assessment includes all effects other than those where LSE could not be ruled out (SSC for salmon and sea lamprey of the Itchen and Avon SAC and Pollution events for all sites).
- 8.2.2.2. All other features and sites where it was concluded that no LSE would arise due to the project alone have been assessed against the in-combination projects listed in Table 2: Appendix 3. Plans and projects were removed from the in-combination assessment where they:
 - have a licence end date prior to 2021 therefore no temporary overlap and no potential for LSE;
 - are onshore only therefore no interaction with marine features and no potential for LSE; and
 - are beyond the 12 nmi limit therefore outside the coastal migration pathways and in open sea where alternative habitat is widely available and no potential for LSE.
- 8.2.2.3. In summary, there is considered to be negligible potential for the Proposed Development to contribute to any potential in combination effects on Annex II migratory diadromous fish species. It is considered that any in-combination SSC will not cause a barrier to migration to or from any SAC for which these species are features. In addition, any potential for in-combination noise levels are considered unlikely to produce sound levels at a level to induce audible injury or mortality to any species, and no barriers to key migration routes are predicted as a result of in combination underwater noise. Therefore, no LSE as a result of the contribution of the Proposed Development to any potential in combination effects on the Annex II diadromous migratory fish features of UK or French SACs and Ramsars can be concluded.

8.2.3. MARINE MAMMALS

8.2.3.1. The list of plans or projects assessed is shown in Table 3 of Appendix 3. Projects or plans with licence end dates prior to 2021 have been excluded from further appraisal since there will be no temporal overlap with the Proposed Development, and therefore no enduring impacts which are considered to have potential to result in in

combination effects. This is because the marine mammal baseline will be unaffected by these projects/plans. Purely onshore projects have also been excluded.

AQUIND

- 8.2.3.2. The marine mammal in combination assessment has been presented in the PINS matrices (see Appendix 1). The contribution of the Proposed Development to potential in combination effects was assessed. The in-combination assessment includes all effects other than those where LSE could not be ruled out, i.e. pollution events.
- 8.2.3.3. In summary, there is considered to be negligible potential for the Proposed Development to contribute to any potential in combination effects on either bottlenose dolphin, harbour porpoise, grey seal or harbour seal which are qualifying features of the French SACs considered. This is because there is negligible potential for the sound produced by the Proposed Development to induce the onset of auditory injury (PTS), any disturbance is likely to be temporary and reversible with suitable alternative local habitat being available in the meantime, the risk of collision with vessels is considered to be negligible, and short term local level changes in prey availability/quality as a result of indirect effects are unlikely to result in a reduction in either fitness or breeding success. Therefore, no LSE as a result of the contribution of the Proposed Development to any potential in combination effects on the marine mammal features of the French SACs/Ramsar can be concluded.
- 8.2.3.4. Because the potential for connectivity of marine mammals which use the UK SACs and the Proposed Development is considered to be negligible, there is no potential for the Proposed Development to contribute to any potential in combination effects on the marine mammal gualifying features of the UK SACs considered.

8.2.4. MARINE ORNITHOLOGY

- 8.2.4.1. The list of plans or projects assessed is shown in Table 4 of Appendix 3. Projects or plans with licence end dates prior to 2021 have been excluded from further appraisal since there will be no temporal overlap with the Proposed Development, and therefore no enduring impacts which are considered to have potential to result in in combination effects.
- 8.2.4.2. The ZOI in which in combination effects on breeding marine ornithological features may occur has been defined according their mean-maximum foraging range (Thaxter *et al.*, 2012). Plans or projects that fall within the mean-maximum foraging range of a particular species from a European site have been included in the list presented in Table 4 in Appendix 3.
- 8.2.4.3. More recent tracking data is available for gannets breeding within the Alderney West Coast and Burhou Islands Ramsar (Warwick-Evans *et al.*, 2016), which has shown that the mean-maximum foraging range for this colony is smaller than that cited by Thaxter *et al.*, (2012) (135 ± 7 km versus 229 ± 124 km). Thus, the use of Thaxter *et al.*, (2012) to define the ZOI for in combination effects is considered to be a conservative approach for this species.



- 8.2.4.4. All species pre-screened into the marine ornithology assessment are breeding features, with the exception of red-breasted merganser. The spatial extent of in combination effects for this non-breeding feature is considered to be encompassed by the ZOI for breeding features, since wintering ranges of inshore waterfowl are generally smaller than the breeding ranges of seabirds (e.g. a mean-maximum of 229 km for breeding gannet, versus the extent of Portsmouth, Langstone and Chichester Harbours for wintering red-breasted merganser). Indeed, the largest aggregations of inshore wintering waterfowl will be found within the boundaries of those marine areas designated for their protection, since many species show relatively high fidelity to wintering sites. For example, resightings of wing-tagged red-breasted mergansers off the north-east of England provided evidence that birds were faithful to wintering sites between years (Wernham *et al.*, 1997).
- 8.2.4.5. For those European sites and features where LSE could not be excluded for the project alone (see Table 9.1, Section 9 for a summary), in combination effects are considered under Stage 2, determination of potential adverse effects on site integrity (Section 10).
- 8.2.4.6. For those European Marine and Ramsar sites and features where no LSE could be concluded for the project alone, no plans or projects identified in the ZOI are considered likely to act in combination with the Proposed Development due to the scale over which project alone effects are predicted to occur (see Appendix 1 and Appendix 5 PINS matrices for further details).

8.3. ONSHORE ENVIRONMENT

- 8.3.1.1. The list of plans/projects which could act in-combination with the Proposed Development on onshore ecological features is based on the list in Table 5 of Appendix 3.
- 8.3.1.2. For those European sites and features where no LSE could not be concluded for the Proposed Development alone (see Section 7.3 for a summary), in combination effects are considered under Stage 2, determination of potential adverse effects on site integrity (Section 10).
- 8.3.1.3. For those European and Ramsar sites and features where no LSE could be concluded for the Proposed Development alone, no plans or projects identified in the ZOI are considered likely to act in combination with the Proposed Development due to the scale over which project alone effects are predicted to occur (see Appendix 1 and Appendix 5 PINS matrices for further details).



9. SUMMARY OF LIKELY SIGNIFICANT EFFECTS

9.1. MARINE ENVIRONMENT

9.1.1.1. Table 9.1 summarises those European Marine and Ramsar sites and features for which LSE could not be excluded, which have been progressed to Stage 2 (Section 10).

9.1.2. ANNEX I HABITATS

- 9.1.2.1. Annex I Habitats within the Solent Maritime SAC and South Wight Maritime SAC have been assessed for LSE.
- 9.1.2.2. It was found that LSE could not be excluded for the following Solent Maritime SAC features as a result of increased SSC, deposition of sediments, pollution, and invasive species:
 - Estuaries [1130];
 - Sandbanks which are slightly covered by sea water all the time [1110];
 - Mudflats and sandflats not covered by seawater at low tide [1140];
 - Spartina swards [1320];
 - Atlantic salt meadows [1330]; and
 - Salicornia and other annuals colonising mud and sand [1310].
- 9.1.2.3. LSE could not be excluded for the following South Wight Maritime SAC features as a result of increased SSC, deposition of sediments, pollution, and invasive species:
 - Reefs [1170] and;
 - Submerged or partially submerged sea caves [8330];

9.1.3. ANNEX II DIADROMOUS MIGRATORY FISH

- 9.1.3.1. The designated sites which list Annex II diadromous migratory fish features which fall within the study area (the Channel) for this HRA have been assessed both alone and in combination with other projects.
- 9.1.3.2. It was found that LSE could not be ruled out due to the effects of potential pollution events at all pre-screened in sites. It was also concluded that LSE could not be ruled out for Annex II migratory fish species in the River Itchen SAC and River Avon SAC as a result of increased SSC.

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9.1.3.3. No LSE as a result of all other effects was concluded for all sites identified at the prescreening stage (see Section 6.2) either alone or in combination with other plans and projects.

9.1.4. MARINE MAMMALS

- 9.1.4.1. The potential for LSE on the Annex II marine mammal species which are qualifying features of the designated sites which fall within the eastern Channel has been assessed for the Proposed Development both alone and in combination with other plans and projects.
- 9.1.4.2. It was found that LSE could not be ruled out due to the effects of potential pollution events at all sites. No LSE as a result of auditory injury, disturbance, collision or other indirect effects is concluded for all sites identified at the pre-screening stage (see Section 6.2) either alone or in combination with other plans and projects.

9.1.5. MARINE ORNITHOLOGY

9.1.5.1. The designated sites which list Annex I and regularly occurring migratory marine birds which fall within the ZOI have been assessed both alone and in combination with other plans and projects.

European site	Feature	Effect	Project phase/s
Solent and Dorset Coast SPA	Little tern	Disturbance and displacement	Construction, Operation and De
		Indirect effects	
		Accidental spills	
		Litter	
	Sandwich tern	Indirect effects	
		Accidental spills	
		Litter	
	Common tern	Indirect effects	
		Accidental spills	
		Litter	
	Supporting habitat (water column)	Indirect effects	
		Accidental spills	
		Litter	
Chichester and Langstone	Red-breasted merganser	Disturbance and displacement	Construction, Operation and De
Harbours SPA/Ramsar site		Indirect effects	
		Accidental spills	
		Litter	
	Little tern	Disturbance and displacement	
		Indirect effects	
		Accidental spills	
		Litter	
	Sandwich tern	Indirect effects	
		Accidental spills	
		Litter	
	Common tern	Indirect effects	
		Accidental spills	
		Litter	
	Supporting habitat (water column)	Indirect effects	
		Accidental spills	
		Litter	
Portsmouth Harbour	Red-breasted merganser	Accidental spills	Construction, Operation and De
SPA/Ramsar site		Litter	
	Supporting habitat (water column)	Accidental spills	
		Litter	
Solent and Southampton	Little tern	Accidental spills	Construction, Operation and De
Water SPA/Ramsar site		Litter	

Table 9.1 - European sites and features for which LSE could not be excluded for both the project alone and in combination with other plans and projects



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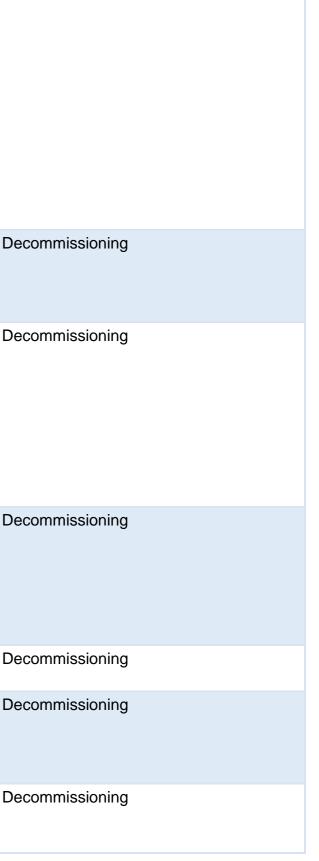
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European site	Feature	Effect	Project phase/s
	Common tern	Accidental spills	
		Litter	
	Sandwich tern	Accidental spills	
		Litter	
	Roseate tern	Accidental spills	
		Litter	
	Mediterranean gull	Accidental spills	
		Litter	
	Supporting habitat (water column)	Accidental spills	
		Litter	
Pagham Harbour SPA/Ramsar	Common tern	Accidental spills	Construction, Operation and De
site		Litter	
	Supporting habitat (water column)	Accidental spills	
		Litter	
Littoral-Seino Marin SPA	Fulmar	Accidental spills	Construction, Operation and D
		Litter	
	Kittiwake	Accidental spills	
		Litter	
	Herring gull	Accidental spills	
		Litter	
	Great black-backed gull	Accidental spills	
		Litter	
Alderney West Coast and	Gannet	Accidental spills	Construction, Operation and De
Burhou Islands Ramsar site		Litter	
	Storm petrel	Accidental spills	
		Litter	
	Lesser black-backed gull	Accidental spills	
		Litter	
River Itchen SAC	Salmon	Increased SSC	Construction, Operation and De
		Pollution Events	
River Avon SAC	Salmon	Increased SSC	Construction, Operation and De
		Pollution events	
	Sea lamprey	Increased SSC	
		Pollution Events	
Littoral Cauchois SAC	Bottlenose Dolphin	Pollution	Construction, Operation and D
	Harbour Porpoise	Pollution	
	Grey Seal	Pollution	





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European site	Feature	Effect	Project phase/s
	Harbour Seal	Pollution	
	Twaite shad	Pollution Events	
	Sea lamprey	Pollution Events	
	River lamprey	Pollution Events	
Estuaires et Littoral Picards	Bottlenose Dolphin	Pollution	Construction, Operation and De
(Baies de Somme et d'Authie)	Harbour Porpoise	Pollution	
SAC/Baie de Somme Ramsar	Grey Seal	Pollution	
	Harbour Seal	Pollution	
	River lamprey	Pollution Events	
Baie de Canche et Couloir des	Harbour Porpoise	Pollution	Construction, Operation and De
trois Estuaires SAC	Grey Seal	Pollution	
	Harbour Seal	Pollution	
	Allis shad	Pollution Events	
	Sea lamprey	Pollution Events	
	River lamprey	Pollution Events	
	Salmon	Pollution Events	
Baie de Seine Orientale SAC	Bottlenose Dolphin	Pollution	Construction, Operation and De
	Harbour Porpoise	Pollution	
	Grey Seal	Pollution	
	Harbour Seal	Pollution	
	Allis shad	Pollution Events	
	Twaite shad	Pollution Events	
	Sea lamprey	Pollution Events	
	River lamprey	Pollution Events	
	Salmon	Pollution Events	
River Axe SAC	Sea lamprey	Pollution Events	Construction, Operation and De
Estuaire de la Seine	Twaite shad	Pollution Events	Construction, Operation and De
ZSC/Marais Vernier Ramsar	Sea lamprey	Pollution Events	
	River lamprey	Pollution Events	
	Salmon	Pollution Events	
Récifs Gris-Nez Blanc-Nez	Harbour Porpoise	Pollution	Construction, Operation and De
SAC	Grey Seal	Pollution	
	Harbour Seal	Pollution	
Ridens et dunes hydrauliques	Harbour Porpoise	Pollution	Construction, Operation and De
du détroit du Pas-de-Calais	Grey Seal	Pollution	
SAC	Harbour Seal	Pollution	
Estuaire de la Seine SAC	Harbour Porpoise	Pollution	Construction, Operation and De





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European site	Feature	Effect	Project phase/s
	Grey Seal	Pollution	
	Harbour Seal	Pollution	
Plymouth Sound and Estuaries SAC	Allis shad	Pollution Events	Construction, Operation and De
	Estuaries [1130]	Increased SSC	Construction, Operation and Dec
	Sandbanks (slightly covered by seawater all the time) [1110]	Deposition of Sediment (Smothering)	
	Mudflats and sandflats (not submerged at low tide) [1140]	Pollution	
	Spartina swards [1320]		
	Atlantic salt meadows [1330]	Invasive Species	
	Salicornia and other annuals colonising mud and sand [1310]		
South Wight Maritime SAC	Reefs [1170]	Increased SSC	
		Deposition of Sediment (Smothering)	
	Submerged or partially submerged sea caves [8330]	Pollution	
		Invasive Species	



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Decommissioning

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9.2. ONSHORE ENVIRONMENT

- 9.2.1.1. The potential for LSE on onshore ecology features related to Annex I and regularly occurring migratory birds only. Such features which occur within the ZOI have been assessed in relation to onshore components of the Proposed Development both alone and in combination with other plans and projects.
- 9.2.1.2. Table 9.2 summarises those European sites and features for which no LSE could not be concluded, which have been progressed to Stage 2 (Section 10)

Table 9.2 - European sites and features for which no LSE could not be concluded with respect to onshore activities for both the project alone and in combination with other plans and projects

European site	Feature	Effect	Project phase/s
Chichester and Langstone Harbours SPA/Ramsar	Sandwich tern	Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Common tern	Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Little tern	Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Dark-bellied brent goose	Disturbance and displacement (noise above water)	Construction and Decommiss
		Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Redshank	Disturbance and displacement (noise above water)	Construction and Decommiss
		Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
S	Shelduck	Disturbance and displacement (noise above water)	Construction and Decommiss
		Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Pintail	Disturbance and displacement (noise above water)	Construction and Decommiss
Teal Wigeon		Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Shoveler	Disturbance and displacement (noise above water)	Construction and Decommiss
		Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Teal	Disturbance and displacement (noise above water)	Construction and Decommiss
		Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Wigeon	Disturbance and displacement (noise above water)	Construction and Decommiss
		Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Bar-tailed godwit	Disturbance and displacement (noise above water)	Construction and Decommiss
		Accidental spills	Construction,Operation and D
		Litter	Construction,Operation and D
	Black-tailed godwit	Disturbance and displacement (noise above water)	Construction and Decommiss



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European site	Feature	Effect	Project phase/s
		Accidental spills	Construction, Operation and Decommissioning
	Curlew	Disturbance and displacement (noise above water)	Construction and Decommissioning
		Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Turnstone	Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Sanderling	Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Grey plover	Disturbance and displacement (noise above water)	Construction and Decommissioning
		Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Ringed plover	Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Dunlin	Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Waterfowl assemblage	Disturbance and displacement (noise above water)	Construction and Decommissioning
		Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Supporting habitats (freshwater and grazing marsh)	Indirect effects (temporary habitat loss)	Construction and Decommissioning
		Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
Portsmouth Harbour	Dark-bellied brent goose	Disturbance and displacement (noise above water)	Construction and Decommissioning
SPA/Ramsar		Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Dunlin	Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Black-tailed godwit	Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning
	Supporting habitats (freshwater and grazing marsh)	Indirect effects (temporary habitat loss)	Construction and Decommissioning
		Accidental spills	Construction, Operation and Decommissioning
		Litter	Construction, Operation and Decommissioning



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10. DETERMINATION OF POTENTIAL ADVERSE EFFECTS (ONSHORE AND MARINE SITES)

10.1. OVERVIEW

- 10.1.1.1. Following the initial pre-LSE screening stage (Section 6) and subsequent determination of LSE (Sections 7 and 8), this section determines the potential for the Proposed Development to have an adverse effect on the European sites and features under Stage 2 of the HRA process, both from the project alone and in combination with other plans or projects.
- 10.1.1.2. Table 9.1 and 9.2 in Section 9 summarises those European sites and features for which LSE could not be excluded, which have been progressed to Stage 2.
- 10.1.1.3. The following sections should be read in conjunction with Appendix 1 and Appendix 5 of this report which presents the PINS integrity matrices for European Marine and Ramsar sites respectively.

10.2. APPROACH TO ASSESSMENT OF POTENTIAL ADVERSE EFFECTS

10.2.1. **OVERVIEW**

- 10.2.1.1. Determining whether, in view of a European site's conservation objectives, the plan or project 'either alone or in combination with other plans or project' would have an adverse effect on site integrity has been assessed in light of:
 - Where available, Natural England's Designated Sites View Supplementary Advice on Conservation Objectives ('SACO');
 - Site-specific information gathered for the environmental baseline;
 - Evidence presented in the ES; and
 - Reasoned argument, professional judgement and lessons learned from other marine cabling projects.
- 10.2.1.2. The following definitions and approach have been used to determine whether the Proposed Development would result in an adverse effect on the integrity of any European site identified as part of this HRA.



10.2.2. SITE INTEGRITY

- 10.2.2.1. The assessment of adverse effects on site integrity of a site is addressed in light of the conservation objectives of each site. The integrity of a site is defined as 'the coherence of the site's ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or populations of species for which the site has been designated' (ODPM Circular 06/2005).
- 10.2.2.2. European Commission guidance (2018) on Managing Natura 200 sites emphasises that site integrity involves its ecological structure, function and ecological processes and that the assessment of adverse effect should focus on, and be limited to, the site's conservation objectives.

10.2.3. ADVERSE EFFECT

- 10.2.3.1. The possible impacts of the Proposed Development during the construction, operation and decommissioning phases have been considered in the context of their effect on the qualifying features for the site under consideration.
- 10.2.3.2. An adverse effect on site integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of designation. In addition, an adverse effect would be one which caused a detectable reduction of the features for which a site was designated, at the scale of the site rather than at the scale of the location of the impact.
- 10.2.3.3. The Habitats Directive defines the conservation status of species as 'favourable' when:
 - Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
 - The natural range of the species is neither being reduced for the foreseeable future; and
 - There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.
- 10.2.3.4. 'Favourable' conservation status of habitats is defined by the Habitats Directive as occurring when:
 - Its natural range and areas it covers within that range are stable or increasing; and
 - The species structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.
- 10.2.3.5. The EC guidance (2018) also recommends that, when considering the 'integrity of the site', it is important to take account of the possibility that effects can manifest over the short, medium or long-term.



10.2.4. SUPPLEMENTARY ADVICE ON CONSERVATION OBJECTIVES

- 10.2.4.1. Natural England's SACO presents attributes which are ecological characteristics or requirements of the classified species within a site. The listed attributes are those which best describe the site's ecological integrity and which, if safeguarded, will enable achievement of the conservation objectives. These attributes have a target which is either quantified or qualified depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.
- 10.2.4.2. In many cases, the attribute targets show if the current objective is to either 'maintain' or 'restore' the attribute. The targets given for each attribute do not represent thresholds to assess the significance of any given effect. Instead, these targets are used along with the conservation objectives, and any case-specific advice issued by Natural England when assessing a project that may affect site integrity. Any proposals or operations which may affect the site, or its features should be designed so they do not adversely affect any of the attributes in the SACO or achievement of the conservation objectives.
- 10.2.4.3. Where available, site-specific SACO have been taken into account when considering potential adverse effects on site integrity. For those impacts for which an LSE could not be ruled out, the equivalent attributes and their targets have been screened into the assessment. Further details are provided in each site-based assessment.

10.2.5. ADDITIONAL MITIGATION - MARINE

Disposal of Dredge Material

- 10.2.5.1. As outlined within Section 3.1.2, the LSE screening stage of the HRA considered a worst-case scenario for increased SSC and sediment deposition resulting from the disposal of dredged material (produced from sandwave clearance) along the entire Marine Cable Corridor. Under this scenario, the spatial extent of the sediment plume was 25 km, which was used as the ZOI for screening and determining LSE.
- 10.2.5.2. Subsequently, mitigation has been included at the AA stage which restricts the disposal of dredged material to take place in the designated disposal site (located between KP 21 and KP 109); thus, prohibiting disposal within the nearshore area (KP 0 KP 21).
- 10.2.5.3. The following worst-case scenario has been used as the basis for assessing the possible adverse effects on site integrity as part of this AA, and the parameters assessed can be summarised as follows:
 - Nearshore (KP0 21)
 - Worst-case activities which will lead to increased SSC are considered to be excavation of HDD pits, and cable installation (due to the potential for the liberation and dispersal of fines identified between KP 5 and 15, and in other isolated locations).



- It is predicted that peak SSCs of up to 200 mg/l may be observed locally (i.e. within 2 km of the cable trench/HDD pit) and these concentrations could potentially persist for several hours following completion of construction activities. Sediment plumes are also likely to be transported up to 5 km away from the trench/pit at which point concentrations of 5 to 10 mg/l are predicted; SSC is expected to return to background levels within a few days following completion of these activities.
- Deposition is not predicted to be significant any coarse material mobilised will deposit rapidly (i.e. within several hundred metres of the cable trench). Finer sediment will be dispersed across a greater spatial extent, transiently depositing throughout the tidal cycle. However, due to the volumes of sediment likely to be liberated into the water column and significant dispersion of fine sediment, it is considered that deposition will be negligible with sediments quickly resuspended and redistributed under the forcing of tidal flows.
- Offshore (Seaward of KP 21)
 - Peak SSC of 1000 mg/l within 1 km from the release point but coarser sediment expected to deposit quickly (almost immediately) with significant reductions of SSC within hours of disposal at each location.
 - Beyond 1 km from release, the passive plume which is transported beyond this is likely to generate SSC in the region of approximately 20 mg/l, transported in the direction of the prevailing flow out to a worst case distance of up to 25 km. SSC is predicted to reduce to background levels (<1 - 6 mg/l) within the timeframe of a few days following completion of these activities.
 - Sediment deposition from disposal activities will be local to the point of release (i.e. within 1000 m), with deposits of coarser sediments potentially observed to depths of between 10 mm and 1.5 m, with greatest deposition observed across an area of a few hundred metres, elongated in the direction of the prevailing flow at the time of release, relative to the release site. Finer sediments will be redistributed and any deposition outside the Marine Cable Corridor will be transient and negligible, with any settled material being quickly redistributed under the forcing of tidal flows.

Pollution Prevention

10.2.5.4. Standard best practice in terms of waste management and spill response procedures for offshore working will be adhered to, as described in the Marine Outline Construction Environmental Management Plan ('CEMP') (APP-488) submitted with



the Application and secured through the Deemed Marine Licence ('dML') which is part of the Draft Development Consent Order (APP-019, Rev 002). This will include the following measures that will reduce the likelihood of pollution events to as low as is reasonably practicable.

- Adoption of routine measures and standard best practice in terms of waste management, auditing, pollution prevention measures and implementation of a dropped object protocol.
- All vessels will also adhere to MARPOL requirements, managed under the International Safety Management ('ISM') Code, which provides an International standard for the safe management and operation of ships for pollution prevention.
- Oil and fuel shall be stored securely in bunded containers. Chemicals will be stored securely, and good housekeeping practices must be adhered to always.
- The process of refuelling or bunkering shall be managed to ensure that the risk of pollution is minimised with details as to how this will be implemented provided in the method statement for each work phase.
- A Marine Pollution Contingency Plan required as part of the dML (APP-019, Rev 002) will be developed for the project post-consent. This plan will set out the measures to be in place to minimise the risks of pollution incidents as well as the procedures to be followed if a pollution incident did occur. This will include the key roles and their responsibilities and relevant contact details.

Biosecurity Management

- 10.2.5.5. A Biosecurity Plan (required under the dML), will be developed for the project postconsent in order to reduce the likelihood of project activities introducing INIS to the local area to as low as is reasonably practicable.
- 10.2.5.6. The management of biosecurity focuses on three areas:
 - Ballast Water Management;
 - Antifouling; and
 - Equipment
- 10.2.5.7. Further information on the outline practices that are proposed are summarised below as described in the Marine Outline CEMP (APP-488) submitted with the Application and secured through the dML.
 - Vessels contracted to work on the Proposed Development will be required to follow current UK Guidance on ballast water management;
 - Vessels will also be required to comply with the IMO 1997 guidelines "Guidelines for the Control and Management of Ships' Ballast Water to Minimise the Transfer of Harmful Aquatic Organisms and Pathogens". In particular, when loading,

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discharging or exchanging ballast, the vessel will be required to comply with section 9 of the "*Guidelines for the control and management of ships*" ballast water to minimise the transfer of harmful aquatic organisms and pathogens" (IMO, 1997);

- Vessels contracted to work on the Proposed Development for any purpose will be required to follow current UK Guidance on the use of hull anti-fouling systems; and
- All vessels working on the Proposed Development shall ensure all practical steps are taken to ensure equipment proposed for use on the project is not fouled by marine organisms.

10.2.6. SPA CONSERVATION OBJECTIVES

- 10.2.6.1. Conservation objectives apply to the site and the individual features and/or assemblages of features for which the site has been designated.
- 10.2.6.2. For those European Marine and Ramsar sites where LSE could not be excluded, the conservation objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Birds Directive, by maintaining or restoring:
 - The extent and distribution of the habitats of the qualifying features;
 - The structure and function of the habitats of the qualifying features;
 - The supporting processes on which the habitats of the qualifying features rely;
 - The populations of qualifying features; and
 - The distribution of qualifying features within the site.
- 10.2.6.3. Given that the populations and distribution of qualifying features are reliant on the extent, distribution, structure, function and processes of supporting habitat, assessment of indirect effects on the latter two conservation objectives is considered to encapsulate assessment of the conservation objectives related to supporting habitat, through consideration of SACO attributes relating to supporting habitat. As such, only the latter two conservation objectives relating to qualifying features have been taken forward for assessment.
- 10.2.6.4. Natural England in their advice on the draft HRA Report (dated 20 September 2019, see Appendix 4), confirmed they were content this approach as the Conservation Objectives relating to supporting habitats are encapsulated within the assessment of 'indirect effects' upon the qualifying features.

10.2.7. SAC CONSERVATION OBJECTIVES

10.2.7.1. Conservation objectives apply to the site and the individual features and/or assemblages of features for which the site has been designated.



- 10.2.7.2. For those European Marine and Ramsar sites in the UK where LSE could not be excluded, the conservation objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Habitats Directive, by maintaining or restoring:
 - The extent and distribution of qualifying natural habitats and habitats of the qualifying species;
 - The structure and function (including typical species) of qualifying natural habitats;
 - The structure and function of the habitats of the qualifying species;
 - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
 - The populations of each of the qualifying species; and
 - The distribution of qualifying species within the site.
- 10.2.7.3. For the sites where LSE could not be ruled out, an assessment of relevant conservation objectives (including consideration of sites specific targets) has been undertaken.

10.3. ONSHORE AND MARINE: CHICHESTER AND LANGSTONE HARBOURS SPA/RAMSAR SITE

10.3.1. OVERVIEW

- 10.3.1.1. Chichester and Langstone Harbours SPA/Ramsar covers two large, estuarine basins. Urban development surrounds the west of Langstone Harbour, whereas farmland surrounds the majority of Chichester Harbour. Together, with neighbouring Portsmouth Harbour, the area forms one of the most sheltered intertidal areas on the south coast of England.
- 10.3.1.2. Both Chichester and Langstone Harbours contain extensive intertidal mudflats and sandflats with areas of seagrass beds, saltmarsh, shallow coastal waters, coastal lagoons, coastal grazing marsh and shingle ridges and islands. These habitats support internationally and nationally important numbers of overwintering and breeding bird species.
- 10.3.1.3. At low tide the mudflats are exposed, the water is drained by channels and creeks which meet to form narrow exits into the Solent. The sediments support rich populations of intertidal invertebrates, which provide an important food source for overwintering birds. Several small freshwater streams flow into the harbours; however, these contribute relatively little freshwater input compared to the tidal flows.
- 10.3.1.4. There are more than 300 ha of seagrass beds (*Zostera noltii* and *Zostera marina*) in the SPA which are an important food source for dark-bellied brent geese (Natural England, 2019a). Overwintering birds also feed and roost in the saltmarsh areas,



which are dominated by cordgrass (*Spartina*) swards, as well as on coastal grazing marsh.

- 10.3.1.5. The shingle ridges and islands within the site provide important nesting habitat for three species of tern during the summer breeding season. Adult terns use the shallow coastal waters in the harbours and the wider Solent to forage for small fish to feed themselves and their chicks.
- 10.3.1.6. Areas outside the SPA contain important supporting habitats for the birds, including coastal grazing marsh, amenity grassland and agricultural land (Natural England, 2019a).

10.3.2. MARINE CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.3.2.1. Site-specific SACO is available for the Chichester and Langstone Harbours SPA^{Error!} ^{Bookmark not defined.} Table 10.1 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded for the marine environment.

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Red-breasted merganser Little tern	Disturbance and displacement	Disturbance caused by human activity
Red-breasted merganser Little tern	Indirect effects	Supporting habitat: food availability
Sandwich tern Common tern		Supporting habitat: water quality - turbidity
	Accidental spills and Litter	Supporting habitat: water quality - contaminants
Supporting habitat (water column)	Indirect effects	Supporting habitat: water quality - DO
		Supporting habitat: water quality - turbidity
	Accidental spills and Litter	Supporting habitat: water quality - contaminants

Table 10.1 – Marine SACO attributes screened in for assessment

10.3.2.2. Non-equivalent attributes listed within the SACO which were screened out from further assessment included:



- Breeding population: abundance;
- Connectivity with supporting habitats;
- Predation all habitats;
- Supporting habitat: air quality;
- Supporting habitat: conservation measures;
- Supporting habitat: extent and distribution of supporting habitat for the breeding season;
- Supporting habitat: landform;
- Supporting habitat: vegetation characteristics for nesting; and
- Supporting habitat: water quality nutrients.

10.3.3. ONSHORE CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.3.3.1. Table 10.2 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded for the onshore environment.

Table 10.2 – Onshore SACO attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Dark-bellied brent goose Redshank Shelduck Pintail Shoveler Teal Wigeon Bar-tailed godwit Black-tailed godwit Curlew Waterfowl assemblage	Disturbance and displacement	Disturbance caused by human activity



Feature	Impact for which LSE could not be excluded	Equivalent attribute
Little tern Sandwich tern Common tern Dark-bellied brent goose Redshank Shelduck Pintail Shoveler Teal Wigeon Bar-tailed godwit Black-tailed godwit Curlew Turnstone Sanderling Grey plover Ringed plover Dunlin	Accidental spills and Litter	Supporting habitat: food availability
Waterfowl assemblage	Accidental spills and Litter	Supporting habitat: quality of supporting non-breeding habitat
Supporting habitat (freshwater and coastal grazing marsh)	Indirect effects	Supporting habitat: extent and distribution of supporting habitat for the non-breeding season
	Accidental spills and Litter	Supporting habitat quality of supporting non-breeding habitat

10.3.4. ONSHORE AND MARINE ASSESSMENTS OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.3.4.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.3 for marine features and Table 10.4 for onshore/intertidal features below.
- 10.3.4.2. It is concluded that there will be no adverse effect on the site integrity of Chichester and Langstone Harbours SPA/Ramsar, either from the Proposed Development alone, or in combination with other plans or projects.

Table 10.3 – Marine assessment of potential adverse effects on site integrity for the Chichester and Langstone Harbours SPA/Ramsar site across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Red-breasted merganser	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Red-breasted merganser sensitivity to disturbance (Bradbury <i>et al.</i> , 2014; G Within Langstone Harbook known to both feed and numbers. It is considered harbour have the highes to cause disturbance and three onshore HDD loca the Proposed Developm Wharf is the closest loca merganser roosting area towards Langstone Bridg location may therefore d unpredictable noise even However, these works w industrialised setting. Vit duration (two hours for in levels from the EMV at H Marshes, given that SPL distance is doubled. Nois with construction activitie above baseline levels of of Langstone Harbour (C Given that HDD1 and HI red-breasted merganser there is no potential for it these locations, both of urban environment Outside of Langstone Harbour (C Given that HDD1 and HI red-breasted merganser there is no potential for it these locations, both of urban environment Outside of Langstone Harbour (C Given that HDD1 and HI red-breasted merganser there is no potential for it these locations, both of urban environment Outside of Langstone Harbour birds to be disturbed and unpredictable noise even with construction activitie Eastney, and elsewhere Vibro-hammering at the duration and noise gene driving machine will be n will not be noticeable ab Red-breasted merganser in water depths of <10 m



ser are considered to be of moderate ce and therefore displacement Gittings & O'Donoghue, 2016).

our, red-breasted mergansers are I roost in internationally important ed that onshore HDD works within the est potential of all construction activities nd displacement to this species. Of the ations (see Chapter 3 Description of ment for locations), HDD3 at Kendall's cation to favoured red-breasted eas east of Farlington Marshes and dge (c.1 km). Sheet piling at this disturb and displace birds through ents.

will be above MHWS in an already /ibro-hammering will be very short in installation at each location) and noise HDD3 will be < 50 dB at Farlington PLs reduce by 6 dB each time the bise and visual disturbance associated ties at HDD3 will not be noticeable of disturbance within the urban setting (Cutts & Allen, 1999; Cutts et al., 2009). HDD2 are located further away from er roosting areas, it is considered that impact from onshore HDD works at which are located above MHWS in an

Harbour, red-breasted mergansers may nearshore waters throughout the ore potential for foraging and roosting nd therefore displaced by both ents and visual disturbance associated ties at the marine HDD location off e within the Marine Cable Corridor.

e marine HDD location will be short in erated by the vibro-hammers and pipenon-percussive and airbourne SPLs bove the baseline in this urban setting. sers dive from the sea surface to forage m (Robbins, 2017). Whilst they may be

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Assessment exposed to underwater i and pipe driving machin be discernible above bas (median noise levels ard dB re 1 μPa; Merchant at together with a multicat, vessel and up to four wo HDD location for up to 4 movements predicted on noticeable above baselil existing high levels of tra Throughout the rest of th anticipated that there may over the course of the a period. Construction vest barges that have difficul safe passage distance of number of vessels preservest is likely that each vesses of the rolling safe passa (hours to days). The pot low tide between KP 1.0 duration of up to 4 week the Channel and Solent breasted mergansers th forage and roost will be disturbance. During operation, an ind Marine Cables would re is therefore considered disturbance/displaceme would be less than pred Therefore, it is considered displacement from the F



r noise resulting from the vibro-hammer ne during this time, noise levels will not ackground underwater noise levels round the UK range from 81.5 to 95.5 : *et al.*, 2016). A single jack-up vessel, t, a safety vessel, a crew transfer vorkboats may be present at the marine 44 weeks, with a total of 636 vessel over this period. This will not be line levels of disturbance from the traffic within the area.

the Marine Cable Corridor, it is nay be up to c.825 vessel movements anticipated 30-month construction essels such as the larger CLVs and ulty in manoeuvring will have a rolling of up to 700 m. Whilst there may be a sent during each stage of installation, it el will only be present in any one area age distance for very short durations otential grounding of cable lay barges at .0 and KP 4.7 will occur over a short eks. Furthermore, vessel traffic levels in at are already high. As such, redhat use the Marine Cable Corridor to e habituated to such levels of

dicative worst-case failure rate of the equire once repair every 10-12 years. It I that potential

ent effects on red-breasted mergansers dicted during construction.

ered that potential disturbance and Proposed Development alone will not fect on red-breasted merganser as a s SPA, and therefore no adverse are predicted.

ng from plans or projects which have verlap with the Proposed Development) are considered to be highly localised

d that there will be no adverse effect on rbance and displacement effects, either n with other project and plans (see ices for further details).

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
		Indirect effects	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. salmon, brook lamprey, minnow, gobies, eels, stickleback, gobies, flatfish, herring, shrimps, <i>Nereis</i>) at preferred sizes (e.g.<11 cm)	Red-breasted merganse benthos, fish and shellfishe of moderate sensitivitial., 2014). If seabed had are disturbed, the area of potential food sources, of Furthermore, red-breast and are likely to be affect can make it harder to set construction have the potential food sources of water column during call. Within Langstone Harbon numbers are likely to be entry/exit points of the di there is no pathway for the suspended sediment or works are considered to merganser prey species Outside of Langstone H pits (KP 1.0-1.6), and can the liberation and dispen- and 15, and in other ison sediments up to 10 km f at these distances will be discernible above naturate approximately <5 to 75 for there will be no effects of Elsewhere within the Mat disturbed habitat for rou- maximum of 3.6 km ² alo (c.6%). High densities of predicted beyond KP 21 shallow, coastal waters area where densities are predicted that a peak SS locally (i.e. within 2 km of concentrations could pof following completion of of plumes are also predicted the cable trench/HDD pin 10 mg/l are predicted; S background levels within these activities. Most fish and shellfish a suspended sediment or



sers are effectively top predators of fish populations and are considered to vity to habitat disturbance (Bradbury *et* abitats (and therefore the prey species) may be temporarily devoid of any resulting in effective habitat loss. sted mergansers are visual foragers ected by an increase in turbidity which see prey. Activities associated with potential to release sediment into the able burial and associated works.

oour where red-breasted merganser be highest, HDD will be used. The drill are expected to be onshore, thus r the works to result in an increase in or resultant smothering. Therefore, the to have no effect on red-breasted es in Langstone Harbour.

Harbour, excavation at the marine HDD cable installation (due to the potential for ersal of fines identified between KP 5 olated locations) will transport the finest from the release point. However, SSC be low (< 5 mg/l) and therefore not ral variation, which ranges from 5 mg/l in coastal areas. In consequence, on prey species at the Landfall farine Cable Corridor, the area of ute preparation is anticipated to be a long the entire Marine Cable Corridor of red-breasted merganser are not 1 given the species' preference for s (Robbins, 2017). Within the nearshore re likely to be highest (KP 0-21, it is SSC of up to 200 mg/l may be observed of the cable trench/HDD pit) and these otentially persist for several hours construction activities. Sediment ted to be transported up to 5 km from pit at which point concentrations of 5 to SSC is expected to return to in a few days following completion of

are able to tolerate a degree of wing to frequent exposure to storm

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 induced fluctuations in sibackground levels of suralready highly turbid (Gul During operation, within that there is no pathway of the cable crossing. Outside of Langstone Hashellfish habitat as a resinot material in terms of it these measures will be buring operation, the realthough unlikely, may be failure rate of the Marine every 10-12 years. Cable similar or lesser effects a potential increases in SS construction due to the siduration of works and the no adverse effects will of Therefore, it is considered availability resulting from increased turbidity from not result in an adverse Potential effects resultint temporal and spatial over (Table 4 of Appendix 3) and temporary.
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	(see Appendix 1 PINS n Red-breasted merganse be affected by an increat harder to see prey. They sensitive to habitat distu Activities associated with maintenance works have the water column during e.g. HDD pit excavation However, since HDD with with an onshore exit point is considered to be negli



sediment concentrations. Indeed, uspended sediment in the Solent are Guillou *et al.*, 2017).

n Langstone Harbour, it is considered by for impact due to the onshore nature

Harbour, the permanent loss of fish and esult of cable non-burial protection is f its effect on prey availability since e limited in spatial extent (c. 0.7 km²).

epair or replacement of cables, be required. An indicative worst-case ne Cables could require a repair once ole repair has the potential to have as during construction, however, SSC would be lower than during e smaller scale of a repair, the shorter the more localised nature of work and occur as a result these potential works.

ered that potential effects on prey om seabed disturbance/loss and n the Proposed Development alone will e effect on site integrity.

ing from plans or projects which have verlap with the Proposed Development) are considered to be highly localised

ed that there is no potential for adverse from disturbance and displacement, bination with other project and plans matrices for further details).

sers are visual foragers and are likely to ease in turbidity which can make it ey are considered to be moderately turbance (Bradbury *et al.*, 2014).

vith construction, repair and

we the potential to release sediment into ng cable burial and associated works n.

vill be used within Langstone Harbour, bint, the volume of suspended material gligible.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Outside of Langstone Hapits (KP 1.0-1.6), and carthe liberation and dispers and 15, and in other isol sediments up to 10 km f at these distances will b discernible above natural approximately <5 to 75 m species at the Landfall armaterial since both hab will be temporary, short Elsewhere within the Mardisturbed habitat for rour maximum of 3.6 km² alo (c.6%). High densities or predicted beyond KP 21 shallow, coastal waters area where densities are predicted that a peak SS locally (i.e. within 2 km concentrations could por following completion of complexity predicted; SSC levels within a few days activities. During operation, repair unlikely, may be require of the Marine Cables coryears. Cable repair has effects as during construct SSC would be lower that smaller scale of a repair more localised nature of As such, the potential for resulting from increased Development alone will integrity. Potential effects resulting temporal and spatial over (Table 4 of Appendix 3) and temporary.



Harbour, excavation at the marine HDD cable installation (due to the potential for ersal of fines identified between KP 5 olated locations) will transport the finest from the release point. However, SSC be low (< 5 mg/l) and therefore not ral variation, which ranges from 5 mg/l in coastal areas. Effects on prey are therefore considered to be not bitat disturbance and increases in SSC t in duration and small in extent.

Marine Cable Corridor, the area of bute preparation is anticipated to be a long the entire Marine Cable Corridor of red-breasted merganser are not 21 given the species' preference for s (Robbins, 2017). Within the nearshore are likely to be highest (KP 0-21), it is SSC of up to 200 mg/I may be observed of the cable trench/HDD pit) and these botentially persist for several hours f construction activities. Sediment to be transported up to 5 km from the at which point concentrations of 5 to 10 C is expected to return to background as following completion of these

ir or replacement of cables, although red. An indicative worst-case failure rate could require a repair once every 10-12 s the potential to have similar or lesser truction, however, potential effects from han during construction due to the hir, the shorter duration of works and the of work.

for effects from reduced prey availability ed turbidity from the Proposed Il not have an adverse effect on site

ing from plans or projects which have verlap with the Proposed Development are considered to be highly localised

d that there will be no adverse effect on ts on prey species within the water

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
			-		column from increased with other project and pl for further details).
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemic during all development p directly affect red-breast surface through direct o disposal of industrial or phases also has the pot merganser mortality thro
					However, routine mitiga practice in terms of was measures and strict nav events and it is predicte measures, there will be
					Given the scale and nat projects and the require measures which could o concluded that there wil either alone or in combin (see Appendix 1 PINS n
Little tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Restrict the frequency, duration and/or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Little terns at sea are so to disturbance and there 2004; Bradbury <i>et al.</i> , 20 Within Langstone and C of little tern are present. forage in relatively close (Thaxter <i>et al.</i> , 2012)ons Harbour have potential t given its moderate sens three onshore HDD loca closest location to a little minimum distance of <i>c.</i> 2 Sheet piling at HDD3 ma foraging birds through u However, these works w industrialised setting. Vi duration (two hours for i levels from the EMV at H Island, given that SPLs is doubled. Noise and vi construction activities at baseline levels of disture (Cutts & Allen, 1999; Cu



d turbidity, either alone or in combination plans (see Appendix 1 PINS matrices

nical spillages from vessels may occur t phases. Spills have the potential to asted mergansers utilising the sea oiling resulting in mortality. Unplanned or user plastic during all development otential to cause red-breasted arough ingestion or entanglement.

ation measures of standard best aste management, pollution prevention avigational protocols will prevent these ted that, in consideration of mitigation e no adverse effects on site integrity.

ature of other potential plans and rement to adhere to similar best practice I contribute to in combination effects, it is will be no adverse effect on site integrity bination with other plans and projects matrices for further details).

scored as being of moderate sensitivity erefore displacement (Garthe & Hüppop, 2014).

Chichester Harbours, breeding colonies nt. Given that little terns are known to se proximity to their breeding colonies onshore HDD works within the Langstone al to displace this species during foraging nsitivity to disturbance at sea. Of the cations, HDD3 at Kendall's Wharf is the ttle tern breeding colony, located at a c.2 km from the Baker's Island colony. may therefore disturb and displace unpredictable noise events.

s will be above MHWS in an already Vibro-hammering will be very short in r installation at each location) and noise at HDD3 will be *c*.40 dB at Baker's .s reduce by 6 dB each time the distance visual disturbance associated with at HDD3 will not be noticeable above urbance within Langstone Harbour Cutts *et al.*, 2009). In any event, were

WSP/Natural Power

Conservation Objectives	Effect	Attribute	Target	Assessment
Conservation Objectives	Effect	Attribute	Target Image:	Assessmentlittle terns be temporarily to the onshore HDD wor equivalent foraging sites and Langstone Harbours Proposed Development. Given that HDD1 and HI little tern breeding colon potential for adverse effe locations, both of which environment.Outside of Langstone Ha shallow, nearshore wate There is therefore poten and displaced by both u disturbance associated of marine HDD location off Vibro-hammering at the duration and noise gene driving machine will be r
				will not be noticeable ab Since little terns plunge feeding (RPS, 2011), it i underwater noise resulti driving machines will be background underwater around the UK range fro <i>et al.</i> , 2016). A single jac a safety vessel, a crew t workboats may be prese to 44 weeks, with a total over this period. The pot low tide between KP 1.0
				duration of up to 4 week baseline levels of disturb traffic within the area. Given that the foraging r nearshore waters up to <i>et al.</i> , 2015), construction impact this feature. How be up to c.825 vessel m construction stage throu including at the marine H month construction perior larger CLVs and barges
	Conservation Objectives Image: Conservatives Image: Conservation Objectives Image: Conservati	Conservation Objectives Effect Image: state st	Conservation Objectives Effect Attribute Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Objectives Image: Conservation Object	Conservation Objectives Effect Attribute Target Image: Image



rily disturbed from foraging in proximity orks within Langstone Harbour, other es are present elsewhere in Chichester urs which will be unaffected by the nt.

HDD2 are located further away from onies, it is considered that there is no effects from onshore HDD works at these sh are located above MHWS in an urban

Harbour, little terns may be present in aters at the mouth of Langstone Harbour. ential for foraging birds to be disturbed unpredictable noise events and visual d with construction activities at the off Eastney.

e marine HDD location will be short in erated by the vibro-hammers and pipenon-percussive and airbourne SPLs above the baseline in this urban setting. e dive to a maximum of 1 m whilst is considered that exposure to any Iting from the vibro-hammer and pipe e minimal and not discernible above er noise levels (median noise levels rom 81.5 to 95.5 dB re 1 µPa; Merchant ack-up vessel, together with a multicat, transfer vessel and up to four sent at the marine HDD location for up tal of 636 vessel movements predicted otential grounding of cable lay barges at .0 and KP 4.7 will occur over a short eks. This is will not be noticeable above Irbance from the existing high levels of

g range of little tern is restricted to o c.10 km (Thaxter *et al.*, 2012; Parsons tion activities beyond this range will owever, it is anticipated that there may movements over the course of the oughout the Marine Cable Corridor, e HDD location, over the anticipated 30riod. Construction vessels such as the es that have difficulty in manoeuvring will asage distance of up to 700 m. Whilst

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					there may be a number of installation, it is likely in any one area of the ro short durations (hours to levels in the Channel an little terns which use the be habituated to such le Therefore, potential dist from the Proposed Deve adverse effect on little te and there will be no adv Potential effects resultin temporal and spatial ove (Table 4 of Appendix 3) and temporary. As such, it is considered site integrity from disturt or in combination with o
		Indirect effects	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. crustacea, annelids, sandeel, herring, clupeidae) at preferred sizes.	 and Appendix 5 PINS m Little terns are effectivel shellfish populations and moderate sensitivity to h 2004; Bradbury <i>et al.</i>, 20 the prey species) are dis devoid of any potential f habitat loss. Furthermore likely to be affected by a it harder to see prey from associated with construct sediment into the water associated works. Within Langstone Harboore may be high; HDD will be drill are expected to be of the works to result in an resultant smothering. The have no material effect of Harbour. Outside of Langstone Harboore and 15, and in other isole sediments up to 10 km f at these distances will be



er of vessels present during each stage ly that each vessel will only be present rolling safe passage distance for very to days). Furthermore, vessel traffic and Solent are already high. As such, he Marine Cable Corridor to forage will levels of disturbance.

isturbance and displacement effects evelopment alone will not result in an e tern as a qualifying feature of this SPA, dverse effect on site integrity.

ting from plans or projects which have overlap with the Proposed Development B) are considered to be highly localised

ed that there will be no adverse effect on urbance and displacement, either alone other project and plans (see Appendix 1 matrices for further details).

vely top predators of benthos, fish and and are considered likely to be of b habitat disturbance (Garthe & Hüppop, 2014). If seabed habitats (and therefore disturbed, the area may be temporarily al food sources, resulting in effective ore, terns are visual foragers and are y an increase in turbidity which can make rom the sea surface. Activities ruction have the potential to release er column during cable burial and

bour where foraging little tern numbers be used. The entry/exit points of the e onshore, thus there is no pathway for an increase in suspended sediment or Therefore, the works are considered to at on tern prey species in Langstone

Harbour, excavation at the marine HDD cable installation (due to the potential for persal of fines identified between KP 5 solated locations) will transport the finest in from the release point. However, SSC be low (< 5 mg/l) and therefore not

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					discernible above natur approximately <5 to 75 species at the Landfall since both habitat distu- temporary, short in dura
					Elsewhere within the Ul foraging little tern densi (Parsons <i>et al.</i> , 2015), t preparation is anticipate the entire UK Marine Ca tern are not expected to mean-maximum foragin <i>al.</i> , 2012). Within this ne predicted that a peak S locally (i.e. within 2 km concentrations could po following completion of plumes are also likely to cable trench/HDD pit at mg/l are predicted; SSC levels within a few days activities.
					Most prey species are a sediment owing to freque fluctuations in sediment background levels of su already (Guillou, <i>et al.</i> ,
					During operation, within that there is no pathway of the cable crossing. Outside of Langstone H permanent loss of fish, of cable non-burial prote effect on prey availabilit in spatial extent (c.0.7 k
					During operation, the realthough unlikely, may be failure rate of the Marine every 10-12 years. Cabe similar or lesser effects potential increases in S construction due to the duration of works and the duration
					As such, the potential for resulting from seabed d



ural variation, which ranges from 5 mg/l in coastal areas. Effects on prey ll are therefore considered not material urbance and increases in SSC will be iration and small in extent.

UK Marine Cable Corridor, where sities are likely to be much lower the area of disturbed habitat for route ited to be a maximum of 3.6 km² along Cable Corridor (c.6%). Breeding little to be present beyond KP 21 given their ing range (6.3 km ± 2.4 km; Thaxter et nearshore area (KP 0 - 21), it is SSC of up to 200 mg/l may be observed of the cable trench/HDD pit) and these potentially persist for several hours of construction activities. Sediment to be transported up to 5 km from the at which point concentrations of 5 to 10 SC is expected to return to background s following completion of these

e able to tolerate a degree of suspended quent exposure to storm induced nt concentrations, together with high suspended sediment in the Solent ., 2017).

in Langstone Harbour, it is considered ay for impact due to the onshore nature

Harbour during operation, the a, shellfish and benthic habitat as a result betection would have no adverse effect ility since these measures will be limited ' km²).

repair or replacement of cables, / be required. An indicative worst-case ine Cables could require a repair once able repair has the potential to have is as during construction, however, SSC would be lower than during e smaller scale of a repair, the shorter the more localised nature of work.

for effects from reduced prey availability disturbance/loss and increased turbidity

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 from the Proposed Development of the Proposed Dev
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	Little terns are visual for an increase in turbidity w They are considered to a disturbance (Bradbury e construction, repair and to release sediment into installation and associat However, since HDD will with an onshore exit poin is considered to be negl Outside of Langstone Ha pits (KP 1.0-1.6), and ca the liberation and disper and 15, and in other isol sediments up to 10 km f at these distances will b discernible above natura approximately <5 to 75 m no adverse effects on th Landfall since both habit will be temporary, short Elsewhere within the Ma little tern densities are life 2015), the area of distur anticipated to be a maxi Marine Cable Corridor (a expected to be present f maximum foraging range 2012). Within this nears that a peak SSC of up to (i.e. within 2 km of the ca concentrations could po following completion of o plumes are also likely to



velopment alone will not adversely ere will be no adverse effects on site

ing from plans or projects which have verlap with the Proposed Development 3) are considered to be highly localised

ed that there is no potential for adverse from effects on prey availability, either n with other project and plans (see ndix 5 PINS matrices for further details).

oragers and are likely to be affected by which can make it harder to see prey. be moderately sensitive to habitat *et al.*, 2014). Activities associated with d maintenance works have the potential to the water column during cable ated works e.g. HDD pit excavation. will be used within Langstone Harbour, oint, the volume of suspended material gligible.

Harbour, excavation at the marine HDD cable installation (due to the potential for ersal of fines identified between KP 5 solated locations) will transport the finest in from the release point. However, SSC be low (< 5 mg/l) and therefore not ural variation, which ranges from 5 mg/l in coastal areas. There would be the availability of prey species at the bitat disturbance and increases in SSC rt in duration and small in extent.

Marine Cable Corridor, where foraging likely to be much lower (Parsons *et al.*, urbed habitat for route preparation is ximum of 3.6 km² along the entire (c.6%). Breeding little tern are not to beyond KP 21, given their meannge (6.3 km \pm 2.4 km; Thaxter *et al.*, rshore area (KP 0 – 21), it is predicted to 200 mg/l may be observed locally cable trench/HDD pit) and these potentially persist for several hours of construction activities. Sediment to be transported up to 5 km from the

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					cable trench/HDD pit at mg/l are predicted; SSC levels within a few days activities. During operation, the re although unlikely, may b failure rate of the Marine every 10-12 years. Cab similar or lesser effects potential increases in St construction due to the
					duration of works and the no adverse effects on site As such, the potential for resulting from increased Development alone is car effect on site integrity. Potential effects resulting temporal and spatial over (Table 4 of Appendix 3) and temporary. As such, it is considered site integrity from effects column, either alone or plans (see Appendix 1 a further details)
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	further details). Unplanned oil or chemic during all development p directly affect little terns oiling resulting in mortal user plastic during all de potential to cause little t entanglement. However, routine mitiga practice in terms of was measures and strict nav events occurring and the consideration of mitigati effect on site integrity fre Given the scale and nat projects and the require measures which could of predicted that there will



at which point concentrations of 5 to 10 SC is expected to return to background ys following completion of these

repair or replacement of cables, / be required. An indicative worst-case ine Cables could require a repair once able repair has the potential to have its as during construction, however, SSC would be lower than during e smaller scale of a repair, the shorter the more localised focus of work, with site integrity.

for effects from reduced prey availability ed turbidity from the Proposed concluded not to result in an adverse

ting from plans or projects which have overlap with the Proposed Development 3) are considered to be highly localised

red that there are no adverse effects on cts on prey species within the water or in combination with other project and I and Appendix 5 PINS matrices for

nical spillages from vessels may occur at phases. Spills have the potential to ns utilising the sea surface through direct cality. Unplanned disposal of industrial or development phases also has the e tern mortality through ingestion or

gation measures of standard best aste management, pollution prevention avigational protocols will prevent these therefore it is predicted that, in ation measures, there will be no adverse from the Proposed Development alone.

ature of other potential plans and rement to adhere to similar best practice d contribute to in combination effects, it is ill be no adverse effect on site integrity in

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					combination with other p and Appendix 5 PINS m
Sandwich tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Indirect effects	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. crustacea, annelids, sandeel, herring, clupeidae) at preferred sizes.	Sandwich terns are effect and shellfish populations moderate sensitivity to h 2004; Bradbury <i>et al.</i> , 20 the prey species) are dis devoid of any potential for habitat loss. Furthermore likely to be affected by a it harder to see prey from associated with construct sediment into the water associated works. Within Langstone Harbo points of the drill are exp pathway for the works to sediment or resultant sm adversely affect tern pre Outside of Langstone Ha pits (KP 1.0-1.6), and ca the liberation and disper and 15, and in other isol sediments up to 10 km fr at these distances will be discernible above natura approximately <5 to 75 r adverse effects on the a Landfall since both habit will be temporary, short Elsewhere within the Ma Sandwich tern densities the area of disturbed hal anticipated to be a maxin Marine Cable Corridor (of distributions presented in of breeding Sandwich te Within the area of highes peak SSC of up to 200 r within 2 km of the cable concentrations could pot following completion of of plumes are also likely to cable trench/HDD pit at mg/l are predicted; SSC



plans and projects (see Appendix 1 matrices for further details).

ectively top predators of benthos, fish ns and are considered likely to be of habitat disturbance (Garthe & Hüppop, 2014). If seabed habitats (and therefore listurbed, the area may be temporarily food sources, resulting in effective ore, terns are visual foragers and are an increase in turbidity which can make om the sea surface. Activities uction have the potential to release r column during cable burial and

bour, HDD will be used. The entry/exit expected to be onshore, thus there is no to result in an increase in suspended smothering. Therefore, the works will not rey species in Langstone Harbour.

Harbour, excavation at the marine HDD cable installation (due to the potential for ersal of fines identified between KP 5 olated locations) will transport the finest from the release point. However, SSC be low (< 5 mg/l) and therefore not ral variation, which ranges from 5 mg/l in coastal areas. There will be no availability of prey species at the bitat disturbance and increases in SSC t in duration and small in extent.

Marine Cable Corridor, where foraging as may be lower (Wilson *et al.*, 2014), abitat for route preparation is ximum of 3.6 km² along the entire (*c*.6%). Based on the predicted usage in Wilson *et al.*, (2014), high densities terns are not expected beyond KP 21. est use (KP 0-21), it is predicted that a mg/I may be observed locally (i.e. e trench/HDD pit) and these otentially persist for several hours f construction activities. Sediment to be transported up to 5 km from the t which point concentrations of 5 to 10 C is expected to return to background

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 levels within a few days activities. Most prey species are all sediment owing to freque fluctuations in sediment background levels of sus already (Guillou, <i>et al.</i>, 2 During operation, within that there is no pathway of the cable crossing. Outside of Langstone Hapermanent loss of fish, so of cable non-burial prote availability since these mextent (<i>c</i>.0.7 km²). During operation, the regathough unlikely, may be failure rate of the Marine every 10-12 years. Cable similar or lesser effects a potential increases in SS construction due to the seduration of works and the no adverse effects on site As such, the potential for resulting from seabed di from the Proposed Dever result in any adverse effects on site in prey availability, either a project and plans (see Arbita)
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	details). Sandwich terns are visua affected by an increase i see prey. They are cons habitat disturbance (Brac associated with construct have the potential to rele during cable installation since HDD will be used v



s following completion of these

able to tolerate a degree of suspended uent exposure to storm induced at concentrations, together with high uspended sediment in the Solent 2017).

n Langstone Harbour, it is considered by for impact due to the onshore nature

Harbour during operation, the shellfish and benthic habitat as a result tection will not materially affect the prey measures will be limited in spatial

epair or replacement of cables, be required. An indicative worst-case ne Cables could require a repair once ble repair has the potential to have as during construction, however, SSC would be lower than during e smaller scale of a repair, the shorter the more localised nature of work, with site integrity.

for effects from reduced prey availability disturbance/loss and increased turbidity velopment alone is concluded not to ffect on site integrity.

ng from plans or projects which have verlap with the Proposed Development) are considered to be highly localised h, it is considered that there are no integrity from in combination effects on alone or in combination with other Appendix 1 PINS matrices for further

sual foragers and are likely to be e in turbidity which can make it harder to hisidered to be moderately sensitive to radbury *et al.*, 2014). Activities uction, repair and maintenance works elease sediment into the water column in and associated works. However, d within Langstone Harbour, with an

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					onshore exit point, the v considered to be negligi
					Outside of Langstone H
					pits (KP 1.0-1.6), and ca
					the liberation and dispe
					and 15, and in other iso
					sediments up to 10 km t
					at these distances will b
					discernible above natura
					approximately <5 to 75
					adverse effects on the a
					Landfall since both hab
					will be temporary, short
					Elsewhere within the Ma
					Sandwich tern densities
					the area of disturbed ha
					anticipated to be a max Marine Cable Corridor (
					distributions presented
					of breeding Sandwich te
					Within the area of highe
					peak SSC of up to 200
					within 2 km of the cable
					concentrations could po
					following completion of
					plumes are also likely to
					cable trench/HDD pit at
					mg/l are predicted; SSC levels within a few days
					activities.
					During operation, the re
					although unlikely, may a failure rate of the Marine
					every 10-12 years. Cab
					similar or lesser effects
					potential increases in S
					construction due to the
					duration of works and the
					no adverse effect on site
					As such, the potential for
					resulting from increased
					Development alone is c
					effects on site integrity.
					Potential effects resultin
					temporal and spatial over



volume of suspended material is gible.

