The Great Grid Upgrade

Sea Link

Preliminary Environmental Information Report

Volume: 1

Part 5 Project Wide Effects

Chapter 3 Habitat Regulations Screening Report

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5.3. Habitat Regulations Screening Report

5.3.1 Introduction

The Proposed Project

5.3.1.1 The Sea Link Project (hereafter referred to as the 'Proposed Project') is a proposal by National Grid Electricity Transmission plc (hereafter referred to as National Grid) to reinforce the transmission network in the South East and East Anglia to accommodate additional power flows generated from renewable and low carbon generation in additional to new interconnection with mainland Europe.

Suffolk Onshore Scheme

5.3.1.2 The proposed Suffolk Onshore Scheme would comprise of:

- A connection from the existing transmission network via the proposed Friston Substation, including the substation itself. Friston Substation already has development consent as part of other third-party projects. If Friston Substation has already been constructed under another consent, only a connection into the substation would be constructed by the Proposed Project.
- A high voltage alternative current (HVAC) underground cable of approximately 1.7 km in length between the proposed Friston Substation and a proposed converter station (below).
- A 2 GW high voltage direct current (HVDC) converter station up to 26 m high plus external equipment (such as lightning protection and railings for walkways) near Saxmundham.
- A HVDC underground cable connection of approximately 10 km in length between the proposed converter station near Saxmundham, and a transition joint bay (TJB) approximately 900 m inshore from a landfall point (below) where the cable transitions from onshore to offshore technology.
- A landfall on the Suffolk coast (between Aldeburgh and Thorpeness).

5.3.1.3 The proposals in Suffolk have been developed for Proposed Project as a standalone project, but also include opportunities to co-locate infrastructure for up to two further projects at the converter station, cable corridors and the landfall location.

Offshore Scheme

5.3.1.4 The proposed Offshore Scheme includes three distinct components, which are summarised below:

- Suffolk landfall: This is the area where the cable route transitions between the marine and terrestrial environment in Suffolk. This is located between the settlements of Aldeburgh and Thorpeness. Trenchless installation techniques are proposed here to reduce disturbance to the intertidal environment;

- Marine HVDC cable route: This is the cable route from the landfall in Suffolk to the landfall in Kent. The marine HVDC cable route is up to 130 km in length; and
- Kent landfall: this is the area where the cable route transitions between the marine and terrestrial environment in Kent, located in the Pegwell Bay area to the south of the settlement of Cliffsend. Trenchless installation techniques are proposed here to reduce disturbance to the intertidal environment.

Kent Onshore Scheme

5.3.1.5 The proposed Kent Onshore Scheme would comprise of:

- A landfall point on the Kent coast at Pegwell Bay.
- A TJB approximately 800 m inshore to transition from offshore HVDC cable to onshore HVDC cable, before continuing underground for approximately 2 km to a new converter station (below).
- A 2 GW HVDC converter station, up to 26 m high plus external equipment (such as lightning protection and railings for walkways), near Minster. A new substation would be located immediately adjacent.
- Removal of approximately up to 1 km of existing HVAC overhead line, and installation of approximately 2.25 km of new HVAC overhead line from the substation near Minster and the existing Richborough to Canterbury overhead line.

5.3.1.6 The Proposed Project also includes modifications to sections of existing overhead lines in Suffolk and Kent, diversions of third-party assets, and land drainage from the construction and operational footprint. It also includes opportunities for environmental mitigation, compensation, and enhancement (which could include hedgerow creation, native tree planting or funding local wildlife groups). The construction phase will involve various temporary construction activities including overhead line diversions, working areas for construction equipment and machinery, site offices, storage, accesses, bellmouths, and haul roads, as well as watercourse crossings and the diversion of public rights of way (PROWs).

Purpose of this Document

5.3.1.7 Alongside the PEIR it is customary to produce a Habitats Regulations Assessment (HRA) in accordance with Planning Inspectorate (PINS) Advice Note 10 (Ref 3.1), discussing impacts on internationally important wildlife sites to the extent possible at that stage of scheme development. For convenience, this version of the HRA report constitutes Part 5 Chapter 3 of the PEIR alongside other reports that cover the entire Proposed Project such as the Water Framework Directive assessment. It is a preliminary document that discusses likely significant effects on internationally important wildlife sites to the extent possible at this stage of Proposed Project. As such, a provisional conclusion of Likely Significant Effects (LSE) is made for a number of impact pathways, pending further analysis that will inform the DCO application. As such, an updated version of this draft HRA, including both an updated LSE analysis (if required) and an Appropriate Assessment, will be produced to accompany the formal DCO application.

5.3.1.8 The draft Order Limits, which illustrate the boundary of the Proposed Project, are illustrated on **Figure 1.1.1 Draft Order Limits** and the proposed Suffolk Onshore Scheme is illustrated on **Figure 1.1.2 Suffolk Onshore Scheme**.

5.3.1.9 This chapter should be read in conjunction with:

- **Volume 1, Part 1, Chapter 4: Description of the Proposed Project**;
- **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**;
- **Volume 1, Part 1, Chapter 6: Scoping Opinion and EIA Consultation**;
- **Volume 1, Part 2, Chapter 1: Evolution of the Suffolk Onshore Scheme**;
- **Volume 1, Part 2, Chapter 3: Suffolk Ecology and Biodiversity**;
- **Volume 1, Part 3, Chapter 3: Kent Ecology and Biodiversity**;
- **Volume 1, Part 4, Chapter 5: Marine Mammals**; and
- **Volume 1, Part 4, Chapter 6: Marine Ornithology**.

5.3.1.10 These chapters describe the Proposed Project and its evolution as well as the ecological work undertaken to date.

Legislation

5.3.1.11 The UK left the EU on 31 January 2020 under the terms set out in the EU (Withdrawal Agreement) Act 2020 (‘the Withdrawal Act’), this established a transition period, which ended on 31 December 2020. The Withdrawal Act retains the body of existing EU-derived law within UK domestic law. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 amended the 2017 Habitat Regulations to decouple the 2017 Habitats Regulations from the EU Directives, whilst maintaining the protection and processes related to European sites. The Habitats Regulations (and the Offshore Regulations) enable the protection of sites that host habitats and species of European Importance.

5.3.1.12 Under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended), and Regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017, as part of the assessment of a proposed scheme it is necessary to consider whether the scheme is likely to have a significant effect on areas that have been internationally designated for nature conservation purposes. This 'first stage' is the assessment that has been conducted and reported in this document.

5.3.1.13 Areas of international importance for nature conservation are Special Areas of Conservation (SAC; designated for their habitats or fauna other than birds), Special Protection Areas (SPA; designated for birds) and Ramsar sites (wetlands of international importance). They are collectively referred to as Habitats Sites or European Sites.

5.3.1.14 Should it be found that significant effects are likely, an 'Appropriate Assessment' should then be carried out in order to further assess those effects. Image 5.3.1 sets out the legislative basis for an Appropriate Assessment. Consent may only be given for the Proposed Project if, following assessment and the consideration of mitigation measures, it is established that it will not adversely affect the integrity of the European Site.

5.3.1.15 If adverse effects are identified that cannot be sufficiently mitigated, alternatives should be considered to avoid those effects. However, where no alternative solution exists and so an adverse effect remains, a further assessment should be made of whether the Proposed Project is required for imperative reasons of overriding public interest (IROPI). If the Proposed Project meets that IROPI test, compensatory measures will be required.

5.3.1.16 Over the years, the phrase 'Habitats Regulations Assessment' (HRA) has been used to describe the overall process set out in both 2017 Regulations, from the screening for LSE through to identification of IROPI. This has arisen in order to distinguish the overall process from the individual stage of "Appropriate Assessment". Throughout this Report the term HRA is used for the overall process and restricts the use of Appropriate Assessment to the specific stage of that name.

5.3.1.17 Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) states that '*A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which— (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and (b) is not directly connected with or necessary to the management of that site, must make an Appropriate Assessment of the implications of the plan or project for that site in view of that site's conservation objectives'*.

5.3.2 Methodology

Introduction

5.3.2.1 Image 5.3.1 below outlines the stages of HRA according to PINS Advice Note 10 (Ref 3.1). Note that while this image shows all the stages of the HRA process, this document only discusses Stage 1 in further detail (see below). The Stage 2 Appropriate Assessment will be documented as part of the DCO application.

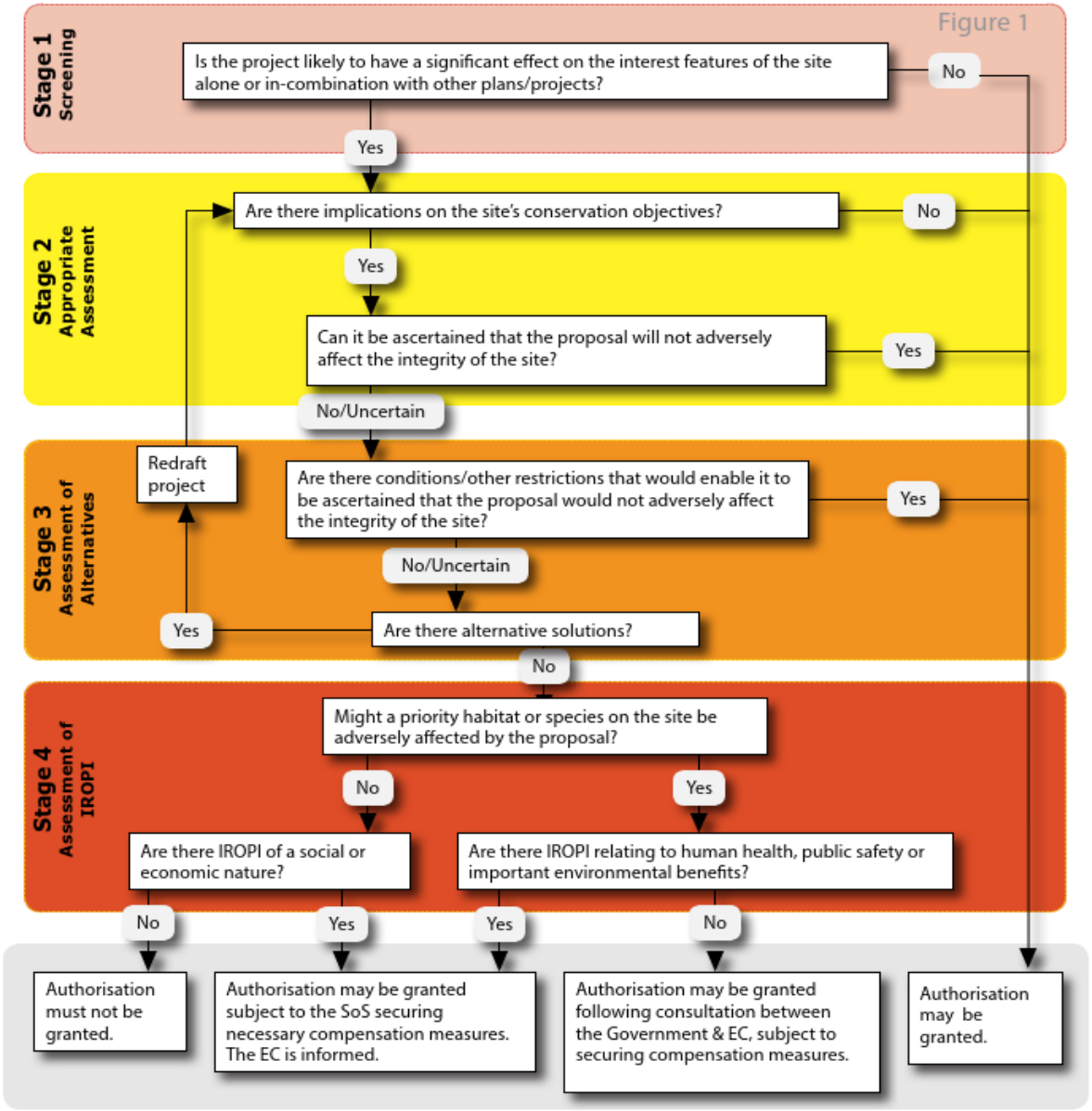

Image 5.3.1 Four Stage Approach to Habitats Regulations Assessments of Projects. Image taken from an earlier version of Planning Inspectorate Advice Note 10.

5.3.2.2 The HRA Stage 1 has been carried out with reference to general guidance on HRA published by the UK government in 2021 (Ref 3.2) and PINS Advice Note 10 (Ref 3.1). This assessment of LSEs takes account of relevant EU case law (for instance, the Holohan and People over Wind cases, discussed below). As required by Advice Note 10, Appendix A of this document contains matrices in the PINS template, summarising impacts on European Sites and conclusions over whether Likely Significant Effects can be dismissed.

5.3.2.3 Whilst the HRA decisions must be taken by the competent authority (The Secretary of State as advised by PINS as Examining Authority), the information needed to undertake the necessary assessments must be provided by the applicant. The information needed for the competent authority to establish whether there are any LSEs from the Proposed Project is therefore provided in this Report.

HRA Stage 1 – Screening for Likely Significant Effects

5.3.2.4 The objective of the LSE test is to 'screen out' those aspects of a Proposed Project and / or the European Sites that can, without any detailed appraisal, be deemed unlikely to result in significant adverse effects upon European Sites, usually because there is no mechanism for an adverse interaction (i.e., a pathway) with European Sites. The remaining aspects are then taken forward to an Appropriate Assessment. The HRA must consider the potential for effects 'in combination' with other plans and projects.

5.3.2.5 This report has been prepared having regard to all relevant case law relating to the 2017 Regulations, the Habitats Directive and Birds Directive. This includes the ruling by the Court of Justice of the European Union (CJEU) in the case of People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17) (Ref 3.3). This case held that; "*it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site*" (paragraph 40). This establishes that 'mitigation measures' cannot be taken into account at the screening stage, but they can be taken into account in an Appropriate Assessment.

5.3.2.6 However, this ruling has since been qualified by the UK courts. On 15 August 2018, in the case of Langton (Ref 3.4), the High Court ruled that conditions on badger cull licences preventing badger culling near a Special Protection Area or at certain times of year should not be classed as mitigation measures as described in the People over Wind ruling. The judge ruled that these licence conditions were properly characterised as "integral features of the project" and could therefore be relied on for the purposes of habitats screening. His reasoning was that it would be "*contrary to common sense for Natural England to assume that culling would take place at times and places where the applicants did not propose to do so"*. Therefore, restrictions on the *timing* of works which are part of the proponent's proposal can be taken into account in HRA Stage 1 – Screening for Likely Significant Effects.

5.3.2.7 In 2018, the Holohan case (Holohan et al vs. An Bord Pleanála (C-461/17) (Ref 3.84)) confirmed that an Appropriate Assessment must ensure that a) where interest features of an SAC or SPA are outside the European site boundary they must be taken into account (this is routinely done in the UK through consideration of functionally-linked land) and b) if there are habitats and species for which the site is not designated but which are essential to ensuring the site achieves its conservation objectives these must also be covered in the Appropriate Assessment.

5.3.2.8 In addition, the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016 make it an offence to pollute watercourses, irrespective of whether they are designated as European Sites or not. Therefore, pollution control measures can also be considered at the LSE stage.

The Rochdale Envelope

5.3.2.9 In July 2018, PINS published Advice Note Nine: Rochdale Envelope (The Planning Inspectorate, 2018), explaining how the principles of the Rochdale Envelope should be used by DCOs for the Environmental Impact Assessment (EIA) process.

5.3.2.10 The Rochdale Envelope[1] is applicable where some of the details of a project have not been confirmed when an application is submitted, and flexibility is sought to address uncertainty. Notwithstanding, all significant potential effects of a project must be properly addressed.

5.3.2.11 It encompasses three key principles:

- The assessment should use a cautious worst-case approach;
- The level of information assessed should be sufficient to enable the LSE of a project to be assessed; and
- The allowance for flexibility should not be abused to provide inadequate descriptions of projects.

5.3.2.12 This HRA has given due consideration to the Rochdale Envelope in the screening process for LSE. The worst-case (i.e., the potentially most impactful) construction, decommissioning and operational scenarios have been assessed in relation to impact pathways.

5.3.3 Data used in this report

5.3.3.1 In this report, the following sources of data have been used:

- Citations for European Sites;
- Conservation Objectives, Site Improvement Plans, and Supplementary Advice on the Conservation Objectives for European Sites;
- Guidance documents for specific impact pathways (referenced in the report where first used);
- Phase 1 Habitat Survey data for the Suffolk Onshore and Kent Onshore Schemes;
- The Multi-Agency Geographic Information System (MAGIC) website: and
- Breeding and non-breeding bird surveys for the Suffolk Onshore and Kent Onshore Schemes.

[1] The Rochdale Envelope arises from two cases: R. v Rochdale MBC ex parte Milne (No.1) and R. v Rochdale MBC ex parte Tew [1999], which are cases that dealt with outline planning applications for a proposed business park in Rochdale.

5.3.4 European Sites

Physical scope of the Project

5.3.4.1 There is no guidance that dictates the general physical scope of an HRA. Therefore, in considering the physical scope of the assessment, National Grid were guided primarily by the identified impact pathways (called the source-pathway-receptor model).

5.3.4.2 Briefly defined, impact pathways are routes by which the implementation of a project can lead to an effect upon a European designated site. An example of this would be visual and noise disturbance arising from the construction work or operational phase associated with a project. If there are sensitive ecological receptors within a nearby European site (e.g., non-breeding overwintering birds), this could alter their foraging and roosting behaviour and potentially affect the site's integrity. For some impact pathways (notably air pollution) there is guidance that sets out distance-based zones required for assessment. These are discussed below where relevant. For other impact pathways, a professional judgment must be made based on the best available evidence.

Relevant European Sites

Suffolk and Kent Onshore Schemes

5.3.4.3 Given the nature of the Suffolk and Kent Onshore Schemes the potential impact pathways that have the greatest 'reach' or zone of influence are those of loss of functionally-linked habitat for SACs and SPAs designated for highly mobile species, and potential direct collision risk regarding new sections of overhead line. The latter impact applies only in Kent as there will be no new overhead line in Suffolk.

5.3.4.4 National Highways' Design Manual for Roads and Bridges standards identify that all SACs designated for bats should be considered up to 30 km from new road schemes. It is considered that this provides a reasonable basis to also consider impacts on SACs designated for bats up to 30 km from the Proposed Project.

5.3.4.5 For birds, unpublished guidance from Natural England ('Impact Risk Zones Guidance Summary: Sites of Special Scientific Interest Notified for Birds. Version 1.1' (Ref 3.83)) indicates that wintering waders and waterfowl forage up to 2 km from the boundary of the SSSIs for which they are designated. The exceptions are white-fronted goose, greylag goose, Bewick's swan, whooper swan, Bean goose, golden plover, lapwing, pink-footed goose and barnacle goose, which can forage up to 10-20 km (depending on species). For heathland breeding birds such as nightjar and woodlark a 2 km impact risk zone around the SSSI boundary is identified for 'pylons and overhead cables' in the same guidance.

5.3.4.6 There are no SACs designated for bats within 30 km of the Proposed Project. Stodmarsh SAC could be affected at greater distances through hydrology. Although it lies 9.3 km upstream of the Proposed Project (6.5 km measured as a straight line) the SAC is below the tidal limit of the River Stour at Fordwich meaning a hydrological connection to the Proposed Project could exist on a rising tide.

5.3.4.7 It is unlikely that any impacts on other terrestrial SACs, or plant or invertebrate interest features of Ramsar sites would arise at distances greater than 500 m at most (and probably less). This is because the furthest zone of influence from the scheme to SACs, where there is no hydrological connection, would be through construction traffic exhaust emissions which have a zone of influence of 200 m (Ref 3.53 and Ref 3.54). SACs designated for great crested newt could be relevant up to 500 m from the Proposed Project as the species routinely disperses this distance from its breeding ponds, but no SACs designated for great crested newt are located within 500 m of the Proposed Project.

Offshore scheme

5.3.4.8 For marine receptors, to ensure that all potential impact pathways were encompassed, the distance at which European Sites are assessed varies depending on the receptor. All European Sites designated for benthic ecology receptors should be considered up to 10 km from the Offshore Scheme.

5.3.4.9 For migratory fish European Sites up to 50 km from the Offshore Scheme were considered. However, to ensure all fish that may pass within the vicinity of the Offshore Scheme were considered, a regional approach was adopted, considering any European Sites where an interaction may occur, even if the site was beyond the initial 50 km distance. However, there are no European Sites designated for fish or shellfish within this range.

5.3.4.10 European Sites that are designated for marine mammals were considered on a site-by site basis, relating to the Management Unit (MU) of each species, in conjunction with a review of species ecology to determine which sites or populations exhibit connectivity with the Offshore Scheme and the potential impact pathways. For cetaceans the relevant Inter Agency Marine Mammal Working Group (IAMMWG) MUs were used for the assessment (Ref 3.5), and for pinnipeds the Special Committee on Seals (SCOS) Seal Management Units (SMUs) were used (Ref 3.6) (**Volume 1, Part 4 Chapter 5: Marine Mammals**).

5.3.4.11 Based on the area over which impacts on sensitive ornithological receptors could occur, SPAs and Ramsar sites up to 10 km from the Offshore Scheme have been considered. This captured any marine and coastal sites designated for the protection of ornithological features.

Summary

5.3.4.12 Given the location of the Proposed Project, the relevant European Sites, and the likely impact pathways present, this HRA has discussed the following European Sites:

Suffolk

- Sandlings SPA.
- Outer Thames Estuary SPA.
- Alde-Ore Estuary SPA/Ramsar.
- Minsmere-Walberswick SPA/Ramsar.

Kent

- Thanet Coast & Sandwich Bay SPA/Ramsar.

- Sandwich Bay SAC.
- Stodmarsh SPA/Ramsar.
- Stodmarsh SAC.

Offshore

- Outer Thames Estuary SPA.
- Alde-Ore Estuary SPA/Ramsar.
- Minsmere-Walberswick SPA/Ramsar.
- Thanet Coast & Sandwich Bay SPA/Ramsar.
- Sandwich Bay SAC.
- Berwickshire and North Northumberland Coast SAC.
- Humber Estuary SAC.
- Margate and Long Sands SAC.
- Southern North Sea SAC.
- Thanet Coast SAC.
- Wash and North Norfolk Coast SAC.

5.3.4.13 This list excludes several onshore SACs in Suffolk for which no impact pathway exists since they lie more than 500m from the Proposed Project, including the Alde-Ore and Butley Estuaries SAC and Minsmere-Walberswick Heaths & Marshes SAC.

5.3.4.14 Paragraph 4.9 of PINS Advice Note 10 requires an evaluation of the potential for the Proposed Project to require other consents which could also require HRA by different competent authorities, and a statement as to whether the Proposed Project boundary overlaps with devolved administrations or other European Economic Area (EEA) States.. It is confirmed that the Proposed Project boundary does not overlap with areas of devolved administrations or with those of other EEA States.

5.3.4.15 Each relevant SAC, SPA or Ramsar site is introduced in turn below.

Sandlings SPA

Introduction

5.3.4.16 The site is notified for its internationally important populations of woodlark and nightjar. The SPA is made up of lowland heathland, acid grassland and forestry plantations on sandy soils which once supported extensive heathland; the main conservation interest of which lies in the open areas such as young plantation and rotational clearfell which provide suitable breeding habitat.

Conservation Objectives

5.3.4.17 With regard to the SPA (Ref 3.7) and the individual species and/or assemblage of species for which the site has been classified (the ‘Qualifying Features’ listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild 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 population of each of the qualifying features; and,
  - The distribution of the qualifying features within the site.

Qualifying Features

5.3.4.18 The site qualifies under Article 4.1 of the Directive (79/409/EEC) (Ref 3.8) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

- Nightjar *Caprimulgus europaeus.*
- Woodlark *Lullula arborea*.

Environmental Vulnerabilities

5.3.4.19 The 2015 Natural England Site Improvement Plan (SIP) (Ref 3.9) identifies the following threats and pressures linked to the site:

- Changes in species distributions.
- Inappropriate scrub control.
- Deer.
- Air pollution: impact of atmospheric nitrogen.
- Public access/disturbance.

5.3.4.20 The 2019 Supplementary Advice to the Conservation Objectives (SACO) (Ref 3.10) goes into more detail on these vulnerabilities.

Outer Thames Estuary SPA

Introduction

5.3.4.21 The Outer Thames Estuary Special Protection Area was designated to protect the red-throated diver *Gavia stellata* population and its supporting habitats (subtidal sands) in favourable condition and has also been designated to protect the plunge-diving open water foraging habitats of common tern *Sterna hirundo* and little tern *Sterna albifrons*. The main part of the site is the outer part of the estuary (east of a line north from Sheerness, Kent to Shoebury Ness, Essex); a separate area extending south along the coast of E Norfolk (from Caister-on-Sea) to Woodbridge, Suffolk and lying mainly within the 12 nautical mile zone, except for two small areas which extend slightly into the 12 nm zone offshore from about Lowestoft; and a third area lying slightly further north and partly within 12 nm, but also with a larger area extending well beyond the 12 nm zone) (Ref 3.11).

Conservation Objectives

5.3.4.22 With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild 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 population of each of the qualifying features; and,
  - The distribution of the qualifying features within the site.

Qualifying Features

5.3.4.23 The site qualifies under Article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

- Red-throated diver *G. stellata* (non-breeding).
- Common tern *Sterna hirundo*.
- Little tern *Sterna albifrons*.

Environmental Vulnerabilities

5.3.4.24 The Conservation Advice Package identifies the flowing threats and pressures linked to the site:

- Low to moderate sensitivity to physical removal or smothering of supporting habitats;
- Low sensitivity to siltation, abrasion and selective extraction;
- High sensitivity to non-physical disturbance (e.g. sound and lighting);
- Low to moderate sensitivity to toxic contamination;
- Low sensitivity to non-toxic contamination;
- Low sensitivity to selective extraction of prey species by fishing; and
- Low to moderate sensitivity to biological disturbance.

Alde-Ore Estuary SPA/Ramsar

Introduction

5.3.4.25 The site is situated on the east coast of Suffolk between Aldeburgh in the north and Bawdsey in the south. The site comprises the estuary complex of the rivers Alde, Butley and Ore, including Havergate Island and Orfordness.

Conservation Objectives

5.3.4.26 With regard to the SPA (Ref 3.12) and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild 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 population of each of the qualifying features; and,
  - The distribution of the qualifying features within the site.

Qualifying Features

5.3.4.27 The site qualifies as an SPA under Article 4.1 of the Directive (79/409/EEC) (Ref 3.13) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

- Marsh Harrier *Circus aeruginosus* (breeding)
- Lesser black-backed gull *Larus fuscus (*breeding)
- Ruff *Philomachus pugnax* (overwintering)
- Avocet *Recurvirostra avosetta* (breeding and overwintering)
- Sandwich tern *Sterna sandvicensis* (breeding)
- Little tern *Sterna albifrons* (breeding)
- Redshank *Tringa totanus* (overwintering)

5.3.4.28 The site also qualifies as an SPA under Article 4.1 for sustaining nationally important numbers of a range of non-breeding bird species. The site also qualifies under Article 4.2 by regularly supporting internationally important numbers of breeding lesser black-backed gull and non-breeding redshank.

5.3.4.29 The site qualifies as a Ramsar site for the following reasons:

- Ramsar criterion 2 - The site supports a number of nationally-scarce plant species and British Red Data Book invertebrates.
- Ramsar criterion 3 - The site supports a notable assemblage of breeding and wintering wetland birds.
- Ramsar criterion 6 – The site supports internationally important populations of breeding lesser black backed gull, and non-breeding avocet and redshank.

Environmental Vulnerabilities

5.3.4.30 The 2015 Natural England SIP (Ref 3.14) identifies the following threats and pressures linked to the site:

- Hydrological changes;
- Public access/disturbance;
- Inappropriate coastal management;
- Coastal squeeze;
- Inappropriate pest control;
- Changes in species distributions;
- Invasive species;
- Air pollution;
- Commercial fisheries.

Minsmere-Walberswick SPA/Ramsar

Introduction

5.3.4.31 The Minsmere-Walberswick SPA contains areas of grazing marsh, extensive reedbeds, the estuary of the River Blyth, and areas of lowland heath and woodland. The boundaries of the site follows those of the Minsmere-Walberswick Heath and Marshes.SSSI.

Conservation Objectives

5.3.4.32 With regard to the SPA (Ref 3.15) and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild 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 population of each of the qualifying features; and,
  - The distribution of the qualifying features within the site.

Qualifying Features

5.3.4.33 The site qualifies as an SPA under Article 4.1 of the Directive (79/409/EEC) (Ref 3.16) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

- *Botaurus stellaris*; Great bittern (Breeding).
- *Anas strepera*; Gadwall (Non-breeding).
- *Anas strepera;* Gadwall (Breeding).
- *Anas crecca*; Eurasian teal (Breeding).

- *Anas clypeata;* Northern shoveler (Breeding).
- *Anas clypeata;* Northern shoveler (Non-breeding).
- *Circus aeruginosus;* Eurasian marsh harrier (Breeding).
- *Circus cyaneus;* Hen harrier (Non-breeding).
- *Recurvirostra avosetta;* Pied avocet (Breeding).
- *Sterna albifrons;* Little tern (Breeding).
- *Caprimulgus europaeus;* European nightjar (Breeding).
- *Anser albifrons albifrons;* Greater white-fronted goose (Non-breeding).

5.3.4.34 The site qualifies as a Ramsar site for the following reasons:

- Ramsar criterion 1 - The site contains a mosaic of marine, freshwater, marshland and associated habitats, complete with transition areas in between. Contains the largest continuous stand of reedbeds in England and Wales and rare transition in grazing marsh ditch plants from brackish to fresh water.
- Ramsar criterion 2 - This site supports nine nationally scarce plants and at least 26 red data book invertebrates. Supports a population of the mollusc *Vertigo angustior* (Habitats Directive Annex II; British Red Data Book Endangered).

Environmental Vulnerabilities

5.3.4.35 The 2015 Natural England SIP (Ref 3.17) identifies the following threats and pressures linked to the site:

- Coastal squeeze;
- Public access/disturbance;
- Changes in species distributions;
- Invasive species;
- Inappropriate pest control;
- Air pollution;
- Water pollution;
- Deer;
- Commercial fisheries.

Thanet Coast & Sandwich Bay SPA /Ramsar

Introduction

5.3.4.36 The Thanet Coast has the longest continuous stretch of coastal chalk in Britain (23 km), representing about 20% of UK coastal chalk and 12% of the coastal exposure in Europe. The chalk cliff face, cave and tunnel habitats and communities here are very uncommon in Europe and therefore important internationally.

5.3.4.37 The intertidal reef, together with the mudflats and sandflats which characterise the remainder of the coastline in North East Kent, provide valuable feeding grounds and roosting areas at low water for wintering waders, Golden Plover *Pluvialis apricaria* and Turnstone *Arenaria interpres* and a breeding population of Little Tern *Sterna albifrons*.

5.3.4.38 Sandwich Bay qualifies as a SAC for its fixed dunes with herbaceous vegetation (grey dunes), embryonic shifting dunes, shifting dunes with *Ammophila arenaria* marram grass (white dunes) and dunes with creeping willow *Salix arenaria* as listed under Annex I of the EU Habitats Directive.

Conservation Objectives

5.3.4.39 With regard to the SPA (Ref 3.18) and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild 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 population of each of the qualifying features; and,
  - The distribution of the qualifying features within the site.

Qualifying Features

5.3.4.40 With regards to the SPA the site is designated for the following qualifying features:

- European golden plover *Pluvialis apricaria* (Non-breeding).
- Ruddy turnstone *Arenaria interpres* (Non-breeding).
- Little tern *Sterna albifrons* (Breeding).

5.3.4.41 With regards to the Ramsar (Ref 3.19) criterion, the site is designated for the following:

Ramsar Criterion 2

- Supports 15 British Red Data Book wetland invertebrates.

Ramsar Criterion 6 – species/populations occurring at levels of international importance

5.3.4.42 Species with peak counts in the winter:

- Ruddy turnstone *Arenaria interpres* – 1,007 individuals representing 1% of the population (1998/99 – 2002/03).

Environmental Vulnerabilities

5.3.4.43 The 2014 Natural England SIP (Ref 3.20) identifies the following threats and pressures linked to the site:

- Changes in species distributions;
- Invasive species;
- Public access/disturbance;
- Hydrological changes;
- Air pollution: impact of atmospheric nitrogen deposition;
- Water pollution; and
- Fisheries: commercial marine and estuarine.

5.3.4.44 The 2019 SACO (Ref 3.21) goes into more detail on these vulnerabilities.

Sandwich Bay SAC

Introduction

5.3.4.45 The Thanet Coast has the longest continuous stretch of coastal chalk in Britain (23 km), representing about 20% of UK coastal chalk and 12% of the coastal exposure in Europe. The chalk cliff face, cave and tunnel habitats and communities here are very uncommon in Europe and therefore important internationally.

5.3.4.46 The intertidal reef, together with the mudflats and sandflats which characterise the remainder of the coastline in North East Kent, provide valuable feeding grounds and roosting areas at low water for wintering waders, Golden Plover *Pluvialis apricaria* and Turnstone *Arenaria interpres* and a breeding population of Little Tern *Sterna albifrons*.

5.3.4.47 Sandwich Bay qualifies as a SAC for its fixed dunes with herbaceaous vegetation (grey dunes), embryonic shifting dunes, shifting dunes with *Ammophila arenaria* marram grass (white dunes) and dunes with creeping willow *Salix arenaria* as listed under Annex I of the EU Habitats Directive.