Harbour, excavation at the marine HDD cable installation (due to the potential for ersal of fines identified between KP 5 olated locations) will transport the finest of from the release point. However, SSC be low (< 5 mg/l) and therefore not tral variation, which ranges from 5 mg/l in coastal areas. There will be no availability of prey species at the abitat disturbance and increases in SSC rt in duration and small in extent.

es may be lower (Wilson *et al.*, 2014), habitat for route preparation is ximum of 3.6 km² along the entire (c.6%). Based on the predicted usage d in Wilson *et al.*, (2014), high densities terns are not expected beyond KP 21. hest use (KP 0-21), it is predicted that a 0 mg/l may be observed locally (i.e. e trench/HDD pit) and these botentially persist for several hours f construction activities. Sediment to be transported up to 5 km from the at which point concentrations of 5 to 10 C is expected to return to background as following completion of these

repair or replacement of cables, be required. An indicative worst-case ne Cables could require a repair once ble repair has the potential to have s as during construction, however, SSC would be lower than during e smaller scale of a repair, the shorter the more localised nature of work, with ite integrity.

for effects from reduced prey availability ed turbidity from the Proposed concluded not to result in any adverse .

ing from plans or projects which have verlap with the Proposed Development

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
		2			(Table 4 of Appendix 3) and temporary. As such, it is considered site integrity from effects column, either alone or plans (see Appendix 1 F
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemic during all development directly affect Sandwich direct oiling resulting in industrial or user plastic has the potential to caus ingestion or entangleme
					However, routine mitigal practice in terms of was measures and strict nav events occurring and the consideration of mitigati effects on site integrity.
					Given the scale and nat projects and the require measures which could o predicted that there will combination with other p
Common tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Indirect effects	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. crustacea, annelids, sandeel, herring, clupeidae) at preferred sizes.	Common terns are effect and shellfish population moderate sensitivity to h 2004; Bradbury <i>et al.</i> , 24 the prey species) are dia devoid of any potential f habitat loss. Furthermore likely to be affected by a it harder to see prey from associated with construct sediment into the water associated works e.g. H Within Langstone Harboo points of the drill are exp pathway for the works to sediment or resultant set adversely affect tern preson Outside of Langstone H pits (KP 1.0-1.6), and can the liberation and dispending



) are considered to be highly localised

ed that there are no adverse effects on ets on prey species within the water r in combination with other project and PINS matrices for further details).

t phases. Spills have the potential to the terns utilising the sea surface through mortality. Unplanned disposal of ic during all development phases also use Sandwich tern mortality through ment.

ation measures of standard best aste management, pollution prevention avigational protocols will prevent these herefore it is predicted that, in ation measures, there will be no adverse y.

ature of other potential plans and rement to adhere to similar best practice contribute to in combination effects, it is Il be no adverse effect on site integrity in r plans and projects.

ectively top predators of benthos, fish ons and are considered likely to be of o habitat disturbance (Garthe & Hüppop, 2014). If seabed habitats (and therefore disturbed, the area may be temporarily al food sources, resulting in effective ore, terns are visual foragers and are y an increase in turbidity which can make rom the sea surface. Activities ruction have the potential to release er column during cable installation and

HDD pit excavation.

bour, HDD will be used. The entry/exit expected to be onshore, thus there is no to result in an increase in suspended smothering. Therefore, the works will not prey species in Langstone Harbour.

Harbour, excavation at the marine HDD cable installation (due to the potential for persal of fines identified between KP 5

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					and 15, and in other is
					sediments up to 10 km
					at these distances will
					discernible above natu
					approximately <5 to 75
					adverse effects on pre
					habitat disturbance and
					short in duration and s
					Elsewhere within the M
					common tern densities
					area of disturbed habit
					be a maximum of 3.6 k
					Corridor (c.6%). Breed
					present beyond KP 21
					maximum foraging ran
					2012). Within this near
					that a peak SSC of up
					(i.e. within 2 km of the
					concentrations could p
					following completion of
					plumes are also likely
					cable trench/HDD pit
					mg/l are predicted; SS
					levels within a few day
					activities.
					Most prey species are
					sediment owing to free
					fluctuations in sedime
					background levels of s
					already (Guillou, et al.
					During operation, with
					that there is no pathwa
					of the cable crossing.
					Outside of Langstone
					no adverse effect on
					will be limited in spatia
					During operation, the r
					although unlikely, may
					failure rate of the Mari
					every 10-12 years. Ca
					similar effects as durin
					increases in SSC wou
					to the smaller scale of
					and the more localised



solated locations) will transport the finest in from the release point. However, SSC l be low (< 5 mg/l) and therefore not ural variation, which ranges from 5 mg/l in coastal areas. There will be no ey species at the Landfall since both ind increases in SSC will be temporary, small in extent.

Marine Cable Corridor, where foraging s may be lower (Wilson et al., 2014), the tat for route preparation is anticipated to km² along the entire Marine Cable ding common tern are not expected to be in high densities, given their meannge (15.2 km ± 11.2 km; Thaxter et al., rshore area (KP 0 - 21), It is predicted to 200 mg/l may be observed locally cable trench/HDD pit) and these potentially persist for several hours of construction activities. Sediment to be transported up to 5 km from the at which point concentrations of 5 to 10 SC is expected to return to background s following completion of these

e able to tolerate a degree of suspended quent exposure to storm induced nt concentrations, together with high suspended sediment in the Solent ., 2017).

in Langstone Harbour, it is considered ay for impact due to the onshore nature

Harbour during operation, there will be prey availability since these measures al extent ($c.0.7 \text{ km}^2$).

repair or replacement of cables, be required. An indicative worst-case ine Cables could require a repair once able repair has the potential to have ng construction. However, potential and be lower than during construction due if a repair, the shorter duration of works d nature of work, with no adverse effect

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 As such, the potential for resulting from seabed diffrom the Proposed Develores result in any adverse effects result in any adverse effects result in temporal and spatial over (Table 4 of Appendix 3) and temporary. As such, it is concluded site integrity from effects combination with other proposed Development of the p
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	Common terns are visual by an increase in turbidi prey. They are consider habitat disturbance (Bra associated with construc- have the potential to rela- during cable burial and a However, since HDD wi with an onshore exit poi is considered to be negl Outside of Langstone H pits (KP 1.0-1.6), and ca the liberation and disper and 15, and in other iso sediments up to 10 km f at these distances will b discernible above natura approximately <5 to 75 adverse on prey species habitat disturbance and short in duration and sm Elsewhere within the Ma common tern densities r area of disturbed habita be a maximum of 3.6 km Corridor (<i>c</i> .6%). Breedir present beyond KP 21 in maximum foraging rang 2012). Within this nears that a peak SSC of up to (i.e. within 2 km of the c



for effect from reduced prey availability disturbance/loss and increased turbidity evelopment alone is concluded to not effect on site integrity.

ting from plans or projects which have overlap with the Proposed Development 3) are considered to be highly localised

ed that there are no adverse effects on cts on prey availability, either alone or in r project and plans (see Appendix 1 ner details).

sual foragers and are likely to be affected idity which can make it harder to see ered to be moderately sensitive to tradbury *et al.*, 2014). Activities ruction, repair and maintenance works elease sediment into the water column d associated works.

will be used within Langstone Harbour, point, the volume of suspended material gligible.

Harbour, excavation at the marine HDD cable installation (due to the potential for persal of fines identified between KP 5 solated locations) will transport the finest in from the release point. However, SSC be low (< 5 mg/l) and therefore not ural variation, which ranges from 5 mg/l in coastal areas. There will be no ies availability the Landfall since both ind increases in SSC will be temporary, small in extent.

Marine Cable Corridor, where foraging s may be lower (Wilson *et al.*, 2014), the tat for route preparation is anticipated to km^2 along the entire Marine Cable ding common tern are not expected to be I in high densities, given their meannge (15.2 km ± 11.2 km; Thaxter *et al.*, rshore area (KP 0 – 21), it is predicted to 200 mg/I may be observed locally cable trench/HDD pit) and these potentially persist for several hours

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					following completion of plumes are also likely to cable trench/HDD pit at mg/l are predicted; SSC levels within a few days activities. During operation, the re although unlikely, may b failure rate of the Marine every 10-12 years. Cab similar effects as during increases in SSC would to the smaller scale of a and the more localised to on site integrity. As such, the potential for resulting from increased Development alone will integrity. Potential effects resultin temporal and spatial ove (Table 4 of Appendix 3) and temporary. As such, it is predicted to site integrity from effects column, either alone or plans (see Appendix 1 F
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemic during all development directly affect common industrial or user plastic has the potential to cau ingestion or entangleme However, routine mitiga practice in terms of was measures and strict nav events occurring and th consideration of mitigat effects on site integrity. Given the scale and nat projects and the require measures which could of



of construction activities. Sediment to be transported up to 5 km from the at which point concentrations of 5 to 10 SC is expected to return to background ys following completion of these

repair or replacement of cables, / be required. An indicative worst-case ine Cables could require a repair once able repair has the potential to have ng construction, however, potential IId be lower than during construction due f a repair, the shorter duration of works d nature of work, with no adverse effects

for effects from reduced prey availability ed turbidity from the Proposed ill not result in any adverse effect on site

ting from plans or projects which have overlap with the Proposed Development 3) are considered to be highly localised

d that there will be no adverse effect on cts to prey species within the water or in combination with other project and I PINS matrices for further details).

nical spillages from vessels may occur at phases. Spills have the potential to a terns utilising the sea surface through a mortality. Unplanned disposal of tic during all development phases also ause common tern mortality through nent.

gation measures of standard best aste management, pollution prevention avigational protocols will prevent these therefore it is predicted that, in ation measures, there will be no adverse y.

ature of other potential plans and rement to adhere to similar best practice d contribute to in combination effects, it is

WSP/Natural Power

Conservation Objectives	Effect	Attribute	Target	Assessment
				predicted that there will combination with other p
Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of the qualifying features	Indirect effects	Supporting habitat: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	DO levels affect the conhabitats. High turbidity of warmer months. Low DO impacts on key prey speadversely affect the avafeature feeding habitat. repair and maintenance sediment and increase to associated works. Howe Langstone Harbour, with suspended material is construction and disperse and 15, and in other isoles ediments up to 10 km fat these distances will be discernible above natura approximately <5 to 75 mediate the liberation and disperse approximately <5 to 75 mediate the second second second second the liberation and the liberation and disperse and 15, and in other isoles ediments up to 10 km fat these distances will be discernible above natura approximately <5 to 75 mediate the locally (i.e., pit) and these concentrates several hours following of Second levels within the second levels within these activities. During operation, the realthough unlikely, may be failure rate of the Marine every 10-12 years. Cable similar or lesser effects apotential increases in Seconstruction due to the second duration of works and the no adverse effect on site.
	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats ofIndirect effectsSupporting habitat: water quality - DOMaintain the DO concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding



Il be no adverse effect on site integrity in r plans and projects.

ondition and health of supporting can lead to a drop in DO, especially in DO can have sub-lethal and lethal pecies (Best *et al.*, 2007) and hence can vailability and suitability of qualifying t. Activities associated with construction, we works have the potential to release turbidity during cable installation and vever, since HDD will be used within ith an onshore exit point, the volume of considered to be negligible.

Harbour, excavation at the marine HDD cable installation (due to the potential for ersal of fines identified between KP 5 solated locations) will transport the finest in from the release point. However, SSC be low (< 5 mg/l) and therefore not ural variation, which ranges from 5 mg/l in coastal areas.

Marine Cable Corridor, the area of bute preparation is anticipated to be a along the entire Marine Cable Corridor that a peak SSC of up to 200 mg/l may e. within 2 km of the cable trench/HDD trations could potentially persist for g completion of construction activities. also likely to be transported up to 5 km HDD pit at which point concentrations of cted; SSC is expected to return to hin a few days following completion of

repair or replacement of cables, be required. An indicative worst-case ne Cables could require a repair once ble repair has the potential to have s as during construction. However, SSC would be lower than during e smaller scale of a repair, the shorter the more localised nature of work, with bite integrity.

for effect on key prey species within the I from a drop in DO from the Proposed

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Development alone will site integrity. Potential effects resultin temporal and spatial over (Table 4 of Appendix 3) and temporary. As such, it is concluded site integrity from effects DO, either alone or in conclusion (see Appendix 1 PINS methods)
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	A prolonged increase in has a number of potential water column, such as a filtering organs of susper adversely affect the ava feature feeding habitat. A repair and maintenance sediment and increase to associated works. However, since HDD will with an onshore exit poil is considered to be negl Outside of Langstone Ha pits (KP 1.0-1.6), and ca the liberation and disper and 15, and in other isol sediments up to 10 km f at these distances will b discernible above natura approximately <5 to 75 f adverse effects on the a Landfall since both habit will be temporary, short Elsewhere within the Ma disturbed habitat for rou maximum of 3.6 km ² alo (c.6%). It is predicted that be observed locally (i.e. pit) and these concentrat several hours following of Sediment plumes are all from the cable trench/HI 5 to 10 mg/l are predicted



Il not result in any adverse effects on

ing from plans or projects which have verlap with the Proposed Development b) are considered to be highly localised

d that there will be no adverse effect on ets on prey availability from a drop in combination with other project and plans matrices for further details).

in turbidity through sediment release tial implications for prey species in the affecting fish health and clogging the bension feeding animals. This in turn can vailability and suitability of qualifying a Activities associated with construction, we works have the potential to release a turbidity during cable installation and

vill be used within Langstone Harbour, bint, the volume of suspended material gligible.

Harbour, excavation at the marine HDD cable installation (due to the potential for ersal of fines identified between KP 5 olated locations) will transport the finest of from the release point. However, SSC be low (< 5 mg/l) and therefore not tral variation, which ranges from 5 mg/l in coastal areas. There will be no availability of prey species at the bitat disturbance and increases in SSC rt in duration and small in extent.

Marine Cable Corridor, the area of bute preparation is anticipated to be a long the entire Marine Cable Corridor that a peak SSC of up to 200 mg/l may e. within 2 km of the cable trench/HDD rations could potentially persist for g completion of construction activities. also likely to be transported up to 5 km HDD pit at which point concentrations of tted; SSC is expected to return to

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	-		-		background levels withi these activities.
					During operation, the realthough unlikely, may failure rate of the Marin every 10-12 years. Cab similar or lesser effects potential increases in S construction due to the duration of works and the resulting in no adverse. As such, the potential fee the Proposed Developm any adverse effect on s Potential effects resulting temporal and spatial ov (Table 4 of Appendix 3) and temporary. As such, it is considere on site integrity from effort in combination with of PINS matrices for further
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemi during all development directly affect prey spec range of biological effec user plastic during all d potential to affect prey s entanglement.
					However, routine mitigate practice in terms of was measures and strict nave events occurring therefore of mitigation measures, integrity from the Proport
					Given the scale and nat projects and the require measures which could o predicted that there will combination with other

Conclusion: No adverse effect on site integrity can be concluded, either from the Proposed Development alone, or in combination with other plans or projects, for the Chichester and Langstone Harbours SPA/Ramsar site.



hin a few days following completion of

repair or replacement of cables, y be required. An indicative worst-case ine Cables could require a repair once able repair has the potential to have is as during construction. However, SSC would be lower than during e smaller scale of a repair, the shorter the more localised nature of work, e effects on site integrity.

for effect from increased turbidity from oment alone is concluded not to result in site integrity.

ting from plans or projects which have overlap with the Proposed Development 3) are considered to be highly localised

ed that there will be no adverse effects effects of increased turbidity, either alone other project and plans (see Appendix 1 her details).

nical spillages from vessels may occur at phases. Spills have the potential to ecies within the water column through a ects. Unplanned disposal of industrial or development phases also has the v species through ingestion or

gation measures of standard best aste management, pollution prevention avigational protocols will prevent these efore it is predicted that, in consideration s, there will be no adverse effects on site posed Development alone.

ature of other potential plans and rement to adhere to similar best practice d contribute to in combination effects, it is ill be no adverse effect on site integrity in r plans and projects.

WSP/Natural Power

Table 10.4- Onshore assessment of potential adverse effects on site integrity for the Chichester and Langstone Harbours SPA/Ramsar site across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Sandwich tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex V of the Water Framework Directive, avoiding deterioration from existing levels.	 Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the pot tern utilising the SPA and other supporting h Unplanned disposal of industrial or user plass decommissioning also has the potential to ca- ingestion or entanglement However, routine mitigation measures of sta management, pollution prevention measures Material Resources of the ES, APP-142)) wi prevented and will therefore not result in an Chapter 27 are summarised in the Onshore Management Plan (CEMP) (APP-505 Rev 0 Materials Management Plan ('MMP') and Sit ('SWMP'. The key matters of the SWMP are Identify the volume of waste streams like establish the potential for reuse and recy Identify possible options for waste to be Identify the most significant opportuniti rates; Identify suitable waste management licences, permits, waste transfer notes notes; and Consider appropriate site practices such and the measures that will be used for rai for waste reduction, reuse and recycling. Best practice recommendations for the prevo outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to co Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP (APP-505 Ref) Designated areas for the storage of haza chemicals; On-site availability of oil spill clean-up experience.



ccur during the construction and potential to directly affect Sandwich habitats resulting in mortality. astic during construction and cause Sandwich tern mortality through

tandard best practice in terms of waste es (see Chapter 27: Waste and will ensure that these events are n adverse effect. Measures detailed in e Outline Construction Environmental 002) and detail incorporating a Site Waste Management Plan re to:

kely to be produced during the works to cycling;

e 'designed out;

sation and management;

ities to increase re-use and recycling

contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative g.

evention of contamination will be specific to the works to be undertaken commencement of construction works. vater (APP-134) and further captured ev002) include:

zardous materials, fuels and

equipment including absorbent n the event of an oil spill or leak;

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Use of drip trays under mobile plant; and Drain socks to trap sediment entering the Therefore, it is considered that potential effect accidental spills and/or litter from the Proposition in an adverse effect on site integrity. Potential effects resulting from the limited pland spatial overlap with the Proposed Devector considered to be localised and temporary. Of similar best practice measures which could is considered that there is no potential for an accidental spills and litter, either alone or in plans (for full details see Appendix 1 for the the SPA and Appendix 5 for the Ramsar site
Little tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex V of the Water Framework Directive, avoiding deterioration from existing levels.	 Unplanned oil or chemical spillages may och decommissioning phases. Spills have the poutilising the SPA and other supporting habits disposal of industrial or user plastic during of also has the potential to cause little tern more entanglement. However, routine mitigation measures of stamanagement, pollution prevention measures Material Resources of the ES, APP-142) will prevented and will therefore not result in an Chapter 27 are summarised in the Onshore and detail incorporating a Materials Manage Management Plan ('SWMP'). The key matter to establish the potential for reuse and results to establish the potential for reuse and results and results of the establish the potential for reuse and results in the opportunities for waste to be Identify the most significant opportunities rates; Identify suitable waste management correlicences, permits, waste transfer notes and the measures that will be used for rapoperative for waste reduction, reuse and the measures that will be used for rapoperative for waste reduction, reuse and the measures that will be used for rapoperative for waste reduction, reuse and the measures that will be used for rapoperative for waste reduction, reuse and the measures that will be used for rapoperative for waste reduction, reuse and the measures that will be used for rapoperative for waste reduction, reuse and the measures that will be used for rapoperative for waste reduction, reuse and the measures that will be used for rapoperative for waste reduction, reuse and the measures that will be used for rapoperative for waste reduction.



and

the watercourse.

ffects on Sandwich tern resulting from bosed Development alone will not result

plans or projects which have temporal velopment (APP-423 and APP-424) are . Given the requirement to adhere to ld contribute to in combination effects, it adverse effects on site integrity from in combination with other project and he screening and integrity matrices for site).

occur during the construction and potential to directly affect little tern bitats resulting in mortality. Unplanned g construction and decommissioning nortality through ingestion or

standard best practice in terms of waste res (see Chapter 27: Waste and will ensure that these events are an adverse effect. Measures detailed in re Outline CEMP (APP-505 Rev002) gement Plan ('MMP') and Site Waste tters of the SWMP are to:

ikely to be produced during the works d recycling;

be 'designed out;

sation and management;

ties to increase re-use and recycling

contractors and record appropriate s and hazardous waste consignment

Ich as how materials will be segregated r raising awareness among site nd recycling.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Best practice recommendations for the prev outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to c Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP (APP-505 Re
					 Designated areas for the storage of haz chemicals;
					 On-site availability of oil spill clean-up equivalent material and inflatable booms for use in
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering th
					Therefore, it is considered that potential effe accidental spills and/or litter from the Proposi in an adverse effect on site integrity.
					Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve are considered to be localised and, tempora to similar best practice measures which cou effects, it is considered that there is no pote integrity from accidental spills and litter, eith project and plans (for full details see Appen matrices for the SPA).
Common tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex V of the Water Framework Directive, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po- utilising the SPA and other supporting habits disposal of industrial or user plastic during of also has the potential to cause common terr entanglement. However, routine mitigation r terms of waste management, pollution preve Waste and Material Resources of the ES, A are prevented and will therefore not result in detailed in Chapter 27 are summarised in the Rev002) and detail incorporating a Materials Waste Management Plan ('SWMP'). The key
					 Identify the volume of waste streams like to establish the potential for reuse and r
					Identify possible options for waste to be
					Identify opportunities for waste minimisa
					 Identify the most significant opportunitie rates;



evention of contamination will be specific to the works to be undertaken commencement of construction works. water (APP-134) and further captured Rev002) include:

zardous materials, fuels and

equipment including absorbent in the event of an oil spill or leak;

nd

the watercourse.

ffects on little tern resulting from bosed Development alone will not result

plans or projects which have temporal velopment (APP-423 and APP-424)) orary. Given the requirement to adhere ould contribute to in combination stential for adverse effects on site ither alone or in combination with other endix 1 for the screening and integrity

occur during the construction and potential to directly affect common tern itats resulting in mortality. Unplanned construction and decommissioning ern mortality through ingestion or measures of standard best practice in vention measures (see Chapter 27: APP-142) will ensure that these events in an adverse effect. Measures the Onshore Outline CEMP (APP-505 als Management Plan ('MMP') and Site key matters of the SWMP are to:

kely to be produced during the works recycling;

e 'designed out;

sation and management;

ies to increase re-use and recycling

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	-				 Identify suitable waste management con licences, permits, waste transfer notes a notes; and
					 Consider appropriate site practices such and the measures that will be used for ra operative for waste reduction, reuse and
					Best practice recommendations for the preve outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to co Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP (APP-505 Re
					 Designated areas for the storage of haza chemicals;
					 On-site availability of oil spill clean-up equivalent and inflatable booms for use in the second seco
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering the
					Therefore, it is considered that potential effe accidental spills and/or litter from the Propos in an adverse effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel are considered to be localised and temporar to similar best practice measures which coul effects, it is considered that there is no poter integrity from accidental spills and litter, eithe project and plans (for full details see Append matrices for the SPA).
Dark-bellied brent goose	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Dark-bellied brent goose is considered to be (Cutts <i>et al.</i> , 2013). Therefore, construction a in Langstone Harbour and Onshore Cable R SWBGS sites have the potential to disturb d roosting and foraging components of their da setting of the Proposed Development (SWB)
					Owens (1977) describes the effects of anthre Geese wintering on the Essex coast near the Airport at Maplin Sands. The report conclude habituated to most sounds, but unexpected from wildfowlers, usually put the geese to flig



ontractors and record appropriate and hazardous waste consignment

ch as how materials will be segregated raising awareness among site nd recycling.

evention of contamination will be specific to the works to be undertaken commencement of construction works. vater (APP-134) and further captured ev002)include:

zardous materials, fuels and

equipment including absorbent n the event of an oil spill or leak;

nd

the watercourse.

fects on common tern resulting from osed Development alone will not result

plans or projects which have temporal elopment (APP-423 and APP-424)) ary. Given the requirement to adhere ould contribute to in combination ential for adverse effects on site ther alone or in combination with other ndix 1 for the screening and integrity

be of high sensitivity to disturbance n activities associated with HDD works Route works in and adjacent to dark-bellied brent geese at both daily cycle despite the industrial /BGS Steering Group, 2018).

hropogenic disturbances on Brent the site of the then proposed London ded that brent geese quickly became d sounds, such as nearby gunshots flight. Similarly, the first shots of the

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					day at nearby army gunnery ranges caused quickly returned and ignored all subsequent but regular bangs made during nearby weap the first few weeks.
					Specific surveys for this species for the Prop numbers in both intertidal and terrestrial (i.e. Area (APP-421). Furthermore, given the pro- Development, construction and decommissi the potential to displace wintering dark-bellin foraging and roosting habitat through unpre- work within the SWBGS sites will reduce the habitat where the construction stage overlap bellied brent geese and other wintering bird SPA are present, nominally October to Marc within the sites during winter would produce noise and movements of construction vehic the availability of remaining grassland within following SWBGS sites overlap with onshor Development:
					 P25 – University of Portsmouth, Langston
					 P23B – University of Portsmouth;
					 P23A – Milton Common north 1;
					 P23R – Milton Common north 2;
					 P11 – Kendall's Wharf playing fields; an
					 P08A – Farliongton Playing Fields
					P08A – Farlington playing fields.Effects of the and Langstone Harbour SPA and it's winter avoided by restricting works within the winter March (the period when SPA qualifying spe- arrive from their breeding grounds (Snow ar
					A detailed overview of the working restriction Onshore Ecology (APP-131) and Appendix Features of Chichester & Langstone Harbout to revisions following consultation with Natur updated Outline Onshore Construction Envir (OOCEMP; APP-505 Rev002). There are so into working methods: .



ed the birds to leave the area, but they ont firings for that day. Extremely loud apon testing caused little reaction after

roposed Development recorded notable .e. SWBGS) components of the Study proximity of these areas to the Proposed ssioning works are considered to have llied brent goose from favoured redictable noise events. Construction the availability of grassland foraging aps with the winter season when darkrds that are qualifying features of the arch (Carboneras *et al.* 2019). Work ce direct disturbance of the sites from icles and machinery, further restricting hin the sites as foraging areas. The ore components of the Proposed

stone Campus;

and

the construction stage on Chichester ering intertidal bird community will be iter season, defined as October to becies such as dark-bellied brent goose and Perrins, 1998).

tions was provided in Chapter 16: ix 16.14: Winter Working Restriction for oours SPA (APP-422) and then subject atural England which are captured in the ovironmental Monitoring Plan e six principles that will be incorporated

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Principle 1: Construction works can categorised as either core, primary sup candidate) sites that overlap with the F during October – March. An exception that is already disturbed by movements of functional habitat for brent geese of Chichester and Langstone Harbour SPA
					• Principle 2 : Where HDD works are to ta (e.g. at Eastney Landfall) no direct imparestriction does not apply.
					Principle 3: Elements of the Onshore O the SPA are not included in any restriction
					• Principle 4: Construction noise events of
					 Principle 5: Construction works of 55 – a major road and/or adjacent to industria existing noise can be undertaken unreste Development would be masked in these
					 Principle 6: Percussive piling or work resulting in a noise level in excess of 69 receptor) should be avoided during the k to March inclusive. The sensitive recept any SPA supporting habitat (e.g. high tick
					Adoption of Principle 1 (and reference to Pri adverse effects on those SWBGS sites that above (as these sites will not be subject to v are used by SPA birds), and effects of noise SPA itself.
					Trenching / road saw noise at 69dbLAmax h SWBGS sites. However, SWBGS sites P54 affected due to the minimal overlap of the si from trenching / road saw works. It is also co situated between the construction works and the noise so that in reality, there will be no o consequence, these two sites are excluded remaining 12 sites in addition to adjacenet a considered likely that Principle 5 applies in t construction work is restricted during Octobe



annot take place in SWBGS (those upport, secondary support, low use or Proposed Developments Order Limits in is the gravel car park within site P11 s of cars, lorries and plant, and offers no or other waterbirds associated with PA.

take place underneath the SWBGS site pacts are considered to occur and the

Cable Route that are over 400 m from tion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. Noise levels from the Proposed se instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October ptor is the nearest point of the SPA or ide roosting site).

Principle 2) will ensure that there are no at lie within the Order Limits as detailed works in the winter period when they se and vibration on birds within the

a has the potential to affect fourteen 4 and P29 will not be adversely site areas with noise exceeding 69 dB considered that the buildings that are nd SWBGS sites will effectively buffer overlap of noise effects. In d from the restriction. In relation to the t areas of the SPA, although it is n this highly urbanised environment, ber – March.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					The percussive activities at HDD compound are anticipated to comprise the insertion of s vibrator at HDD-1, HDD-2, HDD-3 and HDD reception pit at HDD-4.
					In accordance with the requirements of the 0 high around the perimeter of the HDD comp noise mitigation. The benefit this screening a modelling for the HDD works in proximity to noise at over 69db LAmax as a result of this compounds for HDD-4 and HDD-6.
					With the combination of the seasonal restric the potential effects on dark-bellied brent go displacement from the Proposed Developme effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel considered to be localised and temporary.
					The North Portsea Island Coastal Flood Def Between Milton Common and Kendall's Wha includes a full winter working restriction (Oct dark-bellied brent goose. Such restrictions f projects identified as potentially affecting wir SWBGS as outlined in Appendices 16.15 an APP-424). Potential overlap between the Pri and mitigation areas for the North Portsea Is Phase 4b would occur if the Proposed Deve around Milton Common is taken. However, t form part of the proposed mitigations/compet connection with the planning permission with most recent documents submitted to dischar
					As such, it is considered that there is no pot integrity from disturbance and displacement other project and plans (for full details see A integrity matrices for the SPA and Appendix
		Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. Zostera, Ulva spp., Spergularia, Puccinellia, Triglochin, Aster trifolium,	Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po brent geese utilising intertidal and other sup Unplanned disposal of industrial or user plas decommissioning phases also has the poter goose mortality through ingestion or entangl



nds in proximity to the SWBGS sites f sheet piles via an excavator mounted D-6 and via a piling rig for the

e OOCEMP, screening of at least 2 m apounds is required for the purpose of g affords has been included in 3D noise to the SWBGS sites. Construction his screening only occurs outside of the

iction and noise mitigation measures goose resulting from disturbance and nent alone will not result in an adverse

plans or projects which have temporal relopment (APP-423 and APP-424) are

efence Scheme, Phase 4B - Coastline harf Eastern Road (19/01368/FUL) ctober – March) so will not disturb s have been adopted by other plans or vintering bird features of the SPA or and 16.16 of the ES (APP-423 and Proposed Development Order Limits Island Coastal Flood Defence Scheme velopments southern route option , those compensation measures do not pensations to be provided in ith reference 19/01368/FUL as per the arge the relevant planning conditions.

otential for adverse effects on site nt, either alone or in combination with Appendix 1 for the screening and ix 5 for the Ramsar site).

occur during the construction and potential to directly affect dark-bellied upporting habitats resulting in mortality. astic during construction and ential to cause dark-bellied brent glement. However, routine mitigation

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
				Plantago, Salicornia spp, Agrostis stolonifera, Lolium perenne, Trifolium repens) at preferred sizes.	measures of standard best practice in terms prevention measures (see Chapter 27: Was APP-142)) will ensure that these events are result in an adverse effect. Measures detaile the Onshore Outline CEMP (APP-505 Rev0 Materials Management Plan ('MMP') and Si ('SWMP'). The key matters of the SWMP ar
					 Identify the volume of waste streams like establish the potential for reuse and recy
					Identify possible options for waste to be
					Identify opportunities for waste minimisa
					 Identify the most significant opportunit rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for ra for waste reduction, reuse and recycling
					Best practice recommendations for the prevolution outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to c Measures detailed in Chapter 19: Groundward in the Onshore Outline CEMP (APP-505 Reference)
					Designated areas for the storage of haza
					 On-site availability of oil spill clean-up eq and inflatable booms for use in the even
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering th
					Therefore, it is considered that potential efference resulting from accidental spills and/or litter fragment alone will not result in an adverse effect on a
					Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be locality



ns of waste management, pollution aste and Material Resources of the ES re prevented and will therefore not iled in Chapter 27 are summarised in /002) and detail incorporating a Site Waste Management Plan are to:

kely to be produced during the works to ecycling;

e 'designed out;

sation and management;

ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative ng.

evention of contamination will be specific to the works to be undertaken commencement of construction works. water (APP-134) and further captured Rev002) include:

zardous materials, fuels and chemicals;

equipment including absorbent material ent of an oil spill or leak;

nd

the watercourse.

fects on dark-bellied brent goose from the Proposed Development site integrity.

plans or projects which have temporal velopment (APP-423 and APP-424)) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Given the requirement to adhere to similar to contribute to in combination effects, it is con adverse effects on site integrity from accide combination with other project and plans (for screening and integrity matrices for the SPA site).
Redshank	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	 Redshank is considered to be of high sensiti 2013). Therefore, the presence of construct Langstone Harbour may disturb redshank a components of their daily cycle. This species intertidal areas of the Study Area, most duri Furthermore, given the proximity of these at is considered that construction and decomm wintering redshank from favoured foraging a unpredictable noise events. However, the P industrialised setting so that any noise effect conditions. Other than where HDD routes unot coincide with the SPA itself. Furthermore Chichester and Langstone Harbour SPA and community will be avoided by restricting wo as October to March (the period when SPA their breeding grounds (Snow and Perrins, A detailed overview of the working restrictio Onshore Ecology (APP-131) and Appendix features of Chichester & Langstone Harbour to revision following consultation with Nature updated Outline Onshore Construction Enviro (OOCEMP; APP-505 Rev002). Redshank we during the surveys undertaken for the Proposed Principles 3– 6 apply to this species: Principle 4: Construction noise events of the SPA are not included in any restriction industriate xisting noise can be undertaken unrest from the Proposed Development would Principle 6: Percussive piling or work
					resulting in a noise level in excess of 69 receptor) should be avoided during the



r best practice measures which could onsidered that there is no potential for lental spills and litter, either alone or in for full details see Appendix 1 for the PA and Appendix 5 for the Ramsar

sitivity to disturbance (Cutts et al., ction associated with HDD works in at both roosting and foraging ies was recorded on a monthly basis in ring low tide surveys (APP-421). areas to the Proposed Development, it missioning works may displace and roosting habitat through Proposed Development is within an ects would not add to baseline underlie the SPA, the Order Limits do ore, effects of the construction stage on ind its wintering intertidal bird orks within the winter season, defined A birds such as redshank arrive from 1998).

on was provided in Chapter 16: x 16.14: Winter Working Restriction for urs SPA (APP-422) and then subject rral England which are captured in the vironmental Monitoring Plan was recorded in intertidal habitat only posed Development. Therefore

Cable Route that are over 400 m from tion.

s of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					to March inclusive. The sensitive recep any SPA supporting habitat (e.g. high tid Adoption of these principles will ensure that and vibration on redshank within the SPA. N road saw and HDD works overlaps at 69dbl regards to intertidal habitat. Trenching / road Eastern Road because of overlap with SWB provide any disturbance to adjacent intertida other section of the route that is restricted by Onshore Cable Route from Milton Locks not aspects are captured in the revised OOCEN. Therefore, it is considered that potential effect disturbance and displacement from the Prop- result in an adverse effect on site integrity. Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve considered to be localised and temporary. The North Portsea Island Coastal Flood Def Between Milton Common and Kendall's Wh includes a full winter working restriction (Oc redshank. Such restrictions have been adop identified as potentially affecting wintering b as outlined in Appendices 16.15 and 16.16 Potential overlap between the Proposed Deve around Milton Common is taken. However, form part of the proposed mitigations/compec connection with the planning permission wit most recent documents submitted to dischar As such, it is considered that there is no pot integrity from disturbance and displacement other project and plans (for full details see A integrity matrices for the SPA and Appendix
		Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. earthworm, leatherjacket, grassland/marsh invertebrates, <i>Hydrobia, Macoma,</i> <i>Corophium, Nereis</i>) at preferred sizes.	Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po- utilising intertidal and other supporting habit disposal of industrial or user plastic during of phases also has the potential to cause redsh entanglement. However, routine mitigation re terms of waste management, pollution prever Waste and Material Resources of the ES AF



ptor is the nearest point of the SPA or ide roosting site).

at there are no adverse effects of noise Noise effects from both trenching / bLAmax is extremely limited with ad saw construction is restricted along /BGS sites so this section will also not dal habitat within the SPA. The only by Principle 6 is the section of the orth to the P23B SWBGS. These SMP (APP-505 Rev002).

fects on redshank resulting from oposed Development alone will not

plans or projects which have temporal relopment (APP-423 and APP-424) are

efence Scheme, Phase 4B - Coastline harf Eastern Road (19/01368/FUL) ctober – March) so will not disturb opted by other plans or projects bird features of the SPA or SWBGS, 6 of the ES (APP-423 and APP-424). evelopment Order Limits and nd Coastal Flood Defence Scheme velopments southern route option , those compensation measures do not bensations to be provided in ith reference 19/01368/FUL as per the arge the relevant planning conditions.

otential for adverse effects on site nt, either alone or in combination with Appendix 1 for the screening and ix 5 for the Ramsar site).

ccur during the construction and potential to directly affect redshank itats resulting in mortality. Unplanned construction and decommissioning shank mortality through ingestion or measures of standard best practice in vention measures (see Chapter 27: APP-142)) will ensure that these events

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					are prevented and will therefore not result in detailed in Chapter 27 are summarised in the Rev002) and detail incorporating a Materials Waste Management Plan ('SWMP'). The key
					 Identify the volume of waste streams like establish the potential for reuse and recy
					 Identify possible options for waste to be '
					 Identify opportunities for waste minimisat
					 Identify the most significant opportunitie rates;
					 Identify suitable waste management of licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for rai for waste reduction, reuse and recycling.
					Best practice recommendations for the preve outlined in more detail in a detailed CEMPsp and agreed with relevant statutory authority construction works. Measures detailed in Ch and further captured in the Onshore Outline
					Designated areas for the storage of haza
					 On-site availability of oil spill clean-up eq and inflatable booms for use in the event
					 Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering the
					Therefore, it is considered that potential efference accidental spills and/or litter from the Proposition of an adverse effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Developlus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ken (19/01368/FUL), are considered to be localis
					Given the requirement to adhere to similar be contribute to in combination effects, it is cons adverse effects on site integrity from acciden



- in an adverse effect. Measures the Onshore Outline CEMP (APP-505 als Management Plan ('MMP') and Site acy matters of the SWMP are to:
- kely to be produced during the works to cycling;
- e 'designed out;
- sation and management;
- ities to increase re-use and recycling

contractors and record appropriate as and hazardous waste consignment

- ch as how materials will be segregated raising awareness among site operative g.
- evention of contamination will be specific to the works to be undertaken y prior to commencement of Chapter 19: Groundwater (APP-134) e CEMP (APP-505 Rev002)include:
- zardous materials, fuels and chemicals;
- equipment including absorbent material ent of an oil spill or leak;
- nd
- the watercourse.
- fects on redshank resulting from osed Development alone will not result
- plans or projects which have temporal elopment (APP-423 and APP-424) of Defence Scheme, Phase 4B endall's Wharf Eastern Road ilised and temporary.
- best practice measures which could onsidered that there is no potential for ental spills and litter, either alone or in

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					combination with other project and plans (se integrity matrices for the SPA and Appendix
Shelduck	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	 Shelduck is considered to be of high sensitive 2013). Therefore, the presence of construct Langstone Harbour may disturb shelduck at components of their daily cycle. This specie intertidal areas of the Study Area during sur Development, with highest numbers recorded (ES Appendix 16.13). Given the proximity of Development, it is considered that construct displace wintering shelduck from favoured for unpredictable noise events. However, the P industrialised setting so that the noise effect conditions. Other than where HDD routes unot coincide with the SPA itself. Furthermore Chichester and Langstone Harbour SPA and community will be avoided by restricting word as October to March (the period when SPA their breeding grounds (Snow and Perrins, A detailed overview of the working restriction Onshore Ecology and Appendix 16.14: Wint of Chichester & Langstone Harbours SPA (A following consultation with Natural England Outline Onshore Construction Environmenta 505 Rev002). Shelduck was recorded in interfudent for the Proposed Development. Principle 3: Elements of the Onshore Construction Environmenta for the Proposed Development.
					Principle 4: Construction noise events of
					 Principle 5: Construction works of 55 – a major road and/or adjacent to industria existing noise can be undertaken unrestr from the Proposed Development would
					 Principle 6: Percussive piling or wor resulting in a noise level in excess of 69 receptor) should be avoided during the to March inclusive. The sensitive recep- any SPA supporting habitat (e.g. high tic
					Adoption of these principles will ensure that fromnoise and vibration on shelduck within t



see Appendix 1 for the screening and ix 5 for the Ramsar site). tivity to disturbance (Cutts et al., ction associated with HDD works in at both roosting and foraging es was recorded on a monthly basis in urveys conducted for the Proposed ded at low tide (up to 66 individuals) of these areas to the Proposed ction and decommissioning works may foraging and roosting habitat through Proposed Development is within an cts would not add to baseline underlie the SPA, the Order Limits do ore, effects of the construction stage on nd it's wintering intertidal bird orks within the winter season, defined A birds such as shelduck arrive from 1998).

on was provided in Chapter 16: nter Working Restriction for Features (APP-422) and then subject to revision d which are captured in the updated ital Monitoring Plan (OOCEMP; APPitertidal habitat only during the surveys t. Principles 3– 6 apply to this species:

Cable Route that are over 400 m from tion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October ptor is the nearest point of the SPA or ide roosting site).

at there are no adverse effects the SPA. Noise effects from both

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					trenching / road saw and HDD works overla with regards to intertidal habitat. Trenching / along Eastern Road because of overlap with also not provide any disturbance to adjacen section of the route that is restricted by Prin Cable Route from Milton Locks north to the Therefore, it is considered that potential effect disturbance and displacement from the Prop result in an adverse effect on site integrity. Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve considered to be localised and temporary.
					The North Portsea Island Coastal Flood Def Between Milton Common and Kendall's Wh includes a full winter working restriction (Oc shelduck. Such restrictions have been adop identified as potentially affecting wintering b as outlined in Appendices 16.15 and 16.16 Potential overlap between the Proposed De mitigation areas for the North Portsea Island Phase 4b would occur if the Proposed Deve around Milton Common is taken. However, form part of the proposed mitigations/compet connection with the planning permission wit most recent documents submitted to dischar As such, it is considered that there is no pot integrity from disturbance and displacement other project and plans (for full details see A
		Accidental spills and Litter	Supporting habitat: –costal and food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Hydrobia, Corophium, Nereis</i> , hatching midges) at preferred sizes.	integrity matrices for the SPA and Appendix Unplanned oil or chemical spillages may oct decommissioning phases. Spills have the po- utilising intertidal and other supporting habit disposal of industrial or user plastic during of phases also has the potential to cause shell entanglement. However, routine mitigation r terms of waste management, pollution preve Waste and Material Resources of the ES AF are prevented will therefore not result in an Chapter 27 are summarised in the Onshore and detail incorporating a Materials Manage Management Plan ('SWMP'). The key matt



rlaps at 69dbLAmax is extremely limited g / road saw construction is restricted vith SWBGS sites so this section will ent intertidal habitat. The only other rinciple 6 is the section of the Onshore ine P23B SWBGS.

ffects on shelduck resulting from roposed Development alone will not

plans or projects which have temporal velopment (APP-423 and APP-424) are

Defence Scheme, Phase 4B - Coastline Wharf Eastern Road (19/01368/FUL) October – March) so will not disturb opted by other plans or projects bird features of the SPA or SWBGS, 6 of the ES (APP-423 and APP-424). Development Order Limits and and Coastal Flood Defence Scheme evelopments southern route option r, those compensation measures do not opensations to be provided in with reference 19/01368/FUL as per the harge the relevant planning conditions.

ootential for adverse effects on site ent, either alone or in combination with e Appendix 1 for the screening and dix 5 for the Ramsar site).

potential to directly affect shelduck bitats resulting in mortality. Unplanned g construction and decommissioning elduck mortality through ingestion or n measures of standard best practice in evention measures (see Chapter 27: APP-142)) will ensure that these events in adverse effect. Measures detailed in re Outline CEMP (APP-505 Rev002) gement Plan ('MMP') and Site Waste atters of the SWMP are to:

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Identify the volume of waste streams like establish the potential for reuse and recy
					 Identify possible options for waste to be
					 Identify opportunities for waste minimisa
					 Identify the most significant opportuniti rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for ra for waste reduction, reuse and recycling
					Best practice recommendations for the prev outlined in more detail in a detailed CEMP s and agreed with relevant statutory consulted construction works. Measures detailed in Ch and further captured in the Onshore Outline
					 Designated areas for the storage of haza
					 On-site availability of oil spill clean-up ed and inflatable booms for use in the even
					 Use of drip trays under mobile plant; and
					 Drain socks to trap sediment entering th
					Therefore, it is considered that potential effe accidental spills and/or litter from the Propos in an adverse effect on site integrity.
					Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be localis
					Given the requirement to adhere to similar b contribute to in combination effects, it is con adverse effects on site integrity from acciden combination with other project and plans (se integrity matrices for the SPA and Appendix



- kely to be produced during the works to cycling;
- e 'designed out;
- sation and management;
- ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

- ch as how materials will be segregated raising awareness among site operative ng.
- evention of contamination will be specific to the works to be undertaken ees prior to commencement of Chapter 19: Groundwater (APP-134) the CEMP (APP-505 Rev002) include:
- zardous materials, fuels and chemicals;
- equipment including absorbent material ent of an oil spill or leak;
- nd
- the watercourse.
- fects on shelduck resulting from osed Development alone will not result
- plans or projects which have temporal velopment (APP-423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.
- best practice measures which could onsidered that there is no potential for ental spills and litter, either alone or in see Appendix 1 for the screening and ix 5 for the Ramsar site).

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Pintail	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	 Pintail is considered to be of moderate sense presence of construction associated with HE disturb pintail at both roosting and foraging of species was recorded on the majority of low Proposed Development in intertidal areas of individuals were noted (APP-421). Given the Proposed Development, construction and de wintering pintail from favoured foraging and unpredictable noise events. However, the Prindustrialised setting so that the noise effect conditions. Other than where HDD routes u not coincide with the SPA itself. Furthermore Chichester and Langstone Harbour SPA and community will be avoided by restricting wor as October to March (the period when SPA breeding grounds (Snow and Perrins, 1998) A detailed overview of the working restriction Onshore Ecology and Appendix 16.14: Wint of Chichester & Langstone Harbours SPA (<i>f</i> following consultation with Natural England Outline Onshore Construction Environmenta 505 Rev002). Pintail was recorded in intertioundertaken for the Proposed Development. Principle 3: Elements of the Onshore Construction noise events of the SPA are not included in any restriction Principle 5: Construction noise events of Principle 5: Construction works of 55 – a major road and/or adjacent to industria existing noise can be undertaken unrestrifrom the Proposed Development would be avoided during the to March inclusive. The sensitive recept any SPA supporting habitat (e.g. high tic Adoption of these principles ensure that there and vibration on pintail within the SPA. Nois saw and HDD works overlaps at 69dbLAma intertidal habitat. Trenching / road saw cons



sitivity to disturbance. Therefore, the IDD works in Langstone Harbour may components of their daily cycle. This w tide surveys conducted for the of the Study Area where up to 75 he proximity of these areas to the decommissioning works may displace d roosting habitat through Proposed Development is within an cts would not add to baseline underlie the SPA, the Order Limits do ore, effects of the construction stage on nd its wintering intertidal bird orks within the winter season, defined A birds such as pintail arrive from their B).

on was provided in Chapter 16: nter Working Restriction for Features (APP-422) and then subject to revision d which are captured in the updated tal Monitoring Plan (OOCEMP; APPtidal habitat only during the surveys t. Principles 3– 6 apply to this species:

Cable Route that are over 400 m from tion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October ptor is the nearest point of the SPA or ide roosting site).

ere are no adverse effects from noise ise effects from both trenching / road ax is extremely limited with regards to astruction is restricted along Eastern es so this section will also not provide

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					any disturbance to adjacent intertidal habitat that is restricted by Principle 6 is the section Milton Locks north to the P23B SWBGS. Therefore, it is considered that potential effer disturbance and displacement from the Pro result in an adverse effect on site integrity. Potential effects resulting from the limited p and spatial overlap with the Proposed Deve considered to be localised and temporary.
					The North Portsea Island Coastal Flood Det Between Milton Common and Kendall's Wh includes a full winter working restriction (Oc pintail. Such restrictions have been adopted as potentially affecting wintering bird feature in Appendices 16.15 and 16.16 of the ES (A overlap between the Proposed Development for the North Portsea Island Coastal Flood D occur if the Proposed Developments southe Common is taken. However, those compens the proposed mitigations/compensations to planning permission with reference 19/0136 documents submitted to discharge the relev As such, it is considered that there is no potential other project and plans (for full details see A integrity matrices for the SPA and Appendix
		Accidental spills and Litter	Supporting habitat: –food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Eleocharis palustris,</i> <i>Potamogeton, Elodea, Rumex,</i> <i>Glyceria, Chara</i> , hatching midges, insects, molluscs, crustaceans, <i>Hydrobia</i> , cereal grains and potatoes) at preferred sizes.	 Unplanned oil or chemical spillages may oc decommissioning phases. Spills have the pr utilising intertidal and other supporting habit disposal of industrial or user plastic during of phases also has the potential to cause pintal entanglement. However, routine mitigation of terms of waste management, pollution preve Waste and Material Resources of the ES Al are prevented and will therefore not result in detailed in Chapter 27 are summarised in the Rev002) and detail incorporating a Materials Waste Management Plan ('SWMP'). The kee Identify the volume of waste streams like establish the potential for reuse and records Identify possible options for waste to be



tat. The only other section of the route on of the Onshore Cable Route from

ffects on pintail resulting from oposed Development alone will not

plans or projects which have temporal velopment (APP-423 and APP-424) are

befence Scheme, Phase 4B - Coastline /harf Eastern Road (19/01368/FUL) October – March) so will not disturb ed by other plans or projects identified ures of the SPA or SWBGS, as outlined (APP-423 and APP-424). Potential ent Order Limits and mitigation areas d Defence Scheme Phase 4b would hern route option around Milton ensation measures do not form part of o be provided in connection with the 368/FUL as per the most recent evant planning conditions.

otential for adverse effects on site nt, either alone or in combination with Appendix 1 for the screening and lix 5 for the Ramsar site).

occur during the construction and potential to directly affect pintail pitats resulting in mortality. Unplanned construction and decommissioning nail mortality through ingestion or measures of standard best practice in evention measures (see Chapter 27: APP-142) will ensure that these events in an adverse effect. Measures the Onshore Outline CEMP (APP-505 als Management Plan ('MMP') and Site key matters of the SWMP are to:

kely to be produced during the works to ecycling;

e 'designed out;

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Identify opportunities for waste minimisa
					 Identify the most significant opportuniti rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for ra for waste reduction, reuse and recycling
					Best practice recommendations for the prevolution outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to compass detailed in Chapter 19: Groundwar in the Onshore Outline CEMP (APP-505 Reference)
					Designated areas for the storage of haza
					 On-site availability of oil spill clean-up ed and inflatable booms for use in the even
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering the
					Therefore, it is considered that potential effe accidental spills and/or litter from the Propos in an adverse effect on site integrity.
					Potential effects resulting from the limited pl and spatial overlap with the Proposed Devel plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be localis
					Given the requirement to adhere to similar b contribute to in combination effects, it is con adverse effects on site integrity from acciden combination with other project and plans (se intregrity matrices for the SPA and Appendix
Shoveler	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Shoveler is considered to be of moderate set the presence of construction associated with may disturb shoveler at both roosting and for cycle. This species was recorded during a s the Proposed Development where two indiv habitat (APP-421). Given the proximity of su Proposed Development, it is considered that



sation and management;

ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative og.

evention of contamination will be specific to the works to be undertaken commencement of construction works. vater (APP-134) and further captured ev002) include:

zardous materials, fuels and chemicals;

equipment including absorbent material ent of an oil spill or leak;

nd

the watercourse

fects on pintail resulting from osed Development alone will not result

plans or projects which have temporal relopment (APP-423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road ilised and temporary.

best practice measures which could onsidered that there is no potential for ental spills and litter, either alone or in see Appendix 1 for the screening and dix 5 for the Ramsar site).

sensitivity to disturbance. Therefore, ith HDD works in Langstone Harbour foraging components of their daily single low tide survey conducted for lividuals were noted on intertidal suitable habitat for this species to the at construction and decommissioning

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 works may displace wintering shoveler from unpredictable noise events, although it is evare present. The Proposed Development is noise effects would not add to baseline com Other than where HDD routes underlie the S with the SPA itself. Furthermore, effects of t and Langstone Harbour SPA and its winteria avoided by restricting works within the winter March (the period when SPA birds such as grounds (Snow and Perrins, 1998). A detailed overview of the working restriction Onshore Ecology and Appendix 16.14: Wint of Chichester & Langstone Harbours SPA (a following consultation with Natural England Outline Onshore Construction Environmenta 505 Rev002). Shoveler was recorded in interviouder the Proposed Development. Principle 3: Elements of the Onshore Call
					SPA are not included in any restriction.
					 Principle 4: Construction noise events of
					 Principle 5: Construction works of 55 – 7 major road and/or adjacent to industrial existing noise can be undertaken unrestri from the Proposed Development would be
					• Principle 6: Percussive piling or works with in a noise level in excess of 69dbLAmax should be avoided during the bird overw inclusive. The sensitive receptor is the r supporting habitat (e.g. high tide roosting
					Adoption of these principles will ensure that noise and vibration on shoveler within the S / road saw and HDD works overlaps at 69db regards to intertidal habitat. Trenching / road Eastern Road because of overlap with SWB provide any disturbance to adjacent intertida the route that is restricted by Principle 6 is th Route from Milton Locks north to the P23B S



m favoured habitat through evident that only very small numbers is within an industrialised setting so that onditions.

e SPA, the Order Limits do not coincide f the construction stage on Chichester ering intertidal bird community will be iter season, defined as October to s shoveler arrive from their breeding

ion was provided in Chapter 16: inter Working Restriction for Features (APP-422) and then subject to revision d which are captured in the updated ntal Monitoring Plan (OOCEMP; APPntertidal habitat only during the surveys it. Principles 3– 6 apply to this species:

able Route that are over 400 m from the

of <55 dB can occur unrestricted.

72 dBLAmax immediately adjacent to a al sites with notable levels (>60 dB) of tricted. It is considered that noise levels be masked in these instances.

with heavy machinery (i.e. plant resulting x – measured at the sensitive receptor) wintering period (i.e. October to March a nearest point of the SPA or any SPA ag site).

at there are no adverse effects from SPA. Noise effects from both trenching dbLAmax is extremely limited with ad saw construction is restricted along /BGS sites so this section will also not dal habitat. The only other section of the section of the Onshore Cable 3 SWBGS.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Therefore, it is considered that potential effective disturbance and displacement from the Pro- result in an adverse effect on site integrity. Potential effects resulting from the limited p and spatial overlap with the Proposed Deve considered to be localised and temporary.
					The North Portsea Island Coastal Flood De Between Milton Common and Kendall's Wh includes a full winter working restriction (Oc shoveler. Such restrictions have been adop identified as potentially affecting wintering b as outlined in Appendices 16.15 and 16.16 Potential overlap between the Proposed De mitigation areas for the North Portsea Island Phase 4b would occur if the Proposed Deve around Milton Common is taken. However, form part of the proposed mitigations/compe connection with the planning permission wit most recent documents submitted to dischar As such, it is considered that there is no por integrity from disturbance and displacement other project and plans (for full details see A intregrity matrices for the SPA).
		Accidental spills and Litter	Supporting habitat: –food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>cirpus, Eleocharis, Carex,</i> <i>Potamogeton, Glyceria</i> , surface plankton, hatching midges, Hydrobia, crustaceans, caddisflies, diptera, beetles) at preferred sizes.	 Unplanned oil or chemical spillages may or decommissioning phases. Spills have the putilising intertidal and other supporting habit disposal of industrial or user plastic during or phases also has the potential to shoveler mentanglement. However, routine mitigation of terms of waste management, pollution previous waste and Material Resources of the ES Al are prevented and will therefore not result in in Chapter 27 are summarised in the Onshor Rev002) and detail incorporating a Materials Waste Management Plan ('SWMP'). The key of the the potential for reuse and recommendations.
					 Identify possible options for waste to be
					Identify opportunities for waste minimisa



ffects on shoveler resulting from roposed Development alone will not

plans or projects which have temporal velopment (APP-423 and APP-424) are

Defence Scheme, Phase 4B - Coastline Wharf Eastern Road (19/01368/FUL) October – March) so will not disturb opted by other plans or projects bird features of the SPA or SWBGS, 6 of the ES (APP-423 and APP-424). Development Order Limits and and Coastal Flood Defence Scheme evelopments southern route option r, those compensation measures do not opensations to be provided in with reference 19/01368/FUL as per the harge the relevant planning conditions.

ootential for adverse effects on site ent, either alone or in combination with e Appendix 1 for the screening and

bccur during the construction and potential to directly affect shoveler bitats resulting in mortality. Unplanned g construction and decommissioning mortality through ingestion or n measures of standard best practice in evention measures (see Chapter 27: APP-142)) will ensure that these events in an adverse effect. Measures detailed hore Outline CEMP (APP-505 als Management Plan ('MMP') and Site key matters of the SWMP are to:

ikely to be produced during the works to ecycling;

be 'designed out;

sation and management;

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	-				 Identify the most significant opportuniti rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					Consider appropriate site practices such and the measures that will be used for ra for waste reduction, reuse and recycling
					Best practice recommendations for the prevolution outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to complex detailed in Chapter 19: Groundwar in the Onshore Outline CEMP (APP-505 Reference)
					Designated areas for the storage of haza
					On-site availability of oil spill clean-up example and inflatable booms for use in the even
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering th
					Therefore, it is considered that potential effe accidental spills and/or litter from the Propos in an adverse effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be localis
					Given the requirement to adhere to similar be contribute to in combination effects, it is con adverse effects on site integrity from accident combination with other project and plans (se intregrity matrices for the SPA).
Teal	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Teal is considered to be of moderate sensiti presence of construction associated with HE disturb teal at both roosting and foraging con although it is evident from surveys conducte only very small numbers are present (APP-4 within an industrialised setting so that noise conditions.



ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative ng.

evention of contamination will be specific to the works to be undertaken commencement of construction works. water (APP-134) and further captured Rev002) include:

zardous materials, fuels and chemicals.;

equipment including absorbent material ent of an oil spill or leak;

nd

the watercourse

fects on shoveler resulting from osed Development alone will not result

plans or projects which have temporal velopment (APP-423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.

best practice measures which could onsidered that there is no potential for lental spills and litter, either alone or in see Appendix 1 for the screening and

itivity to disturbance. Therefore, the IDD works in Langstone Harbour may omponents of their daily cycle. ted for the Proposed Development that -421). The Proposed Development lies e effects would not add to baseline

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Other than where HDD routes underlie the S with the SPA itself. Furthermore, effects of th and Langstone Harbour SPA and its winterin avoided by restricting works within the winte March (the period when SPA birds such as t grounds (Snow and Perrins, 1998). A detailed overview of the working restriction Onshore Ecology and Appendix 16.14: Winte of Chichester & Langstone Harbours SPA (A following consultation with Natural England v Outline Onshore Construction Environmenta 505 Rev002). Teal was recorded in intertidal undertaken for the Proposed Development. species:
					 Principle 3: Elements of the Onshore C the SPA are not included in any restriction
					Principle 4: Construction noise events of
					 Principle 5: Construction works of 55 – a major road and/or adjacent to industria existing noise can be undertaken unrestri from the Proposed Development would be
					 Principle 6: Percussive piling or work resulting in a noise level in excess of 690 receptor) should be avoided during the k to March inclusive. The sensitive recept any SPA supporting habitat (e.g. high tid
					Adoption of these principles will ensure that noise and vibration on teal within the SPA. If road saw and HDD works overlaps at 69dbL regards to intertidal habitat. Trenching / road Eastern Road because of overlap with SWB provide any disturbance to adjacent intertidat the route that is restricted by Principle 7 is the Route from Milton Locks north to the P23B S
					Therefore, it is considered that potential effe and displacement from the Proposed Develo adverse effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel considered to be localised and temporary.