Conservation Objectives

5.3.4.48 With regard to the SAC (Ref 3.22) and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
  - The extent and distribution of qualifying natural habitats;
  - The structure and function (including typical species) of qualifying natural habitats; and
  - The supporting processes on which qualifying natural habitats rely.

Qualifying Features

5.3.4.49 With regards to the SAC it is designated for the following:

- Embryonic shifting dunes.

- Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes"); Shifting dunes with marram.
- Fixed dunes with herbaceous vegetation ("grey dunes"); Dune grassland.
- Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*); Dunes with creeping willow.
- Humid dune slacks.

Environmental Vulnerabilities

5.3.4.50 The 2014 Natural England SIP (Ref 3.23) identifies the following threats and pressures linked to the site:

- Changes in species distributions;
- Invasive species;
- Public access/disturbance;
- Hydrological changes;
- Air pollution: impact of atmospheric nitrogen deposition;
- Water pollution; and
- Fisheries: commercial marine and estuarine.

5.3.4.51 The 2019 SACO (Ref 3.24) goes into more detail on these vulnerabilities.

Stodmarsh SPA/Ramsar

Introduction

5.3.4.52 Stodmarsh is designated as an SPA and SAC and is designed as a Ramsar wetland site. The background details of these sites, including their features of designation and Conservation Objectives are detailed in the subsequent paragraphs.

5.3.4.53 This wetland site located in the Stour valley contains a wide range of habitats including open water, gravel pits, lagoons, extensive reedbeds and grazing marsh, scrub and alder carr which together support a rich flora and fauna. Habitats are influenced by both freshwater and marine inputs. The vegetation is a good example of a southern eutrophic flood plain and a number of rare plants are found here. The invertebrate fauna is varied. The site is also of ornithological interest with its diverse breeding bird community. The site includes gravel pits, lagoons and reedbeds, and grassland habitats.

Qualifying features

5.3.4.54 The site is designated as a Ramsar site under Ramsar Criteria 2 (Ref 3.25):

- Six British Red Data Book wetland invertebrates. Two nationally rare plants, and five nationally scarce species. A diverse assemblage of rare wetland birds. The flora of the site includes the rare sharp leaved pondweed (*Potamogeton acutifolius*), which is considered critically endangered by the GB Red Book, as well as the vulnerable whorled water-milfoil (*Myriophyllum verticillatum*), rootless duckweed (*Wolffia arrhiza*) and *Carex divisa*. The site finds the presence of otter (*Lutra lutra*).

5.3.4.55 The site is designated as an SPA for the following features (Ref 3.26):

5.3.4.56 Wintering populations of:

- Bittern *Botaurus stellaris.*
- Gadwall *Anas Strepera.*
- Hen harrier *Circus cyaneus.*
- Northern shoveler *Anas clypeata.*

5.3.4.57 Breeding populations of:

- Gadwall *Anas Strepera.*

5.3.4.58 Regularly supports assemblages of breeding species:

- Great crested grebe *Podiceps cristatus.*
- Lapwing *Vanellus vanellus.*
- Mallard *Anas platyrhynchos.*
- Moorhen *Gallinula chloropus.*
- Reed bunting *Emberiza schoeniclus.*
- Common tern *Sterna hirundo.*
- Coot *Fulica atra.*
- Redshank *Tringa totanus.*
- Reed Warbler *Acrocephalus scirpaceus.*
- Shelduck *Tadorna tadorna.*
- Mute Swan *Cygnus olor.*
- Shoveler *Anas clypeata.*
- Teal *Anas crecca.*
- Tufted Duck *Aythya fuligula.*
- Water Rail *Rallus aquaticus.*
- Bearded Tit *Panurus biarmicus.*
- Cetti's Warbler *Cettia cetti.*
- Gadwall *Anas strepera.*
- Pochard *Aythya farina.*
- Sedge warbler *Acrocephalus schoenobaenus.*

5.3.4.59 Regularly supports assemblages of wintering waterfowl species:

- Gadwall *Anas strepera.*
- Shoveler *Anas clypeata.*
- Bittern *Botaurus stellaris.*

- Hen harrier *Circus cyaneus.*
- Tufted duck *Aythya fuligua.*
- Wigeon *Anas penelope.*
- White-fronted geese *Anser albifrons.*
- Mallard *Anas platyrhynchos.*
- Lapwing *Vanellus vanellus.*
- Snipe *Gallinago gallinago.*

Conservation Objectives (Ref 3.27)

5.3.4.60 With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild 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 population of each of the qualifying features; and,
  - The distribution of the qualifying features within the site.

Environmental Vulnerabilities

5.3.4.61 The 2014 Natural England SIP (Ref 3.28) identifies the following threats and pressures linked to the site:

- Water pollution;
- Invasive species;
- Inappropriate scrub control; and
- Air pollution;

5.3.4.62 The 2019 SACO (Ref 3.29) goes into more detail on these vulnerabilities.

Stodmarsh SAC

Qualifying features

5.3.4.63 The site is designated as an SAC (Ref 3.30) for its:

- 1016 Desmoulin's whorl snail *Vertigo moulinsiana.*

5.3.4.65 A sizeable population of Desmoulin's whorl snail *Vertigo moulinsiana* lives beside ditches within pasture on the floodplain of the River Stour, where reed sweet-grass *Glyceria maxima*, large sedges *Carex* spp. and sometimes common reed *Phragmites australis* dominate the vegetation. Stodmarsh is a south-eastern outlier of the main swathe of sites and is important in confirming the role of underlying base-rich rock (chalk) as a factor determining this species' distribution.

Conservation Objectives

5.3.4.66 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
  - The extent and distribution of the habitats of qualifying species;
  - The structure and function of the habitats of qualifying species;
  - The supporting processes on which the habitats of qualifying species rely;
  - The populations of the qualifying species; and,
  - The distribution of the qualifying species within the site.

Environmental Vulnerabilities

5.3.4.67 The 2014 Natural England SIP identifies the following threats and pressures linked to the site:

- Water pollution;
- Invasive species;
- Inappropriate scrub control; and
- Air pollution.

5.3.4.68 The 2019 SACO goes into more detail on these vulnerabilities.

Berwickshire and North Northumberland Coast SAC

Conservation Objectives (Ref 3.31)

5.3.4.69 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
  - The extent and distribution of the habitats of qualifying species;
  - The structure and function of the habitats of qualifying species;
  - The supporting processes on which the habitats of qualifying species rely;

- The populations of the qualifying species; and,
- The distribution of the qualifying species within the site.

Qualifying features

5.3.4.70 The site is designated as an SAC for its (Ref 3.32):

- 1140 Mudflats and sandflats not covered by seawater at low tide.
- 1160 Large shallow inlets and bays.
- 1170 Reefs.
- 8330 Submerged or partially submerged sea caves.
- 1364 Grey seal *Halichoerus grypus.*

5.3.4.71 Due to the distance of this site from the Proposed Project and the large foraging range of grey seals (Ref 3.62), the only feature of Berwickshire and North Northumberland Coast SAC that has the potential to overlap with potential impact pathways associated with the Proposed Project. Therefore, grey seal is the only feature of Berwickshire and North Northumberland Coast SAC to be assessed within the HRA.

Environmental Vulnerabilities

5.3.4.72 The 2015 Natural England SIP for Northumberland Coastal (Ref 3.33) identifies the following threats and pressures linked to the site:

- Public access/Disturbance;
- Water pollution;
- Invasive species;
- Changes in species distribution;
- Coastal squeeze;
- Direct impact from third party;
- Transportation and service corridors; and
- Fisheries: Commercial marine and estuarine.

5.3.4.73 The 2023 SACO (Ref 3.34) goes into more detail on these vulnerabilities.

Humber Estuary SAC

Conservation Objectives (Ref 3.35)

5.3.4.74 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
  - The extent and distribution of the habitats of qualifying species;

- The structure and function of the habitats of qualifying species;
- The supporting processes on which the habitats of qualifying species rely;
- The populations of the qualifying species; and,
- The distribution of the qualifying species within the site.

Qualifying features

5.3.4.75 The site is designated as an SAC (Ref 3.36) for its:

- 1130 Estuaries.
- 1140 Mudflats and sandflats not covered by seawater at low tide.
- 1110 Sandbanks which are slightly covered by sea water all the time.
- 1150 Coastal lagoons.
- 1310 Salicornia and other annuals colonizing mud and sand.
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*).
- 2110 Embryonic shifting dunes.
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes").
- 2130 Fixed coastal dunes with herbaceous vegetation ("grey dunes").
- 2160 Dunes with *Hippophae rhamnoides.*
- 1095 Sea lamprey *Petromyzon marinus.*
- 1099 River lamprey *Lampetra fluviatilis.*
- 1364 Grey seal *Halichoerus grypus.*

5.3.4.76 Due to the distance of this site from the Proposed Project and the large foraging range of grey seals (Ref 3.62), the only feature of Humber Estuary SAC that has the potential to overlap with potential impact pathways associated with the Proposed Project. Therefore, grey seal is the only feature of Humber Estuary SAC to be assessed within the HRA.

Environmental Vulnerabilities

5.3.4.77 The 2015 Natural England SIP for Humber Estuary (Ref 3.37) identifies the following threats and pressures linked to the site:

- Water pollution;
- Coastal squeeze;
- Changes in species distributions;
- Undergrazing;
- Invasive species;
- Natural changes to site conditions;
- Public access/disturbance;

- Fisheries: Commercial marine and estuarine;
- Direct land take from development; and
- Air pollution: impact of atmospheric nitrogen deposition.

5.3.4.78 The 2023 SACO (Ref 3.38) goes into more detail on these vulnerabilities.

Margate and Long Sands SAC

Conservation Objectives (Ref 3.39)

5.3.4.79 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
  - The extent and distribution of the habitats of qualifying species;
  - The structure and function of the habitats of qualifying species;
  - The supporting processes on which the habitats of qualifying species rely;
  - The populations of the qualifying species; and,
  - The distribution of the qualifying species within the site.

Qualifying features

5.3.4.80 The site is designated as an SAC for its:

- 1110 Sandbanks which are slightly covered by sea water all the time.

Environmental Vulnerabilities

5.3.4.81 The 2015 Natural England SIP for Northumberland Coastal (Ref 3.40) identifies the following threats and pressures linked to the site:

- Fisheries: Commercial marine and estuarine.

5.3.4.82 The 2023 SACO (Ref 3.41) goes into more detail on these vulnerabilities.

Southern North Sea SAC

Conservation Objectives (Ref 3.42)

5.3.4.83 The conservation objectives for the Southern North Sea SAC are to ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status for harbour porpoise in UK waters. In the context of natural change, this will be achieved by ensuring that:

- Harbour porpoise is a viable component of the site;
- There is no significant disturbance of the species; and

- The condition of supporting habitats and processes, and the availability of prey is maintained.

Qualifying features

5.3.4.84 The site is designated as an SAC (Ref 3.43) for its:

- 1351 Harbour porpoise *Phocoena phocoena.*

Environmental Vulnerabilities

5.3.4.85 The Southern North Sea SAC Conservation Objectives and Advice on Operations (Ref 3.44) identifies the following threats and pressures linked to the site:

- Entanglement/bycatch;
- Contaminants;
- Anthropogenic underwater sound;
- Reduction in prey resource; and
- Collision with vessels or installations.

Thanet Coast SAC

Conservation Objectives (Ref 3.45)

5.3.4.86 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
  - The extent and distribution of the habitats of qualifying species;
  - The structure and function of the habitats of qualifying species;
  - The supporting processes on which the habitats of qualifying species rely;
  - The populations of the qualifying species; and,
  - The distribution of the qualifying species within the site.

Qualifying features

5.3.4.87 The site is designated as an SAC (Ref 3.46) for its:

- 1170 Reefs.
- 8330 Submerged or partially submerged sea caves.

Environmental Vulnerabilities

5.3.4.88 The 2015 Natural England SIP for Thanet Coast (Ref 3.47) identifies the following threats and pressures linked to the site:

- Public access/disturbance
- Fisheries: Commercial marine and estuarine

5.3.4.89 The 2023 SACO (Ref 3.48) goes into more detail on these vulnerabilities.

Wash and North Norfolk Coast SAC

Conservation Objectives (Ref 3.49)

5.3.4.90 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

5.3.4.91 Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of the habitats of qualifying species
- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of the qualifying species, and,
- The distribution of the qualifying species within the site."

Qualifying features

5.3.4.92 The site is designated as an SAC for its (Ref 3.50):

- 1110 Sandbanks which are slightly covered by sea water all the time
- 1140 Mudflats and sandflats not covered by seawater at low tide
- 1150 Coastal lagoons
- 1160 Large shallow inlets and bays
- 1170 Reefs
- 1310 Salicornia and other annuals colonizing mud and sand
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- 1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)
- 1355 Otter *Lutra lutra*
- 1364 Grey seal *Halichoerus grypus*

5.3.4.93 Due to the distance of this site from the Proposed Project and the large foraging range of grey seals (Ref 3.51), the only feature of Wash and North Norfolk Coast SAC that has the potential to overlap with potential impact pathways associated with the Proposed Project. Therefore, grey seal is the only feature of the Wash and North Norfolk Coast SAC to be assessed within the HRA Stage 1 (Screening).

Environmental Vulnerabilities

5.3.4.94 The 2015 Natural England SIP for Northumberland Coastal (Ref 3.52) identifies the following threats and pressures linked to the site:

- Public access/disturbance;
- Siltation;
- Fisheries: Recreational marine and estuarine;
- Invasive species;
- Inappropriate coastal management;
- Fisheries: Commercial marine and estuarine;
- Coastal squeeze;
- Change in land management; and
- Air pollution: impact of atmospheric nitrogen deposition.

5.3.4.95 The 2023 SACO (Ref 3.53) goes into more detail on these vulnerabilities.

5.3.5 Likely Significant Effects (LSE)

Suffolk Onshore Scheme

Construction period

Direct habitat loss

5.3.5.1 There will be no direct loss of any area of SAC, SPA or Ramsar site as a result of the Proposed Project. Therefore, no likely significant effect will arise through this impact pathway.

Air quality

5.3.5.2 Traffic exhaust emissions contribute oxides of nitrogen and (from petrol exhausts) ammonia. These are pollutants but also contribute to nitrogen deposition (and thus acid deposition). Nitrogen deposition is a form of fertilisation that can change vegetation structure and species composition. Guidance from the Institute of Air Quality Management (Ref 3.53) and Natural England (Ref 3.54) identify that traffic exhaust emissions can affect ecological sites within 200m of the source. Approximately 12ha of Sandlings SPA will be located within 200m of a construction compound, the haul road, and launch pit for trenchless techniques, as these will directly about the southern boundary of the SPA. This amounts to 0.3% of the 3,406ha SPA. According to the UK Air Pollution Information System (www.apis.ac.uk) nitrogen deposition to acid grassland and heathland can affect the value of those habitats for both nightjar and woodlark. This is primarily due to changes in habitat structure.

5.3.5.3 In addition to traffic exhaust emissions, guidance from the Institute of Air Quality Management (Ref 3.55) identifies that significant dust soiling can arise on ecological receptors located within 50m of construction sites. A small part of Sandlings SPA is located within 50m of the eastern-most construction compound.

5.3.5.4 At this stage, therefore, LSE on the SPA due to atmospheric pollution from construction traffic is screened in for further consideration as part of the HRA submitted in the DCO application. At that time consideration will also be given to the fact that any impact will be temporary, whereas the critical load system for assessing nitrogen deposition impacts is based on an assumption of decades of exposure.

Loss of functionally-linked land

5.3.5.5 This is defined as the loss of habitat that is outside the boundary of a European site, but which is critical to its functioning. For example, the loss of habitat outside of an SPA which is used for foraging purposes by significant numbers (typically defined as more than 1% of the population) of qualifying bird species for which the SPA is designated, is regarded as a significant loss of functionally-linked habitat. The distance related to loss of functionally-linked habitat is dependent on the species in question and can vary greatly as discussed earlier based on Natural England guidance.

5.3.5.6 Sandlings SPA is designated for nightjar and woodlark. These species nest primarily within the SPA, although in 2023 three nesting pairs of woodlark were recorded nesting within 200m of one of the construction access routes (an existing track) connecting the Suffolk Onshore Boundary with Leiston Road. Several pairs were also recorded on Aldeburgh Golf Club, the closest of which was nesting approximately 100m from the Suffolk Onshore Boundary. A further pair was recorded nesting in the northern part of the Proposed Project (between Friston and Knodishall) adjacent to the Suffolk Onshore Boundary. According to the aforementioned Natural England guidance both woodlark and nightjar could forage up to 2 km from their nests. Both species have relatively broad foraging habitat requirements; in addition to heathland and early stage plantation they will also forage in grazed grass heath, arable land and have been recorded foraging in deciduous woodland and rough pasture, as well as domestic gardens. As such there is no shortage of suitable foraging habitat for both species within 2 km of the SPA. While there will be temporary loss of approximately 116 ha of potentially suitable foraging habitat within 2 km of the SPA, this represents 0.6% of available foraging habitat within 2 km of the SPA, and the vast majority will be restored within 2-3 years (as the entire route will not be excavated at once). There will be no permanent loss of suitable foraging habitat within 2 km of the SPA except for a few square metres occupied by some link kiosks. It is therefore concluded that no likely significant effect on Sandlings SPA due to loss of functionally-linked habitat will occur.