SPA, the Order Limits do not coincide the construction stage on Chichester ring intertidal bird community will be ter season, defined as October to s teal arrive from their breeding

on was provided in Chapter 16: nter Working Restriction for Features (APP-422) and then subject to revision d which are captured in the updated tal Monitoring Plan (OOCEMP; APPlal habitat only during the surveys t. Principles 3– 6 apply to this

Cable Route that are over 400 m from tion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October ptor is the nearest point of the SPA or tide roosting site).

at there are no adverse effects from Noise effects from both trenching / bLAmax is extremely limited with ad saw construction is restricted along BGS sites so this section will also not dal habitat. The only other section of the section of the Onshore Cable B SWBGS.

fects on teal resulting from disturbance elopment alone will not result in an

plans or projects which have temporal elopment APP-423 and APP-424) are

WSP/Natural Power

on Objectives Effect	Attribute	Target	Assessment
			The North Portsea Island Coastal Flood Def Between Milton Common and Kendall's Wh includes a full winter working restriction (Oc Such restrictions have been adopted by oth potentially affecting wintering bird features of Appendices 16.15 and 16.16 of the ES (API overlap between the Proposed Development for the North Portsea Island Coastal Flood D occur if the Proposed Developments souther Common is taken. However, those compens the proposed mitigations/compensations to planning permission with reference 19/0136 documents submitted to discharge the relev As such, it is considered that there is no pot integrity from disturbance and displacement other project and plans (for full details see A intregrity matrices for the SPA and Appendia
Accider spills ar Litter	11 0	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Salicornia, Atriplex</i> , cereal grains, <i>Polygonum</i> , <i>Eleocharis, Rumex</i> , <i>Ranunculus, Hydrobia</i> , flies, caddisfly, beetles, bugs, hatching midges) at preferred sizes.	 Unplanned oil or chemical spillages may occord decommissioning phases. Spills have the pointertidal and other supporting habitats result of industrial or user plastic during construction has the potential to cause teal mortality throo However, routine mitigation measures of star management, pollution prevention measures. Material sources of the ES APP-142) will en and will therefore not result in an adverse ef 27 are summarised in the Onshore Outline (incorporating a Materials Management Plan ('SWMP'). The key mattered in the for reuse and recy is a lidentify the volume of waste streams like establish the potential for reuse and recy is a lidentify opportunities for waste minimisate is a lidentify the most significant opportunities rates; Identify suitable waste management licences, permits, waste transfer notes



efence Scheme, Phase 4B - Coastline (harf Eastern Road (19/01368/FUL) october – March) so will not disturb teal. ther plans or projects identified as a of the SPA or SWBGS, as outlined in PP-423 and APP-424). Potential ent Order Limits and mitigation areas I Defence Scheme Phase 4b would hern route option around Milton nsation measures do not form part of to be provided in connection with the 868/FUL as per the most recent evant planning conditions.

otential for adverse effects on site nt, either alone or in combination with Appendix 1 for the screening and dix 5 for the Ramsar site).

occur during the construction and potential to directly affect teal utilising sulting in mortality. Unplanned disposal ction and decommissioning phases also rough ingestion or entanglement. standard best practice in terms of waste res (see Chapter 27: Waste and ensure that these events are prevented effect. Measures detailed in Chapter e CEMP (APP-505 Rev002) and detail an ('MMP') and Site Waste tters of the SWMP are to:

kely to be produced during the works to ecycling;

e 'designed out;

sation and management;

ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Consider appropriate site practices such and the measures that will be used for ration waste reduction, reuse and recycling. Best practice recommendations for the prevoutlined in more detail in a detailed CEMP is and agreed with relevant authority prior to compare the Onshore Outline CEMP (APP-505 RevC) Designated areas for the storage of haze On-site availability of oil spill clean-up e and inflatable booms for use in the ever Use of drip trays under mobile plant; an Drain socks to trap sediment entering the Therefore, it is considered that potential effects adverse effect on site integrity. Potential effects resulting from the limited p and spatial overlap with the Proposed Developed adverse effect on site integrity. Potential effects resulting from the limited p and spatial overlap with the Proposed Developed complus the North Portsea Island Coastal Floor Coastline Between Milton Common and Ke (19/01368/FUL), are considered to be localities of the requirement to adhere to similar the contribute to in combination effects, it is complication with other project and plans (se intregrity matrices for the SPA and Appendition and spatial overlap of the SPA and Appendition and spatial overlap of the SPA and Appendition and the set of the set of the SPA and Appendition and the set of the set of the SPA and Appendition and the set of the set of the SPA and Appendition and the set of the SPA and Appendition and the set of the set of the SPA and Appendition and the set of the set of the set of the SPA and Appendition and the set of the set of the SPA and Appendition and the set of the set of the SPA and Appendition and the set of the set of the SPA and Appendition and the set of the set of the set of
Wigeon	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Wigeon is considered to be of moderate set presence of construction associated with Hi disturb wigeon. This species was however of Study Area during surveys conducted for the Given the proximity however of suitable has Development, construction and decommiss wigeon through unpredictable noise events, very small numbers are present. The Propo- industrialised setting so that noise effects w Other than where HDD routes underlie the set with the SPA itself. Furthermore, effects of the and Langstone Harbour SPA and its winter avoided by restricting works within the winter March (the period when SPA birds such as grounds (Snow and Perrins, 1998).



uch as how materials will be segregated raising awareness among site operative ng.

evention of contamination will be P specific to the works to be undertaken commencement of construction works. ter (APP-134)and further captured in v002) include:

azardous materials, fuels and chemicals;

equipment including absorbent material ent of an oil spill or leak;

and

the watercourse

ffects on teal resulting from accidental sopment alone will not result in an

plans or projects which have temporal velopment (APP-423 and APP-424) od Defence Scheme, Phase 4B -Xendall's Wharf Eastern Road alised and temporary.

r best practice measures which could onsidered that there is no potential for dental spills and litter, either alone or in (see Appendix 1 for the screening and dix 5 for the Ramsar site).

sensitivity to disturbance. Therefore, the HDD works in Langstone Harbour may r unrecorded in intertidal areas of the the Proposed Development (APP-421). abitat for this species to the Proposed ssioning works may displace wintering ts, although it is evident that at most, cosed Development lies within an s would not add to baseline conditions. e SPA, the Order Limits do not coincide of the construction stage on Chichester ering intertidal bird community will be neter season, defined as October to as wigeon arrive from their breeding

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					A detailed overview of the working restriction Onshore Ecology and Appendix 16.14: Wint Chichester & Langstone Harbours SPA (AP following consultation with Natural England Outline Onshore Construction Environments 505 Rev002). Those relevant to wigeon are
					 Principle 3: Elements of the Onshore of the SPA are not included in any restriction
					• Principle 4: Construction noise events
					 Principle 5: Construction works of 55 – a major road and/or adjacent to industria existing noise can be undertaken unresta from the Proposed Development would
					 Principle 6: Percussive piling or wor resulting in a noise level in excess of 69 receptor) should be avoided during the to March inclusive. The sensitive recep any SPA supporting habitat (e.g. high tid
					Adoption of these principles ensure that the vibration on wigeon within the SPA. Noise e and HDD works overlaps at 69dbLAmax is a intertidal habitat. Trenching / road saw constructed by ensure that is restricted by Principle 6 is the section Milton Locks north to the P23B SWBGS.
					Therefore, it is considered that potential effective disturbance and displacement from the Pro- result in an adverse effect on site integrity. Potential effects resulting from the limited p- and spatial overlap with the Proposed Deve considered to be localised and temporary.
					The North Portsea Island Coastal Flood Der Between Milton Common and Kendall's Wh includes a full winter working restriction (Oc wigeon. Such restrictions have been adopted as potentially affecting wintering bird feature in Appendices 16.15 and 16.16 of the ES (A



ion was provided in Chapter 16: nter Working Restriction for features of PP-422) and then subject to revision d which are captured in the updated ntal Monitoring Plan (OOCEMP; APPre Principles 3-6:

Cable Route that are over 400 m from tion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October ptor is the nearest point of the SPA or tide roosting site).

ere is no adverse effect fromnoise and effects from both trenching / road saw s extremely limited with regards to nstruction is restricted along Eastern es so this section will also not provide tat. The only other section of the route on of the Onshore Cable Route from

fects on wigeon resulting from oposed Development alone will not

plans or projects which have temporal relopment (APP-423 and APP-424) are

efence Scheme, Phase 4B - Coastline /harf Eastern Road (19/01368/FUL) October – March) so will not disturb ted by other plans or projects identified res of the SPA or SWBGS, as outlined (APP-423 and APP-424). Potential

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					overlap between the Proposed Development for the North Portsea Island Coastal Flood I occur if the Proposed Developments souther Common is taken. However, those compense the proposed mitigations/compensations to planning permission with reference 19/0136 documents submitted to discharge the relev As such, it is considered that there is no pote integrity from disturbance and displacement other project and plans (for full details see A intregrity matrices for the SPA.
		Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. Zostera, Enteromorpha, Polygonum, Eleocharis, Rumex, Ranunculus, Agrostis stolonifera, Puccinellia maritima, Salicornia spp., hatching midges) at preferred sizes.	Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po- utilising intertidal and other supporting habit disposal of industrial or user plastic during of phases also has the potential to cause wige entanglement. However, routine mitigation r terms of waste management, pollution preve Waste and Material Resources of the ES AF are prevented and will therefore not result in detailed in Chapter 27 are summarised in th Rev002) and detail incorporating a Materials Waste Management Plan ('SWMP'. The key
					 Identify the volume of waste streams like establish the potential for reuse and recy
					Identify possible options for waste to be
					Identify opportunities for waste minimisa
					 Identify the most significant opportunit rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for ra for waste reduction, reuse and recycling
					Best practice recommendations for the prev outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to c



ent Order Limits and mitigation areas I Defence Scheme Phase 4b would hern route option around Milton ensation measures do not form part of o be provided in connection with the B68/FUL as per the most recent evant planning conditions.

otential for adverse effects on site ent, either alone or in combination with Appendix 1 for the screening and

occur during the construction and potential to directly affect wigeon bitats resulting in mortality. Unplanned construction and decommissioning geon mortality through ingestion or measures of standard best practice in evention measures (see Chapter 27: APP-142) will ensure that these events in an adverse effect. Measures the Onshore Outline CEMP (APP-505 als Management Plan ('MMP') and Site ey matters of the SWMP are to:

kely to be produced during the works to ecycling;

e 'designed out;

sation and management;

nities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative ng.

evention of contamination will be specific to the works to be undertaken commencement of construction works.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP (APP-505 Re
					Designated areas for the storage of haza
					On-site availability of oil spill clean-up er and inflatable booms for use in the even
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering th
					Therefore, it is considered that potential effe accidental spills and/or litter from the Propo in an adverse effect on site integrity. Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be locali Given the requirement to adhere to similar to contribute to in combination effects, it is con adverse effects on site integrity from accide combination with other project and plans (se intregrity matrices for the SPA).
Bar-tailed godwit	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Bar-tailed godwit is considered to be of mod Therefore, the presence of construction ass Harbour may disturb this species. This species occasion only (of a single individual) in inter- surveys conducted for the Proposed Develor proximity however of suitable habitat for this Development, it is considered that construct displace wintering bar-tailed godwit through it is evident that only very small numbers ar Development is however within an industria would not add to baseline conditions. Other SPA, the Order Limits do not coincide with the the construction stage on Chichester and La wintering intertidal bird community will be av- winter season, defined as October to March bar-tailed godwit arrive from their breeding of A detailed overview of the working restriction Onshore Ecology and Appendix 16.14: Wint- of Chichester & Langstone Harbours SPA (A



- vater (APP-134) and further captured ev002) include:
- zardous materials, fuels and chemicals;
- equipment including absorbent material ent of an oil spill or leak;
- nd
- the watercourse
- fects on wigeon resulting from osed Development alone will not result
- plans or projects which have temporal velopment (APP-423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.
- best practice measures which could onsidered that there is no potential for lental spills and litter, either alone or in see Appendix 1 for the screening and
- derate sensitivity to disturbance. sociated with HDD works in Langstone ecies was recorded on a single ertidal areas of the Study Area during lopment (APP-421). Given the is species to the Proposed ction and decommissioning works may h unpredictable noise events, although re present. The Proposed alised setting so that noise effects er than where HDD routes underlie the the SPA itself. Furthermore, effects of angstone Harbour SPA and its avoided by restricting works within the h (the period when SPA birds such as grounds (Snow and Perrins, 1998).
- ion was provided in Chapter 16: nter Working Restriction for Features (APP-422) and then subject to revision d which are captured in the updated

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Onshore OCEMP; APP-505 Rev002). Those was only recorded utilising intertidal habitat a
					 Principle 3: Elements of the Onshore C the SPA are not included in any restriction
					Principle 4: Construction noise events o
					 Principle 5: Construction works of 55 – a major road and/or adjacent to industria existing noise can be undertaken unrestrifrom the Proposed Development would be
					 Principle 6: Percussive piling or work resulting in a noise level in excess of 690 receptor) should be avoided during the b to March inclusive. The sensitive recept any SPA supporting habitat (e.g. high tid
					Adoption of these principles will ensure that a fromnoise and vibration on bar-tailed godwit both trenching / road saw and HDD works ov limited with regards to intertidal habitat. Tren restricted along Eastern Road because of ov section will also not provide any disturbance only other section of the route that is restricted Onshore Cable Route from Milton Locks nor
					Therefore, it is considered that potential effective from disturbance and displacement from the not result in an adverse effect on site integrit
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel considered to be localised and temporary.
					The North Portsea Island Coastal Flood Defe Between Milton Common and Kendall's Wha includes a full winter working restriction (Oct tailed godwit. Such restrictions have been ac identified as potentially affecting wintering bi as outlined in Appendices 16.15 and 16.16 of Potential overlap between the Proposed Deve mitigation areas for the North Portsea Island Phase 4b would occur if the Proposed Devel around Milton Common is taken. However, the



se relevant to bar-tailed godwit which are Principles 3-6:

Cable Route that are over 400 m from tion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October ptor is the nearest point of the SPA or tide roosting site).

at there are no adverse effects vit within the SPA. Noise effects from overlaps at 69dbLAmax is extremely enching / road saw construction is overlap with SWBGS sites so this ce to adjacent intertidal habitat. The cted by Principle 6 is the section of the orth to the P23B SWBGS.

fects on bar-tailed godwit resulting ne Proposed Development alone will prity.

plans or projects which have temporal relopment (APP-423 and APP-424) are

efence Scheme, Phase 4B - Coastline harf Eastern Road (19/01368/FUL) ictober – March) so will not disturb baradopted by other plans or projects bird features of the SPA or SWBGS, of the ES (APP-423 and APP-424). evelopment Order Limits and nd Coastal Flood Defence Scheme velopments southern route option , those compensation measures do not bensations to be provided in

WSP/Natural Power

Feature Conservation Obje	ectives Effect	Attribute	Target	Assessment
				connection with the planning permission with most recent documents submitted to dischar As such, it is considered that there is no pot integrity from disturbance and displacement other project and plans (for full details see A intregrity matrices for the SPA.
	Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Arenicola, Nereis</i>) at preferred sizes.	 Unplanned oil or chemical spillages may occe decommissioning phases. Spills have the poly godwit utilising intertidal and other supporting Unplanned disposal of industrial or user plass decommissioning phases also has the poter mortality through ingestion or entanglement. measures of standard best practice in terms prevention measures (see Chapter 27: Was APP-142)) will ensure that these events are result in an adverse effect. Measures detailed the Onshore Outline CEMP (APP-505 RevO Materials Management Plan ('MMP') and Sir ('SWMP'). The key matters of the SWMP and Identify the volume of waste streams like establish the potential for reuse and recyonal identify opportunities for waste minimisation. Identify the most significant opportunities rates; Identify suitable waste management licences, permits, waste transfer notes notes; and Consider appropriate site practices such and the measures that will be used for rate for waste reduction, reuse and recycling Best practice recommendations for the prevoutlined in more detail in a detailed CEMP's and agreed with relevant authority prior to compare detailed in Chapter 19: Groundward for waste detailed in Chapter 19: Groundward onshore Outline CEMP (APP-505 Rev002) Designated areas for the storage chemicals;



with reference 19/01368/FUL as per the harge the relevant planning conditions.

otential for adverse effects on site nt, either alone or in combination with Appendix 1 for the screening and

accur during the construction and potential to directly affect bar-tailed ting habitats resulting in mortality. astic during construction and ential to cause bar-tailed godwit ht. However, routine mitigation hs of waste management, pollution aste and Material Resources of the ES re prevented and will therefore not iled in Chapter 27 are summarised in /002) and detail incorporating a Site Waste Management Plan are to:

kely to be produced during the works to cycling;

e 'designed out;

sation and management;

ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative ng.

evention of contamination will be specific to the works to be undertaken commencement of construction works. vater and further captured in the !) include:

of hazardous materials, fuels and

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 On-site availability of oil spill clean-up e and inflatable booms for use in the evel Use of drip trays under mobile plant; a Drain socks to trap sediment entering Therefore, it is considered that potential effects from accidental spills and/or litter from the F result in an adverse effect on site integrity. Potential effects resulting from the limited p and spatial overlap with the Proposed Devel 16.16 of the ES) plus the North Portsea Isla Phase 4B - Coastline Between Milton Comr Road (19/01368/FUL), are considered to be Given the requirement to adhere to similar for adverse effects on site integrity from accide combination with other project and plans (se intregrity matrices for the SPA).
Black-tailed Godwit ⁴⁴	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Black-tailed godwit is considered to be of m Therefore, the presence of construction ass Harbour may disturb this species. This species in intertidal areas of the Study Area during s Development with a peak count of 75 birds however of suitable habitat for this species considered that construction and decommiss black-tailed godwit through unpredictable no only very small numbers are present. The P within an industrialised setting so that noise conditions. Other than where HDD routes u not coincide with the SPA itself. Furthermor Chichester and Langstone Harbour SPA an community will be avoided by restricting wo as October to March (the period when SPA from their breeding grounds (Snow and Per A detailed overview of the working restriction Onshore Ecology (APP-131) and Appendix Features of Chichester & Langstone Harbour (OOCEMP; APP-505 Rev002). Those relev only recorded utilising intertidal habitat are functioned.

⁴⁴ Black-tailed godwit qualifies for the Ramsar site only – conservation objectives presented are reproduced from bar-tailed godwit from the SPA.



equipment including absorbent material vent of an oil spill or leak;

and

g the watercourse.

ffects on bar-tailed godwit resulting Proposed Development alone will not

plans or projects which have temporal velopment (Appendices 16.15 and sland Coastal Flood Defence Scheme, mmon and Kendall's Wharf Eastern be localised and temporary.

r best practice measures which could onsidered that there is no potential for dental spills and litter, either alone or in (see Appendix 1 for the screening and

moderate sensitivity to disturbance. ssociated with HDD works in Langstone ecies was recorded on four occasions surveys conducted for the Proposed ls (APP-421). Given the proximity s to the Proposed Development, it is nissioning works may displace wintering noise events, although it is evident that Proposed Development is however se effects would not add to baseline underlie the SPA, the Order Limits do ore, effects of the construction stage on and its wintering intertidal bird vorks within the winter season, defined A birds such as bar-tailed godwit arrive errins, 1998).

tions are provided in Chapter 16: ix 16.14: Winter Working Restriction for oours SPA (APP-422)and then subject ural England which are captured in the nvironmental Monitoring Plan evant to black-tailed godwit which was e Principles 3-6:

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Principle 3: Elements of the Onshore C the SPA are not included in any restriction
					Principle 4: Construction noise events of
					 Principle 5: Construction works of 55 – a major road and/or adjacent to industria existing noise can be undertaken unrestri from the Proposed Development would be
					 Principle 6: Percussive piling or work resulting in a noise level in excess of 690 receptor) should be avoided during the b to March inclusive. The sensitive recept any SPA supporting habitat (e.g. high tid
					Adoption of these principles will ensure that fromnoise and vibration on black-tailed godw both trenching / road saw and HDD works of limited with regards to intertidal habitat. Tren restricted along Eastern Road because of ov section will also not provide any disturbance only other section of the route that is restricted Onshore Cable Route from Milton Locks nor
					Therefore, it is considered that potential effe from disturbance and displacement from the not result in an adverse effect on site integrit
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel considered to be localised and temporary.
					The North Portsea Island Coastal Flood Defe Between Milton Common and Kendall's What includes a full winter working restriction (Oct black-tailed godwit. Such restrictions have be projects identified as potentially affecting win SWBGS, as outlined in Appendices 16.15 and APP-424). Potential overlap between the Pro- and mitigation areas for the North Portsea Is Phase 4b would occur if the Proposed Deve around Milton Common is taken. However, t form part of the proposed mitigations/compe- connection with the planning permission with



Cable Route that are over 400 m from tion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October ptor is the nearest point of the SPA or ide roosting site).

at there are no adverse effects dwit within the SPA. Noise effects from overlaps at 69dbLAmax is extremely enching / road saw construction is overlap with SWBGS sites so this ce to adjacent intertidal habitat. The cted by Principle 6 is the section of the orth to the P23B SWBGS.

fects on black-tailed godwit resulting ne Proposed Development alone will prity.

plans or projects which have temporal elopment (APP-423 and APP-424) are

efence Scheme, Phase 4B - Coastline harf Eastern Road (19/01368/FUL) ctober – March) so will not disturb been adopted by other plans or vintering bird features of the SPA or and 16.16 of the ES (APP-423 and Proposed Development Order Limits Island Coastal Flood Defence Scheme velopments southern route option , those compensation measures do not pensations to be provided in ith reference 19/01368/FUL as per the arge the relevant planning conditions.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					As such, it is considered that there is no point integrity from disturbance and displacement other project and plans (for full details see A integrity matrices for the Ramsar site).
		Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Arenicola, Nereis</i>) at preferred sizes.	Unplanned oil or chemical spillages may oc decommissioning phases. Spills have the p godwit utilising intertidal and other supportin Unplanned disposal of industrial or user pla decommissioning phases also has the pote mortality through ingestion or entanglement measures of standard best practice in terms prevention measures (see Chapter 27: Was APP-142) will ensure that these events are in an adverse effect. Measures detailed in C Onshore Outline CEMP (APP-505 Rev002) Management Plan ('MMP') and Site Waste matters of the SWMP are to:
					 Identify the volume of waste streams like establish the potential for reuse and rec
					Identify possible options for waste to be
					 Identify opportunities for waste minimisa
					 Identify the most significant opportunit rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for ra- for waste reduction, reuse and recycling
					Best practice recommendations for the prevoutlined in more detail in a detailed CEMP s and agreed with relevant authority prior to c Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP (APP-505 Ref
					Designated areas for the storage of haz
					On-site availability of oil spill clean-up e
					and inflatable booms for use in the ever
					Use of drip trays under mobile plant; and



ootential for adverse effects on site ent, either alone or in combination with e Appendix 5 for the screening and

occur during the construction and potential to directly affect black-tailed ting habitats resulting in mortality. lastic during construction and tential to cause black-tailed godwit ent. However, routine mitigation ms of waste management, pollution aste and Material Resources of the ES re preventedand will therefore not result a Chapter 27 are summarised in the 2)nd detail incorporating a Materials e Management Plan ('SWMP'). The key

ikely to be produced during the works to ecycling;

be 'designed out;

sation and management;

nities to increase re-use and recycling

at contractors and record appropriate es and hazardous waste consignment

uch as how materials will be segregated raising awareness among site operative ng.

evention of contamination will be P specific to the works to be undertaken o commencement of construction works. water (APP-134) and further captured Rev002) include:

azardous materials, fuels and chemicals;

equipment including absorbent material ent of an oil spill or leak;

and

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Drain socks to trap sediment entering the
					Therefore, it is considered that potential effe from accidental spills and/or litter from the P result in an adverse effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be localis
					Given the requirement to adhere to similar b contribute to in combination effects, it is con adverse effects on site integrity from accider combination with other project and plans (se integrity matrices for the Ramsar site).
Curlew	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Curlew is considered to be of moderate sense presence of construction associated with HE disturb this species. This species was record occasional surveys at high tide in intertidal a individuals noted (APP-421). Given the prox Development, it is considered that construct displace wintering curlew from favoured hab events. The Proposed Development is howe that noise effects would not add to baseline routes underlie the SPA, the Order Limits do Furthermore, effects of the construction stag Harbour SPA and its wintering intertidal bird restricting works within the winter season, do period when SPA birds such as curlew arrive and Perrins, 1998). A detailed overview of the working restriction Onshore Ecology and Appendix 16.14: Wint of Chichester & Langstone Harbours SPA (A following consultation with Natural England of Outline Onshore Construction Environmenta 505 Rev002). Those relevant to curlew whic intertidal habitat are Principles 3-6: Principle 3 : Elements of the Onshore Con-
					the SPA are not included in any restriction
					Principle 4: Construction noise events of
					 Principle 5: Construction works of 55 – a major road and/or adjacent to industria



the watercourse.

fects on black-tailed godwit resulting Proposed Development alone will not

plans or projects which have temporal velopment (APP-423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.

best practice measures which could onsidered that there is no potential for ental spills and litter, either alone or in see Appendix 5 for the screening and

Insitivity to disturbance. Therefore, the HDD works in Langstone Harbour may orded at all low tide surveys and areas of the Study Area with up to 61 oximity of these areas to the Proposed ction and decommissioning works may abitat through unpredictable noise wever within an industrialised setting so he conditions. Other than where HDD do not coincide with the SPA itself. age on Chichester and Langstone rd community will be avoided by defined as October to March (the ive from their breeding grounds (Snow

ons was provided in Chapter 16: nter Working Restriction for Features (APP-422)and then subject to revision d which are captured in the updated ntal Monitoring Plan (OOCEMP; APPnich was only recorded utilising

Cable Route that are over 400 m from tion.

s of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					existing noise can be undertaken unrest from the Proposed Development would
					 Principle 6: Percussive piling or wor resulting in a noise level in excess of 69 receptor) should be avoided during the to March inclusive. The sensitive recep any SPA supporting habitat (e.g. high tid
					Adoption of these principles will ensure that noise and vibration on curlew within the SP, road saw and HDD works overlaps at 69dbl regards to intertidal habitat. Trenching / roa Eastern Road because of overlap with SWE provide any disturbance to adjacent intertid the route that is restricted by Principle 6 is t Route from Milton Locks north to the P23B
					Therefore, it is considered that potential effective disturbance and displacement from the Pro- result in an adverse effect on site integrity.
					Potential effects resulting from the limited p and spatial overlap with the Proposed Deve considered to be localised and temporary.
					The North Portsea Island Coastal Flood Der Between Milton Common and Kendall's Wh includes a full winter working restriction (Oc curlew. Such restrictions have been adopted as potentially affecting wintering bird feature in Appendices 16.15 and 16.16 of the ES (A overlap between the Proposed Development for the North Portsea Island Coastal Flood I occur if the Proposed Developments souther Common is taken. However, those compen- the proposed mitigations/compensations to planning permission with reference 19/0136 documents submitted to discharge the relevant
					As such, it is considered that there is no po- integrity from disturbance and displacement other project and plans (for full details see A integrity matrices).
		Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of	Unplanned oil or chemical spillages may oc decommissioning phases. Spills have the pu utilising intertidal and other supporting habit



stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 69dbLAmax – measured at the sensitive e bird overwintering period (i.e. October eptor is the nearest point of the SPA or tide roosting site).

at there are no adverse effects from PA. Noise effects from both trenching / bLAmax is extremely limited with ad saw construction is restricted along /BGS sites so this section will also not dal habitat. The only other section of the section of the Onshore Cable 3 SWBGS.

ffects on curlew resulting from oposed Development alone will not

plans or projects which have temporal velopment (APP-423 and APP-424) are

befence Scheme, Phase 4B - Coastline /harf Eastern Road (19/01368/FUL) October – March) so will not disturb ted by other plans or projects identified ures of the SPA or SWBGS, as outlined (APP-423 and APP-424). Potential ent Order Limits and mitigation areas d Defence Scheme Phase 4b would hern route option around Milton ensation measures do not form part of o be provided in connection with the 368/FUL as per the most recent evant planning conditions.

otential for adverse effects on site nt, either alone or in combination with Appendix 1 for the SPA screening and

occur during the construction and potential to directly affect curlew bitats resulting in mortality. Unplanned

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
				key food and prey items e.g. earthworm, leatherjackets, <i>Coleoptera, Orthoptera,</i> <i>Carcinus, Nereis</i>) at preferred sizes.) at preferred sizes.	disposal of industrial or user plastic during of phases also has the potential to cause curle entanglement. However, routine mitigation re- terms of waste management, pollution preve Waste and Material Resources of the ES AF are prevented and will therefore not result in in Chapter 27 are summarised in the Onsho and detail incorporating a Materials Manage Management Plan ('SWMP'. The key matter
					 Identify the volume of waste streams like establish the potential for reuse and recy
					Identify possible options for waste to be
					Identify opportunities for waste minimisa
					 Identify the most significant opportunit rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for ra- for waste reduction, reuse and recycling
					Best practice recommendations for the prev outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to c Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP include:
					Designated areas for the storage of haza
					 On-site availability of oil spill clean-up ea and inflatable booms for use in the even
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering th
					Therefore, it is considered that potential effe accidental spills and/or litter from the Proposi in an adverse effect on site integrity.
					Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve plus the North Portsea Island Coastal Flood



construction and decommissioning lew mortality through ingestion or measures of standard best practice in vention measures (see Chapter 27: APP-142) will ensure that these events n an adverse effect. Measures detailed hore Outline CEMP (APP-505 Rev002) gement Plan ('MMP') and Site Waste ers of the SWMP are to:

- kely to be produced during the works to cycling;
- e 'designed out;
- sation and management;
- ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative g.

evention of contamination will be specific to the works to be undertaken commencement of construction works. vater (APP-134) and further captured

zardous materials, fuels and chemicals;

equipment including absorbent material ent of an oil spill or leak;

nd

the watercourse.

fects on curlew resulting from osed Development alone will not result

plans or projects which have temporal elopment (APP-423 and APP-424) of Defence Scheme, Phase 4B -

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be locali Given the requirement to adhere to similar to contribute to in combination effects, it is con adverse effects on site integrity from accide combination with other project and plans (se and integrity matrices).
Grey plover	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	 Grey plover is considered to be of moderate the presence of construction associated with may disturb this species. occurred only at lof for the Proposed Development (peak count sighting at high tide. This species was restription the south of the Study Area (APP-421). Get the Proposed Development, it is considered decommissioning works may displace winter through unpredictable noise events. The Prowithin an industrialised setting so that the neconditions. Other than where HDD routes underlie the Swith the SPA itself. Furthermore, effects of the and Langstone Harbour SPA and its winteria avoided by restricting works within the winter of Chichester & Langstone Harbours SPA (afollowing consultation with Natural England Outline Onshore Construction Environmenta 505 Rev002). Those relevant to grey plover intertidal habitat are Principles 3-6: Principle 3: Elements of the Onshore Construction noise events of the SPA are not included in any restriction and or adjacent to industriate existing noise can be undertaken unrestriction from the Proposed Development would Principle 6: Percussive piling or wor resulting in a noise level in excess of 69



endall's Wharf Eastern Road alised and temporary.

r best practice measures which could onsidered that there is no potential for lental spills and litter, either alone or in see Appendix 1 for the SPA screening

ate sensitivity to disturbance. Therefore, with HDD works in Langstone Harbour low tide during the surveys conducted int of 19 in January 2018), with only one stricted to intertidal mud habitat mainly Given the proximity of these areas to ed that construction and intering grey plover from favoured habitat Proposed Development is however

noise effects would not add to baseline

e SPA, the Order Limits do not coincide of the construction stage on Chichester ering intertidal bird community will be nter season, defined as October to as grey plover arrive from their breeding

tions was provided in Chapter 16: inter Working Restriction for Features (APP-422) and then subject to revision ad which are captured in the updated ntal Monitoring Plan (OOCEMP; APPer which was only recorded utilising

E Cable Route that are over 400 m from stion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to trial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 69dbLAmax – measured at the sensitive

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					receptor) should be avoided during the to March inclusive. The sensitive recep any SPA supporting habitat (e.g. high tid Adoption of these principles will ensure that noise and vibration on grey plover within the trenching / road saw and HDD works overla with regards to intertidal habitat. Trenching along Eastern Road because of overlap with also not provide any disturbance to adjacen section of the route that is restricted by Prin Cable Route from Milton Locks north to the
					Therefore, it is considered that potential effects and displacement from the Propresult in an adverse effect on site integrity. Potential effects resulting from the limited pland spatial overlap with the Proposed Deveconsidered to be localised and temporary.
					The North Portsea Island Coastal Flood Der Between Milton Common and Kendall's Wh includes a full winter working restriction (Oc plover. Such restrictions have been adopted as potentially affecting wintering bird feature in Appendices 16.15 and 16.16 of the ES (A overlap between the Proposed Development for the North Portsea Island Coastal Flood I occur if the Proposed Developments southe Common is taken. However, those compen- the proposed mitigations/compensations to planning permission with reference 19/0136 documents submitted to discharge the relevent
					As such, it is considered that there is no point integrity from disturbance and displacement other project and plans (for full details see the Appendix 1 for the SPA and Appendix 5 for
		Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Nereis, Arenicola</i> and <i>Notomastus</i>) at preferred sizes.	Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po- utilising intertidal and other supporting habit disposal of industrial or user plastic during of phases also has the potential to cause grey entanglement. However, routine mitigation r terms of waste management, pollution preve Waste and Material Resources of the ES AF



e bird overwintering period (i.e. October eptor is the nearest point of the SPA or tide roosting site).

at there are no adverse effects from the SPA. Noise effects from both rlaps at 69dbLAmax is extremely limited g / road saw construction is restricted with SWBGS sites so this section will ent intertidal habitat. The only other rinciple 6 is the section of the Onshore the P23B SWBGS.

ffects on grey plover resulting from roposed Development alone will not

plans or projects which have temporal velopment (APP-423 and APP-424) are

Defence Scheme, Phase 4B - Coastline Wharf Eastern Road (19/01368/FUL) October – March) so will not disturb grey and by other plans or projects identified ures of the SPA or SWBGS, as outlined (APP-423 and APP-424). Potential ent Order Limits and mitigation areas d Defence Scheme Phase 4b would hern route option around Milton ensation measures do not form part of to be provided in connection with the 368/FUL as per the most recent evant planning conditions.

potential for adverse effects on site ent, either alone or in combination with the screening and integrity matrices at or the Ramsar site).

occur during the construction and potential to directly affect grey plover bitats resulting in mortality. Unplanned g construction and decommissioning ey plover mortality through ingestion or n measures of standard best practice in evention measures (see Chapter 27: APP-142) will ensure that these events

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					are preventedand will therefore not result in in Chapter 27 are summarised in the Onshor Rev002)and detail incorporating a Materials Waste Management Plan ('SWMP'). The key
					 Identify the volume of waste streams like establish the potential for reuse and recy
					 Identify possible options for waste to be
					 Identify opportunities for waste minimisation
					 Identify the most significant opportunitier rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for rai for waste reduction, reuse and recycling.
					Best practice recommendations for the preve outlined in more detail in a detailed CEMP in undertaken and agreed with relevant authori construction works. Measures detailed in Ch and further captured in the Onshore Outline
					 Designated areas for the storage of haza
					 On-site availability of oil spill clean-up eq and inflatable booms for use in the event
					 Use of drip trays under mobile plant; and
					 Drain socks to trap sediment entering the
					Therefore, it is considered that potential effe accidental spills and/or litter from the Propos in an adverse effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ken (19/01368/FUL), are considered to be localis
					Given the requirement to adhere to similar b contribute to in combination effects, it is cons adverse effects on site integrity from accider



- n an adverse effect. Measures detailed hore Outline CEMP (APP-505 Is Management Plan ('MMP') and Site key matters of the SWMP are to:
- kely to be produced during the works to cycling;
- e 'designed out;
- sation and management;
- ities to increase re-use and recycling
- contractors and record appropriate as and hazardous waste consignment
- ch as how materials will be segregated raising awareness among site operative ng.
- evention of contamination will be in relation to the specific works to be ority prior to commencement of Chapter 19: Groundwater (APP-134) e CEMP (APP-505 Rev002) include:
- zardous materials, fuels and chemicals;
- equipment including absorbent material ent of an oil spill or leak;
- nd
- the watercourse.
- fects on grey plover resulting from osed Development alone will not result
- plans or projects which have temporal velopment (APP-0423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.
- best practice measures which could onsidered that there is no potential for ental spills and litter, either alone or in

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	-				combination with other projects and plans fo integrity matrices at Appendix 1 for the SPA
the population qualifying fea the distributio	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Balanus, Mytilus, Carcinus,</i> <i>Gammarus, Littorina,</i> dipertan flies, kelp-fly larvae) at preferred sizes.	Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po- utilising intertidal and other supporting habita disposal of industrial or user plastic during c phases also has the potential to cause turns entanglement. However, routine mitigation n terms of waste management, pollution preve Waste and Material Resources of the ES AF are preventedand will therefore not result in in Chapter 27 are summarised in the Onsho Rev002)and detail incorporating a Materials Waste Management Plan ('SWMP'). The key
					 Identify possible options for waste to be
					 Identify opportunities for waste minimisa
					 Identify the most significant opportuniti rates;
					 Identify suitable waste management licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for rais for waste reduction, reuse and recycling.
					Best practice recommendations for the preve outlined in more detail in a detailed CEMP s and agreed with relevant authority prior to co Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP (APP-505 Ref
					Designated areas for the storage of haza
					 On-site availability of oil spill clean-up ec and inflatable booms for use in the event
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering the



for full details see the screening and A and Appendix 5 for the Ramsar site). ccur during the construction and potential to directly affect turnstone itats resulting in mortality. Unplanned construction and decommissioning nstone mortality through ingestion or measures of standard best practice in vention measures (see Chapter 27: APP-142) will ensure that these events n an adverse effect. Measures detailed nore Outline CEMP (APP-505 Is Management Plan ('MMP') and Site tey matters of the SWMP are to:

kely to be produced during the works to cycling;

e 'designed out;

sation and management;

ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative og.

evention of contamination will be specific to the works to be undertaken commencement of construction works. vater (APP-134) and further captured ev002) include:

zardous materials, fuels and chemicals;

equipment including absorbent material ent of an oil spill or leak;

nd

the watercourse.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Therefore, it is considered that potential effe accidental spills and/or litter from the Propo in an adverse effect on site integrity. Potential effects resulting from the limited p and spatial overlap with the Proposed Deve plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ke (19/01368/FUL), are considered to be local Given the requirement to adhere to similar I contribute to in combination effects, it is cor adverse effects on site integrity from accide combination with other project and plans (for integrity matrices at Appendix 1 for the SPA
Sanderling	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Bathyporeia</i> and <i>Mytilus</i> spat, wrack flies, sandhoppers) at preferred sizes.	Unplanned oil or chemical spillages may or decommissioning phases. Spills have the p utilising intertidal and other supporting habit disposal of industrial or user plastic during of phases also has the potential to cause sand entanglement. However, routine mitigation terms of waste management, pollution prev Waste and Material Resources of the ES A are prevented and will therefore not result in detailed in Chapter 27 are summarised in th Rev002)and detail incorporating a Materials Waste Management Plan ('SWMP'). The key
					Identify the volume of waste streams like establish the potential for reuse and records and recor
					Identify possible options for waste to be
					Identify opportunities for waste minimise
					 Identify the most significant opportuni rates;
					 Identify suitable waste management licences, permits, waste transfer note notes; and
					Consider appropriate site practices such and the measures that will be used for ratio for waste reduction, reuse and recycling the sector of the sector
					Best practice recommendations for the pre- outlined in more detail in a detailed CEMP and agreed with relevant authority prior to c



ffects on turnstone resulting from bosed Development alone will not result

plans or projects which have temporal velopment (APP-423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.

r best practice measures which could onsidered that there is no potential for lental spills and litter, either alone or in for full details see the screening and PA).

bccur during the construction and potential to directly affect sanderling bitats resulting in mortality. Unplanned g construction and decommissioning nderling mortality through ingestion or n measures of standard best practice in evention measures (see Chapter 27: APP-142) will ensure that these events t in an adverse effect. Measures the Onshore Outline CEMP (APP-505 als Management Plan ('MMP') and Site key matters of the SWMP are to:

ikely to be produced during the works to ecycling;

be 'designed out;

sation and management;

nities to increase re-use and recycling

at contractors and record appropriate tes and hazardous waste consignment

uch as how materials will be segregated raising awareness among site operative ng.

evention of contamination will be specific to the works to be undertaken commencement of construction works.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP (APP-505 Re
					Designated areas for the storage of haza
					On-site availability of oil spill clean-up eq and inflatable booms for use in the even
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering the
					Therefore, it is considered that potential effe accidental spills and/or litter from the Propos in an adverse effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be localis
					Given the requirement to adhere to similar b contribute to in combination effects, it is con adverse effects on site integrity from accider combination with other project and plans (for integrity matrices at Appendix 1 for the SPA
Ringed plover	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. Invertebrates, marine worms, crustaceans and molluscs) at preferred sizes.	Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po- ploverutilising intertidal and other supporting Unplanned disposal of industrial or user plass decommissioning phases also has the poter through ingestion or entanglement. However standard best practice in terms of waste main measures (see Chapter 27: Waste and Mate will ensure that these events are prevented adverse effect. Measures detailed in Chapter Outline CEMP (APP-505 Rev002) and detail Management Plan ('MMP') and Site Waste Matters of the SWMP are to:
					 Identify the volume of waste streams like establish the potential for reuse and recy
					Identify possible options for waste to be
					Identify opportunities for waste minimisa
					 Identify the most significant opportuniti rates;



- water (APP-134) and further captured Rev002) include:
- zardous materials, fuels and chemicals;
- equipment including absorbent material ent of an oil spill or leak;
- nd
- the watercourse.
- fects on sanderling resulting from osed Development alone will not result
- plans or projects which have temporal velopment (APP-423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.
- best practice measures which could onsidered that there is no potential for lental spills and litter, either alone or in for full details see the screening and PA).
- occur during the construction and potential to directly affect ringed ing habitats resulting in mortality. astic during construction and ential to cause ringed plover mortality ver, routine mitigation measures of nanagement, pollution prevention aterial Resources of the ES APP-142) d and will therefore not result in an oter 27 are summarised in the Onshore ail incorporating a Materials e Management Plan ('SWMP'). The key
- kely to be produced during the works to cycling;
- e 'designed out;
- sation and management;
- ities to increase re-use and recycling

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
				•	 Identify suitable waste management licences, permits, waste transfer notes notes; and Consider appropriate site practices such and the measures that will be used for rai for waste reduction, reuse and recycling.
					Best practice recommendations for the preve outlined in more detail in a detailed CEMP s and agreed with relevant statutory consultee construction works. Measures detailed in Ch and further captured in the Onshore Outline
					 Designated areas for the storage of haza
					 On-site availability of oil spill clean-up eq and inflatable booms for use in the event
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering the
					Therefore, it is considered that potential effe accidental spills and/or litter from the Proposi in an adverse effect on site integrity. Potential effects resulting from the limited pla and spatial overlap with the Proposed Devel plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ken (19/01368/FUL), are considered to be localis Given the requirement to adhere to similar b contribute to in combination effects, it is con- adverse effects on site integrity from accider combination with other project and plans (for integrity matrices at Appendix 1 for the SPA
Dunlin	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items e.g. <i>Nereis, Macoma, Hydrobia,</i> <i>Crangon, Carcinus</i> , dipertan flies, beetles, caddisfly, wasps, sawflies, mayflies) at preferred sizes.	Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po- utilising intertidal and other supporting habita disposal of industrial or user plastic during co- phases also has the potential to cause dunlin entanglement. However, routine mitigation m terms of waste management, pollution prever Waste and Material Resources of the ES AP are prevented and will therefore not result in in Chapter 27 are summarised in the Onshor



contractors and record appropriate and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative og.

evention of contamination will be specific to the works to be undertaken ees prior to commencement of Chapter 19: Groundwater (APP-134) e CEMP (APP-505 Rev002) include:

zardous materials, fuels and chemicals;

equipment including absorbent material ent of an oil spill or leak;

nd

the watercourse.

fects on ringed plover resulting from osed Development alone will not result

plans or projects which have temporal relopment (APP-423 and APP-424)) od Defence Scheme, Phase 4B endall's Wharf Eastern Road ilised and temporary.

best practice measures which could onsidered that there is no potential for ental spills and litter, either alone or in for full details see the screening and A and Appendix 5 for the Ramsar site).

ccur during the construction and potential to directly affect dunlin itats resulting in mortality. Unplanned construction and decommissioning nlin mortality through ingestion or measures of standard best practice in vention measures (see Chapter 27: APP-142) will ensure that these events n an adverse effect. Measures detailed hore Outline CEMP (APP-505 Rev002)

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					and detail incorporating a Materials Manager Management Plan ('SWMP'). The key matter
					 Identify the volume of waste streams like establish the potential for reuse and recy
					 Identify possible options for waste to be '
					 Identify opportunities for waste minimisat
					 Identify the most significant opportunitie rates;
					 Identify suitable waste management of licences, permits, waste transfer notes notes; and
					 Consider appropriate site practices such and the measures that will be used for rai for waste reduction, reuse and recycling.
					Best practice recommendations for the preve outlined in more detail in a detailed CEMP sp and agreed with relevant authority prior to co Measures detailed in Chapter 19: Groundwa in the Onshore Outline CEMP (APP-505 Rev
					 Designated areas for the storage of haza
					 On-site availability of oil spill clean-up eq and inflatable booms for use in the event
					 Use of drip trays under mobile plant; and
					 Drain socks to trap sediment entering the
					Therefore, it is considered that potential effect accidental spills and/or litter from the Proposition in an adverse effect on site integrity.
					Potential effects resulting from the limited pla and spatial overlap with the Proposed Developlus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ken (19/01368/FUL), are considered to be localis
					Given the requirement to adhere to similar be contribute to in combination effects, it is cons adverse effects on site integrity from acciden combination with other project and plans (for integrity matrices at Appendix 1 for the SPA



- gement Plan ('MMP') and Site Waste ters of the SWMP are to:
- kely to be produced during the works to cycling;
- e 'designed out;
- sation and management;
- ities to increase re-use and recycling
- contractors and record appropriate as and hazardous waste consignment
- ch as how materials will be segregated raising awareness among site operative g.
- evention of contamination will be specific to the works to be undertaken commencement of construction works. vater (APP-134) and further captured ev002)include:
- zardous materials, fuels and chemicals;
- equipment including absorbent material ent of an oil spill or leak;
- nd
- the watercourse.
- fects on dunlin resulting from osed Development alone will not result
- plans or projects which have temporal relopment (APP-423 and APP-424) od Defence Scheme, Phase 4B endall's Wharf Eastern Road ilised and temporary.
- best practice measures which could onsidered that there is no potential for ental spills and litter, either alone or in for full details see the screening and A and Appendix 5 for the Ramsar site).

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Waterfowl assemblage	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Species that contribute to the waterfowl ass include those of both moderate and high set notably dark-bellied brent goose (Cutts <i>et al.</i> activities associated with HDD works in Lan disturb all sensitive species within the asser Route works in and adjacent to SWBGS site bellied brent geese at both roosting and fora despite the industrial setting of the Proposet Group, 2018). Specific surveys for this species for the Prop relatively low numbers of most components numbers in intertidal areas although notable occurred in both intertidal and terrestrial (i.e (App-421). Furthermore, given the proximity Development, construction and decommissis the potential to displace wintering dark-bellie foraging and roosting habitat through unpre- work within the SWBGS sites will reduce the habitat where the construction stage overlag bellied brent geese and other wintering birds SPA are present, October to March (Carbo sites during winter would produce direct dist movements of construction vehicles and ma availability of remaining grassland within the following SWBGS sites overlap with onshord Development:
					 P25 – University of Portsmouth, Langston
					 P23B – University of Portsmouth;
					• P23A – Milton Common north 1;
					• P23R – Milton Common north 2;
					 P11 – Kendall's Wharf playing fields; an
					 P08A – Farlington playing fields.
					Effects of the construction stage on Chiches its wintering intertidal bird community will be the winter season, defined as October to Ma species such as dark-bellied brent goose ar (Snow and Perrins, 1998).
					A detailed overview of the working restriction Onshore Ecology and Appendix 16.14: Wint



essemblage of the SPA and Ramsar ensitivity to disturbance, including most *al.*, 2013). Therefore, construction ingstone Harbour have the potential to emblage while the Onshore Cable ites have the potential to disturb darkraging components of their daily cycle ed Development (SWBGS Steering

oposed Development recorded s of the waterfowl assemblage notable le numbers of dark-bellied brent goose e. SWBGS) areas of the Study Area ty of these areas to the Proposed sioning works are considered to have lied brent goose from favoured edictable noise events. Construction ne availability of grassland foraging aps with the winter season when darkds that are qualifying features of the oneras et al. 2019). Work within the sturbance of the sites from noise and achinery, further restricting the ne sites as foraging areas. The ore components of the Proposed

tone Campus;

nd

ester and Langstone Harbour SPA and be avoided by restricting works within March (the period when SPA qualifying arrive from their breeding grounds

ions are provided in Chapter 16: nter Working Restriction for Features

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 of Chichester and Langstone Harbours SPA revisions following consultation with Natural updated Outline Onshore CEMP (APP-505 F that will be incorporated into working method Principle 1: Construction works can categorised as either core, primary supplicandidate) sites that overlap with the P during October – March. An exception is that is already disturbed by movements of functional habitat for brent geese or
					 Chichester and Langstone Harbour SPA. Principle 2: Where HDD works are to tal (e.g. at Eastney Landfall) no direct imparestriction does not apply.
					• Principle 3 : Elements of the Onshore C the SPA are not included in any restriction
					• Principle 4: Construction noise events o
					 Principle 5: Construction works of 55 – a major road and/or adjacent to industria existing noise can be undertaken unrestri from the Proposed Development would be
					 Principle 6: Percussive piling or work resulting in a noise level in excess of 690 receptor) should be avoided during the b to March inclusive. The sensitive recept any SPA supporting habitat (e.g. high tid
					Adoption of Principle 1 (and reference to Prin adverse effects on those SWBGS sites that I above (as these sites will not be subject to w are used by SPA birds), and effects of noise SPA itself. Trenching / road saw noise at 69dbLAmax h SWBGS sites. However, SWBGS sites P54 a affected due to the minimal overlap of the sit from trenching / road saw works. It is also co situated between the construction works and the noise so that in reality, there will be no ov consequence, these two sites are excluded f remaining 12 sites although it considered like



PA (APP-422) and then subject to al England which are captured in the 5 Rev002) . There are six principles ods:

annot take place in SWBGS (those upport, secondary support, low use or Proposed Developments Order Limits in is the gravel car park within site P11 s of cars, lorries and plant, and offers no or other waterbirds associated with PA.

take place underneath the SWBGS site pacts are considered to occur and the

Cable Route that are over 400 m from tion.

of <55 dB can occur unrestricted.

 72 dBLAmax immediately adjacent to rial sites with notable levels (>60 dB) of stricted. It is considered that noise levels d be masked in these instances.

orks with heavy machinery (i.e. plant 9dbLAmax – measured at the sensitive e bird overwintering period (i.e. October ptor is the nearest point of the SPA or ide roosting site).

Principle 2) will ensure that there are no at lie within the Order Limits as detailed works in the winter period when they se and vibration on birds within the

has the potential to affect fourteen 4 and P29 will not be adversely site areas with noise exceeding 69 dB considered that the buildings that are nd SWBGS sites will effectively buffer overlap of noise effects. In d from the restriction. In relation to the ikely that Principle 5 applies in this

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Feature	Conservation Objectives	Effect	Attribute	Target	highly urbanised environment, construction v potential to impact on them is restricted durin The percussive activities at HDD compounds are anticipated to comprise the insertion of s vibrator at HDD-1, HDD-2, HDD-3 and HDD- reception pit at HDD-4. In accordance with the requirements of the C high around the perimeter of the HDD compo noise mitigation. The benefit this screening a modelling for the HDD works in proximity to t noise at over 69dbLAmax as a result of this s compounds for HDD-4 and HDD-6. With the combination of the seasonal restrict the potential effects on the watwerfowl asser and displacement from the Proposed Develo adverse effect on site integrity.
					Therefore, it is considered that potential effect resulting from disturbance and displacement alone will not result in an adverse effect on s Potential effects resulting from the limited plat and spatial overlap with the Proposed Develop considered to be localised and temporary.
					The North Portsea Island Coastal Flood Defe Between Milton Common and Kendall's Wha includes a full winter working restriction (Octo dark-bellied brent goose. Such restrictions ha projects identified as potentially affecting win SWBGS, as outlined in Appendices 16.15 an APP-424). Potential overlap between the Pro and mitigation areas for the North Portsea Is Phase 4b would occur if the southern route of taken. However, those compensation measu mitigations/compensations to be provided in permission with reference 19/01368/FUL as submitted to discharge the relevant planning As such, it is considered that there is no pote integrity from disturbance and displacement,
					other project and plans (for full details see Ap intregrity matrices for the SPA and Appendix



n work which would otherwise have the rring October – March.

nds in proximity to the SWBGS sites f sheet piles via an excavator mounted D-6 and via a piling rig for the

e OOCEMP, screening of at least 2 m apounds is required for the purpose of g affords has been included in 3D noise o the SWBGS sites. Construction s screening only occurs outside of the

iction and noise mitigation measures semblage resulting from disturbance elopment alone will not result in an

fects on the waterfowl assemblage ont from the Proposed Development in site integrity.

plans or projects which have temporal elopment (APP-423 And APP-424) are

efence Scheme, Phase 4B - Coastline harf Eastern Road (19/01368/FUL) ctober – March) so will not disturb have been adopted by other plans or vintering bird features of the SPA or and 16.16 of the ES (APP-423 and Proposed Development Order Limits Island Coastal Flood Defence Scheme e option around Milton Common is sures do not form part of the proposed in connection with the planning as per the most recent documents ng conditions.

otential for adverse effects on site nt, either alone or in combination with Appendix 1 for the screening and dix 5 for the Ramsar site).

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Feature	Conservation Objectives	Effect Accidental spills and Litter	Attribute Supporting habitat: quality of supporting non- breeding habitat	Target Maintain the structure, function and availability of the following habitats which support the assemblage feature for all stages (moulting, roosting, loafing, feeding) of the non- breeding period: intertidal sediments, intertidal seagrass beds, intertidal rock, saltmarsh, subtidal sediments, coastal lagoons, reedbeds, grazing marsh, water column, improved grassland and arable fields.	 Unplanned oil or chemical spillages may occ decommissioning phases. Spills have the po- assemblage utilising intertidal and other sup Unplanned disposal of industrial or user plass decommissioning phases also has the poter through ingestion or entanglement. However standard best practice in terms of waste main measures (see Chapter 27: Waste and Mater will ensure that these events are prevented a adverse effect. Measures detailed in Chapte Outline CEMP (APP-505 Rev002) and detail Management Plan ('MMP') and Site Waste M matters of the SWMP are to: Identify the volume of waste streams like establish the potential for reuse and recy Identify possible options for waste to be Identify suitable waste management licences, permits, waste transfer notes notes; and Consider appropriate site practices such and the measures that will be used for ra for waste reduction, reuse and recycling. Best practice recommendations for the previoutline in more detail in a detailed CEMP s and agreed with relevant statutory consulted construction works. Measures detailed in Chapters and further captured in the Onshore Outline
					Designated areas for the storage of haza
					 On-site availability of oil spill clean-up eq and inflatable booms for use in the event
					Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering the
					Therefore, it is considered that potential efferes resulting from accidental spills and/or litter fra alone will not result in an adverse effect on statements.



ccur during the construction and potential to directly affect the waterfowl upporting habitats resulting in mortality. astic during construction and ential to cause waterfowl mortality ver, routine mitigation measures of hanagement, pollution prevention aterial Resources of the ES APP-142) d and will therefore not result in an her 27 are summarised in the Onshore all incorporating a Materials e Management Plan ('SWMP'). The key

kely to be produced during the works to cycling;

e 'designed out;

sation and management;

ities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

ch as how materials will be segregated raising awareness among site operative g.

evention of contamination will be specific to the works to be undertaken ees prior to commencement of Chapter 19: Groundwater (APP-134) e CEMP (APP-505 Rev002) include:

zardous materials, fuels and chemicals;

equipment including absorbent material ent of an oil spill or leak;

nd

the watercourse.

fects on the waterfowl assemblage from the Proposed Development site integrity.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve plus the North Portsea Island Coastal Flood Coastline Between Milton Common and Ker (19/01368/FUL), are considered to be localis Given the requirement to adhere to similar b contribute to in combination effects, it is con adverse effects on site integrity from accider combination with other project and plans (for integrity matrices at Appendix 1 for the SPA
Supporting habitat (freshwater and grazing marsh)	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of the qualifying features	Indirect effects	Supporting habitat: extent and distribution of supporting habitat for the non- breeding season	Maintain the structure, function and availability of the following habitats which support the assemblage feature for all stages (moulting, roosting, loafing, feeding) of the non- breeding period: intertidal sediments, intertidal seagrass beds, intertidal rock, saltmarsh, subtidal sediments, coastal lagoons, reedbeds, grazing marsh, improved grassland and arable fields.	No habitat within the SPA/Ramsar site will be temporary basis as a result of onshore consi Several SWBGS sites do however lie within P11, P23A, P23B and P23R. SWBGS are a importance to over-wintering waterbirds in the said to be functionally linked to the Special B including Chichester and Langstone Harbour Construction work within these sites will rest varying extents which would impact the avait resource to dark-bellied brent goose. Restoration measures will be implemented with sward re-established to provide a suitable for geese return to the Solent to winter. The following two approaches are considered Re-seeding. Reinstate areas within SWE May where practicable. This is the easier Re-turfing. Where not practicable to re-stablish is a more costly option but allow growth in a shorter timescale. The choice of restoration approach is primate within the summer growing season for implete be the optimal technique after May so that for month, re-turfing would be implemented. The preparation, establishment and aftercare are Outline CEMP (APP-505 Rev002).



plans or projects which have temporal velopment (APP-423 and APP-424)) od Defence Scheme, Phase 4B endall's Wharf Eastern Road alised and temporary.

best practice measures which could onsidered that there is no potential for lental spills and litter, either alone or in for full details see the screening and A and Appendix 5 for the Ramsar site).