5.3.5.7 The Outer Thames Estuary SPA is designated to protect open water marine foraging habitat for terns and red-throated diver. Red-throated diver are sea birds that do not utilise habitats inland of the SPA. While the terns for which Outer Thames Estuary SPA is designated do nest on land, they nest in shingle and other unvegetated stony or sandy habitats that will not be affected by the Proposed Project. It is therefore concluded that no likely significant effect on Outer Thames Estuary SPA due to loss of functionally-linked habitat will occur.

5.3.5.8 Thousands of non-breeding wigeon and teal, as well as shelduck, black-tailed godwit, herring gull, gadwall, and shoveler have been recorded on the RSPB North Warren Reserve beneath which the trenchless installation will occur, and some of these have also been recorded on farmland within the Suffolk Onshore Boundary during wintering bird surveys. Until the second season of wintering bird surveys are complete it is not possible to determine whether the Suffolk Onshore Boundary supports more than 1% of the Alde-Ore Estuary SPA population of these species. Therefore, the land within the Suffolk Onshore Boundary could constitute functionally-linked land for the Alde-Orde Estuary SPA/Ramsar site which is less than 1 km from the Proposed Project.

5.3.5.9 Of the species identified in Natural England guidance as making significant use of land more than 2 km from designated site boundaries none are reasons for designation of Alde-Ore Estuary SPA and one, non-breeding white-fronted goose, is a reason for designation of Minsmere-Walberswick SPA. The relevant marshland parts of the SPA are located 5.6 km north of the Proposed Project. White-fronted goose can utilise habitat for roosting and foraging up to 10 km from the boundaries of the sites for which it is designated. Until wintering bird surveys are complete it is therefore not possible to dismiss LSE due to loss of functionally-linked habitat associated with Alde-Ore Estuary SPA/Ramsar and Minsmere-Walberswick SPA. This impact pathway is therefore screened in for Appropriate Assessment.

Disturbance

5.3.5.10 The launch pit for trenchless construction will be located on land, approximately 40 m inland of RSPB North Warren Nature Reserve. The launch pit immediately abuts Sandlings SPA to the north, at its closest point. Overlapping with the launch pit for trenchless construction there will also be construction compound immediately south of Sandlings SPA.

5.3.5.11 The factors that influence a species response to a disturbance are numerous, but key is species sensitivity, the scale of the impact (e.g. the noise level), proximity of disturbance sources and timing/duration of the potentially disturbing activity. Some species of birds are also sensitive to other visual disturbances such as human presence and movement of vehicles. The concern regarding the effects of visual disturbance on birds stems from the birds expending more energy than is necessary and spending an increased amount of time responding to the disturbance rather than feeding (Ref 3.56). Disturbance therefore risks increasing energetic output while reducing energetic input, which can adversely affect the 'condition' and ultimately survival of the birds. In addition, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they have to sustain a greater number of birds (Ref 3.57). Moreover, the more time a breeding bird spends disturbed from its nest, the more its eggs are likely to cool and the more vulnerable they, or any nestlings, are to predators.

5.3.5.12 The distance at which a species takes flight when approached by a disturbing stimulus is known as the 'tolerance distance' (also called the 'escape flight distance') and differs between species to the same stimulus and within a species to different stimuli. Disturbance on heathland birds is well known from work undertaken within the Thames Basin Heaths and Dorset Heaths SPAs. With respect specifically to European nightjar *Caprimulgus europaeus*, Liley and Clarke (Ref 3.58 and Ref 3.59) found that the density of individuals was directly related to the amount of surrounding development, with sites surrounded by higher levels of development supporting fewer nightjars. The species' breeding success appears to be much higher at less visited sites (Ref 3.60), with path proximity correlating strongly with nest failure, up to 225m from the path edge. Similarly, woodlark *Lullula arborea* are also affected significantly by disturbance. Mallord estimated that, for 16 sites in southern England, 34% more woodlark chicks would be raised if all sites were free from disturbance (Ref 3.61 and Ref 3.62).

5.3.5.13 Professional experience is that in broad terms noise impacts from conventional construction techniques are unlikely to arise from noise-generating activities located more than approximately 250m from the qualifying bird species, and possibly less depending on the activity. This is therefore only a risk for Sandlings SPA, as the next nearest site (Outer Thames Estuary SPA) is 860m from the launch pit for trenchless installation at its closest.

5.3.5.14 Construction will take place well within 250m of Sandlings SPA. This includes sections of cable trenching, the launch pit for trenchless installation, and a construction compound. Sandlings SPA is designated for its nesting nightjar and woodlark. These species are either absent (nightjar) or non-breeding (woodlark) during the period September to February inclusive. Works within 250m of the SPA boundary that can be scheduled to take place between September and February inclusive would therefore not result in disturbance of nesting nightjar or woodlark. However, it is not possible at this point to confirm what works within 250m of the Sandlings SPA boundary could be confined to the September to February period. Therefore, noise disturbance of nesting woodlark and nightjar at Sandlings SPA is screened into Appropriate Assessment.

5.3.5.15 The Appropriate Assessment will be informed by noise monitoring data from within the SPA and modelling of the average (LAeq) and, where appropriate, maximum (LAmax) construction noise levels for the noisiest activities.

5.3.5.16 Moving from noise to visual disturbance, disturbance from visual intrusion such as lighting is likely to be most relevant if the works are immediately adjacent to an SPA. Lighting is likely to be an issue if the works result in the introduction lighting within close proximity to a European site which is currently unlit. There is currently a fence separating the construction compound and trenchless installation pit location from the Sandlings SPA. Therefore, to ensure no visual disturbance, screens will need to be erected. Since these would constitute mitigation, they cannot be taken into account in the Likely Significant Effect test. Therefore, visual disturbance of nesting woodlark and nightjar at Sandlings SPA is also screened into Appropriate Assessment.

5.3.5.17 The Outer Thames Estuary SPA is 860m from the nearest surface works, such as the launch pit for trenchless installation at its closest, on the opposite side of RSPB North Warren Reserve. Given this distance, there will be no disturbance of red-throated diver or foraging tern species from the Suffolk Onshore Scheme. Likely significant effects on Outer Thames Estuary SPA due to disturbance can therefore be dismissed.

Pollution

5.3.5.18 There is potential for changes in water quality resulting from:

- disturbance of contaminated soils and perched groundwater, and the creation of new pathways to sensitive receptors (including construction workers and controlled waters) during construction;
- pollution of surface watercourses within or near the Proposed Project during construction and decommissioning, due to spillages or polluted surface water run-off entering a watercourse;

5.3.5.19 The quality of the water that feeds European Sites is an important determinant of the nature of their habitats and the species they support, and therefore integral to meeting a site's Conservation Objectives. Poor water quality can have a range of environmental impacts. At high concentrations, toxic chemicals and heavy metals can result in the immediate death of aquatic life (both flora and fauna). At lower concentrations, negative impacts may be more subtle and could increase vulnerability to disease or change the behaviour of wildlife. These substances, especially Polychlorinated Biphenyls (PCBs), accumulate in minuscule benthic organisms and then biomagnify as they are passed up the food chain. Furthermore, they are not easily biodegraded over time. Overall, there are two broad types of toxic compounds in aquatic environments, namely synthetic and non-synthetic (i.e., naturally occurring) substances.

5.3.5.20 Toxic contamination may arise from synthetic toxic compounds, such as pesticides, PCBs (polychlorinated biphenyls) and biocides. Some of these substances are endocrine disrupting chemicals, which have the capacity to mimic animal hormones, prevent their production or breakdown. As discussed above, many of the synthetic compounds tend to accumulate over time and are likely to be present in animal tissue or substrate for long periods of time. Another factor in determining the magnitude of water pollution is the amount of hydrological mixing and tidal flushing that a site receives.

5.3.5.21 Non-synthetic compounds, such as fuel oils and heavy metals, occur in the environment naturally at relatively low concentrations, but become toxic at higher concentrations. Oil pollution is particularly damaging (and persistent) in intertidal environments, where natural degradation and weathering of oils is slow.

5.3.5.22 However, the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016 make it an offence to pollute watercourses, irrespective of whether they are European Sites or connect to European Sites.

5.3.5.23 Therefore, the construction period on every project must have a duty of care to the water environment and produce and implement plans and procedures to prevent discharge from works entering surface, groundwater, wetlands or coastal waters. This is usually undertaken in the form of a Construction Environment Management Plan (CEMP) which includes measures for the protection of ground and surface waters, pollution prevention measures and an emergency response plan for pollution events.

5.3.5.24 As such, it is considered that new infrastructure can be constructed in a way to prevent pollution to the water environment to ensure no adverse effects from water pollution on any European site. LSE can therefore be screened out for all European Sites through this impact pathway.

Operational period

Disturbance

5.3.5.25 Once the Proposed Project is operational there will be no requirement for day-to-day presence of people, and the infrastructure does not produce sounds that would result in disturbance of birds. The only potential for disturbance would therefore be during maintenance. It is impossible to forecast exactly when maintenance crews may need to visit parts of the site, or how often. However, maintenance visits are likely to be infrequent and for short periods and will be much smaller in scale than construction. Given the area is an active agricultural landscape, with tractors, agricultural workers and other mobile plant present as a matter of course, it is considered that maintenance crews and activities would not constitute a material change to this background level of activity. LSE on all European Sites are therefore screened out.

5.3.5.26 Four ducts would be installed as part of the trenchless installation, one more duct would be installed than for the terrestrial HVDC underground cables to allow for a spare. Should a section of cable need to be replaced at the landfall, this spare duct would allow for a new section of cable to be pulled through rather than a repair to the existing or needing to re install ducts.

Pollution

5.3.5.27 As with construction period impacts, the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016 make it an offence to pollute watercourses, irrespective of whether they are European Sites or connect to European Sites.

5.3.5.28 Therefore, during maintenance, National Grid has a duty of care to the water environment and produce and implement plans and procedures to prevent discharge from works entering surface, groundwater, wetlands or coastal waters. This is usually undertaken in the form of a Construction Environmental Management Plan which includes measures for the protection of ground and surface waters, pollution prevention measures and an emergency response plan for pollution events.

5.3.5.29 As such, it is considered that maintenance of the new infrastructure (where required) can be designed in a way to prevent pollution to the water environment to ensure no adverse effects from water pollution on any European site. LSE can therefore be screened out for all European Sites through this impact pathway.

Decommissioning period

5.3.5.30 For the purposes of this assessment decommissioning impacts are considered to be very similar to construction period impacts. As such, the assessment of impacts on European Sites discussed above is also considered applicable to decommissioning and no other European Sites, or impacts, are identified.

Kent Onshore Scheme

Construction period

Direct habitat loss

5.3.5.31 The nearest onshore works to any European site will be the trenchless installation receiving pit west of St Augustine's Golf Club 470m from Thanet Coast & Sandwich Bay SPA/Ramsar site. LSE through direct habitat loss can therefore be screened out for all European Sites.

Loss of functionally-linked land

5.3.5.32 Stodmarsh SPA/Ramsar site is located 6.9 km west of the Proposed Project at its closest point. However, none of the long-distance foraging/roosting geese or swan species identified in Natural England guidance are identified as being species for which the SPA or Ramsar site is specifically designated.

5.3.5.33 Golden plover is the only species for which Thanet Coast & Sandwich Bay SPA/Ramsar site is designated that makes significant use of farmland for roosting and foraging. Unpublished guidance from Natural England ('Impact Risk Zones Guidance Summary: Sites of Special Scientific Interest Notified for Birds. Version 1.1') indicates that 'pylons and overhead cables' could significantly affect wintering golden plover up to 5 km from the sites for which they are designated.

5.3.5.34 The first season (2022-2023) of wintering bird surveys undertaken for the Proposed Project identified that fields north-east of the River Stour through which the Proposed Project will pass supported significant numbers (more than 1% of both the SPA population and the latest WeBS counts) of golden plover, albeit only on a single visit in December 2022, when a flock of more than 700 individuals was recorded. This record appeared correlated with localised standing water within these fields. These fields overlap with the location of the proposed Minster Converter Station.

5.3.5.35 As part of the Kent Onshore Scheme there will be a HVAC connection, by overhead line, from the existing Richborough to Canterbury 400 kV overhead line to the proposed Minster Substation. This will be made via a new approximately 1 km section of double overhead line. The proposed new section of overhead line would be routed to the northeast from the existing Richborough to Canterbury overhead line, crossing the River Stour and a section of the railway, and connecting to the proposed Minster 400 kV Substation. There are already powerlines crossing the River Stour approximately 1 km to the west of the proposed new overhead line, but the Proposed Project will be increasing the number of powerlines crossing the river. There is a potential effect of displacement (and thus effective loss of functionally-linked land) if birds avoid the new section of overhead powerline and surrounding area.

5.3.5.36 It is considered at this stage that LSE on Thanet Coast & Sandwich Bay SPA/Ramsar site due to loss of functionally-linked land for golden plover cannot be dismissed. This conclusion will be reviewed once a second season of wintering bird data is obtained and an Appropriate Assessment undertaken if necessary.

Disturbance

5.3.5.37 As already discussed for Suffolk, professional experience is that in broad terms noise impacts from conventional construction techniques are unlikely to arise from noise-generating activities located more than approximately 250m from the qualifying bird species, and possibly less depending on the activity. Disturbance is therefore only a risk for Thanet Coast & Sandwich Bay SPA/Ramsar, as the next nearest European site (Stodmarsh SAC/SPA/Ramsar) is 6.5 km (for the SAC) and 6.9 km (for the SPA/Ramsar) from the Proposed Project at its closest.

5.3.5.38 The closest onshore surface construction to the Thanet Coast & Sandwich Bay SPA is the trenchless installation receiving pit west of Saint Augustine's Golf Club, as the trenchless installation at landfall will occur beneath the golf course. The trenchless installation receiving pit is located approximately 470m from the SPA at its closest and is therefore beyond the distance from which significant disturbance can be expected, although this will be confirmed through noise modelling for the DCO application.

5.3.5.39 Moving from noise to visual disturbance, disturbance from visual intrusion such as lighting is likely to be most relevant if the works are immediately adjacent to an SPA. The onshore trenchless installation receiving pit is 470m from the nearest part of Thanet Coast & Sandwich Bay SPA/Ramsar on the opposite side of the golf course. Therefore, no visual disturbance will arise.

Pollution

5.3.5.40 There is a direct potential pathway for pollution of Thanet Coast & Sandwich Bay SPA/Sandwich Bay SAC via Minster Stream and other watercourses that drain into the SPA and SAC, as well as via the trenchless installation launch pit which will be situated in the subtidal part of the SPA/SAC. There is also an indirect pathway to Stodmarsh SAC/SPA on a rising tide, due to the Proposed Project crossing the River Stour and the SAC/SPA being downstream of the tidal limit on that river.

5.3.5.41 However, as with Suffolk, the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016 make it an offence to pollute watercourses, irrespective of whether they are European Sites or connect to European Sites.

5.3.5.42 Therefore, the construction period on every project must have a duty of care to the water environment and produce and implement plans and procedures to prevent discharge from works entering surface, groundwater, wetlands or coastal waters. This is usually undertaken in the form of a Construction Environment Management Plan (CEMP) which includes measures for the protection of ground and surface waters, pollution prevention measures and an emergency response plan for pollution events.

5.3.5.43 As such, it is considered that new infrastructure can be constructed in a way to prevent pollution to the water environment to ensure no adverse effects from water pollution on any European site. LSE can therefore be screened out for all European Sites through this impact pathway.

Operational period

Collision risk

5.3.5.44 As discussed earlier, part of the Kent Onshore Scheme will include a HVAC connection across the River Stour by overhead line, from the existing Richborough to Canterbury 400 kV overhead line to the proposed Minster Substation and proposed Minster Converter Station. The main sources of potential risk to birds from the presence of transmission overhead lines are:

- Mortality of injury through collision with transmission lines (including conductors and earth wires) or supporting structures;
- Mortality through electrocution on transmission lines or supporting structures;

5.3.5.45 The principal factors affecting the risk of bird mortality through collision and electrocution are:

- Species specific morphology, biology and vision.
- Landscape and topography (e.g., siting of OHLs near important habitats or flyways)
- Weather affecting flight capability or visibility (strong winds/fog/heavy rain)
- Technical aspects of the transmission line (spacing of conductors, creation of perches)

5.3.5.47 Earth wires are thought to be responsible for a much higher rate of collisions than the thicker, often bundled conductor wires. Earth wires are harder for birds to see, being thinner in diameter and typically positioned at the top of the wire array. Birds trying to gain height to avoid the larger more visible conductor wires may fail to see earth wire.