I be lost on either a permanent or nstruction / decommissioning activities. in the Order Limits, namely: P08A, areas that are of fundamental the Solent Region. SWBGS can be Il Protection Area (SPA) network ours SPA / Ramsar site.

esult in temporary habitat loss to vailability of foraging and roosting

d which require completion and grass food resource by October when brent

ered for restoration of SWBGS sites:

VBGS with grass seed before the end of siest and most cost effective option;

e-seed, turf will be laid and established. ws re-establishment and good sward

harily dependent on the time available blementation. Re-seeding is not likely to t for any restoration works after this These measures including details of site are provided in the revised Onshore

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 P211, P23A and P23 R will be subject to re- appropriate timescales to allow reestablishm subject to either re-seeding or re-turfing. Components of P08A will not be restored un no construction activities will take place on S winter season so that visual and noise distur-
					impact brent geese. National census data ga Ornithology (BTO) through their Wetland Bir that numbers present in England during Oct during the peak month of January. Additional important factors to consider inclu require restoration in October and the propo and the wider network.
					The October restoration area accounts for:
					 12 % of the P08A SWBGS;
					 1.2 % of SWBGS core sites; and
					0.2 % of the entire SWBGS network.
					On this basis, it is determined that the resto October would not impair the SWBGS netwing impact the non-breeding brent goose popular unavailability of 12% of the SWBGS, brent go therefore the functionality of the P08A SWB extensive remaining habitat
					The temporary habitat loss accounts for just 0.2% of the SWBGS network. Brent geese w of Farlington SWBGS, which in itself forms j SWBGS network available.
					The loss of habitat will be temporary, coveri breeding season and during a period when population would not be present. The P08A for in advance of when the peak numbers of
					Therefore, it is considered that potential indirection resulting from temporary loss of functionally Development alone will not result in an advert
					Potential effects resulting from the limited pl and spatial overlap with the Proposed Deve are considered to be localised and temporar
					The North Portsea Island Coastal Flood Def Between Milton Common and Kendall's What



e-turfing restoration within the ment prior to October. P23B will be

until the month of October. However, SWBGS sites in the non-breeding urbance associated with these will not gathered by the British Trust for Bird Survey (WeBS) Scheme shows ctober are approximately 30% of those

lude the amount of habitat that will portion that it is of the SWBGS sites

toration of 1.7 ha during the month of work and specifically it would not lation. Irrespective of the temporary geese would not be disturbed and BGS would not be lost due to the

st 1.2% of the SWBGS core sites and will still be able to utilise the majority just a small component of the

ring at most 17% of a single nonthe majority of the Solent brent goose A SWBGS will be restored it its entirety of geese are present in the region.

direct effects on supporting habitat ly linked SWBGS from the Proposed verse effect on site integrity.

plans or projects which have temporal velopment (APP-4234 and APP-424) ary.

efence Scheme, Phase 4B - Coastline harf Eastern Road (19/01368/FUL)

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					includes a similar commitment to restore all season (October – March) so will not disturb As such, it is considered that there is no pot integrity from indirect effects, either alone of and plans (for full details see Appendix 1 fo for the SPA and Appendix 5 for the Ramsar
		Accidental spills and Litter	Supporting habitat: quality of supporting non- breeding habitat	Maintain the structure, function and availability of the following habitats which support the assemblage feature for all stages (moulting, roosting, loafing, feeding) of the non- breeding period: intertidal sediments, intertidal seagrass beds, intertidal rock, saltmarsh, subtidal sediments, coastal lagoons, reedbeds, grazing marsh, improved grassland and arable fields.	 Unplanned oil or chemical spillages from coconstruction and decommissioning phases. affect prey species within supporting habitate effects. Unplanned disposal of industrial plata also has the potential to affect prey species. However, routine mitigation measures of starmanagement, pollution prevention measures Material Resources of the ES APP-142) will prevented and will therefore not result in an Chapter 27 are summarised in the Onshore Rev002)and detail incorporating a Materials. Waste Management Plan ('SWMP'). The kee Identify the volume of waste streams like establish the potential for reuse and reccetablish the potential for reuse and reccetablish the potential for waste to be Identify upportunities for waste minimisate Identify suitable waste management licences, permits, waste transfer notes notes; and Consider appropriate site practices such and the measures that will be used for rafor waste reduction, reuse and recycling. Best practice recommendations for the prevoutlined in more detail in a detailed CEMP sand agreed with relevant authority prior to comeasures detailed in Chapter 19: Groundwares of waste areas for the storage of hazate on the Onshore Outline CEMP include: Designated areas for the storage of hazate and inflatable booms for use in the event and inflatable booms



all SWBGS before the non-breeding urb dark-bellied brent goose. ootential for adverse effects on site or in combination with other project for the screening and intregrity matrices ar site).

construction activity may occur during s. Spills have the potential to directly tats through a range of biological plastic during all development phases es through ingestion or entanglement. standard best practice in terms of waste res (see Chapter 27: Waste and vill ensure that these events are an adverse effect. Measures detailed in re Outline CEMP (APP-505 als Management Plan ('MMP') and Site key matters of the SWMP are to:

- ikely to be produced during the works to ecycling;
- be 'designed out;
- sation and management;
- nities to increase re-use and recycling

t contractors and record appropriate es and hazardous waste consignment

uch as how materials will be segregated raising awareness among site operative ng.

evention of contamination will be P specific to the works to be undertaken o commencement of construction works. water (APP-134) and further captured

zardous materials, fuels and chemicals.;

equipment including absorbent material ent of an oil spill or leak;

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Use of drip trays under mobile plant; and
					Drain socks to trap sediment entering the watercourse.
					Therefore, it is considered that potential effects on supporting habitat resulting from accidental spills and/or litter from the Proposed Development alone will not result in an adverse effect on site integrity.
					Potential effects resulting from the limited plans or projects which have tempora and spatial overlap with the Proposed Development (APP-423 and APP-424) plus the North Portsea Island Coastal Flood Defence Scheme, Phase 4B - Coastline Between Milton Common and Kendall's Wharf Eastern Road (19/01368/FUL), are considered to be localised and temporary.
					Given the requirement to adhere to similar best practice measures which could contribute to in combination effects, it is considered that there is no potential for adverse effects on site integrity from accidental spills and litter, either alone or in combination with other project and plans (for full details see the screening and integrity matrices at Appendix 1 for the SPA and Appendix 5 for the Ramsar site

and Langstone Harbours SPA/Ramsar site.



and

WSP/Natural Power



10.4. MARINE: SOLENT AND DORSET COAST SPA

10.4.1. **OVERVIEW**

- 10.4.1.1. Solent and Dorset Coast SPA is located on the south coast within the Channel. The site is approximately 255.2 nautical miles squared ('nmi²') and extends from the Isle of Purbeck in the west to Bognor Regis in the east, following the coastline on either side to the Isle of Wight and into Southampton Water. The SPA is proposed to protect important at-sea foraging areas used by qualifying interest features from colonies within adjacent, already classified SPAs. These qualifying interest features are three species of tern: common tern, Sandwich tern and little tern and the site boundary was established as a composite of the usage of the area within adjacent SPAs.
- 10.4.1.2. From west to east, the adjacent SPAs with these tern species as qualifying interest features (in parentheses) are: Poole Harbour (common tern) Solent and Southampton Water SPA (common, Sandwich and little tern) and Chichester & Langstone Harbours SPA (common, Sandwich and little tern). In addition to these species at these sites, Sandwich terns at the Poole Harbour SPA have been included in determining the details of the SPA. However, certain species at certain sites i.e. roseate tern at Solent and Southampton Water SPA, and Sandwich, little and common tern at Pagham Harbour SPA, have not been included in determining the details of the SPA. These exclusions have been made on the basis of these birds either not being a qualifying feature at the source SPAs and/or being present in such low numbers either at classification or recently (or both) to merit influencing the size and shape of the SPA.

10.4.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

- 10.4.2.1. Site-specific SACO is not currently available for the Solent and Dorset Coast SPA. As such, SACO available for the Chichester and Langstone Harbours SPA⁴⁵, which is adjacent to the SPA, has been used as a basis for the assessment.
- 10.4.2.2. Table 10.5 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Little tern	Disturbance and displacement	Disturbance caused by human activity

Table 10.5 - SACO attributes screened in for assessment

⁴⁵<u>https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9011011&SiteName=C</u> <u>hichester+and+Langstone&SiteNameDisplay=Chichester+and+Langstone+Harbours+SPA&countyCode=&res</u> <u>ponsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=18</u> (Accessed October 2019)



Feature	Impact for which LSE could not be excluded	Equivalent attribute
Little tern Sandwich tern	Indirect effects	Supporting habitat: food availability
Common tern		Supporting habitat: water quality - turbidity
	Accidental spills and Litter	Supporting habitat: water quality - contaminants
Supporting habitat (water column)	Indirect effects	Supporting habitat: water quality - dissolved oxygen ('DO')
		Supporting habitat: water quality - turbidity
	Accidental spills and Litter	Supporting habitat: water quality - contaminants

10.4.2.3. Non-equivalent attributes listed within the SACO which were screened out from further assessment included:

- Breeding population: abundance;
- Connectivity with supporting habitats;
- Predation all habitats;
- Supporting habitat: air quality;
- Supporting habitat: conservation measures;
- Supporting habitat: extent and distribution of supporting habitat for the breeding season;
- Supporting habitat: landform;
- Supporting habitat: vegetation characteristics for nesting; and
- Supporting habitat: water quality nutrients.
- 10.4.2.4. Natural England in their advice on the draft HRA Report (dated 20 September 2019, see Appendix 4), confirmed that they were content with this approach i.e. only considering attributes in detail where they are relevant to the feature-activity-pressure interactions screened in at LSE stage.



10.4.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.4.3.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.6 below.
- 10.4.3.2. It is concluded that there will be no adverse effect on site integrity for the Solent and Dorset Coast SPA, either from the Proposed Development alone, or in combination with other plans or projects

Table 10.6 - Assessment of potential adverse effects on site integrity for the Solent and Dorset Coast SPA across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Little tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Restrict the frequency, duration and/or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	Little terns at sea are sensitivity to disturbat (Garthe & Hüppop, 2 Within Langstone and colonies of little tern known to forage in re- breeding colonies, or Langstone Harbour (Proposed Development HDD3) have potentiat foraging given its mo- sea. Of the three ons Kendall's Wharf is the breeding colony, locat from the Baker's Isla therefore disturb and unpredictable noise of However, these work industrialised setting duration (two hours f noise levels from the Baker's Island, given the distance is doubl associated with consis be noticeable above Langstone Harbour (2009). In the event the disturbed from foragi works within Langston sites are present else Harbours which will the Development. Given further away from little considered that there onshore HDD works located above MHW4 Outside of Langstone Harbour. There is the be disturbed and disp events and visual disp events and visual disp



re scored as being of moderate bance and therefore displacement 2004; Bradbury *et al.*, 2014).

nd Chichester Harbours, breeding are present. Given that little terns are relatively close proximity to their onshore HDD works within the (see Chapter 3 Description of the nent for locations of HDD1, HDD2 and ial to displace this species during oderate sensitivity to disturbance at ashore HDD locations, HDD3 at he closest location to a little tern cated at a minimum distance of *c*.2 km and colony. Sheet piling at HDD3 may d displace foraging birds through events.

ks will be above MHWS in an already g. Vibro-hammering will be very short in for installation at each location) and e EMV at HDD3 will be *c.*40 dB at n that SPLs reduce by 6 dB each time oled. Noise and visual disturbance struction activities at HDD3 are will not e baseline levels of disturbance within (Cutts & Allen, 1999; Cutts et al., that little terns were temporarily ging in proximity to the onshore HDD one Harbour, other equivalent foraging sewhere in Chichester and Langstone be unaffected by the Proposed n that HDD1 and HDD2 are located ttle tern breeding colonies, it is re is no potential for impact from s at these locations, both of which are VS in an urban environment.

ne Harbour, little terns may be present re waters at the mouth of Langstone nerefore potential for foraging birds to splaced by both unpredictable noise isturbance associated with construction ine HDD location off Eastney.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Vibro-hammering at the in duration and noise pipe-driving machine SPLs will not be notice setting. Since little term whilst feeding (RPS, 2 to any underwater not and pipe driving mach background underwater around the UK range Merchant <i>et al.</i> , 2016 A single jack-up vess vessel, a crew transfer may be present at the weeks, with a total of over this period. Group between KP 1.0 and 1 of up to 4 weeks. This levels of disturbance within the area. Given that the foraging nearshore waters up Parsons <i>et al.</i> , 2015), range will not impact that there may be up for the marine HDD we construction period of majority of these will the terms. Furthermore, vessel to such levels of disturbance to such levels of disturbance to such levels of disturbance and disturbance and disploperation, a we Cables would require Repairs will be under timeframe (weeks to redisturbance and disploperation. Therefore, potential de Proposed Development



t the marine HDD location will be short se generated by the vibro-hammers and he will be non-percussive and airbourne ticeable above the baseline in this urban terns plunge dive to a maximum of 1 m S, 2011), it is considered that exposure hoise resulting from the vibro-hammer achine will not be discernible above vater noise levels (median noise levels be from 81.5 to 95.5 dB re 1 μ Pa; 16).

ssel, together with a multicat, a safety offer vessel and up to four workboats he marine HDD location for up to 44 of 636 vessel movements predicted ounding of cable lay barges at low tide d KP 4.7 will occur over a short duration his will not be noticeable above baseline e from the existing high levels of traffic

ging range of little tern is restricted to p to c.10 km (Thaxter *et al.*, 2012; 5), construction activities beyond this ct this feature. Although it is anticipated p to c.825 vessel movements, including works, over the anticipated 30-month of the Proposed Development, the II be outside the foraging area of little

I traffic levels in the Channel and Solent th 300 to 400 vessels transiting the area hapter 13, Shipping, Navigation and s, APP-128). As such, little terns which ble Corridor to forage will be habituated sturbance.

worst-case failure rate of the Marine re repair once every 10-12 years. ertaken by a single vessel, over a short p months). Thus, the potential for placement effects on little tern during tenance would be less than during

disturbance and displacement from the nent alone will not result in an adverse

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					effect on the integrity this SPA. Potential effects result temporal and spatial Development (Table highly localised and that there will be no alone or in combinat Appendix 1 PINS ma
		Indirect effects	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. crustacea, annelids, sandeel, herring, clupeidae) at preferred sizes.	Little terns are effect shellfish populations moderate sensitivity Hüppop, 2004; Bradi (and therefore the pri- may be temporarily of resulting in effective visual foragers and a in turbidity which car sea surface. Activitie the potential to relea during cable installat Within Langstone Ha numbers may be hig points of the drill are no pathway for the w suspended sediment the works will not af in Langstone Harbou Outside of Langstone HDD pits (KP 1.0-1.6 potential for the liber between KP 5 and 1 transport the finest s point. However, SSC mg/l) and therefore r which ranges from a areas. There will be of prey species at the disturbance and incr in duration and small Elsewhere within the foraging little tern de (Parsons <i>et al.</i> , 2015)



ity of little tern as a qualifying feature of

sulting from plans or projects which have al overlap with the Proposed e 4 of Appendix 3) are considered to be d temporary. As such, it is considered o adverse effect on site integrity either ation with other project and plans (see natrices for further details).

ctively top predators of benthos, fish and is and are considered likely to be of y to habitat disturbance (Garthe & dbury *et al.*, 2014). If seabed habitats prey species) are disturbed, the area y devoid of any potential food sources, e habitat loss. Furthermore, terns are are likely to be affected by an increase an make it harder to see prey from the ies associated with construction have ease sediment into the water column ation and associated works.

larbour where foraging little tern gh, HDD will be used. The entry/exit e expected to be onshore, thus there is works to result in an increase in nt or resultant smothering. Therefore, affect the availability of tern prey species bur.

ne Harbour, excavation at the marine .6), and cable installation (due to the eration and dispersal of fines identified 15, and in other isolated locations) will sediments up to 10 km from the release 6C at these distances will be low (< 5 e not discernible above natural variation, approximately <5 to 75 mg/l in coastal e no adverse effects on the availability of he Landfall since both habitat creases in SSC will be temporary, short all in extent.

he Marine Cable Corridor, where lensities are likely to be much lower (5), the area of disturbed habitat for anticipated to be a maximum of 3.6

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					km ² along the entire is Breeding little tern an KP 21 given their me 2.4 km; Thaxter <i>et al.</i> (KP 0 – 21), it is pred mg/l may be observe trench/HDD pit) and to persist for several ho construction activities be transported up to which point concentra SSC is expected to re days following comple species are able to to sediment owing to free fluctuations in sedime background levels of already (Guillou <i>et al.</i> During operation, with considered that there onshore nature of the Outside of Langstone be no permanent loss as a result of cable n effect on prey availab limited in spatial exter During operation, rep unlikely, may be requ rate of the Marine Ca 10-12 years. Cable re effects as during con increases in SSC wo due to the smaller sc shorter duration and adverse effect on site As such, the potential availability resulting f increased turbidity fro is not predicted to res integrity. Potential effects result temporal and spatial Development (Table highly localised and t



e Marine Cable Corridor (c.6%). are not expected to be present beyond nean-maximum foraging range ($6.3 \text{ km} \pm$ *al.*, 2012). Within this nearshore area edicted that a peak SSC of up to 200 ved locally (i.e. within 2 km of the cable d these concentrations could potentially nours following completion of

es. Sediment plumes are also likely to o 5 km from the cable trench/HDD pit at trations of 5 to 10 mg/l are predicted; return to background levels within a few pletion of these activities. Most prey tolerate a degree of suspended frequent exposure to storm induced ment concentrations, together with high of suspended sediment in the Solent *al.*, 2017).

ithin Langstone Harbour, it is re is no pathway for impact due to the ne cable crossing.

ne Harbour during operation, there will oss of fish, shellfish and benthic habitat non-burial protection and no adverse ability since these measures will be tent (c.0.7 km²).

epair or replacement of cables, although quired. An indicative worst-case failure Cables could require a repair once every repair has the potential to have similar onstruction. However, the potential yould be lower than during construction scale of a repair, with works being of d more localised, which will not result in ite integrity.

ial for impact from reduced prey from seabed disturbance and rom the Proposed Development alone esult in an adverse effect on site

sulting from plans or projects which have al overlap with the Proposed e 4 of Appendix 3) are considered to be I temporary. As such, it is considered

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					that there is no poter either alone or in con (see Appendix 1 PIN
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	Little terns are visual by an increase in turk prey. They are consis- habitat disturbance (associated with cons- works have the poter column during cable HDD pit excavation. However, since HDD Harbour, with an ons- suspended material if Outside of Langstone HDD pits (KP 1.0-1.6 potential for the liber between KP 5 and 18 transport the finest se point. However, SSC mg/l) and therefore m which ranges from an areas. Elsewhere within the foraging little tern de (Parsons <i>et al.</i> , 2015) route preparation is a km ² along the entire Breeding little tern ar KP 21, given their me ± 2.4 km; Thaxter <i>et</i> (KP 0 – 21), it is prec- mg/l may be observed trench/HDD pit) and persist for several ho construction activities be transported up to which point concentr SSC is expected to r



ential for adverse effects on site integrity ombination with other project and plans INS matrices for further details).

al foragers and are likely to be affected urbidity which can make it harder to see sidered to be moderately sensitive to e (Bradbury *et al.*, 2014). Activities instruction, repair and maintenance tential to release sediment into the water le installation and associated works e.g. n.

DD will be used within Langstone nshore exit point, the volume of al is considered to be negligible. one Harbour, excavation at the marine 1.6), and cable installation (due to the eration and dispersal of fines identified 15, and in other isolated locations) will sediments up to 10 km from the release SC at these distances will be low (< 5 e not discernible above natural variation, approximately <5 to 75 mg/l in coastal

he UK Marine Cable Corridor, where densities are likely to be much lower 15), the area of disturbed habitat for anticipated to be a maximum of 3.6 e Marine Cable Corridor (c.6%). are not expected to be present beyond mean-maximum foraging range (6.3 km et al., 2012). Within this nearshore area edicted that a peak SSC of up to 200 ved locally (i.e. within 2 km of the cable d these concentrations could potentially hours following completion of ies. Sediment plumes are also likely to to 5 km from the cable trench/HDD pit at ntrations of 5 to 10 mg/l are predicted; return to background levels within a few pletion of these activities.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Most prey species ar suspended sediment induced fluctuations with high background Solent already (Guille During operation, rep unlikely, may be requ rate of the Marine Ca 10-12 years. Cable r effects as during com increases in SSC wo due to the smaller so shorter duration and any adverse effect of As such, the potentia availability resulting f Proposed Developm effect on site integrity Potential effects result temporal and spatial Development (Table highly localised and the As such, it is consider on site integrity from water column from in combination with oth PINS matrices for fur
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or che occur during all deve potential to directly a through direct oiling r Unplanned disposal of development phases tern mortality through However, routine mit practice in terms of w prevention measures prevent these events that, in consideration no adverse effect on Given the scale and projects and the requi- practice measures w



are able to tolerate a degree of nt owing to frequent exposure to storm s in sediment concentrations, together nd levels of suspended sediment in the llou *et al.*, 2017).

epair or replacement of cables, although quired. An indicative worst-case failure Cables could require a repair once every repair has the potential to have similar nstruction. However, potential

ould be lower than during construction scale of a repair, with works being of d more localised, which will not result in on site integrity.

ial for impacts from reduced prey from increased turbidity from the nent alone will not result in an adverse ty.

sulting from plans or projects which have I overlap with the Proposed

e 4 of Appendix 3) are considered to be l temporary.

lered that there will be no adverse effect n impacts on prey species within the increased turbidity, either alone or in her project and plans (see Appendix 1 urther details).

emical spillages from vessels may elopment phases. Spills have the affect little terns utilising the sea surface resulting in mortality.

l of industrial or user plastic during all es also has the potential to cause little gh ingestion or entanglement.

itigation measures of standard best waste management, pollution

es and strict navigational protocols will ts occurring and therefore it is predicted n of mitigation measures, there will be n site integrity for the project alone.

I nature of other potential plans and quirement to adhere to similar best which could contribute to in combination

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					effects, there will be combination with oth PINS matrices for fu
Sandwich tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Indirect effects	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. crustacea, annelids, sandeel, herring, clupeidae) at preferred sizes.	Sandwich terns are of fish and shellfish pop be of moderate sense Hüppop, 2004; Brad (and therefore the pop may be temporarily of resulting in effective visual foragers and a in turbidity which can sea surface. Activitie the potential to relead during cable burial a Within Langstone Ha entry/exit points of the thus there is no path increase in suspend Therefore, the works species in Langston HDD pits (KP 1.0-1.0 potential for the liber between KP 5 and 1 transport the finest se point. However, SSO mg/l) and therefore m which ranges from a areas. There will be prey species at the L and increases in SS and small in extent. Elsewhere within the foraging Sandwich to al., 2014), the area of preparation is anticip along the entire Mar the predicted usage (2014), high densitie expected beyond KF



e no adverse effect on site integrity in ther plans and projects (see Appendix 1 further details).

e effectively top predators of benthos, opulations and are considered likely to nsitivity to habitat disturbance (Garthe & adbury *et al.*, 2014). If seabed habitats prey species) are disturbed, the area y devoid of any potential food sources, e habitat loss. Furthermore, terns are d are likely to be affected by an increase an make it harder to see prey from the ties associated with construction have ease sediment into the water column and associated works.

Harbour, HDD will be used. The the drill are expected to be onshore, thway for the works to result in an ded sediment or resultant smothering. ks are not predicted to affect tern prey ne Harbour.

one Harbour, excavation at the marine 1.6), and cable installation (due to the eration and dispersal of fines identified 15, and in other isolated locations) will sediments up to 10 km from the release SC at these distances will be low (< 5 e not discernible above natural variation, approximately <5 to 75 mg/l in coastal e no adverse effects on the availability of a Landfall since both habitat disturbance SC will be temporary, short in duration

he Marine Cable Corridor, where tern densities may be lower (Wilson *et* a of disturbed habitat for route cipated to be a maximum of 3.6 km² arine Cable Corridor (c.6%). Based on e distributions presented in Wilson *et al.*, ties of breeding Sandwich terns are not KP 21. Within the area of highest use (KP

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					0-21), it is predicted be observed locally (trench/HDD pit) and persist for several ho construction activities be transported up to which point concentr SSC is expected to r days following comp Most prey species ar suspended sediment induced fluctuations with high background Solent already (Guill
					During operation, wit considered that there onshore nature of the Outside of Langstone be no adverse effect a result of cable non- measures will be limit
					During operation, rep unlikely, may be requ rate of the Marine Ca 10-12 years. Cable r effects as during com increases in SSC wo due to the smaller so shorter duration and any adverse effect o
					As such, the potentia availability resulting f increased turbidity fr will not result in any
					Potential effects resu temporal and spatial Development (Table highly localised and that there is no poten from in combination Appendix 1 PINS ma



d that a peak SSC of up to 200 mg/l may y (i.e. within 2 km of the cable d these concentrations could potentially hours following completion of ies. Sediment plumes are also likely to to 5 km from the cable trench/HDD pit at ntrations of 5 to 10 mg/l are predicted; o return to background levels within a few apletion of these activities.

are able to tolerate a degree of ent owing to frequent exposure to storm is in sediment concentrations, together and levels of suspended sediment in the illou *et al.*, 2017).

vithin Langstone Harbour, it is ere is no pathway for impact due to the he cable crossing.

one Harbour during operation, there will ct on the availability of prey species as on-burial protection since these mited in spatial extent (c.0.7 km²).

epair or replacement of cables, although equired. An indicative worst-case failure Cables could require a repair once every e repair has the potential to have similar onstruction. However, potential would be lower than during construction scale of a repair, with works being of ad more localised, which will not result in on site integrity..

tial for effects from reduced prey g from seabed disturbance and from the Proposed Development alone g adverse effect on site integrity.

sulting from plans or projects which have al overlap with the Proposed le 4 of Appendix 3) are considered to be d temporary. As such, it is considered ential for adverse effects on site integrity n effects on prey availability (see natrices for further details).

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	Sandwich terns are v affected by an increa harder to see prey. T sensitive to habitat di Activities associated maintenance works h into the water column associated works e.g However, since HDD Harbour, with an ons suspended material i
					Outside of Langstone HDD pits (KP 1.0-1.6 potential for the libera between KP 5 and 15 transport the finest se point. However, SSC mg/l) and therefore n which ranges from ap areas.
					Elsewhere within the foraging Sandwich te lower (Wilson <i>et al.</i> , 2 route preparation is a km ² along the entire l on the predicted usag
					al., (2014), high dens not expected beyond (KP 0-21), it is predic may be observed loca trench/HDD pit) and t persist for several ho construction activities be transported up to a
					which point concentra SSC is expected to re days following comple Most prey species are suspended sediment induced fluctuations i
					with high background Solent already (Guillo During operation, rep unlikely, may be requ



visual foragers and are likely to be ase in turbidity which can make it They are considered to be moderately disturbance (Bradbury *et al.*, 2014). d with construction, repair and have the potential to release sediment on during cable installation and .g. HDD pit excavation.

D will be used within Langstone shore exit point, the volume of is considered to be negligible.

he Harbour, excavation at the marine .6), and cable installation (due to the eration and dispersal of fines identified 15, and in other isolated locations) will sediments up to 10 km from the release C at these distances will be low (< 5 not discernible above natural variation, approximately <5 to 75 mg/l in coastal

e Marine Cable Corridor, where tern densities are likely to be much 2014), the area of disturbed habitat for anticipated to be a maximum of 3.6 Marine Cable Corridor (*c*.6%). Based age distributions presented in Wilson et nsities of breeding Sandwich terns are d KP 21. Within the area of highest use icted that a peak SSC of up to 200 mg/l cally (i.e. within 2 km of the cable these concentrations could potentially ours following completion of es. Sediment plumes are also likely to 5 km from the cable trench/HDD pit at trations of 5 to 10 mg/l are predicted; return to background levels within a few oletion of these activities.

are able to tolerate a degree of nt owing to frequent exposure to storm is in sediment concentrations, together nd levels of suspended sediment in the llou *et al.*, 2017).

epair or replacement cables, although quired. An indicative worst-case failure

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					rate of the Marine C 10-12 years. Cable effects as during con increases in SSC we due to the smaller se shorter duration and any adverse effect of As such, the potentia a result of the Propo- in any adverse effect Potential effects res temporal and spatia Development (Table highly localised and As such, it is conclu- adverse effects on so on prey species with PINS matrices for fur
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or che occur during all deve potential to directly a surface through dire Unplanned disposal development phases Sandwich tern morta However, routine mi practice in terms of prevention measure prevent these event predicted that, in con there will be no adve Proposed Project all Given the scale and projects and the req practice measures w effects, it is predicted
Common tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Indirect effects	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. crustacea, annelids, sandeel, herring, clupeidae) at preferred sizes.	Common terns are e and shellfish populat moderate sensitivity Hüppop, 2004; Brad (and therefore the pr may be temporarily of



- Cables could require a repair once every e repair has the potential to have similar onstruction. However, potential
- would be lower than during construction scale of a repair, with works being of ad more localised, which will not result in on site integrity.
- tial for effects from increased turbidity as posed Development alone will not result acts on site integrity.
- sulting from plans or projects which have al overlap with the Proposed
- le 4 of Appendix 3) are considered to be d temporary.
- uded that there is no potential for site integrity from in combination effects thin the water column (see Appendix 1 further details).
- nemical spillages from vessels may velopment phases. Spills have the affect Sandwich terns utilising the sea rect oiling resulting in mortality.
- al of industrial or user plastic during all es also has the potential to cause tality through ingestion or entanglement. nitigation measures of standard best
- f waste management, pollution es and strict navigational protocols will nts occurring and therefore it is onsideration of mitigation measures, verse effects on site integrity from the alone.
- d nature of other potential plans and quirement to adhere to similar best which could contribute to in combination ed that there will be no adverse effect on abination with other plans and projects.
- effectively top predators of benthos, fish ations and are considered likely to be of ty to habitat disturbance (Garthe & adbury *et al.*, 2014). If seabed habitats prey species) are disturbed, the area y devoid of any potential food sources,

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					resulting in effective f visual foragers and a in turbidity which can sea surface. Activities the potential to releas during cable installati Within Langstone Hat entry/exit points of the thus there is no pathy increase in suspende Therefore, the works species in Langstone Outside of Langstone HDD pits (KP 1.0-1.6 potential for the liberat between KP 5 and 15 transport the finest se point. However, SSC mg/l) and therefore no which ranges from ap areas. There will be r prey speciesble since increases in SSC will small in extent. Elsewhere within the foraging common tern <i>al.</i> , 2014), the area of preparation is anticipa along the entire Marin common tern are not in high densities, give range (15.2 km ± 11.2 nearshore area (KP 0 of up to 200 mg/l may of the cable trench/HD could potentially pers completion of constru- also likely to be trans trench/HDD pit at whi are predicted; SSC is levels within a few da activities. Most prey species are suspended sediment



e habitat loss. Furthermore, terns are are likely to be affected by an increase in make it harder to see prey from the es associated with construction have ase sediment into the water column ation and associated works.

arbour, HDD will be used. The he drill are expected to be onshore, hway for the works to result in an ded sediment or resultant smothering. s are not predicted to affect tern prey he Harbour.

he Harbour, excavation at the marine .6), and cable installation (due to the eration and dispersal of fines identified 15, and in other isolated locations) will sediments up to 10 km from the release C at these distances will be low (< 5 not discernible above natural variation, approximately <5 to 75 mg/l in coastal e no adverse effects on the availability of ce both habitat disturbance and ill be temporary, short in duration and

e Marine Cable Corridor, where ern densities may be lower (Wilson et of disturbed habitat for route pated to be a maximum of 3.6 km² rine Cable Corridor (c.6%). Breeding ot expected to be present beyond KP 21 ven their mean-maximum foraging I.2 km; Thaxter et al., 2012). Within this 0 - 21), it is predicted that a peak SSC ay be observed locally (i.e. within 2 km HDD pit) and these concentrations rsist for several hours following ruction activities. Sediment plumes are sported up to 5 km from the cable hich point concentrations of 5 to 10 mg/l is expected to return to background days following completion of these

are able to tolerate a degree of nt owing to frequent exposure to storm

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					induced fluctuations with high background Solent already (Guille During operation, wit
					considered that there onshore nature of the
					Outside of Langstone be no adverse effect prey availability since spatial extent (c.0.7 l
					During operation, rep unlikely, may be requ rate of the Marine Ca 10-12 years. Cable re effects as during con increases in SSC wo due to the smaller sc and the more localise effects on site integri
					As such, the potential availability resulting f increased turbidity fro is not considered to r integrity. Potential effects result temporal and spatial
					Development (Table highly localised and t As such, it is conside effects on site integri projects on prey avai for further details).
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	Common terns are vi affected by an increa harder to see prey. T sensitive to habitat di Activities associated maintenance works h into the water column associated works e.g However, since HDD
					Harbour, with an ons suspended material i



s in sediment concentrations, together nd levels of suspended sediment in the llou *et al.*, 2017).

ithin Langstone Harbour, it is re is no pathway for impact due to the ne cable crossing.

the Harbour during operation, there will at as a result of non-burial protection on the these measures will be limited in (km²).

epair or replacement of cables, although quired. An indicative worst-case failure cables could require a repair once every repair has the potential to have similar nstruction. However, potential ould be lower than during construction scale of a repair, the shorter duration sed nature of work, with no adverse rity.

ial for effects from reduced prey from seabed disturbance and rom the Proposed Development alone result in any adverse effects on site

sulting from plans or projects which have al overlap with the Proposed e 4 of Appendix 3) are considered to be l temporary.

lered that there will be no adverse rity in combination with other plans and ailability (see Appendix 1 PINS matrices

visual foragers and are likely to be ease in turbidity which can make it They are considered to be moderately disturbance (Bradbury *et al.*, 2014). d with construction, repair and have the potential to release sediment on during cable installation and

g. HDD pit excavation.

D will be used within Langstone shore exit point, the volume of is considered to be negligible.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Outside of Langstone HDD pits (KP 1.0-1.6 potential for the libera between KP 5 and 18 transport the finest se point. However, SSC mg/l) and therefore n which ranges from ap areas. Elsewhere within the foraging common ter (Wilson <i>et al.</i> , 2014), preparation is anticip along the entire Marin common tern are not in high densities, give range (15.2 km ± 11. nearshore area (KP 0 of up to 200 mg/l may of the cable trench/H could potentially pers completion of constru- also likely to be trans- trench/HDD pit at wh are predicted; SSC is levels within a few da activities. Most prey species ar suspended sediment induced fluctuations is with high background Solent already (Guillo During operation, rep unlikely, may be requ rate of the Marine Ca 10-12 years. Cable re effects as during com increases in SSC wo due to the smaller sc and the more localise effect on site integrity As such, the potential



he Harbour, excavation at the marine .6), and cable installation (due to the eration and dispersal of fines identified 15, and in other isolated locations) will sediments up to 10 km from the release C at these distances will be low (< 5 not discernible above natural variation, approximately <5 to 75 mg/l in coastal

e Marine Cable Corridor, where ern densities are likely to be much lower), the area of disturbed habitat for route pated to be a maximum of 3.6 km² rine Cable Corridor (c.6%). Breeding ot expected to be present beyond KP 21 ven their mean-maximum foraging I.2 km; Thaxter et al., 2012). Within this 0-21), it is predicted that a peak SSC ay be observed locally (i.e. within 2 km HDD pit) and these concentrations rsist for several hours following ruction activities. Sediment plumes are sported up to 5 km from the cable hich point concentrations of 5 to 10 mg/l is expected to return to background days following completion of these

are able to tolerate a degree of nt owing to frequent exposure to storm is in sediment concentrations, together nd levels of suspended sediment in the llou *et al.*, 2017).

epair or replacement of cables, although quired. An indicative worst-case failure Cables could require a repair once every repair has the potential to have similar instruction. However, potential rould be lower than during construction scale of a repair, the shorter duration sed nature of work, with no adverse ity.

ial for effects from increased turbidity Development alone will not result in any site integrity.

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Potential effects result temporal and spatial Development (Table highly localised and As such, it is conside effects on site integri species within the wa (see Appendix 1 PIN
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or che occur during all deve potential to directly a surface through direc Unplanned disposal development phases common tern mortali However, routine mit
					practice in terms of w prevention measures prevent these events concluded that, in co there will be no adve
					Given the scale and projects and the requ practice measures w effects, it is conclude on site integrity alone and projects.
Supporting habitat (water column)	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of the qualifying features	Indirect effects	Supporting habitat: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	DO levels affect the of habitats. High turbidit in warmer months. Lo impacts on key prey can adversely affect qualifying feature fee Activities associated maintenance works h and increase turbidity associated works.
					Harbour, with an ons suspended material Outside of Langstone HDD pits (KP 1.0-1.6 potential for the liber



sulting from plans or projects which have al overlap with the Proposed e 4 of Appendix 3) are considered to be d temporary.

dered that there will be no adverse grity from in combination effects on prey water column from increased turbidity NS matrices for further details).

nemical spillages from vessels may velopment phases. Spills have the affect common terns utilising the sea ect oiling resulting in mortality. Il of industrial or user plastic during all es also has the potential to cause ality through ingestion or entanglement.

nitigation measures of standard best waste management, pollution es and strict navigational protocols will ts occurring and therefore it is consideration of mitigation measures, verse effects on site integrity.

d nature of other potential plans and quirement to adhere to similar best which could contribute to in combination ded that there will be no adverse effect ne or in combination with other plans

e condition and health of supporting dity can lead to a drop in DO, especially Low DO can have sub-lethal and lethal ey species (Best *et al.*, 2007) and hence ct the availability and suitability of eeding habitat.

ed with construction, repair and s have the potential to release sediment dity during cable installation and

D will be used within Langstone hashore exit point, the volume of a lis considered to be negligible.

ne Harbour, excavation at the marine .6), and cable installation (due to the eration and dispersal of fines identified

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					between KP 5 and 1 transport the finest s point. However, SSC mg/l) and therefore r which ranges from a areas.
					Elsewhere within the disturbed habitat for maximum of 3.6 km ² Corridor (c.6%). It is 200 mg/l may be obs cable trench/HDD pit potentially persist for construction activitie be transported up to which point concentr SSC is expected to r days following comp species are able to the sediment owing to fru- fluctuations in sedim background levels of already (Guillou <i>et al</i>
					During operation, rep unlikely, may be requ rate of the Marine Ca 10-12 years. Cable r effects as during cor in SSC would be low smaller scale of a re works and the more adverse effects on s
					As such, the potentia the water column res Proposed Developm effects on site integri Potential effects resu temporal and spatial
					Development (Table highly localised and As such, it is conside effects on site integri



15, and in other isolated locations) will sediments up to 10 km from the release SC at these distances will be low (< 5 e not discernible above natural variation, approximately <5 to 75 mg/l in coastal

he Marine Cable Corridor, the area of or route preparation is anticipated to be a ² along the entire Marine Cable is predicted that a peak SSC of up to bserved locally (i.e. within 2 km of the bit) and these concentrations could or several hours following completion of ies. Sediment plumes are also likely to to 5 km from the cable trench/HDD pit at ntrations of 5 to 10 mg/l are predicted; return to background levels within a few pletion of these activities. Most prey tolerate a degree of suspended frequent exposure to storm induced ment concentrations, together with high of suspended sediment in the Solent al., 2017).

epair or replacement of cables, although equired. An indicative worst-case failure Cables could require a repair once every e repair has the potential to have similar onstruction, however, potential increases ower than during construction due to the repair project, the shorter time-span of e localised focus of work, with no site integrity.

tial for impact on key prey species within esulting from a drop in DO from the ment alone will not result in any adverse grity.

sulting from plans or projects which have al overlap with the Proposed

le 4 of Appendix 3) are considered to be d temporary.

dered that there will be no adverse grity from in combination effects on prey

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					species within the wa Appendix 1 PINS ma
			Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	A prolonged increase has a number of pote the water column, su clogging the filtering This in turn can adve suitability of qualifyin associated with cons the potential to release during cable installat However, since HDD Harbour, with an ons suspended material if Outside of Langstone HDD pits (KP 1.0-1.6 potential for the liber between KP 5 and 18 transport the finest se point. However, SSC mg/l) and therefore m which ranges from a areas.
					Elsewhere within the disturbed habitat for maximum of 3.6 km ² (c.6%). It is predicted may be observed loc trench/HDD pit) and persist for several ho construction activities be transported up to which point concentr SSC is expected to r days following compl species are able to to sediment owing to free fluctuations in sedime background levels of already (Guillou <i>et al</i>



water column from a drop in DO (see natrices for further details).

ise in turbidity through sediment release otential implications for prey species in such as affecting fish health and ig organs of suspension feeding animals. versely affect the availability and ring feature feeding habitat. Activities instruction and maintenance works have ease sediment and increase turbidity ation and associated works.

DD will be used within Langstone nshore exit point, the volume of al is considered to be negligible.

ne Harbour, excavation at the marine [1.6), and cable installation (due to the eration and dispersal of fines identified 15, and in other isolated locations) will sediments up to 10 km from the release SC at these distances will be low (< 5 e not discernible above natural variation, approximately <5 to 75 mg/l in coastal

he Marine Cable Corridor, the area of r route preparation is anticipated to be a ² along the entire Marine Cable Corridor ed that a peak SSC of up to 200 mg/l ocally (i.e. within 2 km of the cable d these concentrations could potentially nours following completion of ies. Sediment plumes are also likely to to 5 km from the cable trench/HDD pit at ntrations of 5 to 10 mg/l are predicted; return to background levels within a few pletion of these activities. Most prey tolerate a degree of suspended frequent exposure to storm induced ment concentrations, together with high of suspended sediment in the Solent al., 2017).

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					During operation, re although unlikely, m case failure rate of t once every 10-12 ye have similar effects potential increases i construction due to duration and the mo adverse effects on s As such, the potenti the water column re Proposed Developm effects on site integr Potential effects res temporal and spatia Development (Table highly localised and As such, it is consid effects on site integr increased turbidity f Appendix 1 PINS m
		Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or che occur during all deve potential to directly a column through a ra disposal of industria phases also has the ingestion or entangle However, routine mi practice in terms of prevention measure prevent these event concluded that, in co there will be no adve Given the scale and projects and the req practice measures v effects, it is predicte site integrity in comb

Conclusion: No adverse effect on site integrity can be concluded, either from the Proposed Development alone, or in combination with other plans or projects, for the Solent and Dorset Coast SPA.



epair or replacement of cables failure, may be required. An indicative worstthe Marine Cables could require a repair years. Cable repair has the potential to as a during construction However,

in SSC would be lower than during the smaller scale of a repair, the shorter ore localised nature of work, with no site integrity.

tial for impact on key prey species within esulting from increased turbidity from the ment alone will not result in any adverse grity.

sulting from plans or projects which have al overlap with the Proposed

le 4 of Appendix 3) are considered to be d temporary.

dered that there will be no adverse grity from in combination effects of from other plans and projects (see natrices for further details).

nemical spillages from vessels may velopment phases. Spills have the affect prey species within the water range of biological effects. Unplanned al or user plastic during all development re potential to affect prey species through glement.

nitigation measures of standard best f waste management, pollution es and strict navigational protocols will hts occurring and therefore it is consideration of mitigation measures, verse effects on site integrity.

d nature of other potential plans and quirement to adhere to similar best which could contribute to in combination ed that there will be no adverse effect on abination with other plans and projects.

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10.5. ONSHORE AND MARINE: PORTSMOUTH HARBOUR SPA/RAMSAR SITE

10.5.1. **OVERVIEW**

- 10.5.1.1. Portsmouth Harbour is a large, industrialised estuary. Together with the adjacent Chichester and Langstone Harbours, it forms one of the most important sheltered intertidal areas on the south coast of England. The site is composed of extensive intertidal mudflats and sandflats with seagrass beds, areas of saltmarsh, shallow coastal waters, coastal lagoons and coastal grazing marsh (Natural England, 2019b).
- 10.5.1.2. At low tide the extensive mudflats are exposed, the water drained by channels and creeks uniting to form a narrow exit into the Solent. There is comparatively little freshwater input to Portsmouth Harbour. The largest input is the River Wallington, which flows into Fareham Creek in the north-west of Portsmouth Harbour. The estuarine sediments support rich populations of intertidal invertebrates, which provide an important food source for overwintering birds (Natural England, 2019b).

10.5.2. MARINE CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.5.2.1. Site-specific SACO is available for the Portsmouth Harbour SPA⁴⁶. Table 10.7 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.1 – Marine SACO attributes screened in for assessment

Feature Impact for which LSE could not be excluded		Equivalent attribute
Red-breasted merganser Supporting habitat (water column)	Accidental spills and Litter	Supporting habitat: water quality - contaminants

10.5.2.2. Non-equivalent attributes listed within the SACO which were screened out from further assessment included:

- Breeding population: abundance;
- Connectivity with supporting habitats;
- Disturbance caused by human activity;
- Predation all habitats;

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⁴⁶https://designatedsites.naturalengland.org.uk/Marine/FAPMatrix.aspx?SiteCode=UK9011051&SiteName=portsmouth

harbour&SiteNameDisplay=Portsmouth+Harbour+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCA Area=&NumMarineSeasonality=4 (Accessed August 2020)

- Supporting habitat: food availability;
- Supporting habitat: air quality;
- Supporting habitat: conservation measures;
- Supporting habitat: extent and distribution of supporting habitat for the breeding season;
- Supporting habitat: landform;
- Supporting habitat: vegetation characteristics for nesting;
- Supporting habitat: water quality turbidity;
- Supporting habitat: water quality DO; and
- Supporting habitat: water quality nutrients.

10.5.3. ONSHORE CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.5.3.1. Table 10.8 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded for the onshore environment.

Table 10.8 – OnshoreSACO attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Dark-bellied brent goose	bellied brent gooseDisturbance and displacementI	
Dark-bellied brent goose Dunlin Black-tailed godwit	Accidental spills and Litter	Supporting habitat: food availability
Supporting habitat (freshwater and coastal grazing marsh)	Indirect effects	Supporting habitat: extent and distribution of supporting habitat for the non-breeding season
	Accidental spills and Litter	Supporting habitat: food availability

10.5.4. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.5.4.1. For those designated features where no LSE could not be concluded, an assessment of potential adverse effects on site integrity is presented in Table 10.9 below.
- 10.5.4.2. Following the application of standard best practice mitigation measures, no adverse effect on site integrity, arising from the Proposed Development alone, or in combination with other plans or projects, can be concluded for the Portsmouth Harbour SPA/Ramsar site.

Table 10.9 – Marine assessment of potential adverse effects on site integrity for the Portsmouth Harbour SPA/Ramsar site across all phases of the Proposed Development both alone and in combination with other plans or projects.

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Red-breasted merganser	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the po- within the water column through a range disposal of industrial or user plastic duri the potential to affect prey species throu However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occu in consideration of mitigation measures, site integrity from the Proposed Develop Given the scale and nature of other pote requirement to adhere to similar best pri contribute to in combination effects, it is effect on site integrity in combination with
Supporting habitat (water column)	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of the qualifying features.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the po- within the water column through a range disposal of industrial or user plastic duri the potential to affect prey species throu However, routine mitigation measures of waste management, pollution prevention protocols will prevent events occurring a consideration of mitigation measures, the integrity from the Proposed Development Given the scale and nature of other pote requirement to adhere to similar best pri contribute to in combination effects, it is effect on site integrity in combination with

Conclusion: Following the application of standard best practice mitigation measures, no adverse effect on site integrity can be concluded, either from the Proposed Development alone, or in combination with other plans or projects, for the Portsmouth Harbour SPA/Ramsar site.



om vessels may occur during all potential to directly affect prey species ge of biological effects. Unplanned Iring all development phases also has ough ingestion or entanglement.

of standard best practice in terms of on measures and strict navigational curring and therefore it is predicted that, s, there will be no adverse effects on opment alone.

otential plans and projects and the practice measures which could is predicted that there will be no adverse vith other plans and projects.

om vessels may occur during all potential to directly affect prey species ge of biological effects. Unplanned iring all development phases also has ough ingestion or entanglement.

of standard best practice in terms of on measures and strict navigational and therefore it is predicted that, in there will be no adverse effects on site ent alone.

otential plans and projects and the practice measures which could is predicted that there will be no adverse vith other plans and projects.

WSP/Natural Power

Table 10.10 – Onshore assessment of potential adverse effects on site integrity for the Portsmouth Harbour SPA/Ramsar site across all phases of the Proposed Development both alone and in combination with other plans or projects.

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Dark-bellied brent goose	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Disturbance and displacement	Disturbance caused by human activity	Reduce the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.	 Dark-bellied brent goose is considered t (Cutts <i>et al.</i>, 2013). Therefore, construct works in Langstone Harbour and Onsho to SWBGS sites have the potential to dis roosting and foraging components of the setting of the Proposed Development (S Owens (1977) describes the effects of a geese wintering on the Essex coast nea Airport at Maplin Sands. The report cond became habituated to most sounds, but gunshots from wildfowlers, usually put the shots of the day at nearby army gunnery area, but they quickly returned and ignot Extremely loud but regular bangs made little reaction after the first few weeks. Specific surveys for this species for the notable numbers in both intertidal and te Study Area (APP-421). Furthermore, giv Proposed Development, construction and considered to have the potential to displ from favoured foraging and roosting habite events. Construction work within the SW of grassland foraging habitat where the owinter season when dark-bellied brent g qualifying features of the SPA are prese <i>al.</i> 2019). Work within the sites during w of the sites from noise and movements of machinery, further restricting the availab sites as foraging areas. The following SN components of the Proposed Development (I P23B – University of Portsmouth, Lange P23B – University of Portsmouth 2; P11 – Kendall's Wharf playing fields; P08A – Farlington playing fields.
					Effects of the construction stage on Chic and its wintering intertidal bird communit



to be of high sensitivity to disturbance ction activities associated with HDD ore Cable Route works in and adjacent disturb dark-bellied brent geese at both neir daily cycle despite the industrial (SWBGS Steering Group, 2018). anthropogenic disturbances on brent ear the site of the then proposed London ncluded that brent geese quickly it unexpected sounds, such as nearby the geese to flight. Similarly, the first ery ranges caused the birds to leave the ored all subsequent firings for that day. e during nearby weapon testing caused

Proposed Development recorded terrestrial (i.e. SWBGS) areas of the iven the proximity of these areas to the and decommissioning works are place wintering dark-bellied brent goose abitat through unpredictable noise WBGS sites will reduce the availability construction stage overlaps with the geese and other wintering birds that are ent, October to March (Carboneras et winter would produce direct disturbance of construction vehicles and bility of remaining grassland within the SWBGS sites overlap with onshore nent:

ngstone Campus;

; and

ichester and Langstone Harbour SPA nity will be avoided by restricting works

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					within the winter season, defined as Octor qualifying species such as dark-bellied b grounds (Snow and Perrins, 1998). A der restrictions were provided in Chapter 16: 16.14: Winter Working Restriction for Fea Harbours SPA (APP-421) and then subject with Natural England which are captured CEMP (APP-505 Rev002). There are six into working methods: .
					 Principle 1: Construction works can categorised as either core, primary su candidate) sites that overlap with the during October – March. An exception that is already disturbed by movemen no functional habitat for brent geese Chichester and Langstone Harbour States.
					 Principle 2: Where HDD works are to t (e.g. at Eastney Landfall) no direct im restriction does not apply.
					 Principle 3: Elements of the Onshore the SPA are not included in any restrict
					Principle 4: Construction noise events
					 Principle 5: Construction works of 55 - a major road and/or adjacent to indus of existing noise can be undertaken under
					 Principle 6: Percussive piling or wo resulting in a noise level in excess of 6 receptor) should be avoided during the to March inclusive. The sensitive rece any SPA supporting habitat (e.g. high
					Adoption of Principle 1 (and reference to on those SWBGS sites that lie within the these sites will not be subject to works in by SPA birds), and effects of noise and v
					Adoption of Principle 1 (and reference to no adverse effects on those SWBGS site detailed above (as these sites will not be



ctober to March (the period when SPA brent goose arrive from their breeding letailed overview of the working 6: Onshore Ecology and Appendix reatures of Chichester & Langstone oject to revisions following consultation ed in the updated Outline Onshore six principles that will be incorporated

cannot take place in SWBGS (those support, secondary support, low use or e Proposed Developments Order Limits ion is the gravel car park within site P11 ents of cars, lorries and plant, and offers se or other waterbirds associated with SPA.

take place underneath the SWBGS site mpacts are considered to occur and the

e Cable Route that are over 400 m from triction.

ts of <55 dB can occur unrestricted.

5 – 72 dBLAmax immediately adjacent to ustrial sites with notable levels (>60 dB) unrestricted. It is considered that noise ent would be masked in these instances.

vorks with heavy machinery (i.e. plant 69dbLAmax – measured at the sensitive he bird overwintering period (i.e. October ceptor is the nearest point of the SPA or gh tide roosting site).

to Principle 2) will offset direct effects ne Order Limits as detailed above (as in the winter period when they are used I vibration on birds within the SPA itself.

to Principle 2) will ensure that there are ites that lie within the Order Limits as be subject to works in the winter period

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Feature		Effect	Attribute	Target	Assessment when they are used by SPA birds), and e within the SPA itself. Trenching / road saw noise at 69dbLAma SWBGS sites. However, SWBGS sites P affected due to the minimal overlap of the dB from trenching / road saw works. It is are situated between the construction wo buffer the noise so that in reality, there wi consequence, these two sites are exclude the remaining 12 sites and adjacent area likely that Principle 5 applies in this highly work is restricted during October – March The percussive activities at HDD compound
					are anticipated to comprise the insertion of mounted vibrator at HDD-1, HDD-2, HDD the reception pit at HDD-4. In accordance with the requirements of the m high around the perimeter of the HDD purpose of noise mitigation. The benefit to included in 3D noise modelling for the HD sites. Construction noise at over 69dbLAN occurs outside of the compounds for HDD With the combination of the seasonal resist the potential effects on dark-bellied brent displacement from the Proposed Develop adverse effect on site integrity. Potential effects resulting from the limited temporal and spatial overlap with the Proposed
					APP-424) are considered to be localised The North Portsea Island Coastal Flood I Coastline Between Milton Common and H (19/01368/FUL) includes a full winter wor will not disturb dark-bellied brent goose. S by other plans or projects identified as por features of the SPA or SWBGS, as outlin the ES (APP-423 and APP-424). Potentia Development Order Limits and mitigation Coastal Flood Defence Scheme Phase 4 option around Milton Common is taken. H measures do not form part of the propose provided in connection with the planning



d effects of noise and vibration on birds

nax has the potential to affect fourteen P54 and P29 will not be adversely the site areas with noise exceeding 69 is also considered that the buildings that works and SWBGS sites will effectively will be no overlap of noise effects. In uded from the restriction. In relation to eas of the SPA, although it considered hly urbanised environment, construction rch.

ounds in proximity to the SWBGS sites n of sheet piles via an excavator DD-3 and HDD-6 and via a piling rig for

the OOCEMP, screening of at least 2 D compounds is required for the this screening affords has been HDD works in proximity to the SWBGS Amax as a result of this screening only DD-4 and HDD-6.

estriction and noise mitigation measures ont goose resulting from disturbance and opment alone will not result in an

ed plans or projects which have proposed Development (APP-423 and ed and temporary.

d Defence Scheme, Phase 4B d Kendall's Wharf Eastern Road vorking restriction (October – March) so e. Such restrictions have been adopted potentially affecting wintering bird lined in Appendices 16.15 and 16.16 of ntial overlap between the Proposed on areas for the North Portsea Island e 4b would occur if the southern route . However, those compensation osed mitigations/compensations to be ag permission with reference

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					19/01368/FUL as per the most recent do relevant planning conditions.
					As such, it is considered that there is no integrity from disturbance and displacem with other project and plans (for full deta and integrity matrices for the SPA and A
		Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. Zostera, Enteromorpha,	Unplanned oil or chemical spillages may decommissioning phases. Spills have th bellied brent geese utilising intertidal and mortality. Unplanned disposal of industri and decommissioning phases also has t brent goose mortality through ingestion of



documents submitted to discharge the

no potential for adverse effects on site ement, either alone or in combination etails see Appendix 1 for the screening I Appendix 5 for the Ramsar site).

ay occur during the construction and the potential to directly affect darkand other supporting habitats resulting in strial or user plastic during construction s the potential to cause dark-bellied on or entanglement. However, routine

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
				Ulva lactuca, Spergularia, Puccinellia, Triglochin, Aster trifolium, Plantago, Salicornia spp, Agrostis stolonifera, Lolium perenne, Trifolium repens) at preferred sizes.	 mitigation measures of standard best propollution prevention measures (see Cha Resources of the ES APP-142) will ensure and will therefore not result in an advers 27 are summarised in the Onshore Outlidetail incorporating a Materials Manager Management Plan ('SWMP'). The key model of the establish the potential for reuse and to establish the potential for reuse and Identify opportunities for waste streams to establish the potential for reuse and Identify usitable options for waste to Identify suitable waste management licences, permits, waste transfer not notes; and Consider appropriate site practice segregated and the measures that we site operative for waste reduction, researce operative for waste reduction, researce in more detail in a detailed CEN undertaken and agreed with relevant au construction works. Measures detailed in and further captured in the Onshore Out Designated areas for the storage chemicals; On-site availability of oil spill clear material and inflatable booms for use Use of drip trays under mobile plant; Drain socks to trap sediment enterin Therefore, it is considered that potential resulting from accidental spills and/or litt alone will not result in an adverse effect



bractice in terms of waste management, hapter 27: Waste and Material sure that these events are prevented rse effect. Measures detailed in Chapter tline CEMP (APP-505 Rev002) and ement Plan ('MMP') and Site Waste matters of the SWMP are to:

ns likely to be produced during the works and recycling;

to be 'designed out;

imisation and management;

unities to increase re-use and recycling

ent contractors and record appropriate otes and hazardous waste consignment

ces such as how materials will be will be used for raising awareness among reuse and recycling.

prevention of contamination will be MP specific to the works to be uthority prior to commencement of in Chapter 19: Groundwater (APP-134) utline CEMP (APP-505 Rev002) include:

e of hazardous materials, fuels and

ean-up equipment including absorbent se in the event of an oil spill or leak;

t; and

ng the watercourse.

al effects on dark-bellied brent goose tter from the Proposed Development at on site integrity.

ed plans or projects which have roposed Development (APP-423 and d Coastal Flood Defence Scheme,

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Phase 4B - Coastline Between Milton C Road (19/01368/FUL), are considered to Given the requirement to adhere to simi contribute to in combination effects, it is for adverse effects on site integrity from or in combination with other project and for the screening and integrity matrices Ramsar site).
Dunlin	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (eg. <i>Nereis, Macoma,</i> <i>Hydrobia, Crangon,</i> <i>Carcinus,</i> dipertan flies, beetles, caddisfly, wasps, sawflies, mayflies) at preferred sizes.	 Unplanned oil or chemical spillages may decommissioning phases. Spills have the bellied brent geese utilising intertidal and mortality. Unplanned disposal of industriand decommissioning phases also has a brent goose mortality through ingestion mitigation measures of standard best propollution prevention measures (see Char Resources of the ES APP-142) will ensure and will therefore not result in an adverse 27 are summarised in the Onshore Outlidetail incorporating a Materials Manager Management Plan ('SWMP'). The key metabolish the potential for reuse and villentify the volume of waste streams to establish the potential for reuse and identify opportunities for waste minimetates; Identify suitable waste management places, permits, waste transfer nor notes; and Consider appropriate site practice segregated and the measures that we site operative for waste reduction, reduction works. Measures detailed if and further captured in the Onshore Outlined in the Onshore Outlined in the Onshore Outlined in the Onshore Outlined in the Onshore operative for waste reduction, reduction works. Measures detailed if and further captured in the Onshore Outlined in the Onshore Outl



Common and Kendall's Wharf Eastern to be localised and temporary.

milar best practice measures which could is considered that there is no potential m accidental spills and litter, either alone d plans (for full details see Appendix 1 s for the SPA and Appendix 5 for the

ay occur during the construction and the potential to directly affect darkand other supporting habitats resulting in strial or user plastic during construction is the potential to cause dark-bellied in or entanglement. However, routine practice in terms of waste management, hapter 27: Waste and Material isure that these events are prevented erse effect. Measures detailed in Chapter utline CEMP (APP-505 Rev002) and gement Plan ('MMP') and Site Waste matters of the SWMP are to:

ns likely to be produced during the works and recycling;

to be 'designed out;

nimisation and management;

tunities to increase re-use and recycling

ent contractors and record appropriate notes and hazardous waste consignment

ices such as how materials will be will be used for raising awareness among reuse and recycling.

e prevention of contamination will be EMP specific to the works to be authority prior to commencement of d in Chapter 19: Groundwater (APP-134) putline CEMP (APP-505 Rev002) include:

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Designated areas for the storage chemicals;
					 On-site availability of oil spill clear material and inflatable booms for us
					Use of drip trays under mobile plant;
					Drain socks to trap sediment enterin
					Therefore, it is considered that potential resulting from accidental spills and/or litt alone will not result in an adverse effect
					Potential effects resulting from the limite temporal and spatial overlap with the Pr APP-424) plus the North Portsea Island Phase 4B - Coastline Between Milton Co Road (19/01368/FUL), are considered to
					Given the requirement to adhere to simi contribute to in combination effects, it is for adverse effects on site integrity from or in combination with other project and for the screening and integrity matrices Ramsar site).
Black-tailed godwit	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (eg. earthworm, leatherjacket, chironomids, <i>Macoma</i> , <i>Cardium</i> , <i>Nereis</i>) at preferred sizes.	 Unplanned oil or chemical spillages may decommissioning phases. Spills have the bellied brent geese utilising intertidal and mortality. Unplanned disposal of industra and decommissioning phases also has a brent goose mortality through ingestion mitigation measures of standard best propollution prevention measures (see Char Resources of the ES APP-142) will ensure and will therefore not result in an adverse 27 are summarised in the Onshore Outlidetail incorporating a Materials Management Plan ('SWMP'). The key more stablish the potential for reuse and stablish the potential for reuse and
					 Identify possible options for waste to



ge of hazardous materials, fuels and

ean-up equipment including absorbent use in the event of an oil spill or leak;

nt; and

ing the watercourse.

al effects on dark-bellied brent goose litter from the Proposed Development ct on site integrity.

ited plans or projects which have Proposed Development (APP-423 and ad Coastal Flood Defence Scheme, Common and Kendall's Wharf Eastern to be localised and temporary.

milar best practice measures which could is considered that there is no potential m accidental spills and litter, either alone id plans (for full details see Appendix 1 s for the SPA and Appendix 5 for the

ay occur during the construction and the potential to directly affect darknd other supporting habitats resulting in trial or user plastic during construction is the potential to cause dark-bellied in or entanglement. However, routine practice in terms of waste management, hapter 27: Waste and Material sure that these events are prevented rse effect. Measures detailed in Chapter tiline CEMP (APP-505 Rev002) and ement Plan ('MMP') and Site Waste matters of the SWMP are to:

ns likely to be produced during the works and recycling;

to be 'designed out;

WSP/Natural Power

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 Identify opportunities for waste minim
					 Identify the most significant opportunity rates;
					 Identify suitable waste management licences, permits, waste transfer note notes; and
					 Consider appropriate site practice segregated and the measures that will site operative for waste reduction, reu
					Best practice recommendations for the provide outlined in more detail in a detailed CEM undertaken and agreed with relevant auth construction works. Measures detailed in and further captured in the Onshore Outlined
					 Designated areas for the storage chemicals;
					 On-site availability of oil spill clear material and inflatable booms for use
					Use of drip trays under mobile plant;
					Drain socks to trap sediment entering
					Therefore, it is considered that potential error resulting from accidental spills and/or litter alone will not result in an adverse effect of
					Potential effects resulting from the limited temporal and spatial overlap with the Pro APP-424) plus the North Portsea Island (Phase 4B - Coastline Between Milton Co Road (19/01368/FUL), are considered to
					Given the requirement to adhere to similar contribute to in combination effects, it is of for adverse effects on site integrity from a or in combination with other project and p for the screening and integrity matrices for Ramsar site).



imisation and management;

unities to increase re-use and recycling

ent contractors and record appropriate otes and hazardous waste consignment

ces such as how materials will be will be used for raising awareness among reuse and recycling.

prevention of contamination will be MP specific to the works to be uthority prior to commencement of in Chapter 19: Groundwater (APP-134) utline CEMP (APP-505 Rev002) include:

e of hazardous materials, fuels and

ean-up equipment including absorbent se in the event of an oil spill or leak;

t; and

ng the watercourse.

al effects on dark-bellied brent goose tter from the Proposed Development at on site integrity.

ed plans or projects which have Proposed Development (APP-423 and d Coastal Flood Defence Scheme, Common and Kendall's Wharf Eastern to be localised and temporary.

nilar best practice measures which could s considered that there is no potential n accidental spills and litter, either alone d plans (for full details see Appendix 1 s for the SPA and Appendix 5 for the

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Supporting habitat (freshwater and coastal grazing marsh)	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of the qualifying features	Indirect effects	Supporting habitat: extent and distribution of supporting habitat for the non- breeding season	Restore the extent and distribution of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of the non- breeding/wintering period (moulting, roosting, loafing, feeding)	 No habitat within the SPA/Ramsar site witemporary basis as a result of onshore of activities. Several SWBGS sites do how namely: P08A, P11, P23A, P23B and P2 fundamental importance to over-winterin SWBGS can be said to be functionally lit (SPA) network including Chichester and site. Construction work within these sites will varying extents which would impact the resource to dark-bellied brent goose. Restoration measures will be implement sward re-established to provide a suitable brent geese return to the Solent to winter geese return to the Solent to winter the following two approaches are consite. Re-seeding. Reinstate areas within Sof May where practicable. This is the of May where practicable to row the growth in a shorter timescale. The choice of restoration approach is pravailable within the summer growing searnot likely to be the optimal technique aft works after this month, re-turfing would including details of site preparation, estain the revised Onshore Outline CEMP (AP211, P23A and P23 R will be subject to appropriate timescales to allow reestablist subject to either re-seeding or re-turfing would including (BTO) through their Wetland that numbers present in England during those during the peak month of January Additional important factors to consider require restoration area accounts of the works.



will be lost on either a permanent or construction / decommissioning wever lie within the Order Limits, P23R. SWBGS are areas that are of ring waterbirds in the Solent Region. linked to the Special Protection Area ad Langstone Harbours SPA / Ramsar

ill result in temporary habitat loss to availability of foraging and roosting

nted which require completion and grass ble food resource by October when ter.

sidered for restoration of SWBGS sites:

SWBGS with grass seed before the end the easiest and most cost effective option;

re-seed, turf will be laid and established. llows re-establishment and good sward

primarily dependent on the time eason for implementation. Re-seeding is fter May so that for any restoration d be implemented. These measures tablishment and aftercare are provided (APP-505 Rev002).

to re-turfing restoration within the blishment prior to October. P23B will be g.

red until the month of October. However, e on SWBGS sites in the non-breeding disturbance associated with these will us data gathered by the British Trust for nd Bird Survey (WeBS) Scheme shows g October are approximately 30% of ry.

r include the amount of habitat that will proportion that it is of the SWBGS sites

for:

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					 12 % of the P08A SWBGS;
					1.2 % of SWBGS core sites; and
					• 0.2 % of the entire SWBGS network.
					On this basis, it is determined that the r October would not impair the SWBGS impact the non-breeding brent goose per disturbed and therefore the functionality due to the extensive remaining habitat.
					Brent geese will still be able to utilise th itself forms just a small component of the
					This assessment is further supported by temporary, covering at most 17% of a s a period when the majority of the Solen present. The P08A SWBGS will be rest when the peak numbers of geese are p Therefore, it is considered that potentia resulting from temporary loss of function Development alone will not result in an
					Potential effects resulting from the limite temporal and spatial overlap with the Pi APP-424)) are considered to be localise
					The North Portsea Island Coastal Floor Coastline Between Milton Common and (19/01368/FUL) includes a similar comm the non-breeding season (October – Ma brent goose.
					As such, it is considered that there is no integrity from indirect effects, either alor and plans (for full details see Appendix matrices for the SPA and Appendix 5 for
		Accidental spills and Litter	Supporting habitat: extent and distribution of supporting habitat for the non- breeding season	Restore the extent and distribution of suitable habitat (either within or outside the site boundary) which supports the features for all necessary stages of	Unplanned oil or chemical spillages from during construction and decommissionin directly affect prey species within suppo- biological effects. Unplanned disposal of development phases also has the poter ingestion or entanglement. However, ro best practice in terms of waste manage



restoration of 1.7 ha during the month of S network and specifically it would not population.Brent geese would not be ty of the P08A SWBGS would not be lost

he majority of P08A SWBGS, which in the SWBGS network available.

by the fact that the loss of habitat will be single non-breeding season and during nt brent goose population would not be stored it its entirety for in advance of present in the region.

al indirect effects on supporting habitat onally linked SWBGS from the Proposed n adverse effect on site integrity.

ited plans or projects which have Proposed Development (APP-423 and sed and temporary.

od Defence Scheme, Phase 4B nd Kendall's Wharf Eastern Road nmitment to restore all SWBGS before March) so will not disturb dark-bellied

no potential for adverse effects on site one or in combination with other project x 1 for the screening and intregrity for the Ramsar site).

om construction activity may occur ning phases. Spills have the potential to porting habitats through a range of of industrial plastic during all ential to affect prey species through routine mitigation measures of standard gement, pollution prevention measures

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 the non- breeding/wintering period (moulting, roosting, loafing, feeding) at: Intertidal Sediment = 831 Ha, Intertidal Seagrass = 77 Ha, Saltmarsh = 40 Ha, Freshwater and Coastal Grazing Marsh = 9 Ha and Coastal Lagoons = Unquantified. Identify the volume of waste streams to establish the potential for reuse at to establish the potential for reuse at the ensure that the measures that w site operative for waste reduction, re Best practice recommendations for the poutlined in more detail in a detailed CEM undertaken and agreed with relevant at construction works. Measures detailed i and further captured in the Onshore Out Designated areas for the storage chemicals.; On-site availability of oil spill clear material and inflatable booms for use Use of drip trays under mobile plant; Drain socks to trap sediment enterin Therefore, it is considered that potential from accidental spills and/or litter from th not result in an adverse effect on site int



Resources of the ES APP-142) will dand will therefore not result in an hapter 27 are summarised in the 2002)and detail incorporating a Materials aste Management Plan ('SWMP'). The

ns likely to be produced during the works and recycling;

to be 'designed out;

imisation and management;

unities to increase re-use and recycling

ent contractors and record appropriate otes and hazardous waste consignment

ces such as how materials will be will be used for raising awareness among reuse and recycling.

Prevention of contamination will be MP specific to the works to be uthority prior to commencement of in Chapter 19: Groundwater (APP-134) utline CEMP include:

e of hazardous materials, fuels and

ean-up equipment including absorbent se in the event of an oil spill or leak;

it; and

ing the watercourse.

al effects on supporting habitat resulting the Proposed Development alone will ntegrity.

ted plans or projects which have Proposed Development (APP-423 and d Coastal Flood Defence Scheme, Common and Kendall's Wharf Eastern to be localised and temporary.

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Given the requirement to adhere to simil contribute to in combination effects, it is for adverse effects on site integrity from or in combination with other project and and integrity matrices at Appendix 1 for Ramsar site).

Conclusion: Following the application of standard best practice mitigation measures, no adverse effect on site integrity can be concluded, either from the Proposed Development alone, or in combination with other plans or projects, for the Portsmouth Harbour SPA/Ramsar site.



milar best practice measures which could is considered that there is no potential m accidental spills and litter, either alone nd plans (for full details see the screening or the SPA and Appendix 5 for the

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10.6. MARINE: SOLENT AND SOUTHAMPTON WATER SPA/RAMSAR

10.6.1. **OVERVIEW**

- 10.6.1.1. The Solent and Southampton Water SPA is located in one of the only major sheltered channels in Europe, lying between a substantial island (the Isle of Wight) and the mainland, on the south coast of England. It stretches from Hurst Spit to Hill Head across Hampshire, and on the north coast of the Isle of Wight from Yarmouth to Whitecliff Bay (Natural England, 2019c).
- 10.6.1.2. This area is a complex major estuarine system consisting of coastal plain estuaries including the Yar, Medina, King's Quay Shore, and the Hamble. Bar-built estuaries including Newtown Harbour and Beaulieu also occupy the SPA. The Solent and its inlets are unique in Britain and Europe for their unusual tidal regime, including double tides and long periods of tidal stand at high and low tide (Natural England, 2019c).
- 10.6.1.3. The Solent and Southampton Water is composed of extensive intertidal mudflats and sandbanks, inter- and subtidal rock, areas of saltmarsh, coastal lagoons, coastal reed beds, shingle banks, and grazing marsh.
- 10.6.1.4. The shingle banks also provide important breeding grounds for terns.

10.6.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.6.2.1. Site-specific SACO is available for the Solent and Southampton Water SPA⁴⁷. Table 10.11 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Little ternAcSandwich ternCommon ternRoseate ternSupporting habitat (water column)	Accidental spills and Litter	Supporting habitat: water quality - contaminants

Table 10.11- SACO attributes screened in for assessment

10.6.2.2. Non-equivalent attributes listed within the SACO which were screened out from further assessment included:

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⁴⁷https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9011061&SiteName=so lent&SiteNameDisplay=Solent+and+Southampton+Water+SPA&countyCode=&responsiblePerson=&SeaArea =&IFCAArea=&NumMarineSeasonality=9 (Accessed October 2019)



- Breeding population: abundance;
- Connectivity with supporting habitats;
- Disturbance caused by human activity;
- Predation all habitats;
- Supporting habitat: food availability;
- Supporting habitat: air quality;
- Supporting habitat: conservation measures;
- Supporting habitat: extent and distribution of supporting habitat for the breeding season;
- Supporting habitat: landform;
- Supporting habitat: vegetation characteristics for nesting;
- Supporting habitat: water quality turbidity;
- Supporting habitat: water quality DO; and
- Supporting habitat: water quality nutrients.

10.6.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.6.3.1. For those designated features where no LSE could not be concluded, an assessment of potential adverse effects on site integrity is presented in Table 10.12 below.
- 10.6.3.2. Following the application of standard best practice mitigation measures, no adverse effect on site integrity, arising from either the Proposed Development alone, or in combination with other plans or projects, can be concluded for the Solent and Southampton Water SPA/Ramsar site.

Table 10.12 Assessment of potential adverse effects on site integrity for the Solent and Southampton Water SPA/Ramsar site across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Little tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pote within the water column through a range disposal of industrial or user plastic during potential to affect prey species through in However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur consideration of mitigation measures, the integrity from the Proposed Development Given the scale and nature of other poter requirement to adhere to similar best prac- to in combination effects, it is predicted the site integrity in combination with other place
Sandwich tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pote within the water column through a range disposal of industrial or user plastic during potential to affect prey species through in routine mitigation measures of standard to management, pollution prevention measure will prevent these events occurring and the consideration of mitigation measures, the integrity from the Proposed Development Given the scale and nature of other poter requirement to adhere to similar best prac- to in combination effects, it is predicted the site integrity in combination with other plan
Common tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pote within the water column through a range disposal of industrial or user plastic durin potential to affect prey species through in However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur consideration of mitigation measures, the integrity from the Proposed Development Given the scale and nature of other poter requirement to adhere to similar best prac-



n vessels may occur during all otential to directly affect prey species e of biological effects. Unplanned ing all development phases also has the ingestion or entanglement.

of standard best practice in terms of n measures and strict navigational urring and therefore it is predicted that, in nere will be no adverse effects on site nt alone.

ential plans and projects and the actice measures which could contribute that there will be no adverse effect on lans and projects.

n vessels may occur during all otential to directly affect prey species e of biological effects. Unplanned ing all development phases also has the ingestion or entanglement. However, best practice in terms of waste sures and strict navigational protocols therefore it is predicted that, in nere will be no adverse effects on site nt alone.

ential plans and projects and the actice measures which could contribute that there will be no adverse effect on lans and projects.

n vessels may occur during all otential to directly affect prev species e of biological effects. Unplanned ing all development phases also has the ingestion or entanglement.

of standard best practice in terms of n measures and strict navigational urring and therefore it is predicted that, in nere will be no adverse effects on site nt alone.

ential plans and projects and the actice measures which could contribute

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					to in combination effects, it is predicted the site integrity in combination with other place
Roseate tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pote within the water column through a range disposal of industrial or user plastic durin potential to affect prey species through in However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur consideration of mitigation measures, the integrity from the Proposed Development Given the scale and nature of other poter requirement to adhere to similar best pra to in combination effects, it is predicted the site integrity in combination with other pla
Mediterranean gull	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pote within the water column through a range disposal of industrial or user plastic durin potential to affect prey species through in However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur in consideration of mitigation measures, to integrity from the Proposed Development Given the scale and nature of other poter requirement to adhere to similar best pra- to in combination effects, it is predicted the site integrity in combination with other pla
Supporting habitat (water column)	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of the qualifying features.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pote within the water column through a range disposal of industrial or user plastic durin potential to affect prey species through in However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur consideration of mitigation measures, the integrity from the Proposed Development Given the scale and nature of other poter requirement to adhere to similar best pra



that there will be no adverse effect on plans and projects.

m vessels may occur during all otential to directly affect prey species e of biological effects. Unplanned ing all development phases also has the ingestion or entanglement.

of standard best practice in terms of n measures and strict navigational urring and therefore it is predicted that, in here will be no adverse effects on site nt alone.

ential plans and projects and the ractice measures which could contribute that there will be no adverse effect on plans and projects.

m vessels may occur during all otential to directly affect prey species e of biological effects. Unplanned ing all development phases also has the ingestion or entanglement.

of standard best practice in terms of n measures and strict navigational curring and therefore it is predicted that, , there will be no adverse effects on site nt alone.

ential plans and projects and the ractice measures which could contribute that there will be no adverse effect on plans and projects.

m vessels may occur during all otential to directly affect prey species e of biological effects. Unplanned ing all development phases also has the ingestion or entanglement.

of standard best practice in terms of n measures and strict navigational urring and therefore it is predicted that, in here will be no adverse effects on site nt alone.

ential plans and projects and the actice measures which could contribute

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					to in combination effects, it is predicted the site integrity in combination with other plan

Conclusion: Following the application of standard best practice mitigation measures, no adverse effect on site integrity, arising either from the Proposed Development alone, or in combination with other plans or projects, can be concluded for the Solent and Southampton Water SPA/Ramsar site.



that there will be no adverse effect on lans and projects.

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10.7. MARINE: PAGHAM HARBOUR SPA/RAMSAR SITE

10.7.1. **OVERVIEW**

- 10.7.1.1. Pagham Harbour SPA lies between Bognor Regis and Chichester in West Sussex. The many natural habitats contained within and around the small harbour support a notable abundance of wildlife. The estuarine basin is made up of an extensive central area of saltmarsh and intertidal mud-flats, surrounded by lagoons, shingle, open water, reed swamp and wet permanent grassland. The mud-flats are rich in invertebrates and algae, and provide important feeding areas for the many bird species that use the site (Natural England, 2019d). The local RSPB have managed the site as a local nature reserve ('LNR') since 2013, amplifying the productivity and variety of species present.
- 10.7.1.2. Terns breed on the shingle habitats near the harbour entrance and depart on foraging trips to the coastal waters (Natural England, 2019d).

10.7.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.7.2.1. Site-specific SACO is available for the Pagham Harbour SPA⁴⁸. Table 10.13 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.2- SACO attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Common tern Supporting habitat (water column)	Accidental spills and Litter	Supporting habitat: water quality - contaminants

- 10.7.2.2. Non-equivalent attributes listed within the SACO which were screened out from further assessment included:
 - Breeding population: abundance;
 - Connectivity with supporting habitats;
 - Disturbance caused by human activity;
 - Predation all habitats;
 - Supporting habitat: food availability;
 - Supporting habitat: air quality;

⁴⁸<u>https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9012041&SiteName=pagham&SiteNameDisplay=Pagham+Harbour+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea =&NumMarineSeasonality=4 (Accessed October 2019)</u>



- Supporting habitat: conservation measures;
- Supporting habitat: extent and distribution of supporting habitat for the breeding season;
- Supporting habitat: landform;
- Supporting habitat: vegetation characteristics for nesting;
- Supporting habitat: water quality turbidity;
- Supporting habitat: water quality DO; and
- Supporting habitat: water quality nutrients.

10.7.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.7.3.1. For those designated features where no LSE could not be concluded, an assessment of potential adverse effects on site integrity is presented in Table 10.14 below.
- 10.7.3.2. Following the application of standard best practice mitigation measures, no adverse effect on site integrity, arising from either the Proposed Development alone, or in combination with other plans or projects, can be concluded for the Pagham Harbour SPA/Ramsar site.

Table 10.3 - Assessment of potential adverse effects on site integrity for the Pagham Harbour SPA/Ramsar site across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Common tern	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the po- within the water column through a range disposal of industrial or user plastic duri the potential to affect prey species throu However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occu in consideration of mitigation measures, site integrity from the Proposed Develop Given the scale and nature of other pote requirement to adhere to similar best pri contribute to in combination effects, it is effect on site integrity in combination with
Supporting habitat (water column)	Maintaining or restoring the extent, distribution, structure, function and supporting processes of the habitats of the qualifying features.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the po- within the water column through a range disposal of industrial or user plastic duri the potential to affect prey species throu However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occu in consideration of mitigation measures, site integrity from the Proposed Develop Given the scale and nature of other pote requirement to adhere to similar best pri contribute to in combination effects, it is effect on site integrity in combination with

Conclusion: Following the application of standard best practice mitigation measures, no adverse effect on site integrity can be concluded, either from the Proposed Development alone, or in combination with other plans or projects, for the Pagham Harbour SPA/Ramsar site.



om vessels may occur during all potential to directly affect prey species ge of biological effects. Unplanned Iring all development phases also has ough ingestion or entanglement.

of standard best practice in terms of on measures and strict navigational curring and therefore it is predicted that, s, there will be no adverse effects on opment alone.

otential plans and projects and the practice measures which could is predicted that there will be no adverse vith other plans and projects.

om vessels may occur during all potential to directly affect prey species ge of biological effects. Unplanned iring all development phases also has ough ingestion or entanglement.

of standard best practice in terms of on measures and strict navigational curring and therefore it is predicted that, es, there will be no adverse effects on opment alone.

otential plans and projects and the practice measures which could is predicted that there will be no adverse vith other plans and projects.

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10.8. MARINE: LITTORAL SEINO-MARIN SPA

10.8.1. **OVERVIEW**

- 10.8.1.1. The Littoral Seino-Marin SPA stretches along approximately 70 km of coastline of the coast of Haute-Normandie, from the port of Antifer to Cap d'Ailly. To the west of Veulettes sur mer, the site includes cliff, beach, and foreshore, extending seawards to the limit of French waters (12 nmi). The area east of Veulettes-sur-Mer is entirely marine, extending from the MLWS mark to the limit of French waters.
- 10.8.1.2. The major ecological interest is the presence of large numbers of seabirds, with two main colonies of breeding seabirds at Cap d'Antifer and Cap Fagnet. The site hosts significant numbers of fulmar, cormorant, herring gull and lesser black-backed gull. In addition, the SPA is home to the majority of shag, kittiwake and great black-backed gull nesting on the coast of the Pays de Caux. The cliffs at Cap Fagnet host more than 400 pairs of black-legged kittiwake, which represent nearly half of the breeding population of Haute-Normandie and is one of 10 sites that together host 90% of the French breeding population. Forty-two pairs of fulmars are also present at Cap Fagnet, representing a large proportion of the Upper Normandy population.
- 10.8.1.3. The Littoral Seino-Marin SPA also hosts nationally and internationally important numbers of inshore wintering waterfowl (including grebes, divers and auks), as well as migratory seabirds, including terns, gulls and gannets.
- 10.8.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)
- 10.8.2.1. Site-specific SACO is not available for the Littoral Seino-Marin SPA. As such, SACO available for the UK SPAs considered have been used as a basis for the assessment. Table 10.15 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Fulmar Kittiwake Herring gull Great black-backed gull	Accidental spills and Litter	Supporting habitat: water quality - contaminants

Table 10.4 - SACO attributes screened in for assessment

- 10.8.2.2. Non-equivalent attributes listed within the SACO which were screened out from further assessment included:
 - Breeding population: abundance;
 - Connectivity with supporting habitats;



- Disturbance caused by human activity;
- Predation all habitats;
- Supporting habitat: food availability;
- Supporting habitat: air quality;
- Supporting habitat: conservation measures;
- Supporting habitat: extent and distribution of supporting habitat for the breeding season;
- Supporting habitat: landform;
- Supporting habitat: vegetation characteristics for nesting;
- Supporting habitat: water quality turbidity;
- Supporting habitat: water quality DO; and
- Supporting habitat: water quality nutrients.

10.8.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.8.3.1. For those designated features where no LSE could not be concluded, an assessment of potential adverse effects on site integrity is presented in Table 10.16 below.
- 10.8.3.2. Following the application of standard best practice mitigation measures, no adverse effect on site integrity, arising from either the Proposed Development alone, or in combination with other plans or projects, can be concluded for the Littoral Seino Marine SPA.

Table 10.5- Assessment of potential adverse effects on site integrity for the Littoral Seino-Marin SPA across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Fulmar	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pot within the water column through a range disposal of industrial or user plastic durin the potential to affect prey species throu However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur in consideration of mitigation measures, site integrity from the Proposed Develop Given the scale and nature of other pote requirement to adhere to similar best pra- contribute to in combination effects, it is effect on site integrity in combination with
Kittiwake	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pot within the water column through a range disposal of industrial or user plastic durin the potential to affect prey species throu However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur in consideration of mitigation measures, site integrity from the Proposed Develop Given the scale and nature of other pote requirement to adhere to similar best pra- contribute to in combination effects, it is effect on site integrity in combination with
Herring gull	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pot within the water column through a range disposal of industrial or user plastic durin the potential to affect prey species throu However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur in consideration of mitigation measures, site integrity from the Proposed Develop Given the scale and nature of other pote requirement to adhere to similar best pra-



m vessels may occur during all otential to directly affect prey species le of biological effects. Unplanned ring all development phases also has ugh ingestion or entanglement.

of standard best practice in terms of on measures and strict navigational surring and therefore it is predicted that, s, there will be no adverse effects on opment alone.

tential plans and projects and the practice measures which could s predicted that there will be no adverse vith other plans and projects.

m vessels may occur during all otential to directly affect prey species ge of biological effects. Unplanned ring all development phases also has ough ingestion or entanglement.

of standard best practice in terms of on measures and strict navigational curring and therefore it is predicted that, s, there will be no adverse effects on opment alone.

tential plans and projects and the practice measures which could is predicted that there will be no adverse vith other plans and projects.

om vessels may occur during all otential to directly affect prey species ge of biological effects. Unplanned ring all development phases also has ough ingestion or entanglement.

of standard best practice in terms of on measures and strict navigational urring and therefore it is predicted that, s, there will be no adverse effects on opment alone.

tential plans and projects and the ractice measures which could

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					contribute to in combination effects, it is effect on site integrity in combination with
Great black- backed gull	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from development phases. Spills have the pot within the water column through a range disposal of industrial or user plastic durin the potential to affect prey species throug However, routine mitigation measures of waste management, pollution prevention protocols will prevent these events occur in consideration of mitigation measures, site integrity from the Proposed Develop Given the scale and nature of other pote requirement to adhere to similar best pra- contribute to in combination effects, it is effect on site integrity in combination with

Conclusion: Following the application of standard best practice mitigation measures, no adverse effect on site integrity can be concluded for the Littoral Seino-Marin SPA, arising from either the Proposed Development alone, or in combination with other plans or projects.



s predicted that there will be no adverse *i*th other plans and projects.

om vessels may occur during all ootential to directly affect prey species ge of biological effects. Unplanned ring all development phases also has ough ingestion or entanglement.

of standard best practice in terms of on measures and strict navigational curring and therefore it is predicted that, s, there will be no adverse effects on opment alone.

tential plans and projects and the practice measures which could is predicted that there will be no adverse *v*ith other plans and projects.

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10.9. MARINE: ALDERNEY WEST COAST AND BURHOU ISLANDS RAMSAR SITE

10.9.1. **OVERVIEW**

- 10.9.1.1. The Alderney West and Burhou Islands Ramsar site covers some 4.4 nm² of land and sea, almost twice the land area of mainland Alderney. The site comprises the western coast of Alderney and adjacent shallow waters and islets in the strongly tidal, high-energy system of the northern Channel Islands.
- 10.9.1.2. Large breeding seabird populations are present within the site, including the only storm petrel and gannet colonies in the Channel Islands. The gannet colony is established on the Garden Rocks (Les Etacs) and Ortac. At the time of designation in 2005, 5,950 breeding pairs were present, with 8,737 pairs present during the last count in 2015 (Copping *et al.*, 2018).
- 10.9.1.3. Other breeding seabird species are present in regionally, nationally and internationally important numbers, with most present on the Burhou Islands.

10.9.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.9.2.1. Site-specific SACO is not available for the Alderney West Coast and Burhou Islands Ramsar site. As such, SACO available for the UK SPAs considered have been used as a basis for the assessment. Table 10.17 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.6 SACO attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Gannet Storm petrel Lesser black-backed gull	Accidental spills and Litter	Supporting habitat: water quality - contaminants

- 10.9.2.2. Non-equivalent attributes listed within the SACO which were screened out from further assessment included:
 - Breeding population: abundance;
 - Connectivity with supporting habitats;
 - Disturbance caused by human activity;
 - Predation all habitats;
 - Supporting habitat: food availability;
 - Supporting habitat: air quality;



- Supporting habitat: conservation measures;
- Supporting habitat: extent and distribution of supporting habitat for the breeding season;
- Supporting habitat: landform;
- Supporting habitat: vegetation characteristics for nesting;
- Supporting habitat: water quality turbidity;
- Supporting habitat: water quality DO; and
- 10.9.2.3. Supporting habitat: water quality nutrients.

10.9.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.9.3.1. For those designated features where no LSE could not be concluded, an assessment of potential adverse effects on site integrity is presented in Table 10.18 below.
- 10.9.3.2. Following the application of standard best practice mitigation measures, no adverse effect on site integrity, arising from either the Proposed Development alone, or in combination with other plans or projects, can be concluded for the Alderney West Coast and Burhou Islands Ramsar site.

Table 10.18 - Assessment of potential adverse effects on site integrity for the Alderney West and Burhou Islands Ramsar site across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Gannet	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from vessels me phases. Spills have the potential to directly affect pre through a range of biological effects. Unplanned dis all development phases also has the potential to affect entanglement. However, routine mitigation measures of standard be management, pollution prevention measures and st these events occurring and therefore it is predicted measures, there will be no adverse effects on site in Development alone. Given the scale and nature of other potential plans a adhere to similar best practice measures which cou it is predicted that there will be no adverse effect on plans and projects.
Storm petrel	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from vessels m phases. Spills have the potential to directly affect pr through a range of biological effects. Unplanned dis all development phases also has the potential to aff entanglement. However, routine mitigation measures waste management, pollution prevention measures prevent these events occurring and therefore it is pr mitigation measures, there will be no adverse effect Development alone. Given the scale and nature of other potential plans a adhere to similar best practice measures which cou it is predicted that there will be no adverse effect on plans and projects.
Lesser black- backed gull	Maintaining or restoring the populations of qualifying features, and the distribution of qualifying features within the site.	Accidental spills and Litter	Supporting habitat: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from vessels me phases. Spills have the potential to directly affect pre through a range of biological effects. Unplanned dis all development phases also has the potential to affect entanglement. However, routine mitigation measures waste management, pollution prevention measures prevent these events ocurring and therefore it is pre- mitigation measures, there will be no adverse effect Development alone. Given the scale and nature of other potential plans a adhere to similar best practice measures which cou- it is predicted that there will be no adverse effect on plans and projects.



may occur during all development prey species within the water column isposal of industrial or user plastic during ffect prey species through ingestion or

best practice in terms of waste strict navigational protocols will prevent d that, in consideration of mitigation integrity from the Proposed

and projects and the requirement to uld contribute to in combination effects, on site integrity in combination with other

may occur during all development prey species within the water column isposal of industrial or user plastic during ffect prey species through ingestion or res of standard best practice in terms of s and strict navigational protocols will predicted that, in consideration of cts on site integrity from the Proposed

and projects and the requirement to uld contribute to in combination effects, on site integrity in combination with other

may occur during all development prey species within the water column isposal of industrial or user plastic during ffect prey species through ingestion or res of standard best practice in terms of s and strict navigational protocols will redicted that, in consideration of cts on site integrity from the Proposed

and projects and the requirement to uld contribute to in combination effects, on site integrity in combination with other

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Fe	ature	Conservation Objectives	Effect	Attribute	Target	Assessment

Conclusion: Following the application of standard best practice mitigation measures, no adverse effect on site integrity can be concluded for the Alderney West Coast and Burhou Islands Ramsar site, either from the Proposed Development alone, or in combination with other plans or projects.



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10.10. MARINE: SOLENT MARITIME SAC

10.10.1. **OVERVIEW**

10.10.1.1. The Solent Maritime SAC covers 113.25 km² throughout the Solent as well as Langston Harbour and Chichester Harbour. The SAC overlaps with the Marine Cable Corridor for over an area of 163.4 m² at the mouth of Langston Harbour. Designated features for which LSE could not be ruled out within this SAC were Estuaries [1130], Sandbanks which are slightly covered by sea water all the time [1110], and mudflats and sandflats not covered by seawater at low tide [1140], Spartina swards [1320], Atlantic salt meadows [1330], and Salicornia and other annuals colonising mud and sand [1310].

10.10.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

- 10.10.2.1. Site-specific SACO is available for the Solent Maritime SAC⁴⁹.
- 10.10.2.2. Table 10.19 lists those attributes which are considered to be relevant to those effects for which an LSE could not be excluded.

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https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030059&SiteName=sole nt&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&Nu mMarineSeasonality=0 Accessed October 2019

Table 10.19 - SACO attributes screened in for assessment

Feature/Sub-feature	Effect for which LSE could not be excluded	Equivalent attribute
Estuaries	Increased suspended sediment concentration (SSC) Deposition of sediment (smothering)	Supporting Processes: water quality – DO Supporting Processes: water quality – nutrients Supporting Processes: water quality – turbidity Distribution: presence and spatial distribution of biological communities Structure: species composition of component communities Structure: substrate composition and distribution
Atlantic Salt Meadows Salicornia and other annuals colonising mud and sand Spartina swards	Increased suspended sediment concentration (SSC) Deposition of sediment (smothering)	 Supporting processes: sedimentary processes Distribution of the feature, including associated transitional habitats, within the site Extent of the feature within the site Future extent of habitat within the site and ability to respond to seasonal changes Structure and function (including its typical species): key structural, influential and distinctive species Structure and function: sediment size and availability Supporting processes: functional connectivity with wider coastal sedimentary system
Intertidal Course Sediment Intertidal mixed sediment Intertidal mud Intertidal sand and muddy sand	Increased suspended sediment concentration (SSC) Deposition of sediment (smothering)	Structure: sediment total organic carbon ('TOC') content Supporting processes: sediment movement and hydrodynamic regime Supporting Processes: water quality – DO Supporting Processes: water quality – nutrients Supporting Processes: water quality – turbidity Distribution: presence and spatial distribution of biological communities Structure: species composition of component communities Structure: substrate composition and distribution
Intertidal seagrass beds Subtidal seagrass beds	Increased suspended sediment concentration (SSC) Deposition of sediment (smothering)	Supporting processes: sedimentation rate Supporting Processes: water quality – DO Supporting Processes: water quality – nutrients Supporting Processes: water quality – turbidity Distribution: presences and spatial distribution of biological communities Structure: species composition of component communities Structure: substrate composition and distribution
Sandbanks which are slightly covered by seawater all the time Subtidal course sediment Subtidal mixed sediment Subtidal sand	Increased suspended sediment concentration (SSC) Deposition of sediment (smothering)	Supporting processes: sediment movement and hydrodynamic regime Supporting Processes: water quality – DO Supporting Processes: water quality – nutrients Supporting Processes: water quality – turbidity Distribution: presences and spatial distribution of biological communities Structure: species composition of component communities Structure: substrate composition and distribution
Mudflats and sandflats not covered by seawater at low tide	Increased suspended sediment concentration (SSC) Deposition of sediment (smothering)	Supporting processes: sediment movement and hydrodynamic regime Supporting Processes: water quality – DO Supporting Processes: water quality – nutrients Supporting Processes: water quality – turbidity Distribution: presence and spatial distribution of biological communities Structure: species composition of component communities



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Feature/Sub-feature	Effect for which LSE could not be excluded	Equivalent attribute
Estuaries Mudflats and sandflats not covered by seawater at low tide Sandbanks which are slightly covered by seawater all the time. Subtidal seagrass beds Subtidal sand Subtidal mixed sediment Subtidal course sediment Intertidal seagrass beds Intertidal sand and muddy sand Intertidal mud Intertidal mixed sediment Intertidal course sediment	Pollution	Supporting processes: sediment contaminant Supporting processes: water quality – contam
Spartina swards Salicornia and other annuals colonising mud and sand Atlantic salt meadows	Pollution	Supporting processes: water quality
Estuaries Mudflats and sandflats not covered by seawater at low tide Sandbanks which are slightly covered by seawater all the time. Subtidal seagrass beds Subtidal sand Subtidal mixed sediment Subtidal course sediment Intertidal seagrass beds Intertidal sand and muddy sand Intertidal mud Intertidal mixed sediment Intertidal course sediment	Invasive species	Structure: non-native species and pathogens
Spartina swards Salicornia and other annuals colonising mud and sand Atlantic salt meadows	Invasive species	Structure and function: vegetation – undesira





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- 10.10.2.3. All other attribute/receptor combinations present within the SACO for this SAC were deemed to not be relevant to the effects screened into the AA.
- 10.10.2.4. The assessment for potential adverse effects on integrity for the Solent Maritime SAC (Table 10.20) is undertaken on all relevant sub-features, noting that the same sub-features may be present in more than one qualifying feature of the site. The Conservation Objectives, targets and attributes of each sub-feature are the same across all qualifying features. It is noted that Salicornia and other annuals colonising mud and sand, *Spartina* swards, and Atlantic salt meadows are qualifying features as well as being sub-features of the Estuary qualifying feature. Where qualifying features are also sub-features, the conservation objectives, attributes and targets are the same whether at a sub-feature or qualifying feature level.

10.10.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.10.3.1. For those designated features where LSE could not be excluded in Section 7, an assessment of potential adverse effects on site integrity is presented in Table 10.20 below.
- 10.10.3.2. It is concluded that there will be no adverse effect on site integrity for the Solent Maritime SAC, either from the Proposed Development alone, or in combination with other plans or projects, following the application of mitigation.

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
Estuaries	Maintaining or restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying species	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessels introduction of INIS introduction as far that there will be no adverse effects or invasive species. Due to the lack of predicted effects, all practice measures employed for any of concluded that no in combination adver feature as a result of invasive species.
function (includir typical species) qualifying natura habitats	The structure and function (including typical species) of qualifying natural habitats The structure and	Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the feature (or its sub-features).	Unplanned oil or chemical spillages from development phases. However, routine practice in terms of waste management 10.2.5) and strict navigational protocol therefore will not result in adverse effect Given the scale and nature of other por requirement to adhere to similar best por
	function of the habitats of the qualifying species The supporting processes on which qualifying natural habitats and the	Pollution	Supporting Processes: water quality – contaminants	Reduce aqueous contaminants to levels equating to High/Good Status (according to Annex VIII and X of the WFD), avoiding deterioration from existing levels.	in combination effects, it is predicted the integrity in combination with other plan
	habitats of qualifying species rely The populations of each of the qualifying species The distribution of	Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically \geq 5.7 mg L-1 (at 35 salinity) for 95 % of year) avoiding deterioration from existing levels	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) show that, at this between increased SSC / sediment plu disposal of dredge material. For activities in addition to the depositi activities which will lead to increased S the HDD pit(s) (between KP1 and KP1

Table 10.20 - Assessment of potential adverse effects on site integrity for the Solent Maritime SAC across all phases of the Proposed Development



d procedures (see section 10.2.5) will be els. This will reduce the potential for ar as is reasonably practicable and will ensure on the integrity of the site as a result of

along with the application of any similar best other plan and project identified, it is verse effects on site integrity will arise on this s.

from vessels may occur during all ine mitigation measures of standard best ent, polution prevention measures (Section ols will prevent these events occurring and fects on Site integrity.

potential plans and projects and the practice measures which could contribute to that there will be no adverse effects on site ans and projects.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling his distance, there will be no connectivity olumes and the SAC resulting from the

sition of dredged material, the worst-case SSC are considered to be the excavation at P1.6), and cable installation (due to the

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Conservation Objective	Effect	Attribute	Target	Assessment
qualifying species within the site	Increased SSC	Supporting Processes: water quality – nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	potential for the liberation and dispersa and in other isolated locations). Peak SSCs levels of up to 200 mgl ⁻¹ w cable trench or HDD pit) with these con following completion of construction ac transported up to 5 km away from the t will be in the range of 5 to 10 mgl ⁻¹ . So within a few days following completion The finest sediments will be transported however SSCs at these distances will discernible above natural variations in
	Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	Natural variations in SSC ranges from areas, with annual averages of betwee waters. The mouth of Langstone harbour (the o
	Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	approximately 1 km from the proposed location). SSC variability within the har frequent exposure to storm induced flu 2017). Suspended sediments within La
	Increased SSC	Supporting Processes: water quality – turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	 200 mgl⁻¹(Humby and Dunn, 1975 – therefore, the peak SSCs resulting f exceed natural levels of variation with In addition, estuarine qualifying feature considered sensitive to this pressure are highly tolerant to the levels of ind Development which will only persist adverse effects on site integrity result from increased SSC on estuary feature turbidity, DO, or nutrients are predice effects on inorganic nitrogen levels and Considering the indiscernible effects alone, the general lack of sensitivity activities which may result in in com
	Objective qualifying species	Objective Increased SSC qualifying species within the site Increased SSC Image: Second sec	Objective Increased SSC Supporting Processes: water quality – nutrients qualifying species within the site Increased SSC Supporting Processes: water quality – nutrients Increased SSC Increased SSC Distribution: presence and spatial distribution of biological communities Increased SSC Increased SSC Structure: species composition of component communities Increased SSC Supporting Processes:	ObjectiveIncreased SSCSupporting Processes: water quality – nutrientsRestore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.Increased SSCDistribution: presence and spatial distribution of biological communitiesMaintain the presence and spatial distribution of estuary communities.Increased SSCStructure: species component communitiesRestore the Species component communities.Increased SSCSupporting Processes: water quality – turbidityRestore the Species component communities.Increased SSCSupporting Processes: water quality – turbidityRestore the Species component communities.Increased SSCSupporting Processes: water quality – turbidityRestore the Species component communities.Increased SSCSupporting Processes: water quality – turbidityMaintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the



sal of fines identified between KP 5 and 15,

will be observed locally (i.e. within 2 km of the concentrations persisting for several hours activities. Sediment plumes will be to be trench or pit at which point concentrations SSC levels will return to background levels on of these activities.

ted up to 6-10 km in the nearshore area, I be low (< 5 mgl⁻¹) and therefore not n background SSCs.

n approximately <5 to 75 mgl⁻¹ in coastal een 5 – 15 mgl⁻¹ observed within surface

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at its closest possible arbour is high, owing to its tidal nature and luctuations (New Forest District Council, Langstone harbour have been measured at cited in New Forest District Council, 2017), om the Proposed Development would not hin the estuary at Langstone Harbour.

re habitats present within the SAC, are not (see sub-feature assessments below), and reased SSC as a result of the Proposed for a short duration. Therefore, there will be no ting from the Proposed Development alone ures. Negligible effects on the natural levels of ed following cessation of the activity, and no re predicted.

predicted by the Proposed Development to the impact, and the fact that all other bination effects are likely to be similar or lesser ded that there will be no adverse effects on eases in SSC.

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km); which en Marine Cable Corridor. Results of sedi 6.2 of ES) indicate that, at this distance the SAC resulting from dredge dispose Deposition from other cable installation between KP1 and KP1.6) will not be si deposited rapidly (i.e. within several hu sediment will be dispersed across a gr throughout the tidal cycle. However, du be liberated into the water column and considered that there will be no discern resuspended and redistributed under the
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its subfeatures).	
					The mouth of Langstone harbour (the approximately 1 km from the proposed location), and therefore it is considered majority of sediment is deposited.
					Therefore, any deposition of sediment alone will be 'light', temporary in nature the Estuary feature, most of the habita level. No discernible effects on normal composition are predicted.
					Considering the indiscernible effects p Development alone, and the fact that a combination effects are likely to be sim concluded that there will not be an adv combination deposition of sediment (se
Atlantic Salt Meadows (<i>Glauco-</i> <i>Puccinellietalia</i>)	Maintaining or restoring: The extent and distribution of	Invasive species	Structure and function: vegetation - undesirable species	The frequency / cover of the following undesirable species are maintained at acceptable levels and are not encouraged by changes in surface condition, soils, nutrient levels or changes to	Application of best practice plans and p followed by all contractors and vessels introduction of INIS introduction as far that there will be no adverse effects on invasive species.
	qualifying natural habitats and habitats of the qualifying				Due to the lack of predicted effects, all practice measures employed for any o



iment disposal activities to outwith WFD equates to disposal seaward of KP21 of the diment plume dispersion modelling (Appendix ace, there will be no sediment deposition within sal activities.

on activities (including excavation of HDD pits significant, with any coarse material mobilised hundred metres of the cable trench). Finer greater spatial extent, transiently depositing due to the low volumes of sediment likely to nd significant dispersion of fine sediment, it is ernible deposition with sediments quickly r the forcing of tidal flows.

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible ed that it will be outwith the area where the

nt resulting from the Proposed Development ure and will not adversely affect the integrity of tats of which are not sensitive to effects at this al sediment and water movement, or sediment

predicted to result from the Proposed t all other activities which may result in in imilar or lesser in extent and magnitude, it is dverse effect on site integrity from in (smothering).

d procedures (see section 10.2.5) will be els. This will reduce the potential for ar as is reasonably practicable and will ensure on the integrity of the site as a result of

along with the application of any similar best other plan and project identified, it is

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	species The structure and function (including typical species) of			hydrology: Spartina anglica, Phragmites australis.	concluded that no in combination adve feature as a result of invasive species.
	qualifying natural habitats The structure and function of the habitats of the qualifying species	Increased SSC	Distribution of the feature, including associated transitional habitats, within the site	Maintain the range and continuity of the habitat and its natural transitions within saltmarsh types and to other habitats seaward and landward.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2) indicate that, at this dis increased SSC / sediment plumes with For activities other than the deposition activities which will lead to increased S HDD pits, and cable installation (due to
	The supporting processes on which qualifying natural	Increased SSC	Extent of the feature within the site	Restore the total extent of saltmarsh features to at least 1,095 hectares.	of fines identified between KP 5 and 18 It is predicted that peak SSCs of up to within 2 km of the cable trench or HDD
	habitats and the habitats of qualifying species rely The populations of	Increased SSC	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability to achieve long-term fluctuations in the extent of habitat in response to coastal processes.	potentially persist for several hours fo Sediment plumes are also likely to be or pit at which point concentrations of to return to background levels within a activities.
	each of the qualifying species The distribution of qualifying species within the site	Increased SSC	Structure and function (including its typical species): key structural, influential and distinctive species	Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature	The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation. Natural variation ranges from approxim annual averages of between 5 – 15 mg
		Increased SSC	Structure and function: sediment size and availability	Maintain the availability and size range of those sediments typical of the feature at the site.	 The mouth of Langstone harbour (the approximately 1 km from the proposed location), and the closest areas of saltr from the entrance. SSC variability within the harbour is high
		Increased SSC	Supporting Processes: functional connectivity with wider coastal sedimentary system	Maintain adequate inputs of sediment in the water column from the sediment sources	exposure to storm induced fluctuations Suspended sediments within Langston 1, while measured SSC in nearby harb (Portsmouth) (Humby and Dunn, 1975 2017).



verse effects on site integrity will arise on this es.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling listance, there will be no connectivity for ith the SAC.

on of dredged material, the worst-case I SSC are considered to be excavation at the to the potential for the liberation and dispersal 15, and in other isolated locations).

to 200 mgl-1 may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl-1 are predicted. SSC is expected a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl-1) and therefore not

timately <5 to 75 mgl-1 in coastal areas, with mgl-1 observed within surface waters.

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible altmarsh habitat is located a further kilometre

high, owing to its tidal nature and frequent ns (New Forest District Council, 2017). one harbour have been measured at 200 mglirbours have been recorded up to 100 mgl-1 75 – cited in New Forest District Council,

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
				(offshore / eroding cliffs, etc).	Saltmarsh plants are tolerant of a degr turbidity. It is recognised that turbidity however the plants photosynthesise at that experience reduced photosynthes air and low tides (Tyler Walters, 2004). Therefore, the slight increases in SSC Development alone will not affect the g meadows within the Solent Maritime S predicted. No effect on the natural level cessation of the activity, and negligible ability of this feature to transition or flue Considering the indiscernible effects p alone, the general lack of sensitivity to activities which may result in in combin in extent and magnitude, it is conclude
					site integrity as a result of increases in other plans and projects.
		Deposition of sediment (Smothering)	Supporting Processes: sedimentary Processes	Maintain the sedimentary processes (suspended sediment, sediment transfer, etc) that sustain the elevation and topography of the marsh surface.	Mitigation is proposed to restrict sedir waters (plus a buffer of 3 km). Result (Appendix 6.2) indicate that, at this di sediment deposition with the SAC. Deposition from other cable installation is not predicted to be significant with rapidly (i.e. within several hundred mo
		Deposition of Sediment (Smothering)	Distribution of the feature, including associated transitional habitats, within the site	Maintain the range and continuity of the habitat and its natural transitions within saltmarsh types and to other habitats seaward and landward.	be dispersed across a greater spatial e tidal cycle. However, due to the volume water column and significant dispersion deposition will be negligible with sedim under the forcing of tidal flows. The mouth of Langstone harbour (the approximately 1 km from the proposed
		Deposition of Sediment (Smothering)	Extent of the feature within the site	Restore the total extent of saltmarsh features to at least 1,095 hectares.	location), and the closest areas of saltr from the entrance. Therefore, any dep



gree of increased SSC, and the resulting ty reduces the light attenuation through water, at low tide Any species covered by high tide, esis, will be able compensate when exposed to 4).

C predicted to arise from the Proposed e growth or distribution of Atlantic salt SAC and no adverse effects on integrity are vels of turbidity are predicted following ble effects on sediment composition or the luctuate in extent are predicted.

predicted for the Proposed Development to the impact, and the fact that all other bination effects are likely to be similar or lesser ded that there will be no adverse effects on in SSC, either alone or in combination with

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling listance, there will be no connectivity for

on activities (including excavation of HDD pits) any coarse material mobilised deposited etres of the cable trench). Finer sediment will I extent, transiently depositing throughout the mes of sediment likely to be liberated into the ion of fine sediment, it is considered that ments quickly resuspended and redistributed

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible Itmarsh habitat is located a further kilometre eposition of sediment will be light, and likely

WSP/Natural Power

Feature/Sub-	Conservation	Effect	Attribute	Target	Assessment
features	Objective				within the natural variation of the sed plants are adapted to accreting envir Due to the negligible levels of sedime any material will beredistributed throus sediment deposition from the Propose affect the integrity of the site. Considering the indiscernible effects Development alone, and the fact that combination effects are likely to be si- concluded that there will be no adver deposition of sediment (smothering). and water movement, or sediment co- habitat connectivity or their ability to the
		Deposition of Sediment (Smothering)	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability to achieve long-term fluctuations in the extent of habitat in response to coastal processes.	
		Deposition of Sediment (Smothering)	Structure and function (including its typical species): key structural, influential and distinctive species	Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature	
		Deposition of Sediment (Smothering)	Structure and function: sediment size and availability	Maintain the availability and size range of those sediments typical of the feature at the site.	
		Deposition of Sediment (Smothering)	Supporting Processes: functional connectivity with wider coastal sedimentary system	Maintain adequate inputs of sediment in the water column from the sediment sources (offshore / eroding cliffs, etc).	
		Pollution	Supporting Processes: water quality	Where the feature is dependent on estuarine water, ensure water quality and quantity is restored to a standard that provides the necessary conditions to support the feature.	Unplanned oil or chemical spillages fr development phases. However, routin practice in terms of waste manageme 10.2.5) and strict navigational protoco in adverse effects on site integrity as a alone.
					Given the scale and nature of other per requirement to adhere to similar best in combination effects, it is predicted to integrity in combination with other plan
Intertidal Course Sediment	Maintaining or restoring:	Invasive species	Structure: non-native species and pathogens	Restrict the introduction and spread of non-native	Application of best practice plans and followed by all contractors and vessel introduction of INIS introduction as far



diment regime present in the area. Saltmarsh ronments (Tyler-Walters, 2004).

ent predicted to be deposited, and the fact that ugh normal tidal conditions, it is concluded that sed Development alone will not adversely

predicted to result from the Proposed t all other activities which may result from in imilar or lesser in extent and magnitude, it is rse effects on site integrity from in combination . No discernible effects on normal sediment omposition are predicted, and no effects on transition are predicted.

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section cols will ensure that these events will not result s a result from the Proposed Development

potential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

d procedures (see section 10.2.5) will be els. This will reduce the potential for ar as is reasonably practicable and will ensure

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	The extent and distribution of qualifying natural habitats and habitats of the qualifying species			species and pathogens, and their impacts.	that there will be no adverse effects or invasive species. Due to the lack of predicted effects, al practice measures employed for any of concluded that no in combination adver arise on this feature as a result of inva
function (in typical spec qualifying r habitats The structur function of habitats of qualifying s The suppor processes qualifying r habitats an habitats of species rel The popular each of the species The distribur	The structure and function (including typical species) of qualifying natural habitats The structure and function of the habitats of the qualifying species The supporting	Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminants (<1cm from the surface) to below the OSPAR Environment Assessment Criteria (EAC) or Effects Range Low (ERL) threshold. For example, mean cadmium levels should be maintained below the ERL of 1.2 mg per kg.	Unplanned oil or chemical spillages fro development phases. However, routin practice in terms of waste managemen 10.2.5) and strict navigational protocol in adverse effects on site integrity as a alone. Given the scale and nature of other por requirement to adhere to similar best p in combination effects, it is predicted th integrity in combination with other plan
	processes on which qualifying natural habitats and the habitats of qualifying species rely The populations of each of the qualifying species The distribution of qualifying species within the site	Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	
		Deposition of sediment (Smothering)	Supporting Processes: sediment movement and hydrodynamic regime	Maintain sediment transport pathways to and from the feature to ensure replenishment of habitats that rely on the sediment supply.	The Natural England Advice on Operation sensitive to increase in SSC or deposition or decommissioning. Therefor adverse effects on the integrity of the of sediment on this sub-feature.
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution	Maintain the presence and spatial distribution of estuary communities.	



on the integrity of the site as a result of

along with the application of any similar best o other plan and project identified, it is verse effects on the integrity of the site will vasive species.

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section cols will ensure that these events will not result a result from the Proposed Development

potential plans and projects and the t practice measures which could contribute to I that there will be no adverse effect on site ans and projects.

rations package lists this sub-feature as not osition of sediment at any stage of construction, efore, it is concluded that there is no potential f the site to arise as a result of the deposition

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
			of biological communities		
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its subfeatures).	
		Increased SSC	Structure: sediment TOC content	Maintain the TOC content in the sediment at existing levels.	
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	



WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	
Intertidal Mixed sediment	Maintaining or restoring: The extent and distribution of qualifying natural habitats and habitats	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vesse is reasonably practicable and will ens the integrity of the site as a result of in Development alone. Due to the lack of predicted effects, a practice measures employed for any
	of the qualifying species				concluded that no in combination adv arise on this feature as a result of inv
	The structure and function (including typical species) of qualifying natural habitats The structure and function of the habitats of the	Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminants (<1cm from the surface) to below the OSPAR Environment Assessment Criteria (EAC) or Effects Range Low (ERL) threshold. For example, mean cadmium levels should	Unplanned oil or chemical spillages fr development phases. However, routin practice in terms of waste management 10.2.5) and strict navigational protoco therefore will not result in adverse effect Development alone. Given the scale and nature of other pr requirement to adhere to similar best



nd procedures (see section 10.2.5) will be sels. This will prevent INIS introduction as far as nsure that there will be no adverse effects on f invasive species from the Proposed

, along with the application of any similar best by other plan and project identified, it is dverse effects on the integrity of the site will nvasive species.

s from vessels may occur during all utine mitigation measures of standard best ment, pollution prevention measures (Section ocols will prevent these events occurring and effects on site integrity from the Proposed

potential plans and projects and the st practice measures which could contribute to

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	qualifying species The supporting processes on which qualifying natural			be maintained below the ERL of 1.2 mg per kg.	in combination effects, it is predicted the integrity in combination with other plan
	habitats and the habitats of qualifying species rely The populations of each of the qualifying species The distribution of qualifying species within the site	Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	
		Deposition of Sediment (Smothering)	Supporting Processes: sediment movement and hydrodynamic regime	Maintain sediment transport pathways to and from the feature to ensure the replenishment of habitats that are reliant on the sediment supply.	Mitigation is proposed to restrict sedime waters (plus a buffer of 3 km); which each Marine Cable Corridor. Results of sedin 6.2 of ES) indicate that, at this distance the SAC resulting from dredge disposal Deposition from other cable installation between KP1 and KP1.6) is not predict material mobilised deposited rapidly (i.e. cable trench). Finer sediment will be dis transiently depositing throughout the tid of sediment, it is considered that depo- quickly resuspended and redistributed The mouth of Langstone harbour (the of within which mudflat features exist) is a entry/exit pits (at their closest possible it will be outwith the area where the material The highly limited magnitude and temp predicted, along with the ability of most or recover quickly (days-weeks) from li 2018) ensures that any deposition of set Development alone will not adversely a
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its subfeatures).	



that there will be no adverse effect on site ans and projects.

iment disposal activities to outwith WFD equates to disposal seaward of KP21 of the diment plume dispersion modelling (Appendix nce, there will be no sediment deposition with sal activities.

on activities (including excavation of HDD pits icted to be significant, with any coarse (i.e. within several hundred metres of the dispersed across a greater spatial extent, tidal cycle. However, due to the low volumes the water column and significant dispersion of eposition will be negligible with sediments ed under the forcing of tidal flows.

e closest Estuary feature within the SAC, s approximately 1 km from the proposed HDD le location), and therefore it is concluded that majority of sediment is deposited.

nporary nature of the deposition of sediments ost species present in such habitats to survive h light smothering events (Tillin and Ashley, sediment resulting from the Proposed y affect the integrity of the sub-feature. No

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
					discernible effects on normal sediment composition are predicted.
					Considering the indiscernible effects p Development alone, the general lack activities which may result in in combining in extent and magnitude, it is conclude site integrity from in combination depo- from the Proposed Development and
		Increased SSC	Structure: sediment TOC content	Maintain TOC content in the sediment at existing levels.	Mitigation is proposed to restrict sedin waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at
		Increased SSC	Supporting Processes: water quality - DO	Maintain DO concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	between increased SSC / sediment pl disposal of dredge material. For activities other than the deposition activities which will lead to increased HDD pit(s) (between KP1 and KP1.6) for the liberation and dispersal of fines other isolated locations). It is predicted observed locally (i.e. within 2 km of th concentrations could potentially persis
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	construction activities. Sediment plum km away from the trench or pit at whic predicted. SSC is expected to return t following completion of these activities transported up to 6-10 km in the nears will be low (< 5 mgl ⁻¹) and therefore no Natural variation ranges from approxin annual averages of between 5 – 15 m The mouth of Langstone harbour (the approximately 1 km from the proposed location). SSC variability within the har
			Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.



ent and water movement, or sediment

predicted to result from the Proposed of sensitivity, and the fact that all other bination effects are likely to be similar or lesser ded that there will be no adverse effects on bosition of sediment (smothering) resulting d other project and plans.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling t this distance, there will be no connectivity plumes and the SAC resulting from the

on of dredged material, the worst-case d SSC are considered to be excavation at the 6), and cable installation (due to the potential es identified between KP 5 and 15, and in red that peak SSCs of up to 200 mgl⁻¹ may be the cable trench or HDD pit) and these sist for several hours following completion of mes are also likely to be transported up to 5 hich point concentrations of 5 to 10 mgl⁻¹ are a to background levels within a few days es. The finest sediments will potentially be arshore area, however SSCs at these distances not discernible above natural variation.

kimately <5 to 75 mgl⁻¹ in coastal areas, with mgl⁻¹ observed within surface waters.

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible harbour is high, owing to its tidal nature and fluctuations (New Forest District Council, Langstone harbour have been measured at earby harbours have been recorded up to 100

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	mgl ⁻¹ (Portsmouth) (Humby and Dunn, 2017). According to in the Advice on Operation considered sensitive to nutrients or org
			Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	present in these littoral mixed sediment sediment loading, being in the main bu sediments with a high degree of fine se immersion by tides (Tillin and Ashley, 2 increased SSC, which will only persist normal levels are not considered to lea effect on the natural levels of turbidity, cessation of the activity, and no effects
					Considering the indiscernible effects p general lack of sensitivity to the effect, may result in in combination effects are magnitude, it is concluded that there w from in combination increases in SSC.
Intertidal Mud	 Maintaining or restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying species 	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessels introduction as far as is reasonably pra- adverse effects on the integrity of the s Due to the lack of predicted effects, all practice measures employed for any of concluded that no in combination adver result of invasive species.
	The structure and function (including typical species) of qualifying natural	Increased SSC	Structure: sediment TOC content	Maintain TOC content in the sediment at existing levels.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at t between increased SSC / sediment plu disposal of dredge material.
	habitats The structure and				For activities other than the deposition activities which will lead to increased S HDD pit(s) (between KP1 and KP1.6),



n, 1975 – cited in New Forest District Council,

tions for this SAC, this sub feature is not organic content. Furthermore, the species ents are typically highly tolerant of increased burrowing species with a preference for sediments which are mobilised readily on v, 2018). Therefore, the predicted levels of st for a short duration before returning to ead to adverse effects on site integrity. No y, DO, or nutrients are predicted following cts on TOC levels are predicted.

predicted by the Proposed Development, the ct, and the fact that all other activities which are likely to be similar or lesser in extent and will be no adverse effects on site integrity C.

d procedures (see section 10.2.5) will be els. This will prevent the introduction of INIS practicable and will ensure that there will be no e site as a result of invasive species.

along with the application of any similar best other plan and project identified, it is verse effects will arise on this feature as a

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling t this distance, there will be no connectivity plumes and the SAC resulting from the

on of dredged material, the worst-case I SSC are considered to be excavation at the), and cable installation (due to the potential

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	function of the habitats of the				for the liberation and dispersal of fines in other isolated locations).
	qualifying species The supporting processes on which qualifying natural habitats and the				It is predicted that peak SSCs of up to 2 within 2 km of the cable trench or HDD p potentially persist for several hours follo Sediment plumes are also likely to be tra or pit at which point concentrations of 5 background levels within a few days follo
	habitats of qualifying species rely The populations of				The finest sediments will potentially be t area, however SSCs at these distances discernible above natural variation.
	each of the qualifying species				Natural variation ranges from approxima annual averages of between 5 – 15 mg
	The distribution of qualifying species within the site				The mouth of Langstone harbour (which within the SAC) is approximately 1 km fr their closest possible location). SSC var its tidal nature and frequent exposure to District Council, 2017). Suspended sedin measured at 200 mgl ⁻¹ , while measured recorded up to 100 mgl ⁻¹ (Portsmouth) (Forest District Council, 2017).
					The qualifying features present within the levels of increased SSC, which will only concluded that there will be no adverse SSC from the Proposed Development a Indiscernible effects on the natural level predicted following cessation of the activ
					Considering the indiscernible effects res alone, the general lack of sensitivity to the activities which may result from in comb lesser in extent and magnitude, it is com- on site integrity from in combination incr



s identified between KP 5 and 15, and in

200 mgl⁻¹ may be observed locally (i.e.
D pit) and these concentrations could
Illowing completion of construction activities.
transported up to 5 km away from the trench
5 to 10 mgl⁻¹ are predicted. SSC will return to
following completion of these activities.

e transported up to 6-10 km in the nearshore es will be low (< 5 mgl⁻¹) and therefore not

mately <5 to 75 mgl⁻¹ in coastal areas, with ngl⁻¹ observed within surface waters.

ich contains the closest intertidal mud feature in from the proposed HDD entry/exit pits (at variability within the harbour is high, owing to to storm induced fluctuations (New Forest ediments within Langstone harbour have been ed SSC in nearby harbours have been a) (Humby and Dunn, 1975 – cited in New

the SAC, are highly tolerant of the predicted hly persist for a short duration. Therefore, it is se effects on site integrity from increased t alone on intertidal mud features. vels of turbidity, DO, TOC, or nutrients are ctivity.

resulting from the Proposed Development o the impact, and the fact that all other mbination effects are likely to be similar or oncluded that there will be no adverse effects increases in SSC.

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminants (<1cm from the surface) to below the OSPAR Environment Assessment Criteria (EAC) or Effects Range Low (ERL) threshold. For example, mean cadmium levels should be maintained below the ERL of 1.2 mg per kg.	Unplanned oil or chemical spillages fro development phases. However, routine practice in terms of waste managemen 10.2.5) and strict navigational protocol in adverse effects on site integrity as a Given the scale and nature of other por requirement to adhere to similar best p in combination effects, it is predicted the integrity in combination with other plan
		Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	
		Deposition of sediment (Smothering)	t sediment movement	Maintain sediment transport pathways to and from the feature to ensure replenishment of habitats that rely on the sediment supply.	Mitigation is proposed to restrict sedin waters (plus a buffer of 3 km); which e Marine Cable Corridor. Results of sed 6.2 of ES) indicate that, at this distance the SAC resulting from dredge dispose Deposition from other cable installation
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	between KP1 and KP1.6) is not predic material mobilised deposited rapidly (in cable trench). Finer sediment will be d transiently depositing throughout the ti
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	of sediment likely to be liberated into the fine sediment, it is considered that dep quickly resuspended and redistributed



rom vessels may occur during all ne mitigation measures of standard best ent, pollution prevention measures (Section ols will ensure that these events do notresult a result from the Proposed Development.

botential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

ment disposal activities to outwith WFD equates to disposal seaward of KP21 of the diment plume dispersion modelling (Appendix ce, there will be no sediment deposition with sal activities.

on activities (including excavation of HDD pits icted to be significant, with any coarse (i.e. within several hundred metres of the dispersed across a greater spatial extent, tidal cycle. However, due to the low volumes the water column and significant dispersion of eposition will be negligible with sediments ed under the forcing of tidal flows.