5.3.5.48 Based on surveys during winter 2022-2023 the only bird associated with Thanet Coast & Sandwich Bay SPA likely to be present in the broad proximity of these overhead powerlines would be golden plover. A significant assemblage (700 birds) was recorded on a single survey visit in December 2022, utilising flooded fields north-east of the River Stour. Golden plovers are at low risk of colliding with overhead powerlines as they are small and manoeuvrable. There are few, if any, records of collision mortality for this species.

5.3.5.49 However, the River Stour may be a migration corridor for non-breeding birds travelling to and from Stodmarsh SPA/Ramsar, approximately 8.4 km to the west of the location of the new powerlines crossing the river. Bittern, shoveler, gadwall, hen harrier, mallard, wigeon, pochard, tufted duck, snipe, water rail and lapwing are all referenced within the SPA citation assemblage. Any birds flying along the river to reach Stodmarsh must already cross one set of powerlines spanning the river, but the presence of a second set potentially increases collision risk for vulnerable species. A series of vantage point surveys have been undertaken during 2023, commencing in February, to identify birds flying at potential collision height. The work is ongoing, but marsh harrier, hobby, peregrine, cormorant, buzzard, grey heron, little egret, mute swan, cormorant, shelduck, mallard, teal, greylag goose and curlew have all been recorded flying through the survey area at potential collision height, although not necessarily upstream. None of these are specifically identified as being part of the Stodmarsh non-breeding bird assemblage, but at this stage of the project potential for collision risk associated with species travelling to Stodmarsh SPA/Ramsar is screened in for further consideration in the HRA to accompany the DCO application, either in the HRA Stage 1 (Screening) at that point, or in any Appropriate Assessment.

Disturbance

5.3.5.50 Once the Proposed Project is operational there will be no requirement for day-to-day presence of people, and the infrastructure does not produce sounds that would result in disturbance of birds. The only potential for disturbance would therefore be during maintenance. It is impossible to forecast exactly when maintenance crews may need to visit parts of the site, or how often. However, maintenance visits are likely to be infrequent and for short periods and will be much smaller in scale than construction. Given the area is an active agricultural landscape, with tractors, agricultural workers and other mobile plant present as a matter of course, it is considered that maintenance crews and activities would not constitute a material change to this background level of activity.

5.3.5.51 Four ducts would be installed as part of the trenchless installation, one more duct would be installed than for the terrestrial HVDC underground cables to allow for a spare. Should a section of cable need to be replaced at the landfall, this spare duct would allow for a new section of cable to be pulled through rather than a repair to the existing or needing to re install ducts. LSE on all European Sites are therefore screened out.

Pollution

5.3.5.52 As with Suffolk, the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016 make it an offence to pollute watercourses, irrespective of whether they are European Sites or connect to European Sites.

5.3.5.53 Therefore, during maintenance, National Grid has a duty of care to the water environment and produce and implement plans and procedures to prevent discharge from works entering surface, groundwater, wetlands or coastal waters. This is usually undertaken in the form of an Environmental Management Plan which includes measures for the protection of ground and surface waters, pollution prevention measures and an emergency response plan for pollution events.

5.3.5.54 As such, it is considered that maintenance of the new infrastructure (where required) can be designed in a way to prevent pollution to the water environment to ensure no adverse effects from water pollution on any European site. LSE can therefore be screened out for all European Sites through this impact pathway.

Decommissioning period

5.3.5.55 For the purposes of this assessment decommissioning impacts are considered to be very similar to construction period impacts.

Offshore Scheme

Construction period

Temporary physical disturbance to subtidal benthic habitats and species

5.3.5.56 Activities associated with route preparation and cable installation can lead to direct physical disturbance of substrate which may lead to disturbance and/or loss of benthic habitats and species within the footprint and immediate vicinity of the works. Sensitivity to physical disturbance varies between receptor; for mobile receptors displacement, physiological/morphological damage may occur whilst for habitats and sedentary or less mobile receptors, the likely impacts are physiological/morphological damage and mortality.

5.3.5.57 A number of pre-installation and cable installation activities will temporarily disturb seabed habitats. These activities include:

- boulder plough or grab (swathe of 30 to 40 m, length to be confirmed after final RPL);
- pre-lay grapnel run (swathe of 1 to 3 m, length of ~116.7 km);
- sandwave lowering (sidecasting / CFE) (swathe of 30 to 40 m, length of ~7.3 km);
- sandwave lowering (pre-sweeping) (swathe of 20 to 25 m, length of ~25 km); and
- cable trenching – may include various methods depending on seabed conditions (e.g. ploughing, jet trenching, and/or mechanical trenching) (swathe ranges from 5m to 20m, length of cable route – between ~120 to 128 km).

5.3.5.59 The Proposed Project will use a trenchless solution at the landfalls (**Part 1, Chapter 4, Description of the Proposed Project**). As this is a trenchless technique that drills below the ground surface, loss of habitat will be largely avoided. Therefore, at the landfalls, the main area of habitat loss and disturbance to prey species and foraging grounds for ornithological features is only expected to occur at the exit points for the trenchless solution conduits. However, the trenchless solution exit points at both landfalls are situated in deeper water away from the intertidal zone. At the Suffolk landfall, exit points are approximately 0.38 km from the intertidal zone, within the Outer Thames Estuary SPA; and approximately 0.13 km from the intertidal zone in Pegwell Bay, within the Thanet Coast and Sandwich Bay SPA and Ramsar. Thus, the trenchless solution exit points are not anticipated to disturb intertidal foraging grounds for bird features, and no likely significant effect is anticipated on the SPA's via this impact pathway. Thus, LSE can be screened out for Thanet Coast and Sandwich Bay SPA and Ramsar. However, the activities may also disturb the offshore areas of the Outer Thames Estuary SPA, where densities of seabirds are expected to be highest. These areas include benthic habitats that are important foraging habitat for the ornithology features, such as fish spawning and nursery grounds. It is also understood that the tern and gull features of Alde-Ore Estuary SPA and Ramsar, and Minsmere-Walberswick SPA forage within the vicinity of the Offshore Scheme, and therefore may also be impacted by the temporary disturbance to habitat. Therefore, Outer Thames Estuary SPA, Alde-Ore Estuary SPA and Ramsar, and Minsmere-Walberswick SPA are screened in for further assessment.

5.3.5.60 Margate and Long Sands SAC is 2 km to the west of the Offshore Scheme and is designated for 'Sandbanks which are slightly covered by sea water all the time'. Although fine sediments are dynamic and mobile in nature, sandbanks in shallow water are subject to significant wave and tidal energy, activities are not anticipated to have an impact on the features of the SAC, and thus any LSE can be screened out for Margate and Long Sands SAC.

5.3.5.61 The installation activities may disturb the seabed and impact species that are prey items for the harbour porpoise of the Southern North Sea SAC. The Offshore Scheme passes through this SAC and therefore, Southern North Sea SAC is screened in for further assessment. Moreover, due to the foraging ranges of the grey seals (448 km, Ref 3.51), individuals from Wash and North Norfolk Coast SAC and Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC, may forage for prey within the vicinity of thew Offshore Scheme. Thus, Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC have been screened in for further assessment as there is potential for impacts on the prey of the grey seal features.

Permanent loss of subtidal benthic habitats and species

5.3.5.62 Cable protection is required where, third-party assets cross the route, burial can't be achieved, and at trenchless installation exit points to mitigate the effects of mobile sediments. This would lead to disturbance and/or loss of benthic habitats and species. This would also introduce artificial hard substrata which could have the capacity to function as an artificial rocky reef allowing species dependant on hard substrates to colonise areas that might have previously been unsuitable.

5.3.5.63 Options for external cable protection include:

- rock placement (planned berms) (13.2 km planned post lay rock berm, 10 m wide – area of 0.13 km^2);

- concrete mattresses (80 mattresses, over 480 m in length – area of 0.0014 km^2);
- rock / gravel / sand / grout bags (to be confirmed); and
- protection sleeves / cast-iron shells.

5.3.5.64 Cable protection is anticipated within the following European Sites: Outer Thames Estuary SPA; Thanet Coast and Sandwich Bay SPA and Ramsar; and Southern North Sea SAC. These sites are not designated for any benthic features; however the benthic ecology of these sites support the designated marine mammal and bird features. Therefore, Outer Thames Estuary SPA, Alde-Ore Estuary SPA and Ramsar, Minsmere-Walberswick SPA, Thanet Coast and Sandwich Bay SPA; Southern North Sea SAC, Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC are screened in for further assessment.

Temporary increase in suspended sediment concentrations (SSC)

5.3.5.65 Construction activities have the potential to increase SSC creating a plume within the water column. This in turn can lead to increased deposition as suspended sediments settle out of the water column. Increased SSC can lead to elevated turbidity levels which may reduce the feeding efficiency and subsequent growth rates of filter feeders if clogging of feeding structures occurs. Any contaminants, such as heavy metals and toxins, within the sediments, can also be released into the water column and may alter marine water quality with subsequent indirect effects on species.

5.3.5.66 Increased deposition can smother the seabed potentially resulting in changes to seabed geomorphology, sediment structure and habitats. This would have an impact on species that currently rely on these habitats for food and refuge, leading to potential indirect effects on survival, growth, reproduction, and displacement of individuals.

5.3.5.67 Dispersion processes will act to dilute the small proportion of fine and very fine sediment carried in suspension. These finer fractions that are transported further will also be rapidly diluted. It is estimated that fine sands, silts, and clays could be transported up to approximately 1.5 km away from the Offshore Scheme, after which point concentration of particulate matter would be negligible (**Volume 1, Part 4, Chapter 2: Physical Environment**), and the deposition thickness on the seabed, where the sediment will settle, will be negligible and highly localised.

5.3.5.68 The Proposed Project will use a trenchless solution is to be used at the landfalls (**Volume 1, Part 1, Chapter 4: Description of the Proposed Project**). Thus, there is not anticipated to be a likely significant effect to the intertidal features of Sandwich Bay SAC or Thanet Coast and Sandwich Bay SPA and Ramsar.

5.3.5.70 The Offshore Scheme passes through the Outer Thames Estuary SPA and Southern North Sea SAC. These two sites are not designated for any benthic features. However, the designated marine mammal and bird features, are supported by benthic habitats and species that may be impacted by increased SSC. Therefore, there may be an indirect significant impact on these sites via this impact pathway. The tern and gull features of Alde-Ore Estuary SPA and Ramsar, and Minsmere-Walberswick SPA also rely on the foraging grounds within the vicinity of the Offshore Scheme. Moreover, Thanet Coast SAC is less than 1 km from the Offshore Scheme and is designated for benthic habitats including reef, which has the potential to be impacted by increases in SSC and deposition. Therefore, Outer Thames Estuary SPA, Southern North Sea SAC, Alde-Ore Estuary SPA and Ramsar, Minsmere-Walberswick SPA and Thanet Coast SAC are screened in for further assessment.

Introduction and spread of invasive non-native species (INNS)

5.3.5.71 The use of cables is expected to require protection at some locations, which will introduce hard substrates in the form of rock protection or mattresses, to habitats dominated by sediments ranging from mud to sand and gravel. This could provide additional habitat for any existing epifaunal INNS populations allowing for localised spreading.

5.3.5.72 Although there are concerns around introduced substrata providing habitat for INNS, particularly given the substantial growth of marine infrastructure in the North Sea, to date, no spread of INNS caused by submarine cabling has been documented (Ref 3.63).To ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced (**Volume 2, Part 1, Appendix 1.4.A**), including ensuring that all selected rock protection and concrete mattresses used for cable protection will be clean, so do not provide a vector for INNS directly. Thus it is not anticipated that there will be a likely significant effect on any European Sites via this impact pathway.

Underwater noise

5.3.5.73 Vessel activity and cable installation activities could generate underwater sound which has the potential to directly affect marine species. Underwater sound has a range of potential effects depending on the type of sound and proximity to the sound source. The range of potential effects include lethal effect and physical injury, auditory injury, behavioural responses, and masking.

5.3.5.74 Several activities during the construction phase will generate underwater sound, including:

- pre-installation geophysical surveys comprising Multi-Beam Echo Sounder (MBES), Side-Scan Sonar (SSS), and/or Sub-Bottom Profiler (SBP);
- Acoustic positioning;
- cable trenching – may include various methods depending on seabed conditions (e.g. ploughing, jet trenching, and/or mechanical trenching);
- cable protection placement (e.g. rock placement, concrete mattresses, bags, protection sleeves); and
- vessel movements including vessels operating with dynamic positioning (DP).

5.3.5.75 There is potential for Unexploded Ordnance (UXO) detonation to be required prior to the cable installation programme. At this time there is no information on likely UXO detonation requirements so cannot be assessed here, but this activity will be subject to a separate marine licence application and HRA (which will consider effects alone and in combination) before it can be consented.

5.3.5.76 Few formal studies have been conducted on the impacts of underwater sound on marine invertebrates, although invertebrates are believed to be sensitive to particle motion rather than to sound pressure (Ref 3.63). At present there are no published sensitivity thresholds for invertebrates. Some lab-based studies have demonstrated some behavioural changes of certain species in response to pile driving (Ref 3.64 and Ref 3.65), although, repeated exposure resulted in the habituation or tolerance to underwater noise (Ref 3.66). Field based studies revealed no evidence of increased mortality in bivalves or lobsters, or of reduced catch-rates for plankton or reef associated invertebrates when exposed to acute underwater noise (Ref 3.67). These studies found responses in invertebrates ranged depending on species, with little evidence of increased mortality or ecosystem impacts.

5.3.5.77 The noise levels associated with the Proposed Project activities will be operating at frequencies that are not expected to have an impact on benthic ecology. Thus, the zone of influence of underwater noise is expected to be localised to the Offshore Scheme. Therefore, European Sites designated for subtidal benthic habitats and species beyond this zone of influence have been screened out of further assessment.

5.3.5.78 The installation activity with the highest sound source is expected to be SBP. This activity operates at frequencies of 0.5-12 kHz within the hearing range of harbour porpoise, harbour seal, and grey seal.

5.3.5.79 There is one European Site designated for harbour porpoise within the North Sea IAMMWG MU. The Offshore Scheme passes through the Southern North Sea SAC, thus the Southern North Sea SAC is screened in for further assessment as there is potential for underwater noise to impact the harbour porpoise feature of this site.

5.3.5.80 For pinnipeds, European Sites within the South East England SCOS SMU, Wash and North Norfolk Coast SAC and Humber Estuary SAC, will be screened in for further assessment as there is the potential for individuals from these sites to interact with the Offshore Scheme and the underwater noise generated by associated activities. Moreover, the Berwickshire and North Northumberland Coast SAC, within the North East England SMU, has also been screened into further assessment, as known foraging ranges of the designated grey seal feature (448 km) include this SMU, and thus connectivity between these areas and the Offshore Scheme may occur. Therefore, at this stage, it is not possible to rule out the potential of a likely significant effect on the pinniped features of Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC. Thus, these sites are screened into further assessment for the underwater noise impact pathway.

Vessel collision risk

5.3.5.81 Installation activities will involve the deployment of several vessels. Therefore, there is an inherent risk of collision between vessels and marine mammals associated with the Proposed Project. Direct strikes from vessels, including sharp objects such as propellers, have the potential to cause lethal injury to marine mammals.

5.3.5.83 Marine mammals have been reported as involved in vessel strikes in the North Sea and wider Atlantic (Ref 3.68). Vessel strikes can result in physical impairment or even mortality, which may reduce foraging abilities and fitness at an individual level (Ref 3.69) population level. Vessel speed and draft depth are thought to be the biggest factors concerning collision risk and severity, with higher vessel speeds producing greater impact force and larger drafts being associated with increased mortality (Ref 3.70).

5.3.5.84 The vessels supporting Proposed Project activities typically operate at low speeds of 4 to 6 knots. At these speeds, it is unlikely that vessels pose a significant risk to marine mammals. Moreover, some studies have also correlated avoidance behaviour with sustained or increased vessel traffic (Ref 3.71 and Ref 3.72). Therefore, it is likely individuals are habituated to vessel presence in the Greater Thames Estuary and Southern North Sea, which are subject to high levels of vessel traffic (Ref 3.73).

5.3.5.85 However, as the Offshore Scheme passes through the Southern North Sea SAC, at this stage, it is not possible to rule out the potential of a likely significant effect on the harbour porpoise feature of Southern North Sea SAC, is screened in for further assessment. Similarly, due to the foraging ranges of harbour seals and grey seals (273 and 448 km, respectively) there is potential for individuals from Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC to interact with vessels associated with the Offshore Scheme. Therefore, the Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC are screened in for further assessment.