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its subfeatures).	The mouth of Langstone harbour (the or within which mudflat features exist) is a entry/exit pits (at their closest possible it will be outwith the area where the ma The highly limited magnitude and temp predicted, along with the ability of most or recover quickly (days-weeks) light su that any deposition of sediment resultin will not adversely affect the integrity of normal sediment and water movement Considering the indiscernible effects pr Development alone, the general lack of activities which may result in in combin in extent and magnitude, it is concluded integrity from in combination deposition project and plans.
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically \geq 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	Mitigation is proposed to restrict sedime waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at the between increased SSC / sediment plue disposal of dredge material. For activities other than the deposition activities which will lead to increased S HDD pit(s) (between KP1 and KP1.6), for the liberation and dispersal of fines
	Increased SSC Supporting Processes: water quality - nutrients Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms)	other isolated locations). It is predicted observed locally (i.e. within 2 km of the concentrations could potentially persist construction activities. Sediment plume km away from the trench or pit at which predicted. SSC is expected to return to following completion of these activities. transported up to 6-10 km in the nears will be low (< 5 mgl ⁻¹) and therefore not			



e closest Estuary feature within the SAC, approximately 1 km from the proposed HDD e location), and therefore it is considered that najority of sediment is deposited.

porary nature of the deposition of sediments st species present in such habitats to survive smothering events (Ashley, 2016) ensures ting from the Proposed Development alone of the sub-feature. No material effects on nt, or sediment composition are predicted.

predicted to result from the Proposed of sensitivity, and the fact that all other ination effects are likely to be similar or lesser ed that there will be no adverse effect on site on of sediment (smothering), with other

ment disposal activities to outwith WFD s of sediment plume dispersion modelling this distance, there will be no connectivity lumes and the SAC resulting from the

n of dredged material, the worst-case SSC are considered to be excavation at the a, and cable installation (due to the potential s identified between KP 5 and 15, and in ed that peak SSCs of up to 200 mgl⁻¹ may be ne cable trench or HDD pit) and these st for several hours following completion of nes are also likely to be transported up to 5 ch point concentrations of 5 to 10 mgl⁻¹ are to background levels within a few days s. The finest sediments will potentially be shore area, however SSCs at these distances ot discernible above natural variation.

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Increased SSC	Distribution: presence and spatial distribution of biological communities Structure: species	do not affect the integrity of the site and features. Maintain the presence and spatial distribution of estuary communities. Restore the Species	Natural variation ranges from approxim annual averages of between 5 – 15 mg The mouth of Langstone harbour (the approximately 1 km from the proposed location). SSC variability within the har frequent exposure to storm induced flu 2017). Suspended sediments within La 200 mgl ⁻¹ , while measured SSC in nea mgl ⁻¹ (Portsmouth) (Humby and Dunn, 2017).
		composition of composition of component component component communities.	component	According to in the Advice on Operation considered sensitive to nutrients or orgon present in these littoral mixed sediment sediment loading, being in the main but	
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the	sediment loading, being in the main be sediments with a high degree of fine s immersion by tides (Ashley, 2016). Th SSC, which will only persist for a shor are not considered to lead to adverse natural levels of turbidity, DO, or nutrie activity.
	habitat.	habitat.	Considering the indiscernibleimpacts p Development, the general lack of sense activities which may result in in combin lesser in extent and magnitude, it is co on site integrity from in combination in		
Intertidal sand and muddy sand	Maintaining or restoring: The extent and	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessels far as is reasonably practicable and wi on the integrity of the site as a result o
	distribution of qualifying natural habitats and habitats of the qualifying				Due to the lack of predicted effects, all practice measures employed for any o concluded that in combination impacts integrity.



timately <5 to 75 mgl⁻¹ in coastal areas, with mgl⁻¹ observed within surface waters.

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible arbour is high, owing to its tidal nature and fluctuations (New Forest District Council, Langstone harbour have been measured at earby harbours have been recorded up to 100 n, 1975 – cited in New Forest District Council,

tions for this SAC this sub feature is not organic content. Furthermore, the species ents are typically highly tolerant of increased burrowing species with a preference for sediments which are mobilised readily on Therefore, the predicted levels of increased ort duration before returning to normal levels e effects on site integrity. No effect on the rients are predicted following cessation of the

s predicted to result from the Proposed insitivity to the effect, and the fact that all other bination effects are predicted to be similar or concluded that there will be no adverse effects increases in SSC.

d procedures (see section 10.2.5) will be els. This will prevent the introduction of INIS as will ensure that there will be no adverse effects of invasive species.

along with the application of any similar best other plan and project identified, it is its will not result in an adverse effect on site

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	species The structure and function (including typical species) of qualifying natural habitats The structure and function of the habitats of the qualifying species	Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminants (<1cm from the surface) to below the OSPAR Environment Assessment Criteria (EAC) or Effects Range Low (ERL) threshold. For example, mean cadmium levels should be maintained below the ERL of 1.2 mg per kg.	Unplanned oil or chemical spillages fro development phases. However, routine practice in terms of waste managemen 10.2.5) and strict navigational protocols therefore will not result in adverse effect Proposed Development alone. Given the scale and nature of other por requirement to adhere to similar best p in combination effects, it is predicted the integrity in combination with other plan
	The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely. The populations of each of the qualifying species. The distribution of qualifying species within the site	Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	
		Deposition of sediment	Supporting Processes: sediment movement and hydrodynamic regime	Maintain sediment transport pathways to and from the feature to ensure the replenishment of habitats that rely on the sediment supply.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km); which each Marine Cable Corridor. Results of sedin 6.2 of ES) indicate that, at this distance the SAC resulting from dredge disposal Deposition from other cable installation between KP1 and KP1.6) is not predict material mobilised deposited rapidly (i. cable trench). Finer sediment will be di transiently depositing throughout the til of sediment likely to be liberated into the fine sediment, it is considered that dep quickly resuspended and redistributed The mouth of Langstone harbour (the of within which mudflat features exist) is a
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	



from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section cols will prevent these events occurring and fects on site integrity as a result of the

ootential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

iment disposal activities to outwith WFD equates to disposal seaward of KP21 of the diment plume dispersion modelling (Appendix ace, there will be no sediment deposition with sal activities.

on activities (including excavation of HDD pits licted to be significant, with any coarse (i.e. within several hundred metres of the dispersed across a greater spatial extent, tidal cycle. However, due to the low volumes the water column and significant dispersion of eposition will be negligible with sediments ed under the forcing of tidal flows.

e closest Estuary feature within the SAC, s approximately 1 km from the proposed HDD

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its subfeatures).	entry/exit pits (at their closest possible it will be outwith the area where the ma The highly limited magnitude and temp predicted, along with the ability of mos or recover quickly from light smotherin ensures that any deposition of sedime alone will not adversely affect the integ normal sediment pathways are predict structure or composition are predicted. Considering indiscernible effects predi Development, the general lack of sens which may result in in combination effect and magnitude, it is concluded that the from in combination deposition of sedime
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically \geq 5.7 mg L-1 (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at t between increased SSC / sediment plu disposal of dredge material. For activities other than the deposition activities which will lead to increased S HDD pit(s) (between KP1 and KP1.6), for the liberation and dispersal of fines
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	other isolated locations). It is predicted that peak SSCs of up to within 2 km of the cable trench or HDD potentially persist for several hours foll Sediment plumes are also likely to be or pit at which point concentrations of to return to background levels within a activities.



le location), and therefore it is considered that majority of sediment is deposited.

nporary nature of the deposition of sediments ost species present in such habitats to survive ing events (Tyler-Walters and Marshall, 2006) nent resulting from the Proposed Development egrity of the sub-feature. No effects on the cted, and no materialchanges to sediment ed.

dicted to result from the Proposed nsitivity, and the fact that all other activities ffects are likely to be similar or lesser in extent here will be no adverse effects on site integrity diment (smothering).

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling t this distance, there will be no connectivity plumes and the SAC resulting from the

on of dredged material, the worst-case I SSC are considered to be excavation at the), and cable installation (due to the potential es identified between KP 5 and 15, and in

to 200 mgl⁻¹ may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl⁻¹ are predicted. SSC is expected a few days following completion of these

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation. Natural variation ranges from approxim
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	annual averages of between 5 – 15 m The mouth of Langstone harbour (the approximately 1 km from the proposed location). SSC variability within the ha frequent exposure to storm induced flu
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	2017). Suspended sediments within La 200 mgl ⁻¹ , while measured SSC in nea mgl ⁻¹ (Portsmouth) (Humby and Dunn, 2017). According to in the Advice on Operation considered sensitive to nutrients. Furth mixed sediments are typically highly to
		Increased SSC	Structure: sediment TOC content	Maintain TOC content in the sediment at existing levels.	in the main burrowing species with a p of fine sediments which are mobilised and Marshall, 2006). Therefore, the pr from the Proposed Development alone before returning to normal levels are n site integrity. No effect on the natural l cessation of the activity, and discernib sediments or inorganic nitrogen levels
					Considering the indiscernible effects p Development alone, the general lack of other activities which may result in in o lesser in extent and magnitude, it is co effects on site integrity from in combin
Intertidal seagrass beds	Maintaining or restoring: The extent and	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessels is reasonably practicable and will ensu integrity of the site as a result of invas



be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl⁻¹) and therefore not

timately <5 to 75 mgl⁻¹ in coastal areas, with mgl⁻¹ observed within surface waters.

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible arbour is high, owing to its tidal nature and fluctuations (New Forest District Council, Langstone harbour have been measured at earby harbours have been recorded up to 100 n, 1975 – cited in New Forest District Council,

tions for this SAC ,this sub feature is not rthermore, the species present in these littoral tolerant of increased sediment loading, being preference for sediments with a high degree d readily on immersion by tides (Tyler-walters predicted levels of increased SSC resulting ne, which will only persist for a short duration not considered to lead to adverse effects on I level of turbidity is predicted following ible changes to the organic content of the Is are predicted.

predicted as a result of the Proposed of sensitivity to the effect, and the fact that all combination effects are likely to be similar or concluded that there is no potential for adverse ination increases in SSC.

d procedures (see section 10.2.5) will be els. This will prevent INIS introduction as far as sure that there will be no adverse effect on the sive species.

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	distribution of qualifying natural habitats and habitats of the qualifying				Due to the lack of predicted effects, all practice measures employed for any o considered that no in combination adve arise on this feature as a result of inva
	species The structure and function (including typical species) of qualifying natural habitats The structure and function of the habitats of the qualifying species	Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminants (<1cm from the surface) to below the OSPAR Environment Assessment Criteria (EAC) or Effects Range Low (ERL) threshold. For example, mean cadmium levels should be maintained below the ERL of 1.2 mg per kg.	Unplanned oil or chemical spillages from development phases. However, routine practice in terms of waste management 10.2.5) and strict navigational protocol in adverse effects on site integrity. Given the scale and nature of other por requirement to adhere to similar best p in combination effects, it is predicted the integrity in combination with other plan
	The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely The populations of	Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	
	each of the qualifying species The distribution of qualifying species within the site	Deposition of sediment	Supporting Processes: sedimentation rate	Maintain the natural rate of sediment deposition.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km); which e
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	Marine Cable Corridor. Results of sedi 6.2 of ES) indicate that, at this distance the SAC resulting from dredge dispose
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	Deposition from other cable installation between KP1 and KP1.6) is not predic material mobilised deposited rapidly (i. cable trench). Finer sediment will be di



along with the application of any similar best other plan and project identified, it is dverse effects on the integrity of the site will vasive species.

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section cols will ensure that these events will not result

potential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

iment disposal activities to outwith WFD equates to disposal seaward of KP21 of the ediment plume dispersion modelling (Appendix nce, there will be no sediment deposition with sal activities.

ion activities (including excavation of HDD pits licted to be significant, with any coarse (i.e. within several hundred metres of the dispersed across a greater spatial extent,

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate	transiently depositing throughout the till of sediment likely to be liberated into the fine sediment, it is considered that dep quickly resuspended and redistributed
				across the feature (and each of its subfeatures).	The mouth of Langstone harbour (the containing this sub-feature) is approxinentry/exit pits (at their closest possible it will be outwith the area where the magnetic structure) and the structure of the magnetic structure of the magnetic structure of the structu
					Therefore, any deposition of sediment alone will be 'light', temporary in nature the sub-feature, which due to its prese accretion will be tolerant of the very low
				Considering the very small and localise Proposed Development alone, and the in in combination effects are likely to b is concluded that there will be no adve combination effects of deposition of se	
		Increased SSC	Supporting Processes: water quality - DO	: Maintain the DO concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	
	water quality - nutrients mean winter dissolved inorganic nitrogen level at which biological indicators of eutrophication (opportunistic macroalgal and	inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic	other isolated locations). It is predicted that peak SSCs of up to within 2 km of the cable trench or HDD potentially persist for several hours foll Sediment plumes are also likely to be to or pit at which point concentrations of s to return to background levels within a activities.		



tidal cycle. However, due to the low volumes the water column and significant dispersion of position will be indiscernible with sediments d under the forcing of tidal flows.

e closest Estuary feature within the SAC imately 1 km from the proposed HDD e location), and therefore it is considered that najority of sediment is deposited.

t resulting from the Proposed Development re and will not adversely affect the integrity of ence within an area of natural sediment ow levels of deposition predicted.

sed effects predicted to result from the ne fact that all other activities which may result be similar or lesser in extent and magnitude, it rerse effects on site integrity from in sediment (smothering).

ment disposal activities to outwith WFD s of sediment plume dispersion modelling this distance, there will be no connectivity lumes and the SAC resulting from the

n of dredged material, the worst-case SSC are considered to be excavation at the , and cable installation (due to the potential s identified between KP 5 and 15, and in

200 mgl⁻¹ may be observed locally (i.e.
D pit) and these concentrations could
llowing completion of construction activities.
transported up to 5 km away from the trench
5 to 10 mgl⁻¹ are predicted. SSC is expected
a few days following completion of these

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
				do not affect the integrity	
				do not affect the integrity of the site and features.	The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation. Natural variation ranges from approxim
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	annual averages of between 5 – 15 mg The mouth of Langstone harbour (the which this sub-feature is present) is ap entry/exit pits (at their closest possible is high, owing to its tidal nature and fre
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	fluctuations (New Forest District Coun- Langstone harbour have been measur nearby harbours have been recorded Dunn, 1975 – cited in New Forest Dist
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	Seagrass beds, although not tolerant to (due to a reduction in photosynthesis as such short term isolated events as word Proposed Development (D'Avack, et al over a kilometre from the mouth of the very high levels of SSC with received to levels, and lower than peak levels explare are also able to photosynthesise during seagrass bed function or distribution as result of the Proposed Development. In Operations for this SAC, this sub feature deoxygenation. Therefore, the predicted Proposed Development alone, which we returning to normal levels are not cons- integrity. No discernible effect on the model of the activity, and no effects.
					Considering the indiscernible effects p Development alone, the general lack of other activities which may result in in o lesser in extent and magnitude, it is co on site integrity from in combination in



be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl⁻¹) and therefore not

timately <5 to 75 mgl⁻¹ in coastal areas, with mgl⁻¹ observed within surface waters.

e closest Estuary feature within the SAC within approximately 1 km from the proposed HDD le location). SSC variability within the harbour requent exposure to storm induced ancil, 2017). Suspended sediments within ured at 200 mgl⁻¹, while measured SSC in d up to 100 mgl⁻¹ (Portsmouth) (Humby and strict Council, 2017).

to very high or long term increases in SSC and reduced oxygen levels), are tolerant to ould be experienced as a result of the al., 2019a). Seagrass beds are also located he harbour and as such will not be affected by l levels likely well within normal background perienced in this environment. Littoral beds ing periods of exposure. No changes to littoral are therefore considered likely to arise as a In addition, according to in the Advice on ture is not considered sensitive to cted levels of increased SSC resulting from the will only persist for a short duration before nsidered to lead to adverse effects on site natural level of turbidity is predicted following cts in inorganic nitrogen levels are predicted.

predicted as a result of the Proposed of sensitivity to the effect, and the fact that all combination effects are likely to be similar or concluded that there will be no adverse effects increases in SSC.

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
of the qualifying speciesThe structure and function (including typical species) of qualifying natural habitatsThe structure and function of the 	restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying	Invasive Species	Structure and function: vegetation - undesirable species	The frequency / cover of the following undesirable species are maintained at acceptable levels and are not encouraged by changes in surface condition, soils, nutrient levels or changes to hydrology: Spartina anglica.	Application of best practice plans and p followed by all contractors and vessels is reasonably practicable and will ensu the integrity of the site as a result of inte Development alone. Due to the lack of predicted effects, alo practice measures employed for any of concluded that no in combination adve arise on this feature as a result of invas
	function (including typical species) of qualifying natural habitats The structure and function of the habitats of the	Increased SSC	Supporting Processes: water quality	Where the feature is dependent on estuarine water, ensure water quality and quantity is restored to a standard that provides the necessary conditions to support the feature.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2) indicate that, at this dist increased SSC and the SAC. For activities other than the deposition activities which will lead to increased S HDD pits, and cable installation (due to of fines identified between KP 5 and 15 It is predicted that peak SSCs of up to
	The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely The populations of each of the qualifying species	Increased SSC	Distribution of the feature, including associated transitional habitats, within the site	Maintain the range of the habitat and natural transitions within saltmarsh types and to other habitats seaward and landward.	 within 2 km of the cable trench or HDD potentially persist for several hours foll Sediment plumes are also likely to be a or pit at which point concentrations of a to return to background levels within a activities. The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation. Natural variation ranges from approximannual averages of between 5 – 15 mg. The mouth of Langstone harbour (the approximately 1 km from the proposed)
		Increased SSC	Extent of the feature within the site	Restore the total extent of saltmarsh features to at least 1,095 hectares.	
		Increased SSC	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability for colonisation each year of the annual species that comprise the habitat.	



d procedures (see section 10.2.5) will be els. This will prevent INIS introduction as far as sure that there will be no adverse effects on nvasive species from the Proposed

along with the application of any similar best other plan and project identified, it is verse effects on the integrity of the site will vasive species.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling listance, there will be no connectivity between

on of dredged material, the worst-case I SSC are considered to be excavation at the to the potential for the liberation and dispersal 15, and in other isolated locations).

to 200 mgl-1 may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl-1 are predicted. SSC is expected a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl-1) and therefore not

imately <5 to 75 mgl-1 in coastal areas, with ngl-1 observed within surface waters.

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	qualifying species within the site	Increased SSC	Structure and function (including its typical species): key structural, influential and distinctive species	Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature: Aster tripolium, Puccinellia maritima, Salicornia species, Sueada maritima and Atriplex portulacoides. SM27 also includes Sagina	location). SSC variability within the had frequent exposure to storm induced flu 2017). Suspended sediments within La 200 mgl-1, while measured SSC in ne mgl-1 (Portsmouth) (Humby and Dunn 2017). Areas of estuarine habitat that could s from the closest marine activity (excav affected by high levels of SSC with red levels. Saltmarsh plants are tolerant of a degre turbidity. It is recognised that turbidity
		Increased SSC	Structure and function: sediment size and availability	Maintain the availability and size range of those sediments typical of the feature at the site.	however salt marsh vegetation is immable to photosynthesize. Therefore, sliftrom the Proposed Development will resolve and other annuals colonising SAC. No effects on normal sediment a composition are predicted, and no effects on site integrity from increased. Considering the indiscernible effects provelopment, the general lack of sension other activities which may result in in a lesser in extent and magnitude, it is considering throw in combination in Mitigation is proposed to restrict sediment as (Appendix 6.2) indicate that, at this dissediment deposition with the SAC.
		Increased SSC	Supporting Processes: functional connectivity with wider coastal sedimentary system	Maintain adequate inputs of sediment in the water column from the sediment sources (offshore / eroding cliffs, etc).	
		Deposition of sediment	Supporting Processes: sedimentary Processes	Maintain the sedimentary processes (suspended sediment, sediment transfer, etc) that sustain the elevation and topography of the marsh surface.	
		Deposition of sediment	Supporting Processes: tidal Processes	Maintain the degree of tidal immersion and emersion and tidal flows	rapidly (i.e. within several hundred me be dispersed across a greater spatial tidal cycle. However, due to the volum water column and significant dispersio



arbour is high, owing to its tidal nature and fluctuations (New Forest District Council, Langstone harbour have been measured at hearby harbours have been recorded up to 100 nn, 1975 – cited in New Forest District Council,

support this feature are located over 2 km avation of HDD pits), and as such will not be eceived levels being within normal background

gree of increased SSC, and the resulting ty reduces the light attenuation through water, mersed for the majority of the tidal cycle and slight increases in SSC as predicted to arise not affect the growth or distribution of ing mud and sand within the Solent Maritime and water movement, or sediment fects on habitat connectivity or their ability to is concluded that there will be no adverse ed SSC on this feature.

predicted as a result of the Proposed nsitivity to the impact, and the fact that all combination effects are likely to be similar or concluded that there will be no adverse effects increases in SSC.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling listance, there will be no connectivity for

on activities (including excavation of HDD pits) any coarse material mobilised deposited netres of the cable trench). Finer sediment will I extent, transiently depositing throughout the mes of sediment likely to be liberated into the ion of fine sediment, deposition will be

	Conservation Objective	Effect	Attribute	Target	Assessment
				that supports the function of the habitat type.	negligible with sediments quickly resu of tidal flows. The mouth of Langstone harbour (the
		Deposition of Sediment (Smothering)	Distribution of the feature, including associated transitional habitats, within the site	Maintain the range of the habitat and natural transitions within saltmarsh types and to other habitats seaward and landward.	approximately 1 km from the proposed location), and the closest area of estua over 2 km from the HDD pits. Therefor majority of sediment is deposited. The light, and likely within the natural varia area. Saltmarsh plants, particularly pic
		Deposition of Sediment (Smothering)	Extent of the feature within the site	Restore the total extent of saltmarsh features to at least 1,095 hectares.	environments and may not be adverse month (Tyler-Walters, 2001). Therefor predicted to be deposited, and the fac through normal tidal conditions, it is co
		Deposition of Sediment (Smothering)	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability for colonisation each year of the annual species that comprise the habitat.	of the Proposed Development will no Considering the indiscernible effects Development, and the fact that all oth combination effects are predicted to
		Deposition of Sediment (Smothering)	Structure and function (including its typical species): key structural, influential and distinctive species	Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature: Aster tripolium, Puccinellia maritima, Salicornia species, Sueada maritima and Atriplex portulacoides. SM27 also includes Sagina	is concluded that there will be no adve combination effects of deposition of se
		Deposition of Sediment (Smothering)	Structure and function: sediment size and availability	Maintain the availability and size range of those sediments typical of the feature at the site.	



uspended and redistributed under the forcing

the closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible tuarine habitat that could support this feature is fore, it will be outwith the area where the herefore, any deposition of sediment will be triation of the sediment regime present in the bioneer species, are adapted to accreting sely affected by smothering events for up to a ore, due to the negligible levels of sediment act that any material will be redistributed concluded that sediment deposition as a result of adversely affect the integrity of the feature.

predicted as a result of the Proposed her activities which may result in in be similar or lesser in extent and magnitude, it verse effects on site integrity from in sediment (smothering).

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Sedimentfunction(Smothering)with wide	Supporting Processes: functional connectivity with wider coastal sedimentary system	Maintain adequate inputs of sediment in the water column from the sediment sources (offshore / eroding cliffs, etc).	
		Pollution	Supporting Processes: water quality	Where the feature is dependent on estuarine water, ensure water quality and quantity is restored to a standard that provides the necessary conditions to support the feature.	Unplanned oil or chemical spillages from development phases. However, routing practice in terms of waste management 10.2.5) and strict navigational protocol therefore will not result in adverse effect Proposed Development alone. Given the scale and nature of other por requirement to adhere to similar best point in combination effects, it is predicted the integrity from in combination effects with
habitats and hab of the qualifying species The structure and function (includin typical species) of qualifying natura habitats	restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying species	Invasive Species	Structure and function: vegetation - undesirable species	The frequency / cover of the following undesirable species are maintained at acceptable levels and are not encouraged by changes in surface condition, soils, nutrient levels or changes to hydrology: Spartina anglica.	Application of best practice plans and followed by all contractors and vessels is reasonably practicable and will ensu- integrity of the site as a result of invasi Due to the lack of predicted effects, all practice measures employed for any of concluded that no in combination adve- arise on this feature as a result of invasi
	function (including typical species) of qualifying natural habitats The structure and	Increased SSC	Supporting Processes: water quality	Where the feature is dependent on estuarine water, ensure water quality and quantity is restored to a standard that provides the necessary conditions to support the feature.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2) indicate that, at this dis increased SSC /sediment plumes with For activities other than the deposition activities which will lead to increased S



from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section cols will prevent these events occurring and ffects on site integrity as a result of the

potential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site with other plans and projects.

d procedures (see section 10.2.5) will be els. This will prevent INIS introduction as far as sure that there will be no adverse effect on the asive species.

along with the application of any similar best other plan and project identified, it is verse effects on the integrity of the site will vasive species.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling listance, there will be no connectivity for thin the SAC.

on of dredged material, the worst-case I SSC are considered to be excavation at the

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	habitats of the qualifying species The supporting processes on which	Increased SSC	Distribution of the feature, including associated transitional habitats, within the site	Restore the range of the habitat including natural transitions with other saltmarsh types.	HDD pits, and cable installation (due to of fines identified between KP 5 and 18 It is predicted that peak SSCs of up to within 2 km of the cable trench or HDD potentially persist for several hours foll
	qualifying natural habitats and the habitats of qualifying	Increased SSC	Extent of the feature within the site	Restore the total extent of saltmarsh features to at least 1,095 hectares.	Sediment plumes are also likely to be to or pit at which point concentrations of to to return to background levels within a
	The populations of each of the qualifying species	Increased SSC	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability to achieve seasonal fluctuations in the extent of habitat and the suitability of surrounding areas for colonisation.	activities. The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation. Natural variation ranges from approxim
The distribution of qualifying species within the site		Increased SSC	Structure and function (including its typical species): key structural, influential and distinctive species	Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature: <i>Spartina</i> <i>maritima</i> , <i>S. alterniflora</i> , <i>S. townsendii</i> , <i>Arthrocnemum perenne</i> , <i>Puccinellia maritima</i> , Salicornia species, <i>Sueada maritima</i>	annual averages of between 5 – 15 mg The mouth of Langstone harbour (the of approximately 1 km from the proposed location). SSC variability within the har frequent exposure to storm induced flu 2017). Suspended sediments within La 200 mgl-1, while measured SSC in nea mgl-1 (Portsmouth) (Humby and Dunn 2017). Areas of estuarine habitat that could su from the closest marine activity (excave affected by high levels of SSC with rec
		Increased SSC	Structure and function: sediment size and availability	Maintain the availability and size range of those sediments typical of the feature at the site.	levels. Saltmarsh plants are tolerant of a de turbidity. It is recognised that turbid however salt marsh vegetation is im able to photosynthesize. Therefore, from the Proposed Development alc distribution of Spartina swards within natural levels of turbidity are predict effects on water quality or availabilit feature to transition or fluctuate in e



to the potential for the liberation and dispersal 15, and in other isolated locations).

to 200 mgl-1 may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl-1 are predicted. SSC is expected a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl-1) and therefore not

imately <5 to 75 mgl-1 in coastal areas, with ngl-1 observed within surface waters.

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible arbour is high, owing to its tidal nature and fluctuations (New Forest District Council, Langstone harbour have been measured at earby harbours have been recorded up to 100 nn, 1975 – cited in New Forest District Council,

support this feature are located over 2 km avation of HDD pits), and as such will not be acceived levels likely within normal background

gree of increased SSC, and the resulting ty reduces the light attenuation through water, mersed for the majority of the tidal cycle and slight increases in SSC as predicted to arise ne will not adversely affect the growth or the Solent Maritime SAC. No effect on the ed following cessation of the activity, and no v, sediment composition, or the ability of this ttent are predicted. Therefore, it is concluded

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
					that there will be no adverse effects on feature.
					Considering the indiscernible effects per Development alone, the general lack of all other activities which may result in it or lesser in extent and magnitude, it is effects on site integrity from in combination
		Deposition of sediment	Supporting Processes: sedimentary Processes	Maintain the sedimentary processes (suspended sediment, sediment transfer, etc)	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2) indicate that, at this dist sediment deposition with the SAC.
			that sustain the elevation and topography of the marsh surface.	Therefore, any deposition of sediment variation of the sediment regime present to accreting environments and will not	
		Deposition of sediment	Supporting Processes: tidal Processes	Maintain the degree of tidal immersion and emersion that supports the function of the habitat type.	for up to a month (Tyler-Walters, 2001) Deposition from other cable installation is not predicted to be significant with an rapidly (i.e. within several hundred met be dispersed across a greater spatial e
		Deposition of Sediment (Smothering)	Distribution of the feature, including associated transitional habitats, within the site	Restore the range of the habitat including natural transitions with other saltmarsh types.	tidal cycle. However, due to the volume water column and significant dispersion deposition will be indiscernible with sec redistributed under the forcing of tidal f
		Deposition of Sediment (Smothering)	Structure and function: sediment size and availability	Maintain the availability and size range of those sediments typical of the feature at the site.	The mouth of Langstone harbour (the capproximately 1 km from the proposed location), and the closest area of estual swards is over 2 km from the HDD pits
		Deposition of Sediment (Smothering)	Extent of the feature within the site	Restore the total extent of saltmarsh features to at least 1,095 hectares.	outwith the area where the majority of s effects on the integrity of the site will an from deposition of sediment on <i>Spartin</i> Considering the very small and localise
		Deposition of Sediment (Smothering)	Future extent of habitat within the site and ability to respond to seasonal changes	Maintain the ability to achieve seasonal fluctuations in the extent of habitat and the	Proposed Development alone, and the in in combination effects are likely to be is concluded that there will be no adver



on site integrity from increased SSC on this

predicted as a result of the Proposed of sensitivity to the impact, and the fact that in combination effects are likely to be similar s concluded that there will be no adverse nation increases in SSC.

ment disposal activities to outwith WFD s of sediment plume dispersion modelling istance, there will be no connectivity for

at will be light, and likely within the natural sent in the area. Saltmarsh plants are adapted at be adversely affected by smothering events 1).

on activities (including excavation of HDD pits) any coarse material mobilised deposited etres of the cable trench). Finer sediment will extent, transiently depositing throughout the nes of sediment likely to be liberated into the on of fine sediment, it is considered that ediments quickly resuspended and I flows.

e closest Estuary feature within the SAC) is ed HDD entry/exit pits (at their closest possible parine habitat that could support Spartina ts. Therefore, it is concluded that it will be f sediment is deposited and no adverse arise from the Proposed Development alone tina swards.

sed effects predicted as a result of the he fact that all other activities which may result be similar or lesser in extent and magnitude, it rerse effects on site integrity from in

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Deposition of Sediment (Smothering)	Structure and function (including its typical species): key structural, influential and distinctive species	suitability of surrounding areas for colonisation. Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature: Spartina maritima, S. alterniflora, S. townsendii, Arthrocnemum perenne, Puccinellia maritima, Salicornia species, Sueada maritima	combination deposition of sediment (s sediment and water movement, or sec effects on habitat connectivity, emersis predicted.
		Pollution	Supporting Processes: water quality	Where the feature is dependent on estuarine water, ensure water quality and quantity is restored to a standard that provides the necessary conditions to support the feature.	Unplanned oil or chemical spillages from development phases. However, routing practice in terms of waste manageme 10.2.5) and strict navigational protoco and therefore will not result in adverse Given the scale and nature of other per requirement to adhere to similar best in combination effects, it is predicted to integrity in combination with other plan
Subtidal course sediment	Maintaining or restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying species The structure and	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessel as is reasonably practicable and will e the integrity of the site as a result of in Due to the lack of predicted effects, all practice measures employed for any of concluded that no in combination adve arise on this feature as a result of inva
		Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminant levels to concentrations	Unplanned oil or chemical spillages fro development phases. However, routin practice in terms of waste manageme



(smothering). No discernible effects on normal ediment composition are predicted, and no sion regimes, or their ability to transition are

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section cols will ensure that these events fo not occur se effects on site integrity.

potential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

nd procedures (see section 10.2.5) will be els. This will prevent INIS introduction as far I ensure that there will be no adverse effect on invasive species.

along with the application of any similar best o other plan and project identified, it is verse effects on the integrity of the site will vasive species.

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	function (including typical species) of qualifying natural habitats			where they are not adversely impacting the infauna of the sub- feature.	10.2.5) and strict navigational protocol and therefore will not result in adverse Given the scale and nature of other po requirement to adhere to similar best p
	The structure and function of the habitats of the qualifying species The supporting processes on which qualifying natural	Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	in combination effects, it is predicted the integrity in combination with other plan
	 habitats and the habitats of qualifying species rely The populations of each of the qualifying species The distribution of qualifying species within the site 	Deposition of sediment	Supporting Processes: sediment movement and hydrodynamic regime	Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement are not significantly altered or prevented from responding to changes in environmental conditions.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at t sediment deposition with the SAC. Deposition from other cable installation is not predicted to be significant with a rapidly (i.e. within several hundred me comparable habitat types). Finer sedim spatial extent, transiently depositing th volumes of sediment likely to be libera dispersion of fine sediment, it is consid
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	sediments quickly resuspended and re
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate	



ols will ensure that these events do not occur se effects on Site integrity.

ootential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling t this distance, there will be no connectivity for

on activities (including excavation of HDD pits) any coarse material mobilised deposited netres of the cable trench and within liment will be dispersed across a greater throughout the tidal cycle. However, due to the rated into the water column and significant sidered that deposition will be negligible with redistributed under the forcing of tidal flows.

nt will be 'light' and temporary in nature. The nvironment with a relatively high natural level is not sensitive to effects at the predicted rerse effect on site integrity arising from in the Proposed Development alone on subtidal

predicted as a result of the Proposed t all other activities which may result in in imilar or lesser in extent and magnitude, it is erse effects on site integrity from effects from in (smothering).

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
				across the feature (and each of its subfeatures).	
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically \geq 5.7 mg L-1 (at 35 salinity) for 95 % of year), avoiding deterioration from existing levels.	Mitigation is proposed to restrict sedin waters (plus a buffer of 3 km). Results (Appendix 6.2) indicate that, at this dis increased SSC with the SAC. For activities other than the deposition activities which will lead to increased S HDD pits, and cable installation (due to of fines identified between KP 5 and 1
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	It is predicted that peak SSCs of up to within 2 km of the cable trench or HDE potentially persist for several hours fol Sediment plumes are also likely to be or pit at which point concentrations of to return to background levels within a activities. The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation. Natural variation ranges from approxim
		Increased SSC	Distribution: presence and spatial distribution of biological communities	bution and spatial distribution of coarse sediment habitation of estuary communities. present are naturally four mobility is common (McC	annual averages of between 5 – 15 m Coarse sediment habitats have a low present are naturally found within high mobility is common (McQuillan and Til
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	composition or distribution are predie on Operations package lists this sub stage of construction, operation or d expected to be outwith normal levels temporary and short term, returning



iment disposal activities to outwith WFD ts of sediment plume dispersion modelling listance, there will be no connectivity from

on of dredged material, the worst-case I SSC are considered to be excavation at the to the potential for the liberation and dispersal 15, and in other isolated locations).

to 200 mgl⁻¹ may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl⁻¹ are predicted. SSC is expected a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl-1) and therefore not

timately <5 to 75 mgl⁻¹ in coastal areas, with mgl⁻¹ observed within surface waters.

v sensitivity to increases in SSC as the species gh energy environments were sediment Fillin, 2006), as such no effects on species cted. Furthermore, the Natural England Advice -feature as not sensitive to nutrients at any ecommissioning. Changes DO are not and any effects to this attribute would be to background on cessation of the activity. No

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	effects on inorganic nitrogen levels are discreet events predicted which will be experienced, it is concluded that there from increased SSC on this sub featur Considering the very small and localise Proposed Development, the lack of se other activities which may result in in c lesser in extent and magnitude, it is co on site integrity from in combination inc
Subtidal mixed sediments	 Maintaining or restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying species The structure and function (including typical species) of qualifying natural habitats The structure and function of the habitats of the qualifying natural habitats The structure and function of the habitats of the qualifying species 	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and p followed by all contractors and vessels is reasonably practicable and will ensu the integrity of the site as a result of inv Due to the lack of predicted effects, all practice measures employed for any or concluded that no in combination adve on this feature as a result of invasive s
		Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the habitat.	Unplanned oil or chemical spillages from development phases. However, routing practice in terms of waste management 10.2.5) and strict navigational protocol occurand therefore will not result in accord Given the scale and nature of other post
		Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	requirement to adhere to similar best p in combination effects, it is predicted th integrity in combination with other plan



are predicted. Therefore, considering the be similar to natural variation already re will be no adverse effects on site integrity ure.

ised effects predicted as a result of the sensitivity to the impact, and the fact that all combination effects are likely to be similar or concluded that there will be no adverse effects increases in SSC.

d procedures (see section 10.2.5) will be ls. This will prevent INIS introduction as far as sure that there will be no adverse effects on nvasive species.

along with the application of any similar best other plan and project identified, it is verse effect on the integrity of the site will arise species.

rom vessels may occur during all ne mitigation measures of standard best ent, pollution prevention measures (Section ols will ensure that these events do not dverse effects on Site integrity.

potential plans and projects and the practice measures which could contribute to that there will be no adverse effect on site ans and projects.

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	 qualifying natural habitats and the habitats of qualifying species rely The populations of each of the qualifying species The distribution of qualifying species within the site 	Deposition of Sediment (Smothering)	Supporting Processes: sediment movement and hydrodynamic regime	Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement are not significantly altered or prevented from responding to changes in environmental conditions.	Mitigation is proposed to restrict sedime waters (plus a buffer of 3 km). Results of (Appendix 6.2 of ES) indicate that, at the sediment deposition with the SAC. Deposition from other cable installation is not predicted to be significant with an rapidly (i.e. within several hundred metric comparable habitat types). Finer sedimes spatial extent, transiently depositing three volumes of sediment likely to be liberated dispersion of fine sediment, it is consider
	within the site	Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	with sediments quickly resuspended an flows. Therefore, any deposition of sediment w feature is present in environments with
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	movement, and as such is not sensitive there will be no adverse effect on site in Development alone from deposition of s features. Considering the indiscernible effects pr
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its subfeatures).	Development alone, and the fact that a combination effects are likely to be sim concluded that there will be no adverse effects of deposition of sediment (smot
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically \geq 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	Mitigation is proposed to restrict sedime waters (plus a buffer of 3 km). Results of (Appendix 6.2) indicate that, at this dista- increased SSC with the SAC. For activities other than the deposition of activities which will lead to increased SS HDD pits, and cable installation (due to of fines identified between KP 5 and 15



ment disposal activities to outwith WFD s of sediment plume dispersion modelling this distance, there will be no connectivity for

on activities (including excavation of HDD pits) any coarse material mobilised deposited etres of the cable trench and within ment will be dispersed across a greater hroughout the tidal cycle. However, due to the ated into the water column and significant idered that deposition will be indiscernible and redistributed under the forcing of tidal

t will be 'light' and temporary in nature. The th a relatively high natural level of sediment ve to effects at the predicted level. Therefore integrity arising from the Proposed f sediment on subtidal course sediment

predicted as a result of the Proposed all other activities which may result in in milar or lesser in extent and magnitude, it is se effects on site integrity from in combination othering).

ment disposal activities to outwith WFD s of sediment plume dispersion modelling stance, there will be no connectivity from

n of dredged material, the worst-case SSC are considered to be excavation at the to the potential for the liberation and dispersal 15, and in other isolated locations).

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	It is predicted that peak SSCs of up to within 2 km of the cable trench or HDD potentially persist for several hours foll Sediment plumes are also likely to be or pit at which point concentrations of a to return to background levels within a activities. The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation.
	Increased SSC Distribution: presence Maintain the presence and spatial distribution of of biological communities. Communities	Natural variation ranges from approximannual averages of between $5 - 15$ mg Mixed sediment habitats have a low sepresent are naturally found within high mobility is common (Readman, 2016),			
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	composition or distribution are predicted Furthermore, the Natural England Adv feature as not sensitive to nutrients at decommissioning. Changes DO are not
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	any effects to this attribute would be tere background on cessation of the activity predicted. Therefore, considering the of similar to natural variation already expe- adverse effect on site integrity from inco- Considering the indiscernible effects p Development, the lack of sensitivity to activities which may result in in combin- in extent and magnitude, it is concluder integrity from in combination effects from
Subtidal sand	Maintaining or restoring: The extent and	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessels is reasonably practicable and will ensu- the integrity of the site as a result of in



to 200 mgl⁻¹ may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl⁻¹ are predicted. SSC is expected a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl-1) and therefore not

timately <5 to 75 mgl⁻¹ in coastal areas, with mgl⁻¹ observed within surface waters.

sensitivity to increases in SSC as the species gh energy environments where sediment b), as such no significant effects on species cted.

dvice on Operations package lists this subat any stage of construction, operation or not expected to be outwith normal levels and temporary and short term, returning to rity. No effects on inorganic nitrogen levels are e discreet events predicted which will be aperienced, it is concluded that there will be no ncreased SSC on this sub feature.

predicted as a result of the Proposed to the impact, and the fact that all other bination effects are likely to be similar or lesser ded that there will be no adverse effect on site from increases in SSC.

d procedures (see section 10.2.5) will be els. This will prevent INIS introduction as far as sure that there will be no adverse effects on invasive species.

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	distribution of qualifying natural habitats and habitats of the qualifying				Due to the lack of predicted effects, all practice measures employed for any of concluded that no in combination adve arise on this feature as a result of invas
	species The structure and function (including typical species) of qualifying natural habitats The structure and function of the habitats of the qualifying species The supporting processes on which qualifying natural	Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the sub- feature.	Unplanned oil or chemical spillages fro development phases. However, routine practice in terms of waste managemen 10.2.5) and strict navigational protocols therefore will not result in an adverse e Given the scale and nature of other por requirement to adhere to similar best p
		Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	in combination effects, it is predicted th integrity in combination with other plan
	 habitats and the habitats of qualifying species rely The populations of each of the qualifying species The distribution of qualifying species within the site 	Deposition of sediment	Supporting Processes: sediment movement and hydrodynamic regime	Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement are not significantly altered or prevented from responding to changes in environmental conditions.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at the sediment deposition with the SAC. Deposition from other cable installation is not predicted to be significant with an rapidly (i.e. within several hundred met comparable habitat types). Finer sedim spatial extent, transiently depositing the volumes of sediment likely to be liberate dispersion of fine sediment, it is considered
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	Therefore, any deposition of sediment not adversely affect the integrity of the environment with a relatively high nature



along with the application of any similar best other plan and project identified, it is verse effects on the integrity of the site will vasive species.

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section ols will prevent these events occurring and e effect on site integrity.

ootential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling t this distance, there will be no connectivity for

on activities (including excavation of HDD pits) any coarse material mobilised deposited netres of the cable trench and within liment will be dispersed across a greater throughout the tidal cycle. However, due to the rated into the water column and significant sidered that deposition will be negligible with redistributed under the forcing of tidal flows.

nt will be 'light', temporary in nature and will ne feature which, being a high energy tural level of sediment movement, is not

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	sensitive to effects at the predicted lev sediment and water movement, or sed Considering the indiscernible effects p Development, and the fact that all othe
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its subfeatures).	combination effects are likely to be sin considered that there will be no advers combination effects of deposition of se
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2) indicate that, at this dis increased SSC with the SAC. For activities other than the deposition activities which will lead to increased S HDD pits, and cable installation (due to of fines identified between KP 5 and 19
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	It is predicted that peak SSCs of up to within 2 km of the cable trench or HDD potentially persist for several hours foll Sediment plumes are also likely to be or pit at which point concentrations of a to return to background levels within a activities. The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation. Natural variation ranges from approxim
			Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.



evel. No discernible effects on normal ediment composition are predicted.

predicted as a result of the Proposed her activities which may result in in imilar or lesser in extent and magnitude, it is erse effects on site integrity from in sediment (smothering).

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling listance, there will be no connectivity from

on of dredged material, the worst-case I SSC are considered to be excavation at the to the potential for the liberation and dispersal 15, and in other isolated locations).

to 200 mgl⁻¹ may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl⁻¹ are predicted. SSC is expected a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl-1) and therefore not

timately <5 to 75 mgl⁻¹ in coastal areas, with mgl⁻¹ observed within surface waters.

nsitivity to increases in SSC as the species the energy environments were sediment

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	mobility is common (Tillin, 2016), as su distribution are predicted. Furthermore, the Natural England Adv feature as not sensitive to nutrients at
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	decommissioning. Changes DO are not any effects to this attribute would be te background on cessation of the activity predicted. Therefore, considering the of similar to natural variation already exp adverse effects on site integrity from in Considering the indiscernible effects p Development, the lack of sensitivity to activities which may result in in combin in extent and magnitude, it is concluded integrity from in combination increases
Subtidal seagrass beds	Maintaining or restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying species The structure and function (including typical species) of qualifying natural habitats The structure and function of the habitats of the qualifying species	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessels is reasonably practicable and will ensu- integrity of the site as a result of invasi Due to the lack of predicted effects, all practice measures employed for any of concluded that no in combination adve
		Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the sub- feature.	arise on this feature as a result of inva Unplanned oil or chemical spillages fro development phases. However, routing practice in terms of waste managemen 10.2.5) and strict navigational protocol therefore will not result in adverse effe Given the scale and nature of other por requirement to adhere to similar best p
		Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status (according to Annex VIII and X of the	in combination effects, it is predicted the integrity in combination with other plan



such no effects on species composition or

dvice on Operations package lists this subat any stage of construction, operation or not expected to be outwith normal levels and temporary and short term, returning to rity. No effects on inorganic nitrogen levels are e discreet events predicted which will be operienced, it is concluded that there will be no increased SSC on this sub feature.

predicted as a result of the Proposed to the impact, and the fact that all other pination effects are likely to be similar or lesser ded that there will be no adverse effect on site es in SSC.

d procedures (see section 10.2.5) will be els. This will prevent INIS introduction as far as sure that there will be no adverse effect on the sive species.

along with the application of any similar best other plan and project identified, it is verse effects on the integrity of the site will vasive species.

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section ols will prevent these events occurring and fects on Site integrity.

botential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	The supporting processes on which qualifying natural			WFD), avoiding deterioration from existing levels.	
	habitats and the habitats of qualifying species rely	Deposition of sediment	Supporting Processes: sedimentation rate	Maintain the natural rate of sediment deposition.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km); which e
	The populations of each of the qualifying species	Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	Marine Cable Corridor. Results of sedi 6.2 of ES) indicate that, at this distance the SAC resulting from dredge disposa Deposition from other cable installation
The distribution of	The distribution of qualifying species within the site	Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	between KP1 and KP1.6) is not predic material mobilised deposited rapidly (i. cable trench). Finer sediment will be d transiently depositing throughout the ti of sediment likely to be liberated into th
		Deposition of Sediment (Smothering)	Structure: substrate composition and distribution	Maintain the distribution, composition and character of substrate across the feature (and each of its subfeatures). fine sediment, it is consider quickly resuspended and the The mouth of Langstone has containing this sub-features entry/exit pits (at their closs it will be outwith the area was Therefore, any deposition alone will be 'light', temport the sub-feature, which due	fine sediment, it is considered that dep quickly resuspended and redistributed The mouth of Langstone harbour (the containing this sub-feature) is approxin entry/exit pits (at their closest possible it will be outwith the area where the ma
					Therefore, any deposition of sediment alone will be 'light', temporary in nature the sub-feature, which due to its prese accretion will be tolerant of the very low
					Considering the indiscernible effects p Development alone, and the fact that a combination effects are likely to be sim concluded that there will be no adverse effects of deposition of sediment (smo
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically \geq 5.7 mg per litre (at 35 salinity) for 95	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at t between increased SSC / sediment plu disposal of dredge material.



iment disposal activities to outwith WFD equates to disposal seaward of KP21 of the diment plume dispersion modelling (Appendix nce, there will be no sediment deposition with sal activities.

on activities (including excavation of HDD pits licted to be significant, with any coarse (i.e. within several hundred metres of the dispersed across a greater spatial extent, tidal cycle. However, due to the low volumes the water column and significant dispersion of eposition will be negligible with sediments ed under the forcing of tidal flows.

e closest Estuary feature within the SAC kimately 1 km from the proposed HDD le location), and therefore it is considered that majority of sediment is deposited.

nt resulting from the Proposed Development ure and will not adversely affect the integrity of sence within an area of natural sediment ow levels of deposition predicted.

predicted to result from the Proposed t all other activities which may result from in imilar or lesser in extent and magnitude, it is rse effects on site integrity from in combination nothering).

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling t this distance, there will be no connectivity plumes and the SAC resulting from the

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
				% of the year), avoiding deterioration from existing levels.	For activities other than the deposition activities which will lead to increased S HDD pit(s) (between KP1 and KP1.6), for the liberation and dispersal of fines other isolated locations).
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	It is predicted that peak SSCs of up to within 2 km of the cable trench or HDE potentially persist for several hours fol Sediment plumes are also likely to be or pit at which point concentrations of to return to background levels within a activities. The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation.
	Incr	Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of estuary communities.	Natural variation ranges from approximannual averages of between 5 – 15 m The mouth of Langstone harbour (the which this sub-feature is present) is ap
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	entry/exit pits (at their closest possible is high, owing to its tidal nature and fre fluctuations (New Forest District Cour Langstone harbour have been measu nearby harbours have been recorded
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	Dunn, 1975 – cited in New Forest Dist Seagrass beds, although not tolerant to (due to a reduction in photosynthesis as such short term isolated events as work Proposed Development (D'Avack, et al over a kilometre from the mouth of the affected by very high levels of SSC with background levels, and lower than pea- Littoral beds are also able to photosyn adverse changes to littoral seagrass b considered likely to arise as a result of



on of dredged material, the worst-case I SSC are considered to be excavation at the), and cable installation (due to the potential es identified between KP 5 and 15, and in

to 200 mgl⁻¹ may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl⁻¹ are predicted. SSC is expected a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl⁻¹) and therefore not

timately <5 to 75 mgl⁻¹ in coastal areas, with mgl⁻¹ observed within surface waters.

e closest Estuary feature within the SAC within approximately 1 km from the proposed HDD le location). SSC variability within the harbour frequent exposure to storm induced incil, 2017). Suspended sediments within ured at 200 mgl⁻¹, while measured SSC in d up to 100 mgl⁻¹ (Portsmouth) (Humby and strict Council, 2017).

t to very high or long term increases in SSC s and reduced oxygen levels), are tolerant to rould be experienced as a result of the al., 2019). Seagrass beds are also located he harbour and as such are unlikely to be with received levels well within normal eak levels experienced in this environment. In the sise during periods of exposure. No bed function or distribution are therefore of the Proposed Development. In addition,

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
					according to in the Advice on Operation considered sensitive to deoxygenation predicted following cessation of the ac- levels are predicted. Therefore, the pre- only persist for a short duration before considered to lead to adverse effects of Considering the indicernible effects pre- Development, the general lack of sense other activities which may result in in of lesser in extent and magnitude, it is co- on site integrity from in combination effects
Mudflats and sandflats not submerged at low tide	 Maintaining or restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying species The structure and function (including typical species) of qualifying natural habitats The structure and function of the habitats The structure and function of the habitats 	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessels is reasonably practicable and will ensu the integrity of the site as a result of in Due to the lack of predicted effects, all practice measures employed for any of concluded that no in combination adve arise on this feature as a result of inva
		Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminants (<1cm from the surface) to below the OSPAR Environment Assessment Criteria (EAC) or Effects Range Low (ERL) threshold. For example, mean cadmium levels should be maintained below the ERL of 1.2 mg per kg.	Unplanned oil or chemical spillages from development phases. However, routine practice in terms of waste management 10.2.5) and strict navigational protocol therefore will not result in adverse effect Given the scale and nature of other por requirement to adhere to similar best por in combination effects, it is predicted the integrity in combination with other plan
	The supporting processes on which qualifying natural	Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good	



ions for this SAC, this sub feature is not on. No effect on the natural level of turbidity is activity, and no effects in inorganic nitrogen predicted levels of increased SSC, which will be returning to normal levels are not on site integrity.

redicted as a result of the Proposed asitivity to the impact, and the fact that all combination effects are likely to be similar or concluded that there will be no adverse effects effects of increases in SSC.

d procedures (see section 10.2.5) will be els. This will prevent INIS introduction as far as sure that there will be no adverse effects on invasive species.

along with the application of any similar best other plan and project identified, it is verse effects on the integrity of the site will vasive species.

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section ols will prevent these events occurring and fects on Site integrity.

ootential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
	habitats and the habitats of qualifying species rely The populations of			Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	
	each of the qualifying species the distribution of qualifying species within the site	Deposition of sediment	Supporting Processes: sediment movement and hydrodynamic regime	Maintain sediment transport pathways to and from the feature to ensure replenishment of the feature, and / or replenishment of habitats that rely on the sediment supply from the feature.	Mitigation is proposed to restrict sediment waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at the sediment deposition with the SAC. Deposition from other cable installation is not predicted to be significant with a rapidly (i.e. within several hundred me comparable habitat types). Finer sediment spatial extent, transiently depositing the volumes of sediment likely to be liberal dispersion of fine sediment, it is conside sediments quickly resuspended and rest Therefore, any deposition of sediment alone will be 'light', temporary in nature the feature which is not sensitive to effect Considering the indiscernible effects p Development alone, and the fact that a combination effects are likely to be sime concluded that there will be no adverse combination effects of deposition of sediment
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of mudflat and sandflat communities according to the map.	For activities other than the deposition activities which will lead to increased S HDD pits, and cable installation (due to of fines identified between KP 5 and 1



iment disposal activities to outwith WFD ts of sediment plume dispersion modelling t this distance, there will be no connectivity for

tion activities (including excavation of HDD pits) in any coarse material mobilised deposited metres of the cable trench and within diment will be dispersed across a greater throughout the tidal cycle. However, due to the erated into the water column and significant sidered that deposition will be negligible with I redistributed under the forcing of tidal flows.

ent resulting from the Proposed Development ture and will not adversely affect the integrity of effects at this level.

s predicted as a result of the Proposed at all other activities which may result in in similar or lesser in extent and magnitude, it is erse effects on site integrity from any in sediment (smothering).

on of dredged material, the worst-case d SSC are considered to be excavation at the to the potential for the liberation and dispersal 15, and in other isolated locations).

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Increased SSC	Structure: species composition of component communities	Restore the faunal quality of this feature to Good Status (a minimum mean Infaunal Quality Index ('IQI') score of \geq 0.64), with no sustained deterioration within the status.	It is predicted that peak SSCs of up to within 2 km of the cable trench or HDD potentially persist for several hours foll Sediment plumes are also likely to be or pit at which point concentrations of s to return to background levels within a activities. The finest sediments will potentially be
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	 Anne intest sediments will potentially to area, however SSCs at these distance discernible above natural variation. Natural variation ranges from approximant and averages of between 5 – 15 m Mudflat and sandflat habitats are not in SSC. Therefore, considering the disto natural variation already experience effects on site integrity from increase no adverse effects on faunal communication.
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	effect on the natural level of turbidity o activity, and no effects on inorganic nit Considering the indiscernible effects p Development, the lack of sensitivity to activities which may result in in combin in extent and magnitude, it is conclude site integrity from in combination increase
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	



to 200 mgl-1 may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl-1 are predicted. SSC is expected a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl-1) and therefore not

timately <5 to 75 mgl-1 in coastal areas, with mgl-1 observed within surface waters.

t sensitive or have low sensitivity to increases liscreet events predicted which will be similar ced, it is considered that there will be no ed SSC on mudflat and sandflat features and nity structure or distribution. No discernible or DO is predicted following cessation of the nitrogen levels are predicted.

predicted as a result of the Proposed to the impact, and the fact that all other bination effects are likely to be similar or lesser ded that there will be no adverse effects on reases in SSC.

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
Sandbanks slightly covered by seawater all the time	Maintaining or restoring: The extent and distribution of qualifying natural habitats and habitats of the qualifying	Invasive species	Structure: non-native species and pathogens	Reduce the introduction and spread of non-native species and pathogens, and their impacts.	Application of best practice plans and followed by all contractors and vessels is reasonably practicable and will ensu- integrity of the site as a result of invasi Due to the lack of predicted effects, all practice measures employed for any of concluded that no in combination adver- result of invasive species.
	species The structure and function (including typical species) of qualifying natural habitats The structure and	Pollution	Supporting Processes: sediment contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the feature (and each of its sub- features).	Unplanned oil or chemical spillages from development phases. However, routine practice in terms of waste management 10.2.5) and strict navigational protocol therefore will not result in adverse effect Given the scale and nature of other por requirement to adhere to similar best point in combination effects, it is predicted the
	function of the habitats of the qualifying species The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely The populations of each of the qualifying species The distribution of qualifying species within the site	Pollution	Supporting Processes: water quality - contaminants	Reduce aqueous contaminants to levels equating to High / Good Status according to Annex VIII and X of the WFD, avoiding deterioration from existing levels.	integrity in combination with other plan
		Deposition of sediment	Supporting Processes: sediment movement and hydrodynamic regime	Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement are not significantly altered or prevented from responding to changes in environmental conditions.	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2 of ES) indicate that, at the sediment deposition with the SAC. Deposition from other cable installation is not predicted to be significant with an rapidly (i.e. within several hundred met comparable habitat types). Finer sedim spatial extent, transiently depositing the volumes of sediment likely to be liberar



d procedures (see section 10.2.5) will be els. This will prevent INIS introduction as far as sure that there will be no adverse effect on the asive species.

along with the application of any similar best other plan and project identified, it is verse effects will arise on this feature as a

from vessels may occur during all ine mitigation measures of standard best ent, pollution prevention measures (Section cols will prevent these events occurring and fects on Site integrity.

botential plans and projects and the t practice measures which could contribute to that there will be no adverse effect on site ans and projects.

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling t this distance, there will be no connectivity for

ion activities (including excavation of HDD pits) any coarse material mobilised deposited netres of the cable trench and within liment will be dispersed across a greater throughout the tidal cycle. However, due to the rated into the water column and significant

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Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of subtidal sandbank communities according to the map.	dispersion of fine sediment, it is consid sediments quickly resuspended and re Therefore, any deposition of sediment alone will be 'light', temporary in nature the feature which is not sensitive to eff
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	normal sediment and water movement Considering the indiscernible effects p Development alone, and the fact that a combination effects are likely to be sim
		Deposition of Sediment (Smothering)	Structure: sediment composition and distribution	Maintain the distribution of sediment composition types across the feature (and each of its sub- features) (presence / absence of areas mapped in GIS), compared to an established baseline, to ensure continued structural habitat integrity and connectivity.	concluded that there will be no adverse effects of deposition of sediment (smo
		Increased SSC	Supporting Processes: water quality - DO	Maintain the DO concentration at levels equating to High Ecological Status	Mitigation is proposed to restrict sedim waters (plus a buffer of 3 km). Results (Appendix 6.2) indicate that, at this dis increased SSC with the SAC.
			(specifically ≥ 5.7 mg per litre (at 35 salinity) for 95 % of the year), avoiding deterioration from existing levels.	For activities other than the deposition activities which will lead to increased S HDD pits, and cable installation (due to of fines identified between KP 5 and 15	
		Increased SSC	Supporting Processes: water quality - nutrients	Restore water quality to mean winter dissolved inorganic nitrogen levels at which biological indicators of	It is predicted that peak SSCs of up to within 2 km of the cable trench or HDD potentially persist for several hours foll Sediment plumes are also likely to be or pit at which point concentrations of s



sidered that deposition will be negligible with redistributed under the forcing of tidal flows.

nt resulting from the Proposed Development ure and will not adversely affect the integrity of effects at this level. No discernible effects on ent, or sediment composition are predicted.

predicted as a result of the Proposed t all other activities which may result from in imilar or lesser in extent and magnitude, it is rse effects on site integrity from in combination nothering).

iment disposal activities to outwith WFD ts of sediment plume dispersion modelling listance, there will be no connectivity from

on of dredged material, the worst-case I SSC are considered to be excavation at the to the potential for the liberation and dispersal 15, and in other isolated locations).

to 200 mgl-1 may be observed locally (i.e. DD pit) and these concentrations could ollowing completion of construction activities. e transported up to 5 km away from the trench of 5 to 10 mgl-1 are predicted. SSC is expected

Feature/Sub- features	Conservation Objective	Effect	Attribute	Target	Assessment
				eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features.	to return to background levels within a activities. The finest sediments will potentially be area, however SSCs at these distance discernible above natural variation.
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of subtidal sandbank communities according to the map.	Natural variation ranges from approxim annual averages of between 5 – 15 mg Mudflat and sandflat habitats are not s in SSC. Therefore, considering the disc
		Increased SSC	Structure: species composition of component communities	Restore the Species composition of component communities.	to natural variation already experience distribution are predicted. Furthermore package lists this sub-feature as not se construction, operation or decommission
		Increased SSC	Supporting Processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other	outwith normal levels and any effects to term, returning to background on cessa nitrogen levels are predicted. It is there effects on site integrity from increased seawater all the time.
				material) across the habitat.	Considering the indiscernible effects p Development, the lack of sensitivity to activities which may result in in combin in extent and magnitude, it is conclude site integrity from in combination increase

Conclusion: No adverse effect on site integrity can be concluded for the Solent Maritime SAC, arising from either the Proposed Development alone, or in combination with other plans or projects.



a few days following completion of these

be transported up to 6-10 km in the nearshore ces will be low (< 5 mgl-1) and therefore not

imately <5 to 75 mgl-1 in coastal areas, with ngl-1 observed within surface waters.

sensitive or have low sensitivity to increases iscreet events predicted which will be similar ed, no effects on species composition or re, the Natural England Advice on Operations sensitive to nutrients at any stage of sioning. Changes DO are not expected to be to this attribute would be temporary and short station of the activity. No effects on inorganic erefore concluded that there will be no adverse d SSC on Sandbanks slightly covered by

predicted as a result of the Proposed o the impact, and the fact that all other ination effects are likely to be similar or lesser led that there will be no adverse effects on eases in SSC.

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10.11. MARINE: SOUTH WIGHT MARITIME SAC

10.11.1. **OVERVIEW**

10.11.1.1. The South Wight Maritime SAC runs the full length of the south coast of the Isle of Wight, from the sea stacks of the Needles in the west to Bembridge Point in the east. The designated features for which LSE could not be ruled out within this SAC were: **Reefs** and **Submerged or partially submerged sea caves.**

10.11.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

- 10.11.2.1. Site-specific SACO is available for the Solent Maritime SAC⁵⁰.
- 10.11.2.2. Table 10.21 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

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https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030061&SiteName=sole nt&SiteNameDisplay=South+Wight+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAAre a=&NumMarineSeasonality=0 Accessed October 2019

Feature/Sub-feature	Effect for which LSE could not be excluded	Equivalent attribute	
Reefs	Increased SSC	Supporting processes: sedimentation rate	
Circalittoral rock Infralittoral rock Intertidal rock Subtidal stony reef	Deposition of sediment (smothering)	 Distribution: presence and spatial distribution of biological communities Structure: species composition of component communities Structure: substrate composition and distribution Supporting processes: water quality – DO Supporting processes: water quality – nutrients Supporting processes: water quality – turbidity Structure: physical structure of rocky substrate 	
	Pollution	Supporting processes: water quality – contaminants Supporting processes: sediment contaminants	
	Invasive Species	Structure: non-native species and pathogens	
Submerged or partially	Pollution	Supporting processes: sediment contaminants	
submerged sea caves	Invasive Species	Structure: non-native species and pathogens	
	Increased SSC Deposition of sediment (smothering)	Supporting processes: sedimentation rate Distribution: presence and spatial distribution of biological communit Structure: species composition of component communities Structure: substrate composition and distribution Supporting processes: water quality – DO Supporting processes: water quality – nutrients Supporting processes: water quality – turbidity	

Table 10.21 - SACO attributes screened in for assessment



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10.11.2.3. All other attribute/receptor combinations present within the Supplementary Advice on Conservation Objectives for this SAC were deemed to not be relevant to the effects screened into the AA.

10.11.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.11.3.1. For those designated features where LSE could not be excluded in Section 7, an assessment of potential adverse effects on site integrity is presented in Table 10.22 below.
- 10.11.3.2. It is concluded that there will be no adverse effect on site integrity for the South Wight Maritime SAC, either from the Proposed Development alone, or in combination with other plans or projects, following the application of mitigation.

			• • •	•	
Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
Reefs	maintaining or restoring: the extent and distribution of qualifying natural habitats and habitats of the qualifying	Invasive Species	Structure: non-native species and pathogens	Restrict the introduction and spread of non- native species and pathogens, and their impacts.	Application of best practice plans and procedures (see contractors and vessels. This will prevent INIS introduct and will ensure that there will be no adverse effects on invasive species. Due to the lack of predicted effects, along with the appli- measures employed for any other plan and project iden combination adverse effects will arise on this feature as
	of the qualifying species the structure and function (including typical species) of qualifying natural habitats the structure and function of the habitats of the	Deposition of sediment	Supporting processes: sedimentation rate	Maintain the natural rate of sediment deposition.	Mitigation is proposed to restrict sediment disposal acti buffer of 3 km); which equates to disposal seaward of k Results of sediment plume dispersion modelling (Appen distance, there no will be sediment deposition with the
		Deposition of sediment	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	activities. Deposition from other cable installation activities (includ KP1 and KP1.6) is not predicted to be significant, with a rapidly (i.e. within several hundred metres of the cable dispersed across a greater spatial extent, transiently de However, due to the volumes of sediment likely to be lin significant dispersion of fine sediment, it is considered
qualifying species the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely the populations of each of the qualifying species	Deposition of sediment	Structure: species composition of component communities	Maintain the species composition of component communities.	sediments quickly resuspended and redistributed unde The closest Reef feature within the SAC is approximate entry/exit pits (at their closest possible location), and th outwith the area where the majority of sediment is depo- sediment will be light, temporary in nature and will not a	
	Deposition of sediment	Structure: substrate composition and distribution	Maintain the surface and structural complexity, and the stability of the reef structure.	feature which is not sensitive to effects at this level. On deposition will return, and no effects on distribution and availability or structural integrity of features, are predict Considering the indiscernible effects predicted to result the fact that all other activities which may result in in co or lesser in extent and magnitude, it is concluded that the on site integrity from in combination deposition of sedim	

Table 10.22 - Assessment of potential adverse effects on site integrity for the South Wight Maritime SAC across all phases of the Proposed Development



e section 10.2.5) will be followed by all iction as far as is reasonably practicable n the integrity of the site as a result of

plication of any similar best practice entified, it is concluded that no in as a result of invasive species.

tivities to outwith WFD waters (plus a KP21 of the Marine Cable Corridor. endix 6.2 of ES) indicate that, at this e SAC resulting from dredge disposal

uding excavation of HDD pits between any coarse material mobilised deposited e trench). Finer sediment will be depositing throughout the tidal cycle. liberated into the water column and I that deposition will be negligible with er the forcing of tidal flows.

tely 3.3 km from the proposed HDD herefore it is considered that it will be posited. Therefore, any deposition of adversely affect the integrity of the n cessation of activities normal rates of nd composition of communities, or on the cted.

It from the Proposed Development, and combination effects are likely to be similar there is no potential for adverse effects iment (smothering).

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
	the distribution of qualifying species within the site	Pollution	Supporting processes: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from vessels may However, routine mitigation measures of standard best management, pollution prevention measures (Section will make prevent these events occurring and therefore integrity. Given the scale and nature of other potential plans and to similar best practice measures which could contribut predicted that there will be no adverse effect on site int and projects.
	Pollution	Supporting processes: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.		
		Increased SSC	Supporting processes: water quality - DO	Maintain the DO concentration [at / to] levels equating to [Good / High] Ecological Status [(specifically \ge XX mg per litre (at 35 salinity) for 95 % of the year)], avoiding deterioration from existing levels.	Mitigation is proposed to restrict sediment disposal actions buffer of 3 km). Results of sediment plume dispersion of that, at this distance, there will be no connectivity between and the SAC resulting from the disposal of dredge maters are considered to be excavation of dredged maters and contract of the second sec



y occur during all development phases. st practice in terms of waste in 10.2.5) and strict navigational protocols re will not result in adverse effects on Site

nd projects and the requirement to adhere ute to in combination effects, it is ntegrity in combination with other plans

ctivities to outwith WFD waters (plus a modelling (Appendix 6.2 of ES) indicate ween increased SSC / sediment plumes aterial.

aterial, the worst-case activities which will on at the HDD pit(s) (between KP1 and the liberation and dispersal of fines locations).

y be observed locally (i.e. within 2 km of s could potentially persist for several Sediment plumes are also likely to be

WSP/Natural Power

Feature/Sub- features		Effect	Attribute taken through to AA	Target	Assessment
		Increased SSC	Supporting processes: water quality – nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features	transported up to 5 km away from the trench or pit at 1 are predicted. SSC is expected to return to backgro completion of these activities. The finest sediments will potentially be transported u however SSCs at these distances will be low (< 5 mg natural variation. Natural variation ranges from approximately <5 to 75 averages of between 5 – 15 mgl-1 observed within s Most habitats present within reef environments are n those that are sensitive considered tolerant to such s experienced as a result of the Proposed Development Therefore, it is considered that there will be no advert SSC on reef features. On cessation of activities, norr and effects on distribution and composition of comm
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	nitrogen, are not predicted. Considering the indiscernible effects as a result of the F general lack of sensitivity to the impact, and the fact that in combination effects are likely to be similar or lesser in that there will be no adverse effects on site integrity from
		Increased SSC	Structure: species composition of component communities	Maintain the species composition of component communities.	
		Increased SSC	Supporting processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material)	



which point concentrations of 5 to 10 mglound levels within a few days following

o to 6-10 km in the nearshore area, I-1) and therefore not discernible above

mgl-1 in coastal areas, with annual urface waters.

ot sensitive to increases in SSC, with hort-term isolated events as would be at (see sub-feature assessments below). se effects on site integrity from increased hal levels of turbidity and DO will return, unities, or on the levels of inorganic

e Proposed Development alone, the hat all other activities which may result in r in extent and magnitude, it is concluded rom in combination increases in SSC.

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
				across the habitat.	
Circalittoral Rock	0	Invasive Species	Structure: non-native species and pathogens	Restrict the introduction and spread of non- native species and pathogens, and their impacts.	Application of best practice plans and procedures (see contractors and vessels. This will preventINIS introduce and will ensure that there will be no adverse effects on invasive species. Due to the lack of predicted effects, along with the app measures employed for any other plan and project ide combination adverse effects will arise on this feature a
		Deposition of sediment	Supporting processes: sedimentation rate	Maintain the natural rate of sediment deposition.	Mitigation is proposed to restrict sediment disposal buffer of 3 km); which equates to disposal seaward Results of sediment plume dispersion modelling (A distance, there no will be sediment deposition with
		Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	activities. Deposition from other cable installation activities (inclu KP1 and KP1.6) is not predicted to be significant, with rapidly (i.e. within several hundred metres of the cable dispersed across a greater spatial extent, transiently d However, due to the volumes of sediment likely to be I significant dispersion of fine sediment, it is considered
the supportin processes on qualifying nat	qualifying species the supporting processes on which qualifying natural habitats and the	Lualifying speciesDeposition of Sediment (Smothering)	Structure: species composition of component communities	Restore the Species composition of component communities.	sediments quickly resuspended and redistributed und The closest Reef feature within the SAC is approximate entry/exit pits (at their closest possible location), and outwith the area where the majority of sediment is de sediment will be light, temporary in nature and will not feature which is not sensitive to effects at this level. Of deposition will return, and no effects on distribution a availability or structural integrity of features, are pred Considering the indiscernible effects predicted to res the fact that all other activities which may result in in or lesser in extent and magnitude, it is concluded that integrity from in combination effects of deposition of s
	habitats and the habitats of qualifying species rely the populations of each of the qualifying species	Deposition of Sediment (Smothering)	Structure: physical structure of rocky substrate	Maintain the surface and structural complexity, and the stability of the reef structure.	



ee section 10.2.5) will be followed by all action as far as is reasonably practicable on the integrity of the site as a result of

oplication of any similar best practice lentified, it is concluded that no in as a result of invasive species.

ctivities to outwith WFD waters (plus a of KP21 of the Marine Cable Corridor. Dendix 6.2 of ES) indicate that, at this we SAC resulting from dredge disposal

luding excavation of HDD pits between h any coarse material mobilised deposited le trench). Finer sediment will be depositing throughout the tidal cycle. e liberated into the water column and d that deposition will be negligible with der the forcing of tidal flows.

ately 3.3 km from the proposed HDD therefore it is considered that it will be posited. Therefore, any deposition of ot adversely affect the integrity of the On cessation of activities normal rates of nd composition of communities, or on the icted.

ult from the Proposed Development, and combination effects are likely to be similar at there will be no adverse effects on site sediment (smothering).

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features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
	the distribution of qualifying species within the site	Increased SSC	Supporting processes: water quality - DO	Maintain the DO concentration [at / to] levels equating to [Good / High] Ecological Status [(specifically \ge XX mg per litre (at 35 salinity) for 95 % of the year)], avoiding deterioration from existing levels.	Mitigation is proposed to restrict sediment disposal act buffer of 3 km). Results of sediment plume dispersion is that, at this distance, there will be no connectivity betw and the SAC resulting from the disposal of dredge mat For activities other than the deposition of dredged mate lead to increased SSC are considered to be excavation KP1.6), and cable installation (due to the potential for t identified between KP 5 and 15, and in other isolated le It is predicted that peak SSCs of up to 200 mgl-1 may the cable trench or HDD pit) and these concentrations
		Increased SSC	Supporting processes: water quality – nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features	hours following completion of construction activities transported up to 5 km away from the trench or pit a 1 are predicted. SSC is expected to return to backg completion of these activities. The finest sediments will potentially be transported however SSCs at these distances will be low (< 5 m natural variation. Natural variation ranges from appr with annual averages of between 5 – 15 mgl-1 obse The closest reef feature within the SAC is approxim entry/exit pits (at their closest possible location), and outwith the area of highest SSC. Increases in SSC species and can increase scour in tide swept areas levels of sediment at the location of this subfeature within the natural background concentrations present to be well adapted to this level of effect. No changes
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	will arise Therefore, it is concluded that there will be no adverse SSC on reef features resulting from the Proposed Deve activities, normal levels of turbidity and DO will return, a nitrogen are not predicted.



ctivities to outwith WFD waters (plus a n modelling (Appendix 6.2 of ES) indicate ween increased SSC / sediment plumes aterial.

aterial, the worst-case activities which will on at the HDD pit(s) (between KP1 and r the liberation and dispersal of fines I locations).

y be observed locally (i.e. within 2 km of is could potentially persist for several Sediment plumes are also likely to be which point concentrations of 5 to 10 mglbund levels within a few days following

p to 6-10 km in the nearshore area, gl-1) and therefore not discernible above eximately <5 to 75 mgl-1 in coastal areas, ved within surface waters.

tely 3.3 km from the proposed HDD therefore it is considered that it will be an affect feeding efficiency of filter feeding Readman, 2016). The likely received re however likely to be very similar or t, and as such the communities are likely in community composition or abundances

se effects on site integrity from increased evelopment alone. On cessation of a, and effects on the levels of inorganic

WSP/Natural Power

Feature/Sub- features Conservation Objective		Effect	Attribute taken through to AA	Target	Assessment
		Increased SSC	Structure: species composition of component communities	Maintain the species composition of component communities.	Considering the indiscernible effects predicted as a re the general lack of sensitivity to the impact, and the fa result in in combination effects are likely to be similar of concluded that there will be no adverse effects on site increases in SSC.
		Increased SSC	Supporting processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	
Rockrestoring:the extent distribution qualifying habitats an of the qua speciesthe structure function (in typical spec qualifying habitatsthe structure function (in typical spec qualifying habitats	the extent and distribution of qualifying natural habitats and habitats	Invasive Species	Structure: non-native species and pathogens	Restrict the introduction and spread of non- native species and pathogens, and their impacts.	Application of best practice plans and procedures (see contractors and vessels. This will prevent INIS introduce and will ensure that there will be no adverse effects on invasive species. Due to the lack of predicted effects, along with the app measures employed for any other plan and project ide combination adverse effects will arise on this feature a
	of the qualifying species the structure and function (including	Deposition of sediment	Supporting processes: sedimentation rate	Maintain the natural rate of sediment deposition.	Mitigation is proposed to restrict sediment disposal act buffer of 3 km); which equates to disposal seaward of Results of sediment plume dispersion modelling (Appen distance, there no will be sediment deposition with the
	typical species) of qualifying natural habitats the structure and function of the habitats of the	Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	activities. Deposition from other cable installation activities (incl KP1 and KP1.6) is not predicted to be significant, with rapidly (i.e. within several hundred metres of the cabl dispersed across a greater spatial extent, transiently However, due to the volumes of sediment likely to be



result of the Proposed Development alone, fact that all other activities which may r or lesser in extent and magnitude, it is te integrity from in combination effects from

ee section 10.2.5) will be followed by all luction as far as is reasonably practicable on the integrity of the site as a result of

oplication of any similar best practice lentified, it is concluded that no in as a result of invasive species.

ctivities to outwith WFD waters (plus a of KP21 of the Marine Cable Corridor. pendix 6.2 of ES) indicate that, at this ne SAC resulting from dredge disposal

Eluding excavation of HDD pits between th any coarse material mobilised deposited le trench). Finer sediment will be depositing throughout the tidal cycle. e liberated into the water column and

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
	qualifying speciesthe supporting processes on which qualifying natural habitats and the habitats of qualifying species relythe populations of each of the qualifying 	Deposition of Sediment (Smothering)	Structure: species composition of component communities	Maintain the species composition of component communities.	significant dispersion of fine sediment, it is considered sediments quickly resuspended and redistributed under The closest Reef feature within the SAC is approximate entry/exit pits (at their closest possible location), and the outwith the area where the majority of sediment is dep
		Deposition of Sediment (Smothering)	Structure: physical structure of rocky substrate	Maintain the surface and structural complexity, and the stability of the reef structure.	sediment will be light, temporary in nature and will not feature which is not sensitive to effects at this level. Or deposition will return, and no effects on distribution and availability or structural integrity of features, are predic Considering the indiscernible effects predicted to result the fact that all other activities which may result in in co or lesser in extent and magnitude, it is concluded that integrity from in combination deposition of sediment (s combination with other project and plans.
		Pollution	Supporting processes: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from vessels may However, routine mitigation measures of standard bes management, pollution prevention measures (Section will prevent these events occurring and therefore will n integrity. Given the scale and nature of other potential plans and to similar best practice measures which could contribu predicted that there will be no adverse effect on site in and projects.
		Increased SSC	Supporting processes: water quality - DO	Maintain the DO concentration [at / to] levels equating to [Good / High] Ecological Status [(specifically \ge XX mg per litre (at 35 salinity) for 95 % of the year)],	Mitigation is proposed to restrict sediment disposal act buffer of 3 km). Results of sediment plume dispersion that, at this distance, there will be no connectivity betw and the SAC resulting from the disposal of dredge mat For activities other than the deposition of dredged mat lead to increased SSC are considered to be excavation KP1.6), and cable installation (due to the potential for t identified between KP 5 and 15, and in other isolated b



ed that deposition will be negligible with der the forcing of tidal flows.

ately 3.3 km from the proposed HDD therefore it is considered that it will be posited. Therefore, any deposition of ot adversely affect the integrity of the On cessation of activities normal rates of nd composition of communities, or on the icted.

ult from the Proposed Development, and combination effects are likely to be similar at there will be no adverse effects on site (smothering), either alone or in

y occur during all development phases. est practice in terms of waste n 10.2.5) and strict navigational protocols not result in adverse effects on Site

nd projects and the requirement to adhere oute to in combination effects, it is integrity in combination with other plans

ctivities to outwith WFD waters (plus a n modelling (Appendix 6.2 of ES) indicate ween increased SSC / sediment plumes aterial.

aterial, the worst-case activities which will ion at the HDD pit(s) (between KP1 and r the liberation and dispersal of fines d locations).

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
				avoiding deterioration from existing levels.	It is predicted that peak SSCs of up to 200 mgl-1 may be the cable trench or HDD pit) and these concentrations of hours following completion of construction activities. Set transported up to 5 km away from the trench or pit at w 1 are predicted. SSC is expected to return to background
		Increased SSC	Supporting processes: water quality – nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features	The finest sediments will potentially be transported up to however SSCs at these distances will be low (< 5 mgl-7 natural variation. Natural variation ranges from approxin with annual averages of between 5 – 15 mgl-1 observe The closest reef feature within the SAC is approximatel entry/exit pits (at their closest possible location), and the outwith the area of highest SSC. Increases in SSC can species and can increase scour in tide swept areas (Re- levels of sediment at the location of this subfeature are concentrations present, and as such the communities w As such, no changes in community composition or abut Therefore, it is concluded that there will be no adverse SSC on reef features resulting from the Proposed Deve
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	activities, within days normal levels of turbidity and of inorganic nitrogen are predicted. Considering the indiscernible effects predicted as a the general lack of sensitivity to the impact, and the result in in combination effects are likely to be simil concluded that there will be no adverse effects on a increases in SSC.
	Increased SSC	Structure: species composition of component communities	Maintain the species composition of component communities.		
		Increased SSC	Supporting processes: water quality - turbidity	Maintain natural levels of turbidity (e.g.	



v be observed locally (i.e. within 2 km of s could potentially persist for several Sediment plumes are also likely to be which point concentrations of 5 to 10 mglund levels within a few days following

o to 6-10 km in the nearshore area, I-1) and therefore not discernible above kimately <5 to 75 mgl-1 in coastal areas, yed within surface waters.

ely 3.3 km from the proposed HDD therefore it is considered that it will be an affect feeding efficiency of filter feeding Readman, 2016). The likely received e within the natural background will bewell adapted to this level of effect. undances will arise.

e effects on site integrity from increased velopment alone. On cessation of O will return, and no effects on the levels

esult of the Proposed Development alone, act that all other activities which may or lesser in extent and magnitude, it is e integrity from in combination effects from

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
				concentrations of suspended sediment, plankton and other material) across the habitat.	
Intertidal Rockmaintaining or restoring:the extent and distribution of qualifying natural habitats and habitats	Invasive Species	Structure: non-native species and pathogens	Restrict the introduction and spread of non- native species and pathogens, and their impacts.	Application of best practice plans and procedures (see contractors and vessels. This will prevent INIS introduce and will ensure that there will be no adverse effects or invasive species. Due to the lack of predicted effects, along with the app measures employed for any other plan and project ide combination adverse effects will arise on this feature a	
	of the qualifying species the structure and function (including	Deposition of sediment	Supporting processes: sedimentation rate	Maintain the natural rate of sediment deposition.	Mitigation is proposed to restrict sediment disposal act buffer of 3 km); which equates to disposal seaward of Results of sediment plume dispersion modelling (Appe distance, there no will be sediment deposition with the
function (including typical species) of qualifying natural habitats the structure and function of the habitats of the qualifying species the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely the populations of	typical species) of qualifying natural habitats the structure and function of the habitats of the	Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	activities. Deposition from other cable installation activities (inclu KP1 and KP1.6) is not predicted to be significant, with rapidly (i.e. within several hundred metres of the cable dispersed across a greater spatial extent, transiently d However, due to the volumes of sediment likely to be l significant dispersion of fine sediment, it is considered
	the supporting processes on which qualifying natural	Deposition of Sediment (Smothering)	Structure: species composition of component communities	Maintain the species composition of component communities.	sediments quickly resuspended and redistributed under The closest intertidal rock habitat within the SAC is ap HDD entry/exit pits (at their closest possible location), be outwith the area where any sediment is deposited. Sediment deposition will therefore not adversely affect
	Deposition of Sediment (Smothering)	Structure: physical structure of rocky substrate	Maintain the surface and structural complexity, and	are considered possible. In addition, due to the fact the project alone through deposition of sediment, no in-co possible.	



ee section 10.2.5) will be followed by all luction as far as is reasonably practicable on the integrity of the site as a result of

oplication of any similar best practice lentified, it is concluded that no in as a result of invasive species.

ctivities to outwith WFD waters (plus a of KP21 of the Marine Cable Corridor. pendix 6.2 of ES) indicate that, at this ne SAC resulting from dredge disposal

Eluding excavation of HDD pits between th any coarse material mobilised deposited le trench). Finer sediment will be depositing throughout the tidal cycle. e liberated into the water column and ed that deposition will be negligible with der the forcing of tidal flows.

pproximately 10 km from the proposed , and therefore it is concluded that it will

ct the integrity of the feature as no effects hat no effects are predicted from the combination adverse effects are considered

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
	each of the qualifying species			the stability of the reef structure	
	the distribution of qualifying species within the site	Pollution	Supporting processes: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from vessels may However, routine mitigation measures of standard bes management, pollution prevention measures (Section will prevent these events occurring and therefore will n integrity. Given the scale and nature of other potential plans and to similar best practice measures which could contribu predicted that there will be no adverse effect on site in and projects.
		Increased SSC	Supporting processes: water quality - DO	Maintain the DO concentration [at / to] levels equating to [Good / High] Ecological Status [(specifically ≥ XX mg per litre (at 35 salinity) for 95 % of the year)], avoiding deterioration from existing levels.	Mitigation is proposed to restrict sediment disposal act buffer of 3 km). Results of sediment plume dispersion this distance, there will be no connectivity from increase For activities other than the deposition of dredged mat lead to increased SSC are considered to be excavation (due to the potential for the liberation and dispersal of and in other isolated locations). It is predicted that peak SSCs of up to 200 mgl-1 may the cable trench or HDD pit) and these concentrations hours following completion of construction activities. S transported up to 5 km away from the trench or pit at w
		Increased SSC	Supporting processes: water quality – nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and	 1 are predicted. SSC is expected to return to backgrou completion of these activities. The finest sediments will potentially be transported up however SSCs at these distances will be low (< 5 mgl- natural variation. The closest intertidal rock habitat within the SAC is ap HDD entry/exit pits (at their closest possible location), be outwith the area of significantly increased SSC, with within the natural background of variation present. Nat



y occur during all development phases. est practice in terms of waste n 10.2.5) and strict navigational protocols I not result in adverse effects on Site

nd projects and the requirement to adhere oute to in combination effects, it is integrity in combination with other plans

nctivities to outwith WFD waters (plus a n modelling (Appendix 6.2) indicate that, at ased SSC with the SAC.

aterial, the worst-case activities which will ion at the HDD pits, and cable installation of fines identified between KP 5 and 15,

y be observed locally (i.e. within 2 km of as could potentially persist for several Sediment plumes are also likely to be which point concentrations of 5 to 10 mglound levels within a few days following

p to 6-10 km in the nearshore area, gl-1) and therefore not discernible above

pproximately 10 km from the proposed), and therefore it is considered that it will with any received levels not discernible atural variation ranges from approximately

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
				phytoplankton blooms) do not affect the integrity of the site and features	<5 to 75 mgl-1 in coastal areas, with annual averages surface waters. Considering the received levels predic composition or distributions are predicted, and accord feature are predicted. As the received levels will be w typically experienced, there will be no effects on turbic
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	and composition of communities, or on the levels of in Considering the indiscernible effects predicted as a re lack of sensitivity to the impact, and the fact that all oth combination effects are likely to be similar or lesser in that there will be no adverse effects on site integrity fro in SSC.
		Increased SSC	Structure: species composition of component communities	Maintain the species composition of component communities.	
		Increased SSC	Supporting processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	
Subtidal stony reef	maintaining or restoring: the extent and distribution of qualifying natural habitats and habitats	Invasive Species	Structure: non-native species and pathogens	Restrict the introduction and spread of non- native species and pathogens, and their impacts.	Application of best practice plans and procedures (see contractors and vessels. This will prevent INIS introduce and will ensure that there will be no adverse effects or invasive species. Due to the lack of predicted effects, along with the app measures employed for any other plan and project ide combination adverse effects will arise on this feature a



es of between 5 – 15 mgl-1 observed within dicted, no changes to community rdingly no effects on the integrity of the within the natural background of SSC bidity or DO and no effects on distribution inorganic nitrogen.

result of the Proposed Development, the other activities which may result in in in extent and magnitude, it is concluded from in combination effects from increases

ee section 10.2.5) will be followed by all luction as far as is reasonably practicable on the integrity of the site as a result of

oplication of any similar best practice lentified, it is concluded that no in as a result of invasive species.

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
	of the qualifying species the structure and	Deposition of sediment	Supporting processes: sedimentation rate	Maintain the natural rate of sediment deposition.	Mitigation is proposed to restrict sediment disposal action buffer of 3 km); which equates to disposal seaward of k Results of sediment plume dispersion modelling (Appendistance, there no will be sediment deposition with the
	function (including typical species) of qualifying natural habitats the structure and function of the habitats of the	Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	activities. Deposition from other cable installation activities (inclue KP1 and KP1.6) is not predicted to be significant, with rapidly (i.e. within several hundred metres of the cable dispersed across a greater spatial extent, transiently de However, due to the volumes of sediment likely to be li significant dispersion of fine sediment, deposition will b
	qualifying species the supporting processes on which qualifying natural	Deposition of Sediment (Smothering)	Structure: species composition of component communities	Maintain the species composition of component communities.	resuspended and redistributed under the forcing of tida The closest Reef feature within the SAC is approximate entry/exit pits (at their closest possible location), and the outwith the area where the majority of sediment is depo- sediment will be light, temporary in nature and will not a
	habitats and the habitats of qualifying species rely the populations of each of the qualifying species	Deposition of Sediment (Smothering)	Structure: physical structure of rocky substrate	Maintain the surface and structural complexity, and the stability of the reef structure.	feature which is not sensitive to effects at this level. On deposition will return, and no effects on distribution and availability or structural integrity of features, are predict Considering the indiscernible effects predicted to result the fact that all other activities which may result in in co or lesser in extent and magnitude, it is concluded that to integrity from in combination effects from deposition of
	the distribution of qualifying species within the site	Pollution	Supporting processes: water quality - contaminants	Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	Unplanned oil or chemical spillages from vessels may However, routine mitigation measures of standard best management, pollution prevention measures (Section will prevent these events occurring and therefore will n integrity. Given the scale and nature of other potential plans and to similar best practice measures which could contribut predicted that there will be no adverse effect on site int and projects.



tivities to outwith WFD waters (plus a KP21 of the Marine Cable Corridor. endix 6.2 of ES) indicate that, at this SAC resulting from dredge disposal

uding excavation of HDD pits between any coarse material mobilised deposited e trench). Finer sediment will be depositing throughout the tidal cycle. liberated into the water column and be negligible with sediments quickly dal flows.

ately 3.3 km from the proposed HDD therefore it is considered that it will be posited. Therefore, any deposition of t adversely affect the integrity of the On cessation of activities normal rates of nd composition of communities, or on the cted.

ult from the Proposed Development, and combination effects are likely to be similar t there will be no adverse effects on site of sediment (smothering).

occur during all development phases. st practice in terms of waste 10.2.5) and strict navigational protocols not result in adverse effects on site

nd projects and the requirement to adhere ute to in combination effects, it is ntegrity in combination with other plans

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
		Increased SSC	Supporting processes: water quality - DO	Maintain the DO concentration [at / to] levels equating to [Good / High] Ecological Status [(specifically \ge XX mg per litre (at 35 salinity) for 95 % of the year)], avoiding deterioration from existing levels.	Mitigation is proposed to restrict sediment disposal actions buffer of 3 km). Results of sediment plume dispersion in that, at this distance, there will be no connectivity betwe and the SAC resulting from the disposal of dredge maters for activities other than the deposition of dredged maters and to increased SSC are considered to be excavation KP1.6), and cable installation (due to the potential for the identified between KP 5 and 15, and in other isolated to the cable trench or HDD pit) and these concentrations hours following completion of construction activities. Set
		Increased SSC	Supporting processes: water quality – nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features	transported up to 5 km away from the trench or pit at w 1 are predicted. SSC is expected to return to backgrou completion of these activities. The finest sediments will potentially be transported up however SSCs at these distances will be low (< 5 mgl- natural variation. Natural variation ranges from approxi with annual averages of between 5 – 15 mgl-1 observe The closest reef feature within the SAC is approximate entry/exit pits (at their closest possible location), and th outwith the area of highest SSC. Increases in SSC can affect feeding efficiency of filter f in tide swept areas (Readman, 2016). The likely receiv this subfeature are however within the natural backgrou the communities are well adapted to this level of effect composition or abundances are considered likely to ari
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map.	Therefore, it is considered that there will be no adverse SSC on reef features resulting from the Proposed Deve activities, normal levels of turbidity and DO will return, nitrogen are predicted. Considering the indiscernible effects predicted as a res the general lack of sensitivity to the impact, and the fac



ctivities to outwith WFD waters (plus a modelling (Appendix 6.2 of ES) indicate ween increased SSC / sediment plumes aterial.

terial, the worst-case activities which will on at the HDD pit(s) (between KP1 and the liberation and dispersal of fines locations).

be observed locally (i.e. within 2 km of s could potentially persist for several Sediment plumes are also likely to be which point concentrations of 5 to 10 mglund levels within a few days following

o to 6-10 km in the nearshore area, -1) and therefore not discernible above kimately <5 to 75 mgl-1 in coastal areas, yed within surface waters.

ely 3.3 km from the proposed HDD therefore it is considered that it will be

r feeding species and can increase scour ived levels of sediment at the location of ound concentrations present, and as such ct. As such, no changes in community rise.

se effects on site integrity from increased velopment alone. On cessation of , and no effects on the levels of inorganic

esult of the Proposed Development alone, act that all other activities which may

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
		Increased SSC	Structure: species composition of component communities	Maintain the species composition of component communities.	result in in combination effects are likely to be similar of concluded that there will be no adverse effects on site in SSC.
		Increased SSC	Supporting processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	
Submerged or partially submerged sea caves	maintaining or restoring: the extent and distribution of qualifying natural habitats and habitats	Invasive species	Structure: non-native species and pathogens	Restrict the introduction and spread of non- native species and pathogens, and their impacts.	Application of best practice plans and procedures (see contractors and vessels. This will prevent INIS introdu and will ensure that there will be no adverse effects on invasive species. Due to the lack of predicted effects, along with the app measures employed for any other plan and project idea combination adverse effects will arise on this feature a
	of the qualifying species the structure and function (including typical species) of qualifying natural habitats the structure and function of the	Pollution	Supporting processes: sediment contaminants	Restrict surface sediment contaminant levels to concentrations where they are not adversely impacting the infauna of the feature.	Unplanned oil or chemical spillages from vessels may However, routine mitigation measures of standard bes management, pollution prevention measures (Section will prevent these events occurring and therefore will n integrity. Given the scale and nature of other potential plans and to similar best practice measures which could contribut predicted that there will be no adverse effect on site integrity.
	habitats of the qualifying species	Pollution	Supporting processes: water	Restrict aqueous contaminants to levels equating to	



r or lesser in extent and magnitude, it is the integrity from in combination increases

ee section 10.2.5) will be followed by all duction as far as is reasonably practicable on the integrity of the site as a result of

oplication of any similar best practice lentified, it is concluded that no in as a result of invasive species.

ay occur during all development phases. est practice in terms of waste on 10.2.5) and strict navigational protocols I not result in adverse effects on Site

nd projects and the requirement to adhere oute to in combination effects, it is integrity in combination with other plans

WSP/Natural Power

Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
	the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely the populations of each of the qualifying		quality - contaminants	High Status according to Annex VIII and Good Status according to Annex X of the WFD, avoiding deterioration from existing levels.	
	species the distribution of qualifying species	Deposition of Sediment (Smothering)	Supporting processes: sedimentation rate	Maintain the natural rate of sediment deposition.	Mitigation is proposed to restrict sediment disposal act buffer of 3 km); which equates to disposal seaward of I Results of sediment plume dispersion modelling (Appe distance, there no will be sediment deposition with the
	within the site	Deposition of Sediment (Smothering)	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of sea cave communities according to the map.	activities. Deposition from other cable installation activities (inclue KP1 and KP1.6) is not predicted to be significant, with rapidly (i.e. within several hundred metres of the cable dispersed across a greater spatial extent, transiently de However, due to the volumes of sediment likely to be li
		Deposition of Sediment (Smothering)	Structure: species composition of component communities	Maintain the species composition of component communities.	significant dispersion of fine sediment, it is considered sediments quickly resuspended and redistributed unde The closest Submerged or partially submerged sea car
		Deposition of Sediment (Smothering)	Structure: physical structure of rocky substrate	Maintain the surface and structural complexity, and the stability of the rocky structure within the cave.	approximately 10 km from the proposed HDD entry/exi and therefore it is considered that it will be outwith the Sediment deposition will therefore not adversely affect are considered possible. In addition, due to the fact tha project alone through deposition of sediment, no in-con possible.



ctivities to outwith WFD waters (plus a of KP21 of the Marine Cable Corridor. pendix 6.2 of ES) indicate that, at this ne SAC resulting from dredge disposal

Eluding excavation of HDD pits between th any coarse material mobilised deposited le trench). Finer sediment will be depositing throughout the tidal cycle. e liberated into the water column and ed that deposition will be negligible with der the forcing of tidal flows.

caves feature within the SAC is exit pits (at their closest possible location), he area where any sediment is deposited.

ct the integrity of the feature as no effects that no effects are predicted from the combination adverse effects are considered

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Feature/Sub- features	Conservation Objective	Effect	Attribute taken through to AA	Target	Assessment
		Increased SSC	Supporting processes: water quality - DO	Maintain the DO concentration [at / to] levels equating to [Good / High] Ecological Status [(specifically \ge XX mg per litre (at 35 salinity) for 95 % of the year)], avoiding deterioration from existing levels.	Mitigation is proposed to restrict sediment disposal active buffer of 3 km). Results of sediment plume dispersion of this distance, there will be no connectivity from increased For activities other than the deposition of dredged mater lead to increased SSC are considered to be excavation (due to the potential for the liberation and dispersal of f and in other isolated locations). It is predicted that peak SSCs of up to 200 mgl-1 may be the cable trench or HDD pit) and these concentrations of hours following completion of construction activities. Set transported up to 5 km away from the trench or pit at w
		Increased SSC	Supporting processes: water quality – nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels.	 1 are predicted. SSC is expected to return to background completion of these activities. The finest sediments will potentially be transported up to however SSCs at these distances will be low (< 5 mgl-in natural variation. The closest Submerged or partially submerged sea cave approximately 10 km from the proposed HDD entry/exit and therefore it is considered that it will be outwith the any received levels not discernible within the natural background variation ranges from approximately <5 to 75 mgl-1 in the between 5 – 15 mgl-1 observed within surface waters. cave habitats are not sensitive or have low sensitivity to received levels predicted, no effects on the integrity of the received levels are predicted to be within the natural background is an one offects on turbidity or DO are predicted, and no effect communities, or on the levels of inorganic nitrogen, are considering the indiscernible effects predicted as a rest.
		Increased SSC	Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of intertidal rock communities according to the map	Considering the indiscernible effects predicted as a resolack of sensitivity to the impact, and the fact that all oth combination effects are likely to be similar or lesser in each that there will be no adverse effects on site integrity from in SSC.



ctivities to outwith WFD waters (plus a n modelling (Appendix 6.2) indicate that, at ased SSC with the SAC.

aterial, the worst-case activities which will on at the HDD pits, and cable installation of fines identified between KP 5 and 15,

y be observed locally (i.e. within 2 km of is could potentially persist for several Sediment plumes are also likely to be which point concentrations of 5 to 10 mglbund levels within a few days following

p to 6-10 km in the nearshore area, gl-1) and therefore not discernible above

eaves feature within the SAC is exit pits (at their closest possible location), e area of significantly increased SSC, with background of variation present. Natural n coastal areas, with annual averages of s. Submerged and partially submerged v to increases in SSC, and considering the of the feature are predicted. As the background of SSC typically experienced, fects on distribution and composition of are envisaged.

esult of the Proposed Development, the other activities which may result in in an extent and magnitude, it is concluded from in combination effects from increases

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Feature/Sub- features	Conservation Objective		Attribute taken through to AA	Target	Assessmer
		Increased SSC	Structure: species composition of component communities	Maintain the species composition of component communities.	
	Increased SSC		Supporting processes: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	

Conclusion: No adverse effect on site integrity can be concluded for the South wight maritime SAC, arising from either the Proposed Development alone, or in combination with other plans or projects.



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10.12. MARINE: RIVER ITCHEN SAC

10.12.1. **OVERVIEW**

- 10.12.1.1. The River Itchen SAC covers approximately 310 hectares of classic chalk river. It stretches from Swaithing in Southampton to New Alresford. The SAC does not overlap the Marine Cable Corridor and is 27.5 km distant at its closest point.
- 10.12.1.2. The site is designated for mainly freshwater riverine habitats and species however salmon which spend a large proportion of their adult life at sea are also listed as a qualifying species.

10.12.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.12.2.1. A site-specific Conservation Objectives and Supplementary Advice document is available for the River Itchen SAC⁵¹. Table 10.23 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.23 - Conservation and Supplementary Advice attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Salmon	Increased SSC	Population: Adult run size Population: Juvenile densities Supporting habitat: Biological connectivity Supporting processes: integrity of off-site habitats
	Pollution Events	Population: Adult run size Population: Juvenile densities Supporting habitat: Biological connectivity Supporting processes: integrity of off-site habitats

- 10.12.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:
 - Population: spawning distribution;

⁵¹ <u>http://publications.naturalengland.org.uk/publication/5130124110331904</u> (Accessed: 15 October 2019)



- Supporting habitat: distribution of supporting habitat;
- Supporting habitat: Extent of supporting habitat;
- Supporting habitat: Biotope mosaic;
- Supporting habitat: flow regime;
- Supporting habitat: Riparian zone;
- Supporting habitat: sediment regime;
- Supporting habitat: soils, substrate and nutrient recycling;
- Supporting habitat: thermal regime;
- Supporting habitat: vegetation composition: invasive non-native species;
- Supporting habitat: water quality acidification;
- Supporting habitat: water quality nutrients;
- Supporting habitat: woody debris;
- Supporting processes: adaption and resilience;
- Supporting processes: air quality;
- Supporting processes: conservation measures;
- Supporting processes: control of livestock grazing activity;
- Supporting processes: fisheries exploitation;
- Supporting processes: fisheries introduction of fish species;
- Supporting processes: fisheries introduction of salmon;
- Supporting processes: screening of intakes and discharges;
- Supporting processes: vegetation structure: cover of submerged macrophytes; and
- Supporting processes: water quantity/quality.

10.12.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.12.3.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.24 below.
- 10.12.3.2. It is concluded that there will be no adverse effects on site integrity for the River Itchen SAC, either from the Proposed Development alone, or in combination with other plans or projects.

Table 10.24 - Assessment of potential adverse effects on site integrity for the River Itchen SAC across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Salmon	The populations of qualifying species	Increased SSC	Population: Adult run size	Restore the population to that expected under un-impacted conditions, allowing for natural fluctuations. This should include a seasonal pattern of migration characteristic of the river and maintenance of the multi-sea winter component. Ensure that the stock exceeds its Conservation Limit in 4 out of 5 years The Conservation Limit indicates the minimum desirable adult spawning stock levels (expressed as annual number of eggs deposited) below which stocks should not be allowed to fall. Conservation limit for the River Itchen is considered to be 1.63 million eggs per year.	The potential impact of increased SSC relatives result of the cable installation and associated activities, route clearance and rock placeminearshore areas. The worst case for increased SSC in the officient considered to arise through deposit of dreated sandwave clearance, prior to cable installated SSC of 1000 mgl ⁻¹ could arise within 1 km from sediment is expected to fall out of suspensions significant reductions of SSC within hours of km from release, the passive plume which generate SSC in the region of approximate of the prevailing flow out to a distance of c. background levels (<1 – 6 mg/l) within the form the considered to be excavation at the HDD pite
			Population: Juvenile densities	Restore juvenile densities at those expected under unimpacted conditions throughout the site, taking into account natural habitat conditions and allowing for natural fluctuations	potential for the liberation and dispersal of t and in other isolated locations). The marine approx. 1 km off the coast of Eastney (KP using a backhoe dredger or Mass Flow Exc excavated is up to 2,700 m ³ . The finest sec
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	The movement of characteristic biota should not be artificially constrained.	up to 10 km in the nearshore area, however (<5 mg/l) and therefore not discernible abore peak SSCs of up to 200 mg/l may be observed cable trench/HDD pit) and these concentration of appendix
			Supporting processes: integrity of off- site habitats	Habitats beyond the site boundary upon which characteristic biological communities of the site depend should be maintained in a state that does not impair the full expression of the characteristic biota within the site.	several hours following completion of const are also likely to be transported up to 5 km point concentrations of 5 to 10 mg/l are pre background levels within a few days following SSCs can elicit a short and long-term response the quantity, quality and duration of the exp suspended sediment on migratory fish is or (Robertson <i>et al.</i> , 2007). This, in part, is due to move away from the impact. Given that s



elates to the sediment released as a ated works such as dredge and disposal ment for both the offshore and

offshore area (seaward of KP21) is edge material which may be required for lation. During dredge disposal, peak in from the release point but coarser insion quickly (almost immediately) with is of disposal at each location. Beyond 1 h is transported beyond this is likely to tely 20 mgl⁻¹, transported in the direction c. 25km. SSC is predicted to reduce to e timeframe of a few days following

nearshore area (landward of KP 21) is pits, and cable installation (due to the of fines identified between KP 5 and 15, ne HDD exit/entry Landfall location is P 1 - KP 1.6) and will be excavated excavator ('MFE'). The total volume to be ediments will potentially be transported ver SSCs at these distances will be low pove natural variation, It is predicted that served locally (i.e. within 2 km of the rations could potentially persist for instruction activities. Sediment plumes m away from the trench/pit at which redicted; SSC is expected to return to wing completion of these activities.

sponse from aquatic biota depending on xposure. The greatest impact of on incubating eggs and larval stages due to their lack of mobility and inability at salmon spawn in freshwater there is no

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					route to impact on salmon eggs or larvae. A responses and are able to swim through or e.g. areas of increased SSC. They are also and variable background levels of suspend also true for smolts as they develop in a riv exposed to increases in suspended sedime off. Therefore, it is concluded that there will be from increased SSC on this feature from th Considering the very small and localised ef Proposed Development, the general lack of that all other activities which may result in it similar or lesser in extent and magnitude, it effects on site integrity from in combination
	The populations of qualifying species	Pollution effects	Population: Adult run size	Restore the population to that expected under un-impacted conditions, allowing for natural fluctuations. This should include a seasonal pattern of migration characteristic of the river and maintenance of the multi-sea winter component. Ensure that the stock exceeds its Conservation Limit in 4 out of 5 years The Conservation Limit indicates the minimum desirable adult spawning stock levels (expressed as annual number of eggs deposited) below which stocks should not be allowed to fall. Conservation limit for the River Itchen is considered to be 1.63 million eggs per year.	Unplanned oil or chemical spillages from ver development phases. Spills have the potent and smolts during their spawning or seawar pollution and preference for surface waters. However, routine mitigation measures of sta management, pollution prevention measures navigational protocols will prevent these ever result in adverse effects on site integrity. Given the scale and nature of other potentia requirement to adhere to similar best practi- in combination effects, it is predicted that the integrity in combination with other plans and
			Population: Juvenile densities	Restore juvenile densities at those expected under unimpacted conditions throughout the site, taking into account natural habitat conditions and allowing for natural fluctuations	



Adult salmon exhibit strong swimming or navigate around an impacted area so inherently tolerant of naturally high ided sediment (Heard, 2007). This is iverine environment and are frequently nent due to flood events and land run

e no adverse effects on site integrity he Proposed Development alone.

effects predicted as a result of the of sensitivity to the impact, and the fact in combination effects are likely to be it is concluded that will be no adverse on effects from increases in SSC.

vessels may occur during all ential to directly affect both adult salmon vard migrations given their sensitivity to rs.

standard best practice in terms of waste ares (Section 10.2.5) and strict events occurring and therefore will not

tial plans and projects and the ctice measures which could contribute to there will be no adverse effect on site nd projects.

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Feature	Conservation Objectives	Effect	Attribute	Target
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	The movement of characteristic biota should not be artificially constrained.
			Supporting processes: integrity of off- site habitats	Habitats beyond the site boundary upon which characteristic biological communities of the site depend should be maintained in a state that does not impair the full expression of the characteristic biota within the site.

Conclusion: No adverse effect on site integrity can be concluded for the River Itchen SAC, arising from either the Proposed Development alone, or in combination with other plans or projects.



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10.13. MARINE: RIVER AVON SAC

10.13.1. **OVERVIEW**

- 10.13.1.1. The River Avon SAC covers approximately 498 hectares and comprises the river and its tributaries. It includes sections running through chalk, greenand and clay (English Nature, 2005a). The SAC does not overlap the Marine Cable Corridor and is 51.4 km distant at its closest point.
- 10.13.1.2. The site is designated for mainly freshwater riverine habitats and species however salmon and sea lamprey which spend a large proportion of their adult life at sea are also listed as a qualifying species.

10.13.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.13.2.1. A site-specific Conservation Objectives and Supplementary Advice document is available for the River Avon SAC⁵² Table 10.25 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Feature Impact for which LSE Equivalent attribute could not be excluded Salmon Increased SSC Population: Adult run size Population: Juvenile densities Supporting habitat: Biological connectivity Supporting processes: integrity of off-site habitats **Pollution Events** Population: Adult run size **Population:** Juvenile densities Supporting habitat: Biological connectivity Supporting processes: integrity of off-site habitats Sea lamprey Increased SSC Population: population abundance

Table 10.25 - Conservation and Supplementary Advice attributes screened in for assessment

⁵² <u>http://publications.naturalengland.org.uk/publication/6048472272732160</u> (Accessed 16 October 2019)



Feature	Impact for which LSE could not be excluded	Equivalent attribute
		Population: Juvenile densities
		Supporting habitat: Biological connectivity
		Supporting processes: integrity of off-site habitats
	Pollution Events	Population: population abundance
		Population: Juvenile densities
		Supporting habitat: Biological connectivity
		Supporting processes: integrity of off-site habitats

10.13.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:

- Population: spawning distribution;
- Supporting habitat: distribution of supporting habitat;
- Supporting habitat: extent of supporting habitat;
- Supporting habitat: biotope mosaic;
- Supporting habitat: flow regime;
- Supporting habitat: riparian zone;
- Supporting habitat: sediment regime;
- Supporting habitat: thermal regime;
- Supporting habitat: vegetation composition: invasive non-native species;
- Supporting habitat: water quality acidification;
- Supporting habitat: water quality organic pollution
- Supporting habitat: water quality nutrients;
- Supporting habitat: woody debris;
- Supporting habitat: Introduction of fish species;



- Supporting processes: adaption and resilience;
- Supporting processes: air quality;
- Supporting processes: conservation measures;
- Supporting processes: control of livestock grazing activity;
- Supporting processes: fisheries exploitation;
- Supporting processes: fisheries introduction of salmon and/or other fish species;
- Supporting processes: screening of intakes and discharges; and
- Supporting processes: vegetation structure: cover of submerged macrophytes.

10.13.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.13.3.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.26 below.
- 10.13.3.2. It is concluded that there will be no adverse effects on site integrity for the River Avon SAC, either from the Proposed Development alone, or in combination with other plans or projects.

Table 10.26 - Assessment of potential adverse effects on site integrity for the River Avon SAC across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Sea lamprey	The populations of qualifying species	Increased SSC	Population: Population abundance	Maintain the abundance of the lamprey and bullhead populations at a level which is close to that expected under un-impacted conditions throughout the site (subject to natural habitat conditions and allowing for natural fluctuations), whilst avoiding deterioration from its current level as indicated by the latest count or equivalent.	The potential impact of increased as a result of the cable installation and disposal activities, route clears offshore and nearshore areas. The worst case for increased SSC is considered to arise through dep required for sandwave clearance, disposal, peak SSC of 1000 mgl ⁻¹ point but coarser sediment expects (almost immediately) with significat disposal at each location. Beyond which is transported beyond this is
			Population: Juvenile densities	Restore juvenile densities at those expected under unimpacted conditions throughout the site, taking into account natural habitat conditions and allowing for natural fluctuations.	approximately 20 mgl ⁻¹ , transported out to a distance of c. 25km. SSC is levels (<1 – 6 mg/l) within the time completion of disposal activities. The worst case for increased SSC 21) is considered to be excavation (due to the potential for the liberation
	The structure and function of the habitats of qualifying species		Structure and Function: Biological connectivity	Restore the free movement of the typical species of the SAC feature through the site.	between KP 5 and 15, and in other exit/entry Landfall location is appro – KP 1.6) and will be excavated us Excavator ('MFE'). The total volum
			Structure and function: Supporting off-site habitat	Maintain habitats beyond the site boundary upon which characteristic biological communities of the SAC may depend	The finest sediments will potentially nearshore area, however SSCs at and therefore not discernible above peak SSCs of up to 200 mg/l may the cable trench/HDD pit) and thes persist for several hours following of Sediment plumes are also likely to the trench/pit at which point concer SSC is expected to return to back following completion of these active



I SSC relates to the sediment released n and associated works such as dredge rance and rock placement for both the

C in the offshore area (seaward of KP21) posit of dredge material which may be prior to cable installation. During dredge could arise within 1 km from the release eted to fall out of suspension quickly ant reductions of SSC within hours of 1 km from release, the passive plume is likely to generate SSC in the region of ed in the direction of the prevailing flow c is predicted to reduce to background eframe of a few days following

C in the nearshore area (landward of KP n at the HDD pits, and cable installation tion and dispersal of fines identified er isolated locations). The marine HDD rox. 1 km off the coast of Eastney (KP 1 ising a backhoe dredger or Mass Flow me to be excavated is up to 2,700 m³. Illy be transported up to 10 km in the at these distances will be low (<5 mg/l) ve natural variation, It is predicted that / be observed locally (i.e. within 2 km of ese concentrations could potentially completion of construction activities. o be transported up to 5 km away from entrations of 5 to 10 mg/l are predicted; ground levels within a few days vities.

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					Lamprey are considered to be less than salmonids (Grabarkiewicz and available literature of the effects of limited sea lamprey are known to m (both as adults and transformers) w and the Humber which both natural (FARL, 1995; Marshall and Elliot, 1
					Therefore, it is concluded that there integrity from increased SSC on this Development alone.
					Considering the indiscernible effect development, the general lack of set that all other activities which may re- to be similar or lesser in extent and will be no adverse effects on site in- increases in SSC.
	The populations of qualifying species	Pollution events	Population: Population abundance	Maintain the abundance of the lamprey and bullhead populations at a level which is close to that expected under un-impacted conditions throughout the site (subject to natural habitat conditions and allowing for natural fluctuations), whilst avoiding deterioration from its current level as indicated by the latest count or equivalent.	Unplanned oil or chemical spillages development phases. Spills have the sea lamprey and transformers during migrations given their sensitivity to However, routine mitigation measure of waste management, pollution pre- and strict navigational protocols will therefore will not result in adverse efficiency Given the scale and nature of other requirement to adhere to similar be- contribute to in combination effects
			Population: Juvenile densities	Restore juvenile densities at those expected under unimpacted conditions throughout the site, taking into account natural habitat conditions and allowing for natural fluctuations.	adverse effect on site integrity in co projects.



ss sensitive to suspended sediments nd Davis 2008). Although publicly of suspended sediment on lamprey is migrate through rivers and estuaries with very high SSC such as the Severn rally contain up to several thousand mg/l 1998).

ere will be no adverse effects on site his feature from the Proposed

ects predicted as a result of the Proposed sensitivity to the impact, and the fact result in in combination effects are likely and magnitude, it is concluded that there integrity from in combination effects from

es from vessels may occur during all the potential to directly affect both adult ring their spawning or seaward to pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) will prevent these events occurring and e effects on site integrity.

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	The structure and function of the habitats of qualifying species		Structure and Function: Biological connectivity	Restore the free movement of the typical species of the SAC feature through the site.	
			Structure and function: Supporting off-site habitat	Maintain habitats beyond the site boundary upon which characteristic biological communities of the SAC may depend	
Salmon	The populations of qualifying species		Population: Adult run size	Restore the population to that expected under un-impacted conditions, allowing for natural fluctuations. This	The potential impact of increased S as a result of the cable installation and disposal activities, route cleara offshore and nearshore areas.
				natural fluctuations. This should include a seasonal pattern of migration characteristic of the river and maintenance of the multi- seawinter component. As a minimum, the Conservation Limit for the river system should be complied with.	The worst case for increased SSC is considered to arise through dep required for sandwave clearance, disposal, peak SSC of 1000 mgl ⁻¹ point but coarser sediment expect (almost immediately) with significat disposal at each location. Beyond which is transported beyond this is approximately 20 mgl ⁻¹ , transporte
				As a minimum, the Conservation Limit for the river system should be complied with.	out to a distance of c. 25km. SSC i levels (<1 $-$ 6 mg/l) within the time completion of disposal activities. The worst case for increased SSC
			Population: Juvenile densities	Restore juvenile densities at those expected under unimpacted conditions throughout the site, taking into account natural habitat conditions and allowing for natural fluctuations	21) is considered to be excavation (due to the potential for the liberation between KP 5 and 15, and in other exit/entry Landfall location is appro- – KP 1.6) and will be excavated us Excavator ('MFE'). The total volum The finest sediments will potentially



d SSC relates to the sediment released on and associated works such as dredge arance and rock placement for both the

C in the offshore area (seaward of KP21) eposit of dredge material which may be e, prior to cable installation. During dredge ¹ could arise within 1 km from the release cted to fall out of suspension quickly cant reductions of SSC within hours of d 1 km from release, the passive plume is likely to generate SSC in the region of ted in the direction of the prevailing flow C is predicted to reduce to background heframe of a few days following

SC in the nearshore area (landward of KP on at the HDD pits, and cable installation ation and dispersal of fines identified her isolated locations). The marine HDD brox. 1 km off the coast of Eastney (KP 1 using a backhoe dredger or Mass Flow ume to be excavated is up to 2,700 m³. ally be transported up to 10 km in the

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	Restore the free movement of the typical species of the SAC feature through the site.	nearshore area, however SSCs at t and therefore not discernible above peak SSCs of up to 200 mg/l may b the cable trench/HDD pit) and these
			Structure and function: Supporting off-site habitat	Maintain habitats beyond the site boundary upon which characteristic biological communities of the SAC may	persist for several hours following c Sediment plumes are also likely to the trench/pit at which point concern SSC is expected to return to backgu following completion of these activit
		depend		SSCs can elicit a short- and long-ter depending on the quantity, quality a greatest impact of suspended sedin eggs and larval stages (Robertson their lack of mobility and inability to this increased sensitivity it was four and trout juveniles survived for 3-4 1995). Given that salmon spawn in on salmon eggs or larvae. Adult sal swimming responses and are able to impacted area e.g. areas of increase tolerant of naturally high and variable sediment (Heard, 2007). This is also riverine environment and are frequents suspended sediment due to flood e	
					Therefore, it is concluded that there integrity from increased SSC on this Development alone.
					Considering the indicernible effects Developments, the general lack of s that all other activities which may re to be similar or lesser in extent and are no adverse effects on site integ SSC.



t these distances will be low (<5 mg/l) ve natural variation, It is predicted that v be observed locally (i.e. within 2 km of ese concentrations could potentially completion of construction activities. o be transported up to 5 km away from entrations of 5 to 10 mg/l are predicted; ground levels within a few days vities.

term response from aquatic biota y and duration of the exposure. The diment on migratory fish is on incubating n *et al.*, 2007). This, in part, is due to to move away from the impact. Despite und that Pacific salmon (*Oncorhynchus*) 4 weeks in SSC of 300-750 mg/l (FARL, in freshwater there is no route to impact salmon on the other hand exhibit strong e to swim through or navigate around an ased SSC. They are also inherently able background levels of suspended ilso true for smolts as they develop in a uently exposed to increases in events and land run off.

ere will be no adverse effects on site his feature from the Proposed

is predicted as a result of the Proposed of sensitivity to the impact, and the fact result in in combination effects are likely and magnitude, it is concluded that there egrity from in combination increases in

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	The populations of qualifying species	Pollution effects	Population: Adult run size	Restore the population to that expected under un-impacted conditions, allowing for natural fluctuations. This should include a seasonal pattern of migration characteristic of the river and maintenance of the multi- seawinter component. As a minimum, the Conservation Limit for the river system should be complied with. As a minimum, the Conservation Limit for the river system should be complied with.	Unplanned oil or chemical spillages development phases. Spills have the salmon and smolts during their space their sensitivity to pollution and prefection However, routine mitigation measure of waste management, pollution pre- and strict navigational protocols will therefore will not result in adverse effection Given the scale and nature of other requirement to adhere to similar best contribute to in combination effects, adverse effect on site integrity in co- projects.
			Population: Juvenile densities	Restore juvenile densities at those expected under unimpacted conditions throughout the site, taking into account natural habitat conditions and allowing for natural fluctuations	
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	Restore the free movement of the typical species of the SAC feature through the site.	
			Structure and function: Supporting off-site habitat	Maintain habitats beyond the site boundary upon which characteristic biological communities of the SAC may depend	



es from vessels may occur during all the potential to directly affect both adult pawning or seaward migrations given reference for surface waters.

ures of standard best practice in terms prevention measures (Section 10.2.5) vill prevent these events occurring and e effects on site integrity.

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Conclusion: N projects.	No adverse effect on site	integrity can be concl	uded for the River Av	on SAC, arising from either th	e Proposed Development alone, or



or in combination with other plans or

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10.14. MARINE: RIVER AXE SAC

10.14.1. **OVERVIEW**

- 10.14.1.1. The River Axe SAC covers approximately 25 hectares of river catchment. It has mixed geology of sandstones and limestones which gives rise to calcareous waters (English Nature, 2005b). The SAC does not overlap the Marine Cable Corridor and is 168 km distant at its closest point.
- 10.14.1.2. The site is designated for mainly freshwater riverine habitats and species however sea lamprey which spend a large proportion of their adult life at sea are also listed as a qualifying species.

10.14.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.14.2.1. A site-specific Conservation Objectives and Supplementary Advice document is available for the River Axe SAC⁵³. Table 10.27 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.27 - Conservation and Supplementary Advice attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Sea lamprey	Pollution Events	Population: population abundance
		Population: Juvenile densities
		Supporting habitat: Biological connectivity
		Supporting habitat: integrity of off-site habitats

- 10.14.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:
 - Supporting habitat: distribution of supporting habitat;
 - Supporting habitat: Extent of supporting habitat;
 - Supporting habitat: Biotope mosaic;
 - Supporting habitat: flow regime;

⁵³ <u>http://publications.naturalengland.org.uk/publication/5156988124135424</u> (Accessed: 16 October 2019)



- Supporting habitat: riparian zone;
- Supporting habitat: sediment regime;
- Supporting habitat: soils, substrate and nutrient cycling;
- Supporting habitat: vegetation composition: invasive non-native species;
- Supporting habitat: water quality acidification;
- Supporting habitat: water quality nutrients;
- Supporting habitat: woody debris;
- Supporting processes: adaption and resilience;
- Supporting processes: conservation measures;
- Supporting processes: control of livestock grazing activity;
- Supporting processes: fisheries exploitation;
- Supporting processes: fisheries introduction of fish species;
- Supporting processes: screening of intakes and discharges;
- Supporting processes: vegetation structure: cover of submerged macrophytes; and
- Supporting processes: water quantity/quality.