Airborne sounds and visual disturbance

5.3.5.86 Airborne sound produced by the Proposed Project is likely to be limited the use of project vessels. These vessels operate at slow speeds during cable installation.

5.3.5.87 Waders and waterbirds use intertidal habitat, and vessels will not be operating close to the shore. Therefore, it is unlikely that there will be a significant impact on the features of Thanet Coast and Sandwich Bay SPA and Ramsar. However, as the Offshore Scheme passes through the Outer Thames Estuary SPA, vessel presence has the potential to disturb seabird species, including the wintering red-throated diver feature. Seabirds are known to raft together at sea in groups. Thus, when a vessel passes through or within close proximity to a raft, many individuals could be disturbed at once. Red-throated divers are also highly sensitive to anthropogenic sources of disturbance, including vessel movements. Moreover, the tern and gull features of Alde-Ore Estuary SPA and Ramsar, and Minsmere-Walberswick SPA are understood to utilise foraging grounds within the vicinity of the Offshore Scheme, and thus may also be affected by the airborne sound and visual disturbance associated with the project activities. Therefore, the Outer Thames Estuary SPA, Alde-Ore Estuary SPA and Ramsar, and Minsmere-Walberswick SPA is screened into further assessment.

5.3.5.89 Vessel movements, and their associated airborne sound, may lead to the disturbance of seals. Sounds produced from shipping traffic have been associated with “flushing” of seals at haul-out sites (Ref 3.74). Given the high levels of traffic that currently utilise the North Sea and Thames, seals still haul out regularly around the estuary, likely indicating a degree of habituation to airborne vessel noise and visual disturbance. However, seals are understood to have large foraging ranges, and individuals from Berwickshire and North Northumberland Coast SAC, Humber Estuary SAC, or Wash or North Norfolk Coast SAC have the potential to occur and / or haul-out within the vicinity of the Offshore Scheme. Thus, the Berwickshire and North Northumberland Coast SAC, Humber Estuary SAC, or Wash or North Norfolk Coast SAC is screened into further assessment.

Operational period

5.3.5.90 For the purposes of this assessment operational impacts are considered to be very similar to construction period impacts, with the addition of effects of electromagnetic field (EMF) emissions and thermal emissions.

Effects of EMF emissions

5.3.5.91 EMFs may be emitted during the operational phase of the Proposed Project. EMF has potential to disrupt sensory mechanisms in magneto sensitive and electrosensitive marine species. The worst-case scenario for the Offshore Scheme is two HVDC cables and one fibre optic cable bundled as one in one trench buried to a depth of 1.5 m, with field intensities between 53 and 126 µT at the seabed surface, and that the geometric field was reduced to background levels within around 8 m from the cable, having only a very localised effect (**Volume 2, Part 4, Appendix 4.8B**).

5.3.5.92 There is very little information about the sensitivity of benthic species to EMF. There is evidence from studies that some benthic invertebrates are able to detect EMF (Ref 3.75). Although, a laboratory study found there to be no evidence of avoidance or attraction behaviours at an EMF of 1000 µT (Ref 3.76), a much higher intensity than will the emitted by the Offshore Scheme. However, in an experiment with American lobsters, only subtle behavioural responses to HVDC EMF were observed (Ref 3.77). Moreover, all sites designated for subtidal benthic features are over 1 km from the Offshore Scheme, and thus are screened out of further assessment.

5.3.5.93 EMF emissions from the cables have the potential to disturb foraging grounds for cetaceans. Species such as harbour porpoise forage on flatfish, gadoids, and other sandy benthic species (Ref 3.78), thus the effects of EMF may indirectly impact on these cetaceans. As the Offshore Scheme passes through the Southern North Sea SAC, there is potential for a likely significant effect on the harbour porpoise feature. Therefore, the Southern North Sea is screened into further assessment.

Thermal emissions

5.3.5.94 Operation of buried subsea HVDC cables generates heat due to resistance in the conductor components and have been shown to generate and dissipate heat when active, reaching cable surface temperatures of up to 70°C (Ref 3.79). Such heat has the potential to cause sediment dwelling and demersal mobile organisms to move away from the affected area. Sensitivity to the thermal emissions depends on the sensitivity of the species associated with benthic habitats, as well as the sediment particle size composition (Ref 3.80), with coarser sediments with higher permeability transferring heat further but with a lower increase in temperature.

5.3.5.95 Increased sediment temperature has the potential to affect infaunal species and assemblages directly. Increased heat may also alter physico-chemical conditions and bacterial activity (with shifts in bacterial community composition and changes in nitrogen cycling) in surrounding sediments, contributing to altered faunal composition and localised ecological shifts (Ref 3.81). The installation approach for the Offshore Scheme is two HVDC cables and one fibre optic cable bundled as one in one trench buried to a target depth of 1.5 m. Heat dissipation modelling undertaken in previous projects (Ref 3.82) indicates that, for bundled cables buried at a depth of 1.5 m, within 50 cm of the seabed surface the increase in sediment temperature was limited to 3°C. Therefore, as Margate and Long Sands SAC is 2 km from the Offshore Scheme, the site has been screened out of further assessment.

5.3.5.96 Whilst the sediment surrounding the cable may be heated, there is negligible capability to heat the overlying water column as seawater at the seabed surface will have a cooling effect and will dissipate any temperature increases further reducing any effects on epibenthic communities. Therefore, Thanet Coast SAC has been screened out of further assessment due to the lack of sediment features, as well as Southern North Sea SAC as there is not likely to be an effect on the prey items for the harbour porpoise feature.

Decommissioning period

5.3.5.97 For the purposes of this assessment decommissioning impacts are considered to be very similar to construction period impacts. For example, the scale and locations of any works to remove installed infrastructure (should it ever be required) are expected to be similar to that required for its installation.

5.3.6 Transboundary Effects

5.3.6.1 All works associated with the Proposed Project fall within the UK jurisdiction (12 NM). Given the distance of the Proposed Project from French waters (approximately 25 km), no likely significant transboundary effects have been identified. Predicted disturbance from the Proposed Project is short term and local and are therefore not anticipated to be sufficient to influence European Sites outside UK waters, and subsequently cause transboundary effects.

5.3.8 In Combination Effects

5.3.8.1 It is a legal requirement to consider the impacts of the Proposed Project 'in combination' with other plans and projects. This section discusses the other relevant plans and projects that could occur simultaneously with the Proposed Project. Note that this is a preliminary assessment. The relevance of these projects has been identified based on a similarity of development, timescale and location and thus a similarity of potential impacts on the same European Sites. A full assessment will accompany the DCO application. All the potential in combination effects discussed below would be construction or decommissioning period impacts on the European Sites mentioned below. Once the other schemes being considered 'in combination' are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance in a worked agricultural landscape. Similarly, due to the Proposed Project's location in the heavily trafficked Thames Estuary and temporary nature of any works during operation, any overlap in maintenance in the offshore environment would not result in significant disturbance.

Suffolk Onshore Scheme

Nautilus Interconnector

5.3.8.2 National Grid Ventures (NGV) is developing plans to deliver a subsea cable allowing electricity to flow between the UK and Belgium. The new multi-purpose interconnector (MPI) will also connect to offshore wind generation in the North Sea, powering approximately 1.4 million UK homes. The interconnector as publicly consulted upon in a non-statutory consultation in late 2021 would make landfall at Suffolk somewhere between Sizewell and Aldeburgh and is also proposed to connect to the proposed Friston Substation. However, the project website also notes that NGV also holds a connection agreement on the Isle of Grain in Kent, as part of its development portfolio, and they are currently investigating if this could be a potential location for landfall. If making landfall at Suffolk, the offshore cable will traverse both Outer Thames Estuary SPA and Southern North Sea SAC.

5.3.8.3 There is no detailed ecological impact assessment in the public domain at time of writing, but the PINS website notes than an application is expected in 2024. Clearly, however, if the Nautilus project remains with a proposed landfall in East Suffolk and a connection to the proposed Friston Substation, there is potential for it to have similar impacts to the Proposed Project, over a similar timetable. This will therefore need to be considered in the 'in combination' assessment for the DCO.

5.3.8.4 Impact pathways that may arise 'in combination' with the Proposed Project include disturbance of birds associated with Sandlings SPA, loss of functionally linked habitat for white-fronted goose associated with Minsmere-Walberswick SPA, and disturbance of red-throated diver of Outer Thames Estuary SPA and harbour porpoise of Southern North Sea SAC. Effects 'in combination' cannot be screened out at this stage and will therefore be considered further in the HRA report (either Stage 1 Screening or Appropriate Assessment) accompanying the DCO application.

LionLink Interconnector

5.3.8.5 NGV is developing plans for the LionLink (formerly known as 'EuroLink') Interconnector. This is a multi-purpose interconnector (MPI) that can supply around 1.8 gigawatts of clean electricity, enough to power approximately 1.8 million homes. It is intended to enable electricity to flow between the UK and The Netherlands and will also connect to offshore wind generation in the North Sea. There is no detailed ecological impact assessment in the public domain at time of writing, but the PINS website notes than an application is expected in late 2024. As with the Proposed Project and Nautilus Interconnector the current intention is for landfall to be made at the Suffolk coast. The offshore cable will traverse Outer Thames Estuary SPA and Southern North Sea SAC. Given this, there is potential for it to have similar impacts to the Proposed Project, over a similar timetable. This will therefore need to be considered in the 'in combination' assessment for the DCO.

5.3.8.6 Impact pathways that may arise 'in combination' with the Proposed Project include disturbance of birds associated with Sandlings SPA, loss of functionally linked habitat for white-fronted goose associated with Minsmere-Walberswick SPA, and disturbance of red-throated diver of Outer Thames Estuary SPA and harbour porpoise of Southern North Sea SAC. Effects 'in combination' cannot be screened out at this stage.

East Anglia ONE North Offshore Wind Farm

5.3.8.7 Scottish Power Renewable's East Anglia ONE North Project has been consented but is not yet operational. The cable will make landfall north of Thorpeness and then connect to the proposed Friston Substation. The offshore cable will traverse Outer Thames Estuary SPA and Southern North Sea SAC and the array will be located within Southern North Sea SAC.

5.3.8.8 Given the East Anglia ONE project was consented in 2022, it is possible it will have been constructed by the time construction starts on the Proposed Project. However, there is potential for it to have similar impacts to the Proposed Project, over a similar timetable. This may therefore need to be considered in the 'in combination' assessment for the DCO.

5.3.8.9 Impact pathways that may arise 'in combination' with the Proposed Project include disturbance of birds associated with Sandlings SPA, loss of functionally linked habitat for white-fronted goose associated with Minsmere-Walberswick SPA, and disturbance of red-throated diver of Outer Thames Estuary SPA and harbour porpoise of Southern North Sea SAC. Effects 'in combination' cannot be screened out at this stage.

East Anglia TWO Offshore Wind Farm

5.3.8.10 Scottish Power Renewable's East Anglia TWO Project has been consented but is not yet operational. East Anglia ONE North and TWO are discrete projects with individual DCOs; however, they share a portion of the offshore cable corridor, have the same landfall location, and share an onshore cable route.

5.3.8.11 Given the East Anglia TWO project was consented in 2022, it is possible it will have been constructed by the time construction starts on the Proposed Project. However, there is potential for it to have similar impacts to the Proposed Project, over a similar timetable. This may therefore need to be considered in the 'in combination' assessment for the DCO.

5.3.8.12 Impact pathways that may arise ‘in combination’ with the Proposed Project include disturbance of birds associated with Sandlings SPA, loss of functionally linked habitat for white-fronted goose associated with Minsmere-Walberswick SPA, and disturbance of red-throated diver of Outer Thames Estuary SPA and harbour porpoise of Southern North Sea SAC. Effects ‘in combination’ cannot be screened out at this stage.

Saxmundham to Peasenhall Water Mains Installation

5.3.8.13 Until non-breeding bird surveys and other ecology surveys are complete, it is possible that the Suffolk Onshore Scheme supports a significant population of non-breeding birds associated with Minsmere-Walberswick SPA or Alde-Ore Estuary SPA. Loss of functionally-linked habitat associated with the SPA could therefore arise. The Saxmundham to Peasenhall project will potentially involve disturbance of nesting nightjar associated with Sandlings SPA, or non-breeding birds associated with Minsmere-Walberswick SPA or Alde-Ore Estuary SPA, depending on details of works footprint and timing of works. Potentially significant disturbance or habitat loss impacts for notable species, depending on the outcome of ongoing surveys for the Suffolk Onshore Scheme. Effects ‘in combination’ cannot be screened out at this stage.

Town Farm Solar Farm

5.3.8.14 Until non-breeding bird surveys are complete, it is possible that the Suffolk Onshore Scheme supports a significant population of non-breeding birds associated with Minsmere-Walberswick SPA as the Suffolk Onshore Scheme lies within the zone within which white-fronted goose will travel to forage or roost away from the SPA. Loss of functionally-linked habitat associated with the SPA could therefore arise. The town Farm Solar development also lies within 10km of Minsmere-Walberswick SPA and thus within the zone that white-fronted goose could be travelling to roost or forage away from the SPA. Potentially significant habitat loss impacts for non-breeding birds associated with the SPA, depending on the outcome of ongoing surveys for the Suffolk Onshore Scheme. Effects ‘in combination’ cannot be screened out at this stage.

UKZ139 BC Wissett Solar Farm

5.3.8.15 Until non-breeding bird surveys are complete, it is possible that the Suffolk Onshore Scheme supports a significant population of non-breeding birds associated with Minsmere-Walberswick SPA as the Suffolk Onshore Scheme lies within the zone within which white-fronted goose will travel to forage or roost away from the SPA. Loss of functionally-linked habitat associated with the SPA could therefore arise. The Wissett Solar Farm development also lies within 10km of Minsmere-Walberswick SPA and thus within the zone that white-fronted goose could be travelling to roost or forage away from the SPA. Potentially significant habitat loss impacts for non-breeding birds associated with the SPA, depending on the outcome of ongoing surveys for the Suffolk Onshore Scheme. Effects ‘in combination’ cannot be screened out at this stage.

Saxmundham South Green Neighbourhood

5.3.8.16 Until non-breeding bird surveys and other ecology surveys are complete, it is possible that the Suffolk Onshore Scheme supports a significant population of non-breeding birds associated with Minsmere-Walberswick SPA or Alde-Ore Estuary SPA. Loss of functionally-linked habitat associated with the SPA could therefore arise. The Saxmumdham South Green Neighbourhood project will potentially involve disturbance of nesting nightjar associated with Sandlings SPA, or non-breeding birds associated with Minsmere-Walberswick SPA or Alde-Ore Estuary SPA. It will also involve impacts on other notable species. Potentially significant disturbance or habitat loss impacts for notable species, depending on the outcome of ongoing surveys for the Suffolk Onshore Scheme. Effects 'in combination' cannot be screened out at this stage.

Kent Onshore Scheme

Nautilus Interconnector

5.3.8.17 The Nautilus Project's website for this Interconnector notes that NGV holds a connection agreement on the Isle of Grain in Kent, as part of its development portfolio, and they are currently investigating if this could be a potential location for landfall. If making landfall at Kent, the offshore cable will traverse both Outer Thames Estuary SPA and Southern North Sea SAC.

5.3.8.18 There is no detailed ecological impact assessment in the public domain at time of writing, but the PINS website notes than an application is expected in 2024. If the project does make landfall at Isle of Grain there is potential for it to have similar impacts on Outer Thames Estuary SPA and Southern North Sea SAC to the Sea Link Offshore Scheme, over a similar timetable. This will therefore need to be considered in the 'in combination' assessment for the DCO. Effects 'in combination' cannot be screened out at this stage.

Manston Airport

5.3.8.19 Given that some parts of the Kent Onshore Scheme support significant numbers of golden plover, the Proposed Project has the potential for effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, which according to Natural England guidance can be affected by electricity infrastructure development up to 5km from the SPAs for which they are designated. The expansion of Manston Airport has the potential for similar effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, through loss of functionally-linked habitat, given it is also located within 5km of the SPA. Effects 'in combination' cannot be screened out at this stage.

Residential Development, Canterbury Road, Ramsgate, Kent

5.3.8.20 Given that some parts of the Kent Onshore Scheme support significant numbers of golden plover, the Proposed Project has the potential for effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, which according to Natural England guidance can be affected by electricity infrastructure development up to 5km from the SPAs for which they are designated. Residential development at Canterbury Road has the potential for similar effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, through loss of functionally-linked habitat, given it is also located within 5km of the SPA. Effects 'in combination' cannot be screened out at this stage.

Stonelees Golf Course Expansion

5.3.8.21 Given that some parts of the Kent Onshore Scheme support significant numbers of golden plover, the Proposed Project has the potential for effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, which according to Natural England guidance can be affected by electricity infrastructure development up to 5km from the SPAs for which they are designated. The expansion of Stoneless Golf Course has the potential for similar effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, through loss of functionally-linked habitat, given it is also located within 5km of the SPA. Effects 'in combination' cannot be screened out at this stage.

Richborough Energy Park

5.3.8.22 Given that some parts of the Kent Onshore Scheme support significant numbers of golden plover, the Proposed Project has the potential for effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, which according to Natural England guidance can be affected by electricity infrastructure development up to 5km from the SPAs for which they are designated. The Richborough Energy Park project has the potential for similar effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, through loss of functionally-linked habitat, given it is also located within 5km of the SPA. Effects 'in combination' cannot be screened out at this stage.

Goshall Valley Solar Farm

5.3.8.23 Given that some parts of the Kent Onshore Scheme support significant numbers of golden plover, the Proposed Project has the potential for effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, which according to Natural England guidance can be affected by electricity infrastructure development up to 5km from the SPAs for which they are designated. The Goshall Valley Solar Farm project has the potential for similar effects on golden plover associated with Thanet Coast & Sandwich Bay SPA, through loss of functionally-linked habitat, given it is also located within 5km of the SPA. Effects 'in combination' cannot be screened out at this stage.

Offshore Scheme

Sizewell C Nuclear Power Station

5.3.8.24 This is the expansion of the Sizewell nuclear license site north of Sizewell B Nuclear Power Station. This will accommodate two new European pressurised reactors with a 3.2GW electricity generation capacity.

5.3.8.25 A Scoping Report for the Sizewell C project was completed in 2014, and HRA was completed by the Environment Agency in 2022 when the project also received a DCO. Based on the location of the project, there is potential for 'in combination' effects on the ornithology features of Outer Thames Estuary SPA. This will therefore need to be considered in the 'in combination' assessment. Effects 'in combination' cannot be screened out at this stage.

NeuConnect Interconnector

5.3.8.26 This is a proposed 1.4GW capacity offshore multipurpose interconnector project from Wilhemshaven, Germany to the Isle of Grain, Kent developed by Meridam, Allianz Capital and Kansai Electric Power. This project aims to be the first energy connection between the UK and Germany in order to transfer energy between the two countries and increase grid capacity for increased electricity demand and supply from offshore wind assets. The offshore aspects of this development are the HVDC subsea cable and cable landfall location.

5.3.8.27 An Environmental Appraisal Report was written in 2020. Due to the location of the offshore aspects of the NeuConnect project, the HVDC subsea cable and cable landfall location, there is potential for 'in combination' effects on the ornithology features of Outer Thames Estuary SPA, benthic features of Margate and Long Sands SAC, and harbour porpoise features of Southern North Sea SAC. This will therefore need to be considered in the 'in combination' assessment. Effects 'in combination' cannot be screened out at this stage.

GridLink Interconnector

5.3.8.28 This is a proposed 1.4 GW capacity offshore project from Dunkerque, France to Kingsnorth, Kent developed by iCON Infrastructure LLP, aims to transfer energy between UK and France. Additionally, it aims to improve grid capacity for increases in offshore wind electricity generation. The offshore, coastal, and intertidal components of the project will consist of HVDC subsea cable and landfall location.

5.3.8.29 A Marine Environmental Report was completed in 2021. Due to the location of the offshore aspects of the GridLink project, HVDC subsea cable and landfall location, there is potential for 'in combination' effects on benthic features of Margate and Long Sands SAC, and the harbour porpoise feature of Southern North Sea SAC. This will therefore need to be considered in the 'in combination' assessment. Effects 'in combination' cannot be screened out at this stage.

North Falls Offshore Windfarm

5.3.8.30 The main Offshore Wind Array for the North Falls Offshore Windfarm will be located off the Essex and Suffolk coastline and has been developed by SSE and RWE. The wider array will be split over two separate arrays cumulatively consisting of 71 wind turbine generators across a 150 km^2 area. The maximum wind turbine height will be 397 m above Mean High Water Spring (MHWS) and will be supported by either monopile, pin pile, suction caisson, or Gravity Base Structure foundations.

5.3.8.31 A PEIR was produced in 2023. Due to the location of the offshore aspects of the project, HVDC subsea cable and landfall location, there is potential for 'in combination' effects on benthic habitat features of Margate and Long Sands SAC, and the marine mammal features of Southern North Sea SAC, Humber Estuary SAC, The Wash and North Norfolk Coast SAC. This will therefore need to be considered in the 'in combination' assessment. Effects 'in combination' cannot be screened out at this stage.

East Anglia ONE North Offshore Windfarm

5.3.8.32 This will be a 208 km^2 wind farm developed by Scottish Power Renewables consisting of 67 turbines with a combined electricity generation capacity of 800 MW, an extension of the existing East Anglia ONE array It is part of the East Anglia Hub which includes three arrays off the coast of Suffolk.

5.3.8.33 This project has been consented but is not yet operational. The cable will make landfall north of Thorpeness and then connect to the proposed Friston substation. The offshore cable will traverse Outer Thames Estuary SPA and Southern North Sea SAC and the array will be located within Southern North Sea SAC.

5.3.8.34 Given this project was consented in 2022, it is possible it will have been constructed by the time construction starts on the Proposed Project. However, there is potential for it to have similar impacts to the Proposed Project, over a similar timetable. This may therefore need to be considered in the 'in combination' assessment for the DCO. There is potential for 'in combination' effects on ornithology features of Outer Thames Estuary SPA, including the red-throated diver, and harbour porpoise of Southern North Sea SAC. Effects 'in combination' cannot be screened out at this stage.

East Anglia TWO Offshore Windfarm

5.3.8.35 A proposed 255 km^2 wind farm developed by Scottish Power Renewables consisting of 75 turbines. Each turbine will have an electricity generation capacity of 19MW and 22m high.

5.3.8.36 Scottish Power's East Anglia TWO project has been consented but is not yet operational. East Anglia ONE North and TWO are discrete projects with individual DCOs; however, they share a portion of the offshore cable corridor, have the same landfall location, and share an onshore cable route.

5.3.8.37 Given this project was consented in 2022, it is possible it will have been constructed by the time construction starts on the Proposed Project. However, there is potential for it to have similar impacts to the Proposed Project, over a similar timetable. This may therefore need to be considered in the 'in combination' assessment for the DCO. There is potential for 'in combination' effects on ornithology features of Outer Thames Estuary SPA, including the red-throated diver, and harbour porpoise of Southern North Sea SAC. Effects 'in combination' cannot be screened out at this stage.

East Anglia THREE Offshore Windfarm

5.3.8.38 A proposed 370 km^2 wind farm developed by Scottish Power Renewables (SPR) and Vattenfall consisting of 120 to 240 wind turbines with a combined electricity generation capacity of 1200MW. It is part of the East Anglia Hub which includes three arrays off the coast of Suffolk, with the East Anglia THREE array being 79 km from Lowestoft, Suffolk. All wind turbines are located in a water depth of 35 m to 45 m.

5.3.8.39 Consent for the project was received in August 2017 and construction commenced in July 2022. Therefore, there is potential for 'in combination' effects on ornithology features of Outer Thames Estuary SPA, including the red-throated diver, and harbour porpoise of Southern North Sea SAC. Effects 'in combination' cannot be screened out at this stage.

Nautilus Offshore Interconnector

5.3.8.40 This is a 1.4 GW capacity connection between Belgium with the Suffolk Coast being developed by NGV. The aim will be to increase transfer in offshore wind electricity generation and improve grid capacity in both countries to achieve this. The offshore aspect of the development includes subsea HVDC connecting the Belgian landfall with the UK landfall in Suffolk and Offshore HVDC converter platform.

5.3.8.41 The project website for this interconnector notes that NGV holds a connection agreement on the Isle of Grain in Kent, as part of its development portfolio, and they are currently investigating if this could be a potential location for landfall. If making landfall at Kent, the offshore cable will traverse both Outer Thames Estuary SPA and Southern North Sea SAC.

5.3.8.42 There is no detailed ecological impact assessment in the public domain at time of writing, but the PINS website notes than an application is expected in 2024. If the project does make landfall at Isle of Grain there is potential for it to have impacts on ornithology features of Outer Thames Estuary SPA and the harbour porpoise feature of Southern North Sea SAC, over a similar timetable. This will therefore need to be considered in the 'in combination' assessment for the DCO. Effects 'in combination' cannot be screened out at this stage.

Five Estuaries Offshore Windfarm

5.3.8.43 This is a proposed 149 km^2 wind farm, 37 km off the Suffolk Coast is being developed. The array consists of 79 turbines with a combined electricity generation capacity of 50 GW. Each turbine will be between 397 m high.

5.3.8.44 An EIA Scoping Report and an associated HRA were produced in 2021. Due to the location of the offshore aspects of the project, HVDC subsea cable and landfall location, there is potential for 'in combination' effects on benthic habitat features of Margate and Long Sands SAC, ornithology features of Outer Thames Estuary SPA, Alde-Ore Estuary SPA / Ramsar, and the marine mammal features of Southern North Sea SAC, Humber Estuary SAC, The Wash and North Norfolk Coast SAC. This will therefore need to be considered in the 'in combination' assessment. Effects 'in combination' cannot be screened out at this stage.

LionLink Offshore Interconnector

5.3.8.45 This is an 1.8 GW connection between the Netherlands and the UK is being developed. The aim is to increase transfer in offshore wind electricity generation and improve grid capacity in both countries. The offshore aspect of the development includes subsea HVDC connecting the Belgian landfall with the UK landfall in Suffolk and Offshore HVDC converter platform. At this stage there is a lack of available information regarding this project, thus, following a precautionary approach, effects 'in combination' cannot be screened out at this stage.

5.3.9 Conclusion

5.3.9.1 A preliminary Test of LSE has been undertaken for the PEIR, as the Proposed Project is still being development and surveys are ongoing.

5.3.9.2 Impact pathways that have been considered are:

Construction/Decommissioning

- Direct habitat loss
- Air quality
- Loss of functionally-linked habitat
- Disturbance (noise and visual)
- Pollution
- Temporary physical disturbance to subtidal benthic habitats and species
- Permanent loss of subtidal benthic habitats and species
- Temporary increase in SSC
- Introduction and spread of INNS
- Underwater noise
- Vessel collision risk
- Airborne sounds and visual disturbance

Operation

- Disturbance (noise and visual)
- Pollution
- Collision risk (Kent overhead line only)
- Temporary physical disturbance to subtidal benthic habitats and species
- Permanent loss of subtidal benthic habitats and species
- Temporary increase in SSC
- Introduction and spread of INNS
- Underwater noise
- Vessel collision risk
- Airborne sounds and visual disturbance
- Effects of EMF emissions
- Thermal emissions

Suffolk Onshore Scheme

5.3.9.3 In summary, the following impact pathways have been screened in for Appropriate Assessment:

- Air quality impacts on Sandlings SPA, since a construction compound and trenchless installation pit will immediately abut the SPA.
- Until wintering bird surveys are complete it is not possible to dismiss LSE due to loss of functionally-linked habitat on white-fronted goose associated with Minsmere-Walberswick SPA. This impact pathway is therefore screened in for Appropriate Assessment.

- Construction/decommissioning period noise and visual disturbance of nesting woodlark and nightjar at Sandlings SPA is screened into Appropriate Assessment given a construction compound and trenchless installation pit will be located adjacent to the SPA.

Kent Onshore Scheme

5.3.9.4 In summary, the following impact pathways have been screened in for Appropriate Assessment:

- It is considered at this stage that LSE on Thanet Coast & Sandwich Bay SPA/Ramsar site due to loss of functionally-linked land for golden plover cannot be dismissed. This conclusion will be reviewed for the DCO once a second season of wintering bird data is obtained, and an Appropriate Assessment undertaken if necessary.
- At this stage of the Proposed Project, the potential for operational period collision risk cannot be dismissed, associated with the new section of overhead powerline and species travelling to Stodmarsh SPA/Ramsar. It is therefore screened in for further consideration.

Offshore Scheme

5.3.9.5 In summary, the following impact pathways have been screened in for Appropriate Assessment:

- Temporary physical disturbance impacts on Outer Thames Estuary SPA, Alde-Ore Estuary SPA, Minsmere-Walberswick SPA, Southern North Sea SAC, Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC.
- Permanent loss impacts on Outer Thames Estuary SPA, Thanet Coast & Sandwich Bay SPA/Ramsar, Alde-Ore Estuary SPA, Minsmere-Walberswick SPA, Southern North Sea SAC, Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC
- Temporary increase in SSC impacts on Outer Thames Estuary SPA, Alde-Ore Estuary SPA, Minsmere-Walberswick SPA, Southern North Sea, and Thanet Coast SAC
- Underwater noise impacts on Southern North Sea SAC, Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC
- Vessel collision risk impacts on Southern North Sea SAC, Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC
- Airborne sounds and visual disturbance impact on Outer Thames Estuary SPA, Alde-Ore Estuary SPA, Minsmere-Walberswick SPA, Wash and North Norfolk Coast SAC, Humber Estuary SAC, and Berwickshire and North Northumberland Coast SAC
- Effects of EMF emissions impacts on Southern North Sea SAC

In Combination

5.3.9.6 Multiple schemes (Nautilus Interconnector, Lionlink Interconnector and East Anglia ONE and TWO offshore wind farms) will be making, or intend to make, landfall in Suffolk between Sizewell and Aldeburgh and will be connecting to the proposed Friston Substation. The offshore cable routes will also all be traversing parts of Outer Thames Estuary SPA and Southern North Sea SAC, as will the Sea Link Offshore Scheme. As such, it is not possible to screen out 'in combination' effects at this stage. Impact pathways that may arise 'in combination' with the Proposed Project include disturbance of birds associated with Sandlings SPA, loss of functionally linked habitat for white-fronted goose associated with Minsmere-Walberswick SPA, and disturbance of red-throated diver of Outer Thames Estuary SPA and harbour porpoise of Southern North Sea SAC.

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5.3.11 Appendix A: Relevant Impact Pathways

5.3.11.1 The European Sites included in this screening assessment are:

Suffolk

- Sandlings SPA
- Outer Thames Estuary SPA
- Alde-Ore Estuary SPA/Ramsar
- Minsmere-Walberswick SPA/Ramsar

Kent

- Thanet Coast & Sandwich Bay SPA/Ramsar
- Sandwich Bay SAC
- Stodmarsh SPA
- Stodmarsh SAC

Offshore

- Outer Thames Estuary SPA
- Alde-Ore Estuary SPA/Ramsar
- Minsmere-Walberswick SPA
- Thanet Coast & Sandwich Bay SPA/Ramsar
- Thanet Coast SAC
- Sandwich Bay SAC
- Margate and Long Sands SAC
- Southern North Sea SAC
- Wash and North Norfolk Coast SAC
- Humber Estuary SAC
- Berwickshire and North Northumberland Coast SAC

Table 5.3.1: The impact pathways considered in this HRA Stage 1 (LSE) Report, which are referred to in the detailed screening matrices below.