10.14.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.14.3.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.28 below.
- 10.14.3.2. It is concluded that there will be no adverse effects on site integrity for the River Axe SAC, either from the Proposed Development alone, or in combination with other plans or projects.

Table 10.28 - Assessment of potential adverse effects on site integrity for the River Axe SAC across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Sea lamprey The populations of qualifying species Pollution events Population: Population abundance Image: Population abundance Population abundance Population: Population abundance Image: Population abundance Population: Population abundance Population: Population abundance	The populations of qualifying species	Population population abundance close to the unimpacter throughou natural ha allowing for fluctuation deteriorati level as in mean pear equivalent Should ref		Restore the abundance of the population to a level which is close to that expected under unimpacted conditions throughout the site (subject to natural habitat conditions and allowing for natural fluctuations), whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. Petromyzon sp. Should reflect distribution under near-natural conditions.	Unplanned oil or chemical spillage development phases. Spills have to sea lamprey and transformers duri migrations given their sensitivity to However, routine mitigation measu of waste management, pollution pri and strict navigational protocols wi therefore will not result in adverse Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
	Restore juvenile densities at those expected under unimpacted conditions throughout the site, taking into account natural habitat conditions and allowing for natural fluctuations.				
	function of the habitats function: Biological characteris	The movement of characteristic biota should not be artificially constrained.			
			Structure and function: Supporting off-site habitat	Habitats beyond the site boundary upon which characteristic biological communities of the site depend should be Restored in a state that does not impair the full expression of the characteristic biota within the site.	



es from vessels may occur during all the potential to directly affect both adult tring their spawning or seaward to pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) will prevent these events occurring and e effects on Site integrity.

her potential plans and projects and the best practice measures which could ets, it is predicted that there will be no combination with other plans and

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Conclusion projects.	n: No adverse effect on site	integrity can be concl	luded for the River Ax	e SAC, arising from either the	Proposed Development alone, or in



r in combination with other plans or

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10.15. MARINE: PLYMOUTH SOUND AND ESTUARIES SAC

10.15.1. **OVERVIEW**

- 10.15.1.1. Plymouth Sound and Estuaries SAC is located on the south coast of the UK and covers approximately 6386 hectares of marine and coastal habitat and species. It has a range of features including estuaries, reefs and Atlantic salt meadows (JNCC, 2019). The SAC does not overlap the Marine Cable Corridor and is 225 km distant at its closest point.
- 10.15.1.2. Allis shad which spend a large proportion of their adult life at sea are also listed as a qualifying species.

10.15.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

10.15.2.1. A site-specific SACO is available for Plymouth Sound and Estuaries SAC⁵⁴. Table 10.29 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.29 - Conservation and Supplementary Advice attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Allis shad	Pollution Events	Population: recruitment and reproductive capability
		Structure and function: Biological connectivity
		Supporting habitat: food availability
		Supporting processes: water quality - contaminants

- 10.15.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:
 - Population: population size;
 - Presence and spatial distribution of the species;
 - Structure: Non-native species and pathogens;
 - 54

https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0013111&SiteName=ply mouth&SiteNameDisplay=Plymouth+Sound+and+Estuaries+SAC&countyCode=&responsiblePerson=&SeaAr ea=&IFCAArea=&NumMarineSeasonality=4 (Accessed: 16 October 2019)



- Supporting habitat: extent and distribution;
- Supporting habitat: sediment regime;
- Supporting processes: fisheries exploitation;
- Supporting processes: physico-chemical properties;
- Supporting processes: sediment movement and hydrodynamic regime;
- Supporting processes: water quality DO;
- Supporting processes: water quality nutrients; and
- Supporting processes: water quality turbidity;

10.15.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.15.3.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.30 below.
- 10.15.3.2. It is concluded that there will be no adverse effects on site integrity for the Plymouth Sound and Estuaries SAC, either from the Proposed Development alone, or in combination with other plans or projects.

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Allis shad		Restore the reproductive and recruitment capability of the species.	Unplanned oil or chemical spillages development phases. Spills have the during their spawning migration give preference for surface waters.		
func of q The func	The structure and function of the habitats of qualifying species		function: Biological connectivity	Restore connectivity of estuarine features to surrounding rivers, freshwater, marine and coastal habitats, to ensure larval dispersal and recruitment, maintain nursery grounds for mobile species, and to allow movement of migratory species.	However, routine mitigation measur of waste management, pollution pre- and strict navigational protocols will therefore will not result in adverse e Proposed Development alone. Given the scale and nature of other requirement to adhere to similar bes contribute to in combination effects, adverse effect on site integrity in co
	The structure and function of the habitats of the qualifying species		Supporting habitat: food availability	Maintain the cover/abundance of preferred food items required by the species.	projects.
	The supporting		Supporting	Reduce aqueous	

processes: water

contaminants

quality -

Table 10.30 - Assessment of potential adverse effects on site integrity for Plymouth Sound and Estuaries SAC across all phases of the Proposed Development both alone and in combination with other plans and projects

Conclusion: No adverse effect on site integrity can be concluded for the Plymouth sound and estuaries SAC, arising from either the Proposed Development alone, or in combination with other plans or projects.

existing levels.

contaminants to levels

equating to [High / Good]

VIII and X of the WFD),

Status (according to Annex

avoiding deterioration from

processes on which

habitats and the habitats

of qualifying species rely

qualifying natural



s from vessels may occur during all the potential to directly affect allis shad ven their sensitivity to pollution and

ures of standard best practice in terms revention measures (Section 10.2.5) ill prevent these events occurring and effects on site integrity from the

er potential plans and projects and the est practice measures which could s, it is predicted that there will be no ombination with other plans and

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10.16. MARINE: LITTORAL CAUCHOIS SAC

10.16.1. **OVERVIEW**

- 10.16.1.1. Littoral Cauchois SAC covers approximately 63 km² of the French coast from Le Treport to Le Havre. It is designated for both marine and terrestrial habitats and species (EEA, 2019a). The SAC does not overlap the Marine Cable Corridor and is 52.7 km distant at its closest point.
- 10.16.1.2. For migratory fish features, twaite shad, river lamprey and sea lamprey are qualifying features of this site.
- 10.16.1.3. For marine mammal features, bottlenose dolphin, harbour porpoise, grey seal and harbour seal are qualifying features of this site.
- 10.16.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): ANNEX II DIADROMOUS MIGRATORY FISH SPECIES
- 10.16.2.1. Site-specific SACO is not available for the Littoral Cauchois SAC. As such, the Conservation Objectives and Supplementary Advice document for the River Wye SAC⁵⁵ which shares the same interest features will be used for the assessment. It should be noted that targets for the River Wye SAC will not be used for Littoral Cauchois SAC as these are site specific. Table 10.31 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.31 - Conservation and Supplementary Advice attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Twaite shad	Pollution Events	Population: adult run size Population: juvenile densities Supporting habitat: Biological connectivity Supporting processes: Integrity of off-site habitats
River lamprey	Pollution Events	Population: population abundance Population: Juvenile densities

⁵⁵ <u>http://publications.naturalengland.org.uk/publication/6096799802589184</u> (Accessed: 17 October 2019)



Feature	Impact for which LSE could not be excluded	Equivalent attribute
		Supporting habitat: Biological connectivity
		Supporting habitats: Integrity of off-site habitats
Sea lamprey	Pollution Events	Population: population abundance
		Population: Juvenile densities
		Supporting habitat: Biological connectivity
		Supporting habitats: Integrity of off-site habitats

10.16.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:

- Population: spawning distribution;
- Supporting habitat: distribution of supporting habitat;
- Supporting habitat: Extent of supporting habitat;
- Supporting habitat: Biotope mosaic;
- Supporting habitat: flow regime;
- Supporting habitat: riparian zone;
- Supporting habitat: sediment regime;
- Supporting habitat: soils, substrate and nutrient cycling;
- Supporting habitat: vegetation composition: invasive non-native species;
- Supporting habitat: water quality acidification;
- Supporting habitat: water quality nutrients;
- Supporting habitat: woody debris;
- Supporting processes: air quality;
- Supporting processes: adaption and resilience;
- Supporting processes: conservation measures;



- Supporting processes: control of livestock grazing activity;
- Supporting processes: fisheries exploitation;
- Supporting processes: fisheries introduction of fish species;
- Supporting processes: fisheries introduction of shad;
- Supporting habitat/processes: screening of intakes and discharges;
- Supporting processes: vegetation structure: cover of submerged macrophytes; and
- Supporting processes: water quantity/quality.

10.16.3. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): MARINE MAMMAL SPECIES

- 10.16.3.1. Site-specific SACO is not currently available for this site. As such, the following information was used for each species:
 - Bottlenose dolphin: Cardigan Bay SAC document⁵⁶;
 - Harbour porpoise: Southern North Sea SAC Conservation Advice and Advice on Operations document⁵⁷;
 - Grey seal: Pembrokeshire Marine SAC document⁵⁸ and the SACOs page of Natural England's Designated Sites View website for the Humber SAC⁵⁹; and
 - Harbour seal: SACOs page of Natural England's Designated Sites View website for The Wash and North Norfolk Coast SAC⁶⁰.
- 10.16.3.2. Table10.32 below lists those attributes considered to be equivalent to those impacts for which an LSE could not be excluded (pollution). No attributes were listed for either the proxy or other UK sites for either bottlenose dolphin or harbour porpoise.

Table 10.32 - SACO attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Bottlenose dolphin	Pollution	NA
Harbour porpoise	Pollution	NA

⁵⁶ https://cdn.naturalresources.wales/media/687993/eng-cardigan-bay-reg-37-report-

^{2018.}pdf?mode=pad&rnd=131929023330000000

⁵⁷ http://jncc.defra.gov.uk/pdf/SNorthSea_ConsAdvice.pdf

⁵⁸ https://cdn.naturalresources.wales/media/687999/eng-pembrokeshire-marine-reg-37-report-

^{2018.}pdf?mode=pad&rnd=131929024980000000

⁵⁹ <u>https://designatedsites.naturalengland.org.uk/</u>

⁶⁰ <u>https://designatedsites.naturalengland.org.uk/</u>



Feature	Impact for which LSE could not be excluded	Equivalent attribute
Grey seal	Pollution	Supporting processes: water quality - contaminants
Harbour seal	Pollution	Supporting processes: water quality - contaminants

- 10.16.3.3. The following non-equivalent attributes listed within the SACOs were screened out from further assessment:
 - Population: population size
 - Population: recruitment and reproductive capability
 - Presence and spatial distribution of the species
 - Structure and function: biological connectivity
 - Structure: Non-native species and pathogens
 - Supporting habitat: extent and distribution
 - Supporting habitat: food availability
 - Supporting processes: physico-chemical properties
 - Supporting processes: sediment movement and hydrodynamic regime
 - Supporting processes: water quality nutrients
 - Supporting processes: water quality turbidity
- 10.16.3.4. It should be noted that proxy targets have not been used because targets are sitespecific.

10.16.4. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.16.4.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.33 and 10.34 below.
- 10.16.4.2. It is concluded that there will be no adverse effects on site integrity for Littoral Cauchois SAC, either from the Proposed Development alone, or in combination with other plans or projects.

Table 10.33 - Assessment of potential adverse effects on site integrity for Annex II fish species of the Littoral Cauchois SAC across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Twaite shad	The populations of qualifying species	• •	Population: adult run size	N/A	Unplanned oil or chemical spillages from vessels may Spills have the potential to directly affect twaite shad their sensitivity to pollution.
			Population: juvenile densities	N/A	However, routine mitigation measures of standard be management, pollution prevention measures (Section
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	protocols will prevent these events occurring and ther on site integrity from the Proposed Development alon Given the scale and nature of other potential plans ar
	The supporting processes on which qualifying natural habitat and habitats of qualifying species rely		Supporting processes: Integrity of off-site habitats	N/A	adhere to similar best practice measures which could is predicted that there will be no adverse effect on site plans and projects.
River lamprey	The populations of qualifying species	Pollution events	Population: population abundance	N/A	Unplanned oil or chemical spillages from vessels may Spills have the potential to directly affect both adult riv their spawning or seaward migrations given their sense
	Population: Juvenile densities		Population: Juvenile densities	N/A	However, routine mitigation measures of standard be management, pollution prevention measures (Section
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	protocols will prevent these events occurring and ther on site integrity.
	or qualitying species		Supporting habitats: Integrity of off-site habitats	N/A	Given the scale and nature of other potential plans ar adhere to similar best practice measures which could is predicted that there will be no adverse effect on site plans and projects.
qua The fun	The populations of qualifying species	Pollution events	Population: Population abundance	N/A	Unplanned oil or chemical spillages from vessels may Spills have the potential to directly affect both adult se their spawning or seaward migrations given their sense
			Population: Juvenile densities	N/A	However, routine mitigation measures of standard be management, pollution prevention measures (Section protocols will prevent these events occurring and ther
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	on site integrity from the Proposed Development alon Given the scale and nature of other potential plans ar adhere to similar best practice measures which could



ay occur during all development phases. d during their spawning migration given

best practice in terms of waste on 10.2.5) and strict navigational erefore will not result in adverse effects one.

and projects and the requirement to Id contribute to in combination effects, it ite integrity in combination with other

ay occur during all development phases. river lamprey and transformers during ensitivity to pollution.

best practice in terms of waste on 10.2.5) and strict navigational erefore will not result in adverse effects

and projects and the requirement to Id contribute to in combination effects, it ite integrity in combination with other

ay occur during all development phases. sea lamprey and transformers during nsitivity to pollution.

best practice in terms of waste on 10.2.5) and strict navigational erefore will not result in adverse effects one.

and projects and the requirement to Id contribute to in combination effects, it

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
			Structure and function: Supporting off-site habitat	N/A	is predicted that there will be no adverse effect on site plans and projects.
Conclusion:	No adverse effect on site	integrity can be concl	uded for the Littoral C	Cauchois SAC	c, arising from either the Proposed Development alo

lone, or in combination with other a for the Littoral Gauchors SAC, ansing from either the Proposed Development auverse enect on site integr plans or projects.

Table 10.34 - Assessment of potential adverse effects on site integrity for marine mammal species in the Littoral Cauchois SAC across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Bottlenose dolphin	Maintain or restore: The extent and distribution of 	Pollution	NA	NA	Mitigation included in the dML requires that the best preventing pollution events are followed during deliver
Harbour porpoise	qualifying natural habitats and habitats of the qualifying	Pollution	NA	NA	section 10.2.5). In the unlikely event of pollution even outlines procedures and responsibilities for effectively Similar best practice measures are employed for the
Grey seal	 species; The structure and function (including typical species) of qualifying natural habitats; 	Pollution	Supporting processes: water quality - contaminants	NA	which could contribute to in combination effects. Therefore, it is concluded that adhering to mitigation no adverse effects on site integrity, either alone or in projects.
Harbour seal	 The structure and function of the habitats of the qualifying species; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; The populations of each of the qualifying species; and The distribution of qualifying species within the site. 	Pollution	Supporting processes: water quality - contaminants	NA	projects.

Conclusion: No adverse effect on site integrity can be concluded for the Littoral Cauchois ZSC, arising from either the Proposed Development alone, or in combination with other plans or projects.



te integrity in combination with other

t practice plans and procedures for very of the Proposed Development (see ents occurring, the same mitigation ely managing any events.

e other plans and projects identified

n measures will ensure that there will be in combination with other plans or

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10.17. MARINE: ESTUAIRES ET LITTORAL PICARDS (BAIES DE SOMME ET D'AUTHIE) SAC/ BAIE DE SOMME RAMSAR

10.17.1. **OVERVIEW**

- 10.17.1.1. Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC/Baie De Somme Ramsar covers approximately 15,646 ha of the French coast from Mers les Bains to Baie de l'Authie. It is designated for both marine and terrestrial habitats and species (EEA, 2019b). The SAC does not overlap the UK Marine Cable Corridor and is 84.6 km distant at its closest point.
- 10.17.1.2. River lamprey is qualifying feature of the SAC for Annex II diadromous fish species.
- 10.17.1.3. For marine mammal species, bottlenose dolphin, harbour porpoise, grey seal and harbour seal are qualifying features of the Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar.

10.17.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): ANNEX II DIADROMOUS MIGRATORY FISH SPECIES

10.17.2.1. Site-specific SACO is not available for the Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC. As such, the Conservation Objectives and Supplementary Advice document for the River Wye SAC⁶¹ which shares the same interest feature will be used for the assessment. It should be noted that targets for the River Wye SAC will not be used for Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC as these are site specific. Table 10.35 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.35 - Conservation and Supplementary Advice attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
River lamprey	Pollution Events	Population: population abundance
		Population: Juvenile densities
		Supporting habitat: Biological connectivity
		Supporting habitats: Integrity of off-site habitats

⁶¹ <u>http://publications.naturalengland.org.uk/publication/6096799802589184</u> (Accessed: 17 October 2019)



- 10.17.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:
 - Supporting habitat: distribution of supporting habitat;
 - Supporting habitat: Extent of supporting habitat;
 - Supporting habitat: Biotope mosaic;
 - Supporting habitat: flow regime;
 - Supporting habitat: riparian zone;
 - Supporting habitat: sediment regime;
 - Supporting habitat: soils, substrate and nutrient cycling;
 - Supporting habitat: vegetation composition: invasive non-native species;
 - Supporting habitat: water quality acidification;
 - Supporting habitat: water quality nutrients;
 - Supporting habitat: woody debris;
 - Supporting processes: adaption and resilience;
 - Supporting processes: conservation measures;
 - Supporting processes: control of livestock grazing activity;
 - Supporting processes: fisheries exploitation;
 - Supporting processes: fisheries introduction of fish species;
 - Supporting processes: screening of intakes and discharges;
 - Supporting processes: vegetation structure: cover of submerged macrophytes; and
 - Supporting processes: water quantity/quality.

10.17.3. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): MARINE MAMMAL SPECIES

- 10.17.3.1. Site-specific SACO is not currently available for this site. As such, the following information was used for each species:
 - Bottlenose dolphin: Cardigan Bay SAC document⁶²;

⁶² <u>https://cdn.naturalresources.wales/media/687993/eng-cardigan-bay-reg-37-report-</u>2018.pdf?mode=pad&rnd=131929023330000000



- Harbour porpoise: Southern North Sea SAC Conservation Advice and Advice on Operations document⁶³;
- Grey seal: Pembrokeshire Marine SAC document⁶⁴ and the SACOs page of Natural England's Designated Sites View website for the Humber SAC⁶⁵; and
- Harbour seal: SACOs page of Natural England's Designated Sites View website for The Wash and North Norfolk Coast SAC⁶⁶.
- 10.17.3.2. Table 10.36 below lists those attributes considered to be equivalent to those impacts for which an LSE could not be excluded (i.e. pollution). No attributes were listed for either the proxy or other UK sites for either bottlenose dolphin or harbour porpoise.

Feature	Impact for which LSE could not be excluded	Equivalent Attribute
Bottlenose dolphin	Pollution	NA
Harbour porpoise	Pollution	NA
Grey seal	Pollution	Supporting processes: water quality - contaminants
Harbour seal	Pollution	Supporting processes: water quality - contaminants

Table 10.36 - SACO attributes screened in for assessment

- 10.17.3.3. The following non-equivalent attributes listed within the SACOs were screened out from further assessment:
 - Population: population size
 - Population: recruitment and reproductive capability
 - Presence and spatial distribution of the species
 - Structure and function: biological connectivity
 - Structure: non-native species and pathogens
 - Supporting habitat: extent and distribution

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⁶³ http://jncc.defra.gov.uk/pdf/SNorthSea_ConsAdvice.pdf

⁶⁴ https://cdn.naturalresources.wales/media/687999/eng-pembrokeshire-marine-reg-37-report-

^{2018.}pdf?mode=pad&rnd=131929024980000000

⁶⁵ <u>https://designatedsites.naturalengland.org.uk/</u>

⁶⁶ <u>https://designatedsites.naturalengland.org.uk/</u>



- Supporting habitat: food availability
- Supporting processes: physico-chemical properties
- Supporting processes: sediment movement and hydrodynamic regime
- Supporting processes: water quality nutrients
- Supporting processes: water quality turbidity

10.17.4. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.17.4.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.37 and Table 10.38 below.
- 10.17.4.2. It is concluded that there will be no adverse effects on site integrity for Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC/Baie de Somme Ramsar, either from the Proposed Development alone, or in combination with other plans or projects

Table 10.37 - Assessment of potential adverse effects on site integrity for Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
River lamprey	The populations of qualifying species	Pollution events	Population: population abundance	N/A	Unplanned oil or chemical spillages development phases. Spills have th river lamprey and transformers duri migrations given their sensitivity to
	Population: Juvenile densities		Population: Juvenile densities	N/A	However, routine mitigation measure of waste management, pollution pre and strict navigational protocols will therefore will not result in adverse e
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	Proposed Development alone. Given the scale and nature of other
			Supporting habitats: Integrity of off-site habitats	N/A	requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.

Conclusion: No adverse effect on site integrity can be concluded for the Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC arising from either the Proposed Development alone, or in combination with other plans or projects.

Table 10.38 - Assessment of potential adverse effects on site integrity for the Estuaires et littoral picards (baies de Somme et d'Authie) SAC/Baie de Somme Ramsar across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Bottlenose dolphin	Maintain or restore: The extent and distribution of	Pollution	NA	NA	Mitigation included in the dML requires that the best p preventing pollution events are followed during delive
Harbour porpoise	qualifying natural habitats and habitats of the qualifying species;	Pollution	NA	NA	section 10.2.5). In the unlikely event of pollution even outlines procedures and responsibilities for effectively Similar best practice measures are employed for the
Grey seal	The structure and function (including typical species) of qualifying natural habitats; The structure and function of the	Pollution	Supporting processes: water quality - contaminants	NA	which could contribute to in combination effects. Therefore, it is concluded that adhering to mitigation r no adverse effects on site integrity, either alone or in
Harbour seal	habitats of the qualifying species; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;	Pollution	Supporting processes: water quality - contaminants	NA	projects



es from vessels may occur during all the potential to directly affect both adult uring their spawning or seaward o pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) vill prevent these events occurring and effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

practice plans and procedures for very of the Proposed Development (see ents occurring, the same mitigation ely managing any events.

e other plans and projects identified

measures will ensure that there will be n combination with other plans and

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	The populations of each of the qualifying species; and The distribution of qualifying species within the site.			•	

Conclusion: No adverse effect on site integrity can be concluded for the Estuaires et Littoral Picards (Baies de Somme et d'Authie) SAC/Baie de Somme Ramsar arising from either the Proposed Development alone, or in combination with other plans or projects.



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10.18. MARINE: BAIE DE CANCHE ET COULOIR DES TROIS ESTUAIRES SAC

10.18.1. **OVERVIEW**

- 10.18.1.1. Baie de Canche et Couloir des trois Estuaires SAC covers approximately 33,306 ha of the French coast from Ault to Camiers. It is designated for both marine and estuarine habitat and species (EEA, 2019c). The SAC does not overlap the Marine Cable Corridor and is 86.5 km distant at its closest point.
- 10.18.1.2. Salmon, allis shad, river lamprey, and sea lamprey are Annex II fish qualifying features of this site.
- 10.18.1.3. Harbour porpoise, grey seal and harbour seal are marine mammal qualifying features of the site

10.18.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): ANNEX II DIADROMOUS MIGRATORY FISH SPECIES

10.18.2.1. Site-specific SACO is not available for the Baie de Canche et Couloir des trois Estuaires SAC. As such, the Conservation Objectives and Supplementary Advice document for the River Wye SAC⁶⁷ which shares the same interest features will be used for the assessment. It should be noted that targets for the River Wye SAC will not be used for Baie de Canche et Couloir des trois Estuaires SAC as these are site specific. Table 10.39 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.39 - Conservation and Supplementary Advice attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Salmon	Pollution Events	Population: adult run size Population: juvenile densities Supporting habitat: biological connectivity Supporting processes: integrity of off-site habitats
Allis shad	Pollution Events	Population: adult run size Population: juvenile densities Supporting habitat: Biological connectivity Supporting processes: Integrity of off-site habitats

⁶⁷ <u>http://publications.naturalengland.org.uk/publication/6096799802589184</u> (Accessed: 17 October 2019)



Feature	Impact for which LSE could not be excluded	Equivalent attribute
River lamprey	Pollution Events	Population: population abundance Population: Juvenile densities Supporting habitat: Biological connectivity Supporting habitats: Integrity of off-site habitats
Sea lamprey	Pollution Events	Population: population abundance Population: Juvenile densities Supporting habitat: Biological connectivity Supporting habitats: Integrity of off-site habitats

10.18.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:

- Population: spawning distribution;
- Supporting habitat: distribution of supporting habitat;
- Supporting habitat: Extent of supporting habitat;
- Supporting habitat: Biotope mosaic;
- Supporting habitat: flow regime;
- Supporting habitat: riparian zone;
- Supporting habitat: sediment regime;
- Supporting habitat: soils, substrate and nutrient cycling;
- Supporting habitat: vegetation composition: invasive non-native species;
- Supporting habitat: water quality acidification;
- Supporting habitat: water quality nutrients;
- Supporting habitat: woody debris;
- Supporting processes: adaption and resilience;
- Supporting processes: conservation measures;
- Supporting processes: control of livestock grazing activity;



- Supporting processes: fisheries exploitation;
- Supporting processes: fisheries introduction of fish species;
- Supporting processes: fisheries introduction of salmon;
- Supporting processes: screening of intakes and discharges;
- Supporting processes: air quality;
- Supporting processes: vegetation structure: cover of submerged macrophytes; and
- Supporting processes: water quantity/quality.

10.18.3. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): MARINE MAMMAL SPECIES

- 10.18.3.1. Site-specific SACO is not currently available for this site. As such, the following information was used for each species:
 - Harbour porpoise: Southern North Sea SAC Conservation Advice and Advice on Operations document⁶⁸;
 - Grey seal: Pembrokeshire Marine SAC document⁶⁹ and the SACOs page of Natural England's Designated Sites View website for the Humber SAC⁷⁰; and
 - Harbour seal: SACOs page of Natural England's Designated Sites View website for The Wash and North Norfolk Coast SAC⁷¹.
- 10.18.3.2. Table 10.40 below lists those attributes considered to be equivalent to those impacts for which an LSE could not be excluded (pollution). No attributes were listed for either the proxy or other UK sites for harbour porpoise.

Table 10.40 - SACO attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Harbour porpoise	Pollution	NA
Grey seal	Pollution	Supporting processes: water quality - contaminants

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⁶⁸ http://jncc.defra.gov.uk/pdf/SNorthSea_ConsAdvice.pdf

⁶⁹ https://cdn.naturalresources.wales/media/687999/eng-pembrokeshire-marine-reg-37-report-

^{2018.}pdf?mode=pad&rnd=131929024980000000

⁷⁰ <u>https://designatedsites.naturalengland.org.uk/</u>

⁷¹ https://designatedsites.naturalengland.org.uk/



Feature	Impact for which LSE could not be excluded	Equivalent attribute
Harbour seal	Pollution	Supporting processes: water quality - contaminants

10.18.3.3. The following non-related attributes listed within the SACOs were screened out from further assessment:

- Population: population size
- Population: recruitment and reproductive capability
- Presence and spatial distribution of the species
- Structure and function: biological connectivity
- Structure: Non-native species and pathogens
- Supporting habitat: extent and distribution
- Supporting habitat: food availability
- Supporting processes: physico-chemical properties
- Supporting processes: sediment movement and hydrodynamic regime
- Supporting processes: water quality nutrients
- Supporting processes: water quality turbidity

10.18.4. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.18.4.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.41 and Table 10.42 below.
- 10.18.4.2. It is concluded that there will be no adverse effects on site integrity for Baie de Canche et Couloir des trois Estuaires SAC, either from the Proposed Development alone, or in combination with other plans or projects.

Table 10.41 - Assessment of potential adverse effects on site integrity for Baie de Canche et Couloir des trois Estuaires SAC across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effects	Attribute	Target	Assessment
Salmon	Calmon The populations of qualifying species		Population: adult run size	N/A	Unplanned oil or chemical spillages development phases. Spills have the salmon and smolts during their spatt their sensitivity to pollution and present
			Population: juvenile densities	N/A	However, routine mitigation measu of waste management, pollution pro and strict navigational protocols will therefore will not result in adverse of
	The structure and function of the habitats		Supporting habitat:	N/A	Proposed Development alone.
	of qualifying species		biological connectivity		Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects
	The supporting processes on which qualifying natural habitat and habitats of qualifying species rely		Supporting processes: integrity of off-site habitats	N/A	adverse effect on site integrity in projects.
Allis shad	The populations of qualifying species	Pollution events	Population: adult run size	N/A	Unplanned oil or chemical spillages development phases. Spills have the
			Population: juvenile densities	N/A	during their spawning migrations gi However, routine mitigation measu of waste management, pollution pre
	The structure and function of the habitats of qualifying species	Supporting habitat: Biological connectivity	N/A	and strict navigational protocols we therefore will not result in adverse Proposed Development alone.	
	The supporting processes on which qualifying natural habitat and habitats of qualifying species rely		Supporting processes: Integrity of off-site habitats	N/A	Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
River lamprey	The populations of qualifying species	Pollution events	Population: population abundance	N/A	Unplanned oil or chemical spillages development phases. Spills have the



es from vessels may occur during all the potential to directly affect both adult bawning or seaward migrations given reference for surface waters.

sures of standard best practice in terms prevention measures (Section 10.2.5) vill prevent these events occurring e effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect allis shad given their sensitivity to pollution. sures of standard best practice in terms prevention measures (Section 10.2.5) will prevent these events occurring and e effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect both adult

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Feature	Conservation Objectives	Effects	Attribute	Target	Assessment
		_			river lamprey and transformers duri migrations given their sensitivity to
	Population: Juvenile densities		Population: Juvenile densities	N/A	However, routine mitigation measu of waste management, pollution pro and strict navigational protocols wil
	The structure and function of the habitats		Supporting habitat: Biological	N/A	therefore will not result in adverse e Proposed Development alone.
	of qualifying species		connectivity		Given the scale and nature of other
			Supporting habitats: Integrity of off-site habitats	N/A	requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
Sea lamprey	The populations of qualifying species	Pollution events	Population: Population abundance	N/A	Unplanned oil or chemical spillages development phases. Spills have the sea lamprey and transformers during their constituity to pollution
			Population: Juvenile densities	N/A	their sensitivity to pollution. However, routine mitigation measur of waste management, pollution pre
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	and strict navigational protocols wil therefore will not result in adverse e Proposed Development alone.
			Structure and function: Supporting off-site habitat	N/A	Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.

Conclusion: No adverse effect on site integrity can be concluded for the Baie de Canche et couloir des trois estuaires SAC arising from either the Proposed Development alone, or in combination with other plans or projects.



uring their spawning or seaward o pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) vill prevent these events occurring e effects on site integrity from the

er potential plans and projects and the pest practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect both adult ring their spawning migrations given

sures of standard best practice in terms prevention measures (Section 10.2.5) will prevent these events occurring and e effects on site integrity from the

er potential plans and projects and the best practice measures which could its, it is predicted that there will be no combination with other plans and

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Table 10.42 - Assessment of potential adverse effects on site integrity for the Baie de Canche et couloir des trois estuaires SAC across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Harbour porpoise	Maintain or restore: The extent and distribution of qualifying	Pollution	NA	NA	Mitigation included in the dML requires that the best pr preventing pollution events are followed during delivery
Grey seal	natural habitats and habitats of the qualifying species; The structure and function (including	Pollution	Supporting processes: water quality - contaminants	NA	section 10.2.5). In the unlikely event of pollution events outlines procedures and responsibilities for effectively Similar best practice measures are employed for the o could contribute to in combination effects.
Harbour seal	 typical species) of qualifying natural habitats; The structure and function of the habitats of the qualifying species; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; The populations of each of the qualifying species; and The distribution of qualifying species within the site. 	Pollution	Supporting processes: water quality - contaminants	NA	Therefore, it is concluded that adhering to mitigation m no adverse effects on site integrity, either alone or in c

Conclusion: No adverse effect on site integrity can be concluded for the Baie de Canche et couloir des trois estuaires SAC arising from either the Proposed Development alone, or in combination with other plans or projects.



practice plans and procedures for ery of the Proposed Development (see nts occurring, the same mitigation y managing any events.

other plans and projects identified which

measures will ensure that there will be combination.

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10.19. MARINE: BAIE DE SEINE ORIENTALE SAC

10.19.1. **OVERVIEW**

- 10.19.1.1. Baie de Seine Orientale SAC covers approximately 44,402 ha of the French marine area off the coast of Ouistreham. It is designated for both marine habitats and species (EEA, 2019d). The SAC does not overlap the Marine Cable Corridor and is 90.9 km distant at its closest point.
- 10.19.1.2. Twaite shad, salmon, allis shad, river lamprey, and sea lamprey are Annex II fish qualifying features of this site.
- 10.19.1.3. Bottlenose dolphin, harbour porpoise, grey seal and harbour seal are marine mammal qualifying features of the site

10.19.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): ANNEX II MIGRATORY DIADROMOUS FISH SPECIES

10.19.2.1. Site-specific SACO is not available for the Baie de Seine Orientale SAC. As such, the Conservation Objectives and Supplementary Advice document for the River Wye SAC⁷² which shares the same interest features will be used for the assessment. It should be noted that targets for the River Wye SAC will not be used for Baie de Seine Orientale SAC as these are site specific. Table 10.43 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Table 10.43 - Conservation and Supplementary Advice attributes screened in for assessment

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Twaite shad	Pollution Events	Population: adult run size Population: juvenile densities Supporting habitat: Biological connectivity Supporting processes: Integrity of off-site habitats
Salmon	Pollution Events	Population: adult run size Population: juvenile densities Supporting habitat: biological connectivity

⁷² <u>http://publications.naturalengland.org.uk/publication/6096799802589184</u> (Accessed: 17 October 2019)



Feature	Impact for which LSE could not be excluded	Equivalent attribute
		Supporting processes: integrity of off-site habitats
Allis shad	Pollution Events	Population: adult run size Population: juvenile densities Supporting habitat: Biological connectivity Supporting processes: Integrity of off-site habitats
River lamprey	Pollution Events	Population: population abundance Population: Juvenile densities Supporting habitat: Biological connectivity Supporting habitats: Integrity of off-site habitats
Sea lamprey	Pollution Events	Population: population abundance Population: Juvenile densities Supporting habitat: Biological connectivity Supporting habitats: Integrity of off-site habitats

- 10.19.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:
 - Population: spawning distribution;
 - Supporting habitat: distribution of supporting habitat;
 - Supporting habitat: Extent of supporting habitat;



- Supporting habitat: Biotope mosaic;
- Supporting habitat: flow regime;
- Supporting habitat: riparian zone;
- Supporting habitat: sediment regime;
- Supporting habitat: soils, substrate and nutrient cycling;
- Supporting habitat: vegetation composition: invasive non-native species;
- Supporting habitat: water quality acidification;
- Supporting habitat: water quality nutrients;
- Supporting habitat: woody debris;
- Supporting processes: adaption and resilience;
- Supporting processes: conservation measures;
- Supporting processes: control of livestock grazing activity;
- Supporting processes: fisheries exploitation;
- Supporting processes: fisheries introduction of fish species;
- Supporting processes: fisheries introduction of salmon;
- Supporting processes: screening of intakes and discharges;
- Supporting processes: air quality;
- Supporting processes: vegetation structure: cover of submerged macrophytes; and
- Supporting processes: water quantity/quality.

10.19.3. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): MARINE MAMMAL SPECIES

- 10.19.3.1. Site-specific SACO is not currently available for this site. As such, the following information was used for each species:
 - Bottlenose dolphin: Cardigan Bay SAC document⁷³;
 - Harbour porpoise: Southern North Sea SAC Conservation Advice and Advice on Operations document⁷⁴;

⁷³ https://cdn.naturalresources.wales/media/687993/eng-cardigan-bay-reg-37-report-

^{2018.}pdf?mode=pad&rnd=131929023330000000

⁷⁴ <u>http://jncc.defra.gov.uk/pdf/SNorthSea_ConsAdvice.pdf</u>



- Grey seal: Pembrokeshire Marine SAC document⁷⁵ and the SACOs page of Natural England's Designated Sites View website for the Humber SAC⁷⁶; and
- Harbour seal: SACOs page of Natural England's Designated Sites View website for The Wash and North Norfolk Coast SAC⁷⁷.
- 10.19.3.2. Table 10.44 below lists those attributes considered to be equivalent to those impacts for which an LSE could not be excluded (pollution). No attributes were listed for either the proxy or other UK sites for either bottlenose dolphin or harbour porpoise.

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Bottlenose dolphin	Pollution	NA
Harbour porpoise	Pollution	NA
Grey seal	Pollution	Supporting processes: water quality - contaminants
Harbour seal	Pollution	Supporting processes: water quality - contaminants

Table 10.44 - SACO attributes screened in for assessment

- 10.19.3.3. The following non-equivalent attributes listed within the SACOs were screened out from further assessment:
 - Population: population size
 - Population: recruitment and reproductive capability
 - Presence and spatial distribution of the species
 - Structure and function: biological connectivity
 - Structure: Non-native species and pathogens
 - Supporting habitat: extent and distribution
 - Supporting habitat: food availability
 - Supporting processes: physico-chemical properties
 - Supporting processes: sediment movement and hydrodynamic regime

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⁷⁵ <u>https://cdn.naturalresources.wales/media/687999/eng-pembrokeshire-marine-reg-37-report-</u>2018.pdf?mode=pad&rnd=131929024980000000

⁷⁶ https://designatedsites.naturalengland.org.uk/

 ⁷⁷ https://designatedsites.naturalengland.org.uk/



- Supporting processes: water quality nutrients
- Supporting processes: water quality turbidity
- 10.19.4. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY
- 10.19.4.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.45 and Table 10.46 below.
- 10.19.4.2. It is concluded that there will be no adverse effects on site integrity for Baie de Seine Orientale SAC, either from the Proposed Development alone, or in combination with other plans or projects.

Table 10.45 - Assessment of potential adverse effects on site integrity for Annex II fish species of Baie de Seine Orientale SAC across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Twaite shad	The populations of qualifying species	Pollution events	Population: adult run size	N/A	Unplanned oil or chemical spillag development phases. Spills have shad during their spawning migra
			Population: juvenile densities	N/A	However, routine mitigation measure of waste management, pollution pr
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	and strict navigational protocols wi therefore will not result in adverse Proposed Development alone.
The supporting processes on which qualifying natural habitat and habitats of qualifying species rely	N/A	Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.			
Salmon	The populations of qualifying species	Pollution events	Population: adult run size	N/A	Unplanned oil or chemical spillages development phases. Spills have the
			Population: juvenile densities	N/A	 salmon and smolts during their spattcheir sensitivity to pollution and pre However, routine mitigation measurement
	The structure and function of the habitats of qualifying species		Supporting habitat: biological connectivity	N/A	of waste management, pollution pr and strict navigational protocols wil therefore will not result in adverse Proposed Development alone.
	The supporting processes on which qualifying natural habitat and habitats of qualifying species rely		Supporting processes: integrity of off-site habitats	N/A	Given the scale and nature of othe requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
Allis shad	The populations of qualifying species	Pollution events	Population: adult run size	N/A	Unplanned oil or chemical spillages development phases. Spills have the during their spawning migrations give
			Population: juvenile densities	N/A	However, routine mitigation measu of waste management, pollution pr



es from vessels may occur during all the potential to directly affect twaite tions given their sensitivity to pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) vill prevent these events occurring and effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect both adult bawning or seaward migrations given reference for surface waters.

sures of standard best practice in terms prevention measures (Section 10.2.5) vill prevent these events occurring and effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect allis shad given their sensitivity to pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5)

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	and strict navigational protocols will therefore will not result in adverse Proposed Development alone.
	The supporting processes on which qualifying natural habitat and habitats of qualifying species rely		Supporting processes: Integrity of off-site habitats	N/A	Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
River lamprey	The populations of qualifying species	Pollution events	Population: population abundance	N/A	Unplanned oil or chemical spillages development phases. Spills have the river lamprey and transformers dur migrations given their sensitivity to
	Population: Juvenile densities		Population: Juvenile densities	N/A	However, routine mitigation measu of waste management, pollution pr
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	and strict navigational protocols wi therefore will not result in adverse Proposed Development alone. Given the scale and nature of othe
			Supporting habitats: Integrity of off-site habitats	N/A	requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
Sea lamprey	Image: VThe populations of qualifying speciesPollution events	Population: Population abundance	N/A	Unplanned oil or chemical spillage development phases. Spills have the	
			Population: Juvenile densities	N/A	sea lamprey and transformers duri migrations given their sensitivity to
	The structure and function of the habitats of qualifying species	tion of the habitats	Supporting habitat: Biological connectivity	N/A	However, routine mitigation measure of waste management, pollution pr and strict navigational protocols wi therefore will not result in adverse
		Structure and function: Supporting off-site habitat	N/A	Proposed Development alone. Given the scale and nature of othe requirement to adhere to similar be contribute to in combination effects	



vill prevent these events occurring and e effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect both adult uring their spawning or seaward to pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) will prevent these events occurring and e effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect both adult ring their spawning or seaward o pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) will prevent these events occurring and e effects on site integrity from the

er potential plans and projects and the pest practice measures which could ts, it is predicted that there will be no

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
					adverse effect on site integrity in co projects.
• • •		• • • •			we although a Deserve and Descale way

Conclusion: No adverse effect on site integrity can be concluded for the Baie de Seine orientale SAC arising from either the Proposed Development alone, or in combination with other plans or projects.

Table 10.46 - Assessment of potential adverse effects on site integrity for marine mammal features of the Baie de Seine orientale ZSC across all p	٥h
both alone and in combination with other plans or projects	

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Bottlenose dolphin	 Maintain or restore: The extent and distribution of qualifying natural habitats and habitats of the qualifying species; The structure and function (including typical species) of qualifying natural habitats; The structure and function of the 	Pollution	NA	NA	Mitigation included in the dML requires that the best preventing pollution events are followed during deliver
Harbour porpoise		Pollution	NA	NA	section 10.2.5). In the unlikely event of pollution even outlines procedures and responsibilities for effectively Similar best practice measures are employed for the
Grey seal		Pollution	Supporting processes: water quality - contaminants	NA	which could contribute to in combination effects. Therefore, it is concluded that adhering to mitigation r no adverse effects on site integrity, either alone or in
Harbour seal	 habitats of the qualifying species; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; The populations of each of the qualifying species; and 	Pollution	Supporting processes: water quality - contaminants	NA	projects.
	The distribution of qualifying species within the site.				

Conclusion: No adverse effect on site integrity can be concluded for the Baie de Seine orientale SAC arising from either the Proposed Development alone, or in combination with other plans or projects.



combination with other plans and

phases of the Proposed Development

t practice plans and procedures for very of the Proposed Development (see ents occurring, the same mitigation ely managing any events.

e other plans and projects identified

n measures will ensure that there will be in combination with other plans or

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10.20. MARINE: RIDENS ET DUNES HYDRAULIQUES DU DÉTROIT DU PAS-DE-CALAIS SAC

10.20.1. **OVERVIEW**

10.20.1.1. Harbour porpoise, grey seal and harbour seal are qualifying features of the Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC which is approximately 59 km from the Proposed Development at its closest point.

10.20.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

- 10.20.2.1. Site-specific SACO is not currently available for this site. As such, the following information was used for each species:
 - Harbour porpoise: Southern North Sea SAC Conservation Advice and Advice on Operations document⁷⁸;
 - Grey seal: Pembrokeshire Marine SAC document⁷⁹ and the SACOs page of Natural England's Designated Sites View website for the Humber SAC⁸⁰; and
 - Harbour seal: SACOs page of Natural England's Designated Sites View website for The Wash and North Norfolk Coast SAC⁸¹.
- 10.20.2.2. Table 10.47 below lists those attributes considered to be equivalent to those impacts for which an LSE could not be excluded (pollution). No attributes were listed for either the proxy or other UK sites for harbour porpoise.

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Harbour porpoise	Pollution	NA
Grey seal	Pollution	Supporting processes: water quality - contaminants
Harbour seal	Pollution	Supporting processes: water quality - contaminants

Table 10.47 - SACO attributes screened in for assessment

⁷⁸ http://jncc.defra.gov.uk/pdf/SNorthSea_ConsAdvice.pdf

⁷⁹ https://cdn.naturalresources.wales/media/687999/eng-pembrokeshire-marine-reg-37-report-

^{2018.}pdf?mode=pad&rnd=131929024980000000

⁸⁰ <u>https://designatedsites.naturalengland.org.uk/</u>

⁸¹ <u>https://designatedsites.naturalengland.org.uk/</u>



- 10.20.2.3. The following non-equivalent attributes listed within the SACOs were screened out from further assessment:
 - Population: population size
 - Population: recruitment and reproductive capability
 - Presence and spatial distribution of the species
 - Structure and function: biological connectivity
 - Structure: Non-native species and pathogens
 - Supporting habitat: extent and distribution
 - Supporting habitat: food availability
 - Supporting processes: physico-chemical properties
 - Supporting processes: sediment movement and hydrodynamic regime
 - Supporting processes: water quality nutrients
 - Supporting processes: water quality turbidity

10.20.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.20.3.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.48 below.
- 10.20.3.2. It should be noted that proxy targets have not been used because targets are sitespecific.
- 10.20.3.3. It is concluded that there will be no adverse effects on site integrity for the Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC from either the Proposed Development alone or the Proposed Development in combination with other plans or projects.

Table 10.48 - Assessment of potential adverse effects on site integrity for the Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Harbour porpoise	Maintain or restore: The extent and distribution of qualifying	Pollution	NA	NA	Mitigation included in the dML requires that the best pr preventing pollution events are followed during delivery
Grey seal	natural habitats and habitats of the qualifying species; The structure and function (including	natural habitats and habitats of the qualifying species;PollutionSupporting processes:NASection outlineThe structure and function (includingFollowingSupporting processes:NASimila contaminants	section 10.2.5). In the unlikely event of pollution even outlines procedures and responsibilities for effectively Similar best practice measures are employed for the could contribute to in combination effects.		
Harbour seal	 typical species) of qualifying natural habitats; The structure and function of the habitats of the qualifying species; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; The populations of each of the qualifying species; and The distribution of qualifying species within the site. 	Pollution	Supporting processes: water quality - contaminants	NA	Therefore, it is concluded that adhering to mitigation m no adverse effects on site integrity, either alone or in co projects.

Conclusion: No adverse effect on site integrity can be concluded for the Ridens et dunes hydrauliques du détroit du Pas-de-Calais SAC arising from either the Proposed Development alone, or in combination with other plans or projects.



practice plans and procedures for ery of the Proposed Development (see nts occurring, the same mitigation y managing any events.

other plans and projects identified which

measures will ensure that there will be combination with other plans or

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10.21. MARINE: ESTUAIRE DE LA SEINE SAC/MARAIS VERNIER RAMSAR

10.21.1. **OVERVIEW**

- 10.21.1.1. Estuaire de la Seine SAC/Marais Vernier Ramsar does not overlap the Marine Cable Corridor and is approximately 90 km from the Proposed Development.
- 10.21.1.2. Twaite shad, salmon, river lamprey, and sea lamprey are Annex II fish qualifying features of this site. Harbour porpoise, grey seal and harbour seal are qualifying features of the SAC but not the Ramsar.
- 10.21.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): ANNEX II MIGRATORY DIADROMOUS FISH SPECIES
- 10.21.2.1. Site-specific SACO is not available for the Estuaire de la Seine SAC / Marais Vernier Ramsar. As such, the Conservation Objectives and Supplementary Advice document for the River Wye SAC⁸² which shares the same interest features will be used for the assessment. It should be noted that targets for the River Wye SAC will not be used for Estuaire de la Seine SAC as these are site specific. Table 10.49 lists those attributes which are considered to be equivalent to those impacts for which an LSE could not be excluded.

Feature	Impact for which LSE could not be excluded	Equivalent attribute	
Twaite shad	Pollution Events	Population: adult run size Population: juvenile densities Supporting habitat: Biological connectivity Supporting processes: Integrity of off-site habitats	
Salmon	Pollution Events	Population: adult run size Population: juvenile densities Supporting habitat: biological connectivity	

Table 10.49 - Conservation and Supplementary Advice attributes screened in for assessment.

⁸² <u>http://publications.naturalengland.org.uk/publication/6096799802589184</u> (Accessed: 17 October 2019)



Feature	Impact for which LSE could not be excluded	Equivalent attribute	
		Supporting processes: integrity of off-site habitats	
River lamprey	Pollution Events	Population: population abundance Population: Juvenile densities Supporting habitat: Biological connectivity Supporting habitats: Integrity of off-site habitats	
Sea lamprey	Pollution Events	Population: population abundance Population: Juvenile densities Supporting habitat: Biological connectivity Supporting habitats: Integrity of off-site habitats	

10.21.2.2. Non-equivalent attributes listed within the Conservation Objectives and Supplementary Advice document which are screened out from further assessment included:

- Population: spawning distribution;
- Supporting habitat: distribution of supporting habitat;
- Supporting habitat: Extent of supporting habitat;
- Supporting habitat: Biotope mosaic;
- Supporting habitat: flow regime;
- Supporting habitat: riparian zone;
- Supporting habitat: sediment regime;
- Supporting habitat: soils, substrate and nutrient cycling;
- Supporting habitat: vegetation composition: invasive non-native species;
- Supporting habitat: water quality acidification;



- Supporting habitat: water quality nutrients;
- Supporting habitat: woody debris;
- Supporting processes: adaption and resilience;
- Supporting processes: conservation measures;
- Supporting processes: control of livestock grazing activity;
- Supporting processes: fisheries exploitation;
- Supporting processes: fisheries introduction of fish species;
- Supporting processes: fisheries introduction of salmon;
- Supporting processes: screening of intakes and discharges;
- Supporting processes: air quality;
- Supporting processes: vegetation structure: cover of submerged macrophytes; and
- Supporting processes: water quantity/quality.

10.21.3. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES): MARINE MAMMAL SPECIES

- 10.21.3.1. Site-specific SACO is not currently available for this site. As such, the following information was used for each species:
 - Harbour porpoise: Southern North Sea SAC Conservation Advice and Advice on Operations document⁸³;
 - Grey seal: Pembrokeshire Marine SAC document⁸⁴ and the SACOs page of Natural England's Designated Sites View website for the Humber SAC⁸⁵; and
 - Harbour seal: SACOs page of Natural England's Designated Sites View website for The Wash and North Norfolk Coast SAC⁸⁶.
- 10.21.3.2. Table 10.50 below lists those attributes considered to be equivalent to those impacts for which an LSE could not be excluded (pollution). No attributes were listed for either the proxy or other UK sites for harbour porpoise.

⁸³ http://jncc.defra.gov.uk/pdf/SNorthSea_ConsAdvice.pdf

⁸⁴ https://cdn.naturalresources.wales/media/687999/eng-pembrokeshire-marine-reg-37-report-

^{2018.}pdf?mode=pad&rnd=131929024980000000

⁸⁵ <u>https://designatedsites.naturalengland.org.uk/</u>

⁸⁶ <u>https://designatedsites.naturalengland.org.uk/</u>



Feature	Impact for which LSE could not be excluded	Equivalent attribute	
Harbour porpoise	Pollution	NA	
Grey seal	Pollution	Supporting processes: water quality - contaminants	
Harbour seal	Pollution	Supporting processes: water quality - contaminants	

Table 10.50 - SACO attributes screened in for assessment

10.21.3.3. The following non-equivalent attributes listed within the SACOs were screened out from further assessment:

- Population: population size
- Population: recruitment and reproductive capability
- Presence and spatial distribution of the species
- Structure and function: biological connectivity
- Structure: Non-native species and pathogens
- Supporting habitat: extent and distribution
- Supporting habitat: food availability
- Supporting processes: physico-chemical properties
- Supporting processes: sediment movement and hydrodynamic regime
- Supporting processes: water quality nutrients
- Supporting processes: water quality turbidity

10.21.4. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.21.4.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.51 and Table 10.52 below.
- 10.21.4.2. It should be noted that proxy targets have not been used because targets are sitespecific.
- 10.21.4.3. It is concluded that there will be no adverse effects on site integrity for the Estuaire de la Seine SAC / Marais Vernier Ramsar from either the Proposed Development alone or the Proposed Development in combination with other plans or projects.

Table 10.51 - Assessment of potential adverse effects on site integrity for Annex II fish species of the Estuaire de la Seine SAC/Marais Vernier Ramsar across all phases of the Proposed Development both alone and in combination with other plans and projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Twaite shad	The populations of qualifying species	Pollution events	Population: adult run size	N/A	Unplanned oil or chemical spillages development phases. Spills have the shad during their spawning migration
			Population: juvenile densities	N/A	However, routine mitigation measu of waste management, pollution pre
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	and strict navigational protocols wil therefore will not result in adverse e Proposed Development alone.
qualifying natura and habitats of	processes on which qualifying natural habitat		Supporting processes: Integrity of off-site habitats	N/A	Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
Salmon	The populations of qualifying species	Pollution events	Population: adult run size	N/A	Unplanned oil or chemical spillages development phases. Spills have the salmon and smolts during their spa
			Population: juvenile densities	N/A	their sensitivity to pollution and pre- However, routine mitigation measu
	The structure and function of the habitats of qualifying species		Supporting habitat: biological connectivity	N/A	of waste management, pollution pro and strict navigational protocols wil therefore will not result in adverse e Proposed Development alone.
	The supporting processes on which qualifying natural habitat and habitats of qualifying species rely		Supporting processes: integrity of off-site habitats	N/A	Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
River lamprey	The populations of qualifying species	Pollution events	Population: population abundance	N/A	Unplanned oil or chemical spillages development phases. Spills have th river lamprey and transformers dur migrations given their sensitivity to
	Population: Juvenile densities]	Population: Juvenile densities	N/A	



es from vessels may occur during all the potential to directly affect twaite tions given their sensitivity to pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) vill prevent these events occurring and effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect both adult pawning or seaward migrations given reference for surface waters.

sures of standard best practice in terms prevention measures (Section 10.2.5) vill prevent these events occurring and effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect both adult uring their spawning or seaward o pollution.

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Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	However, routine mitigation measu of waste management, pollution pro and strict navigational protocols wil therefore will not result in adverse of
			Supporting habitats: Integrity of off-site habitats	N/A	Proposed Development alone. Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.
Sea lamprey	The populations of qualifying species	Po at Po de Su Bi co St fu	Population: Population abundance	N/A	Unplanned oil or chemical spillages development phases. Spills have the
			Population: Juvenile densities	N/A	sea lamprey and transformers durin migrations given their sensitivity to
	The structure and function of the habitats of qualifying species		Supporting habitat: Biological connectivity	N/A	However, routine mitigation measu of waste management, pollution pro and strict navigational protocols wil therefore will not result in adverse e
			Structure and function: Supporting off-site habitat	N/A	Proposed Development alone.
					Given the scale and nature of other requirement to adhere to similar be contribute to in combination effects adverse effect on site integrity in co projects.

Conclusion: No adverse effect on site integrity can be concluded for the Estuaire de la Seine ZSC/Marais Vernier Ramsar arising from either the Proposed Development alone, or in combination with other plans or projects.



sures of standard best practice in terms prevention measures (Section 10.2.5) will prevent these events occurring and e effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

es from vessels may occur during all the potential to directly affect both adult ring their spawning or seaward o pollution.

sures of standard best practice in terms prevention measures (Section 10.2.5) will prevent these events occurring and e effects on site integrity from the

er potential plans and projects and the best practice measures which could ts, it is predicted that there will be no combination with other plans and

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Table 10.52 - Assessment of potential adverse effects on site integrity for the Estuaire de la Seine SAC across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Harbour porpoise	 Maintain or restore: The extent and distribution of qualifying natural habitats and habitats of the qualifying species; The structure and function (including typical species) of qualifying natural habitats; The structure and function of the habitats of the qualifying species; 	Pollution	NA	NA	Mitigation included in the dML requires that the best pr preventing pollution events are followed during delivery
Grey seal		Pollution	Supporting processes: water quality - contaminants	NA	10.2.5). In the unlikely event of pollution events occurring procedures and responsibilities for effectively managing. Similar best practice measures are employed for the or could contribute to in combination effects.
Harbour seal		Pollution	Supporting processes: water quality - contaminants	NA	Therefore, it is concluded that adhering to mitigation m no adverse effects on site integrity, either alone or in c projects.
	The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;				
	The populations of each of the qualifying species; and				
	The distribution of qualifying species within the site.				

Conclusion: No adverse effect on site integrity can be concluded for the Estuaire de la Seine SAC arising from either the Proposed Development alone, or in combination with other plans or projects.



practice plans and procedures for ery of the Proposed Project (see section irring, the same mitigation outlines jing any events.

other plans and projects identified which

measures will ensure that there will be combination with other plans or

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10.22. MARINE: RÉCIFS GRIS-NEZ BLANC-NEZ SAC

10.22.1. **OVERVIEW**

10.22.1.1. Harbour porpoise, grey seal and harbour seal are qualifying features of the Récifs Gris-Nez Blanc-Nez SAC which is approximately 104 km from the Proposed Development at its closest point.

10.22.2. CONSERVATION OBJECTIVES (TARGETS AND ATTRIBUTES)

- 10.22.2.1. Site-specific SACO is not currently available for this site. As such, the following information was used for each species:
 - Harbour porpoise: Southern North Sea SAC Conservation Advice and Advice on Operations document⁸⁷;
 - Grey seal: Pembrokeshire Marine SAC document⁸⁸ and the SACOs page of Natural England's Designated Sites View website for the Humber SAC⁸⁹; and
 - Harbour seal: SACOs page of Natural England's Designated Sites View website for The Wash and North Norfolk Coast SAC⁹⁰.
- 10.22.2.2. Table 10.53 lists those attributes considered to be equivalent to those impacts for which an LSE could not be excluded (i.e. pollution). No attributes were listed for either the proxy or other UK sites for harbour porpoise.

Feature	Impact for which LSE could not be excluded	Equivalent attribute
Harbour porpoise	Pollution	NA
Grey seal	Pollution	Supporting processes: water quality - contaminants
Harbour seal	Pollution	Supporting processes: water quality - contaminants

Table 10.53 - SACO attributes screened in for assessment

10.22.2.3. The following non-equivalent attributes listed within the SACOs were screened out from further assessment:

⁸⁷ <u>http://jncc.defra.gov.uk/pdf/SNorthSea_ConsAdvice.pdf</u>

⁸⁸ https://cdn.naturalresources.wales/media/687999/eng-pembrokeshire-marine-reg-37-report-

^{2018.}pdf?mode=pad&rnd=131929024980000000

⁸⁹ <u>https://designatedsites.naturalengland.org.uk/</u>

⁹⁰ https://designatedsites.naturalengland.org.uk/



- Population: population size
- Population: recruitment and reproductive capability
- Presence and spatial distribution of the species
- Structure and function: biological connectivity
- Structure: Non-native species and pathogens
- Supporting habitat: extent and distribution
- Supporting habitat: food availability
- Supporting processes: physico-chemical properties
- Supporting processes: sediment movement and hydrodynamic regime
- Supporting processes: water quality nutrients
- Supporting processes: water quality turbidity

10.22.3. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS ON SITE INTEGRITY

- 10.22.3.1. For those designated features where LSE could not be excluded, an assessment of potential adverse effects on site integrity is presented in Table 10.54 below.
- 10.22.3.2. It should be noted that proxy targets have not been used because targets are sitespecific.
- 10.22.3.3. It is concluded that there will be no adverse effects on site integrity for the Récifs Gris-Nez Blanc-Nez SAC from either the Proposed Development alone or the Proposed Development in combination with other plans or projects.

Table 10.54 - Assessment of potential adverse effects on site integrity for the Récifs Gris-Nez Blanc-Nez SAC across all phases of the Proposed Development both alone and in combination with other plans or projects

Feature	Conservation Objectives	Effect	Attribute	Target	Assessment
Harbour porpoise	Maintain or restore: The extent and distribution of qualifying natural habitats and habitats of the qualifying species; The structure and function (including typical species) of qualifying natural	Pollution	NA	NA	Mitigation included in the dML requires that the best pr preventing pollution events are followed during delivery
Grey seal		ral habitats and habitats of the figure species; structure and function (including between the figure structure and function (including between the figure structure and function (including between the figure structure structu	section 10.2.5). In the unlikely event of pollution events outlines procedures and responsibilities for effectively Similar best practice measures are employed for the of could contribute to in combination effects.		
Harbour seal	 typical species) of qualifying natural habitats; The structure and function of the habitats of the qualifying species; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; The populations of each of the qualifying species; and The distribution of qualifying species within the site. 	Pollution	Supporting processes: water quality - contaminants	NA Theref no adv	

Conclusion: No adverse effect on site integrity can be concluded for the Récifs Gris-Nez Blanc-Nez SAC arising from either the Proposed Development alone, or in combination with other plans or projects.



practice plans and procedures for ery of the Proposed Development (see nts occurring, the same mitigation y managing any events.

other plans and projects identified which

measures will ensure that there will be combination with other plans and

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