Designation	Impact pathways identified on the current evidence base	Presented in screening matrices as
Sandlings SPA	• Direct habitat loss • Air quality • Loss of functionally-linked habitat • Disturbance • Pollution	• Direct habitat loss • Air quality • Loss of functionally-linked habitat • Disturbance • Pollution
Outer Thames Estuary SPA	• Direct habitat loss • Disturbance • Loss of functionally-linked habitat • Pollution • Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Temporary increase in SSC • Introduction and spread of INNS • Airborne sounds and visual disturbance	• Direct habitat loss • Disturbance • Loss of functionally-linked habitat • Pollution • Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Temporary increase in SSC • Introduction and spread of INNS • Airborne sounds and visual disturbance
Alde-Ore Estuary SPA/Ramsar	• Loss of functionally-linked habitat • Temporary physical disturbance to subtidal benthic habitats and species	• Loss of functionally-linked habitat • Temporary physical disturbance to subtidal benthic habitats and species

Designation	Impact pathways identified on the current evidence base	Presented in screening matrices as
	• Permanent loss of subtidal benthic habitats and species • Temporary increase in SSC • Introduction and spread of INNS • Airborne sounds and visual disturbance	• Permanent loss of subtidal benthic habitats and species • Temporary increase in SSC • Introduction and spread of INNS • Airborne sounds and visual disturbance
Minsmere-Walberswick SPA/Ramsar	• Loss of functionally-linked habitat • Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Temporary increase in SSC • Introduction and spread of INNS • Airborne sounds and visual disturbance	• Loss of functionally-linked habitat • Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Temporary increase in SSC • Introduction and spread of INNS • Airborne sounds and visual disturbance
Thanet Coast & Sandwich Bay SPA/Ramsar	• Direct habitat loss • Loss of functionally-linked habitat • Disturbance • Pollution • Collision risk • Temporary physical disturbance to subtidal benthic habitats and species	• Direct habitat loss • Loss of functionally-linked habitat • Disturbance • Pollution • Collision risk • Temporary physical disturbance to subtidal benthic habitats and species

Designation	Impact pathways identified on the current evidence base	Presented in screening matrices as
	• Permanent loss of subtidal benthic habitats and species • Introduction and spread of INNS • Airborne sounds and visual disturbance	• Permanent loss of subtidal benthic habitats and species • Introduction and spread of INNS • Airborne sounds and visual disturbance
Thanet Coast SAC	• Temporary increase in SSC • Introduction and spread of INNS • Thermal emissions	• Temporary increase in SSC • Introduction and spread of INNS • Thermal emissions
Sandwich Bay SAC	• Pollution • Temporary increase in SSC • Introduction and spread of INNS	• Pollution • Temporary increase in SSC • Introduction and spread of INNS
Margate and Long Sands SAC	• Temporary physical disturbance to subtidal benthic habitats and species • Introduction and spread of INNS • Thermal emissions	• Temporary physical disturbance to subtidal benthic habitats and species • Introduction and spread of INNS • Thermal emissions
Stodmarsh SPA/Ramsar	• Collision risk • Pollution	• Collision risk • Pollution
Stodmarsh SAC	• Pollution	• Pollution
Southern North Sea SAC	• Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species	• Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species

Designation	Impact pathways identified on the current evidence base	Presented in screening matrices as
	• Temporary increase in SSC • Introduction and spread of INNS • Underwater noise • Vessel collision risk • Effects of EMF emissions • Thermal emissions	• Temporary increase in SSC • Introduction and spread of INNS • Underwater noise • Vessel collision risk • Effects of EMF emissions • Thermal emissions
Wash and North Norfolk Coast SAC	• Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Introduction and spread of INNS • Underwater noise • Vessel collision risk • Airborne sounds and visual disturbance	• Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Introduction and spread of INNS • Underwater noise • Vessel collision risk • Airborne sounds and visual disturbance
Humber Estuary SAC	• Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Introduction and spread of INNS • Underwater noise • Vessel collision risk	• Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Introduction and spread of INNS • Underwater noise • Vessel collision risk

Designation	Impact pathways identified on the current evidence base	Presented in screening matrices as
	• Airborne sounds and visual disturbance	• Airborne sounds and visual disturbance
Berwickshire and North Northumberland Coast SAC	• Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Introduction and spread of INNS • Underwater noise • Vessel collision risk • Airborne sounds and visual disturbance	• Temporary physical disturbance to subtidal benthic habitats and species • Permanent loss of subtidal benthic habitats and species • Introduction and spread of INNS • Underwater noise • Vessel collision risk • Airborne sounds and visual disturbance

General matrix key:

✓ = Likely significant effect **cannot** be excluded

X = Likely significant effect **can** be excluded

C = Construction

O = Operation

D = Decommissioning

Table 5.3.2: Detailed screening matrix assessing the qualifying features of the Sandlings SPA against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Sandlings SPA														
EU Code: UK9020286														
Distance to NSIP: Adjacent														
Effect	**Disturbance**			**Air quality**		**Pollution**			**Direct habitat loss**	**Loss of functionally-linked land**		**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**C**	**D**	**C**	**O**	**D**
Nightjar *Caprimulgus europaeus*	✓a	Xb	✓a	✓c	✓c	Xd	Xi	Xd	Xe	Xf	Xf	✓g	Xh	✓g
Woodlark *Lullula arborea*	✓a	Xb	✓a	✓c	✓c	Xd	Xi	Xd	Xe	Xf	Xf	✓g	Xh	✓g

a = Paragraphs 5.3.5.9 to 5.3.5.16 explain that noise and visual disturbance of nesting woodlark and nightjar within the SPA may arise during construction and decommissioning, as the SPA is situated adjacent to a construction compound and trenchless installation location.

b = Paragraphs 5.3.5.25 to 5.3.5.26 explain that no significant operational disturbance would arise as only occasional maintenance by small numbers of workers would be required.

c = Paragraphs 5.3.5.2 to 5.3.5.4 explain that during construction and decommissioning dust and atmospheric vehicle exhaust pollution impacts could arise on the SPA, which is situated adjacent to a construction compound and trenchless installation location.

d = Paragraphs 5.3.5.18 to 5.3.5.24 explain that, while pollution during construction and decommissioning is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

e = Paragraph 5.3.5.1 explains that there will be no direct loss of any area of SPA, SAC or Ramsar site due to the Proposed Project.

f = Paragraphs 5.3.5.5 to 5.3.5.8 explain that during construction and decommissioning significant effects on functionally-linked land associated with the SPA will not arise as there is an abundance of suitable land within 2 km of the SPA in which nightjar and woodlark can forage and the Proposed Project will only result in the temporary loss of 116ha of farmland within 2 km of the SPA.

g = Section 5.3.6 explains that there will be several other schemes (Nautilus Interconnector, LionLink Interconnector and East Anglia ONE and TWO wind farms) which will all have landfall in a similar location to the Proposed Project and also connect to the proposed Friston substation and could be under construction at the same time as the Proposed Project. Therefore, potential effects 'in combination' cannot be dismissed.

h = Section 5.3.6 explains that, once the schemes are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance in a worked agricultural landscape.

i = Paragraphs 5.3.5.27 to 5.3.5.29 explain that, while pollution during operational maintenance is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

Table 5.3.3: Detailed screening matrix assessing the qualifying features of the Outer Thames Estuary SPA against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Outer Thames Estuary SPA																									
EU Code: UK9020309																									
Distance to NSIP: Adjacent to Onshore Scheme, 0 km to Offshore Scheme																									
Effect	**Disturbance**			**Pollution**			**Direct habitat loss**	**Loss of functionally-linked land**		**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**D**	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Red throated diver *Gavia stellata*	**✓a**	**Xb**	**✓a**	**Xc**	**Xm**	**Xc**	**Xd**	**Xe**	**Xe**	**✓f**	**✓f**	**✓f**	**✓g**	**✓g**	**✓h**	**✓h**	**✓h**	**Xi**	**Xi**	**Xi**	**✓j**	**✓j**	**✓j**	**✓k**	**Xl**	**✓k**
Common tern *Sterna hirundo*	**✓a**	**Xb**	**✓a**	**Xc**	**Xm**	**Xc**	**Xd**	**Xe**	**Xe**	**✓f**	**✓f**	**✓f**	**✓g**	**✓g**	**✓h**	**✓h**	**✓h**	**Xi**	**Xi**	**Xi**	**✓j**	**✓j**	**✓j**	**✓k**	**Xl**	**✓k**
Little tern *Sterna albifrons*	**✓a**	**Xb**	**✓a**	**Xc**	**Xm**	**Xc**	**Xd**	**Xe**	**Xe**	**✓f**	**✓f**	**✓f**	**✓g**	**✓g**	**✓h**	**✓h**	**✓h**	**Xi**	**Xi**	**Xi**	**✓j**	**✓j**	**✓j**	**✓k**	**Xl**	**✓k**

a = Paragraph 5.3.5.13 explains that noise and visual disturbance of SPA birds will not arise during construction and decommissioning, as the SPA is situated 860m from the Onshore Scheme of the Proposed Project at the closest.

b = Paragraphs 5.3.5.25 to 5.3.5.26 explain that no significant operational disturbance would arise as only occasional maintenance by small numbers of workers would be required.

c = Paragraphs 5.3.5.18 to 5.3.5.24 explain that, while pollution during construction and decommissioning is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore these measures will also avoid significant effects on European Sites.

d = Paragraph 5.3.5.1 explains that there will be no direct loss of any area of SPA, SAC or Ramsar site due to the Proposed Project.

e = Paragraph 5.3.5.7 explains that during construction and decommissioning significant effects on functionally-linked land associated with the SPA will not arise as there are no habitats suitable for SPA birds onshore in the vicinity of the Proposed Project.

f = Paragraph 5.3.5.57 explains that project activities may disturb subtidal offshore areas of the Outer Thames Estuary SPA, including foraging ground of the seabird features. Thus, there is potential for indirect effects on the Outer Thames Estuary SPA.

g = Paragraph 5.3.5.62 explains that there will be a permanent loss of subtidal offshore areas of the Outer Thames Estuary SPA, including foraging ground of the seabird features. Thus, there is potential for indirect effects on the Outer Thames Estuary SPA.

h = Paragraph 5.3.5.67 explains that there will be an increase in SSC within the offshore areas of the Outer Thames Estuary SPA, including foraging ground of the seabird features. Thus, there is potential for indirect effects on the Outer Thames Estuary SPA.

i = Paragraph 5.3.5.69 explains that to ensure that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of the Outer Thames Estuary SPA.

j = Paragraph 5.3.5.83 explains that the increased vessel presence has the potential to disturb the seabird features of the Outer Thames Estuary SPA.

k = Section 5.3.6 explains that there will be several other schemes (Nautilus Interconnector, LionLink Interconnector and East Anglia ONE and TWO wind farms) which will all have landfall in a similar location to the Proposed Project and also connect to the proposed Friston substation and could be under construction at the same time as the Proposed Project. Therefore, potential effects ‘in combination’ cannot be dismissed. Other projects that may interact with the Proposed Project include Sizewell C nuclear power station, Neuconnect interconnector, and Five Estuaries offshore windfarm, and thus ‘in combination’ effects cannot be dismissed.

l = Section 5.3.6 explains that, once the schemes are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance in a worked agricultural landscape.

m = Paragraphs 5.3.5.27 to 5.3.5.29 explain that, while pollution during operational maintenance is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

Table 5.3.4: Detailed screening matrix assessing the qualifying features of the Alde-Ore Estuary SPA against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Alde-Ore Estuary SPA																									
EU Code: UK9020309																									
Distance to NSIP: Adjacent to Onshore Scheme, 0 km to Offshore Scheme																									
Effect	**Disturbance**			**Pollution**			**Direct habitat loss**	**Loss of functionally-linked land**		**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**D**	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Marsh Harrier *Circus aeruginosus*	✓a	Xb	✓a	Xc	Xm	Xc	Xd	Xe	Xe	✓f	✓f	✓f	✓g	✓g	✓h	✓h	✓h	Xi	Xi	Xi	✓j	✓j	✓j	✓k	Xl	✓k
Lesser black-backed gull *Larus fuscus*	✓a	Xb	✓a	Xc	Xm	Xc	Xd	Xe	Xe	✓f	✓f	✓f	✓g	✓g	✓h	✓h	✓h	Xi	Xi	Xi	✓j	✓j	✓j	✓k	Xl	✓k
Ruff *Philomachus pugnax*	✓a	Xb	✓a	Xc	Xm	Xc	Xd	Xe	Xe	✓f	✓f	✓f	✓g	✓g	✓h	✓h	✓h	Xi	Xi	Xi	✓j	✓j	✓j	✓k	Xl	✓k
Avocet *Recurvirostra avosetta*	✓a	Xb	✓a	Xc	Xm	Xc	Xd	Xe	Xe	✓f	✓f	✓f	✓g	✓g	✓h	✓h	✓h	Xi	Xi	Xi	✓j	✓j	✓j	✓k	Xl	✓k
Sandwich tern *Sterna sandvicensis*	✓a	Xb	✓a	Xc	Xm	Xc	Xd	Xe	Xe	✓f	✓f	✓f	✓g	✓g	✓h	✓h	✓h	Xi	Xi	Xi	✓j	✓j	✓j	✓k	Xl	✓k

Name of European site and Designation: Alde-Ore Estuary SPA																										
EU Code: UK9020309																										
Distance to NSIP: Adjacent to Onshore Scheme, 0 km to Offshore Scheme																										
Effect	**Disturbance**			**Pollution**			**Direct habitat loss**	**Loss of functionally-linked land**		**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**D**	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Little tern *Sterna albifrons*	**✓a**	**Xb**	**✓a**	**Xc**	**Xm**	**Xc**	**Xd**	**Xe**	**Xe**	**✓f**	**✓f**	**✓f**	**✓g**	**✓g**	**✓h**	**✓h**	**✓h**	**Xi**	**Xi**	**Xi**	**✓j**	**✓j**	**✓j**	**✓k**	**Xl**	**✓k**
Redshank *Tringa totanus*	**✓a**	**Xb**	**✓a**	**Xc**	**Xm**	**Xc**	**Xd**	**Xe**	**Xe**	**✓f**	**✓f**	**✓f**	✓g	✓g	✓h	✓h	✓h	Xi	Xi	Xi	✓j	✓j	✓j	✓k	Xl	✓k

a = Paragraphs 5.3.5.5 to 5.3.5.9 explain that during construction and decommissioning significant effects on functionally-linked land associated with the SPA cannot be dismissed, at least until bird surveys are complete, as the site lies within 2km of the SPA and habitats suitable for SPA birds lie within the footprint of the Proposed Project.

b = 5.3.5.57, 5.3.5.62, 5.3.5.67, 5.3.5.83 Explain that only seabird features (rather than waterfowl and waders) will be affected by temporary physical disturbance to subtidal benthic habitats and species, permanent loss of subtidal benthic habitats and species, temporary increase in SSC, or airborne sounds and visual disturbance.

c = 5.3.5.57 explains that project activities may disturb foraging areas that support the herring gull feature of Alde-Ore Estuary SPA. Thus, there is potential for indirect effects on the Alde-Ore Estuary SPA.

d = 5.3.5.62 explains that explains that project activities may disturb foraging areas that support the herring gull feature of Alde-Ore Estuary SPA. Thus, there is potential for indirect effects on the Alde-Ore Estuary SPA.

e = 5.3.5.7 explains that during construction and decommissioning significant effects on functionally-linked land associated with the SPA will not arise as there are no habitats suitable for SPA birds onshore in the vicinity of the Proposed Project.

f = 5.3.5.57 explains that project activities may disturb subtidal offshore areas of the Alde-Ore Estuary SPA, including foraging ground of the seabird features. Thus, there is potential for indirect effects on the Alde-Ore Estuary SPA.

g = Paragraph 5.3.5.62 explains that there will be a permanent loss of subtidal offshore areas of the Alde-Ore Estuary SPA, including foraging ground of the seabird features. Thus, there is potential for indirect effects on the Alde-Ore Estuary SPA.

h = Paragraph 5.3.5.67 explains that there will be an increase in SSC within the offshore areas of the Alde-Ore Estuary SPA, including foraging ground of the seabird features. Thus, there is potential for indirect effects on the Alde-Ore Estuary SPA.

i = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of the Alde-Ore Estuary SPA.

j = Paragraph 5.3.5.83 explains that the increased vessel presence has the potential to disturb the seabird features of the Alde-Ore Estuary SPA.

k = Section 5.3.6 explains that there will be several other schemes (Nautilus Interconnector, LionLink Interconnector and East Anglia ONE and TWO wind farms) which will all have landfall in a similar location to the Proposed Projectand also connect to the proposed Friston substation and could be under construction at the same time as the Proposed Project. Therefore, potential effects ‘in combination’ cannot be dismissed.

l = Section 5.3.6 explains that, once the schemes are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance in a worked agricultural landscape.

m = Paragraphs 5.3.5.27 to 5.3.5.29 explain that, while pollution during operational maintenance is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

Table 5.3.5: Detailed screening matrix assessing the qualifying features of the Alde-Ore Estuary Ramsar against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Alde-Ore Estuary Ramsar																			
EU Code: N/A																			
Distance to NSIP: 629m to Onshore Scheme and 1.07 km to Offshore Scheme																			
Effect	**Loss of functionally-linked land**		**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**In combination effects**		
Stage of Proposed Development	**C**	**D**	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Ramsar criterion 2 - The site supports a number of nationally-scarce plant species and British Red Data Book invertebrates	**Xa**	**Xa**	**Xb**	**Xb**	**Xb**	**Xb**	**Xb**	**Xb**	**Xb**	**Xb**	**Xi**	**Xi**	**Xi**	**Xb**	**Xb**	**Xb**	**Xg**	**Xg**	**Xg**
Ramsar criterion 3 - The site supports a notable assemblage of breeding and wintering wetland birds.	**Xg**	**Xg**	**✓c**	**✓c**	**✓c**	**✓d**	**✓d**	**✓e**	**✓e**	**✓e**	**Xi**	**Xi**	**Xi**	**✓f**	**✓f**	**✓f**	**Xg**	**Xg**	**Xg**
Ramsar criterion 6 – The site supports internationally important populations of breeding lesser black backed gull, and non-breeding avocet and redshank.	**Xh**	**Xh**	**Xb**	**Xb**	**Xb**	**Xb**	**Xb**	**Xb**	**Xb**	**Xb**	**Xi**	**Xi**	**Xi**	**Xb**	**Xb**	**Xb**	**Xg**	**Xg**	**Xg**

a = Paragraph 5.3.4.7 explains that the Proposed Project is too distant from the Ramsar site for these features to be affected.

b = 5.3.5.57, 5.3.5.62, 5.3.5.67, 5.3.5.83 Explain that only seabird features (rather than waterfowl and waders) will be affected by temporary physical disturbance to subtidal benthic habitats and species, permanent loss of subtidal benthic habitats and species, temporary increase in SSC, or airborne sounds and visual disturbance.

c = 5.3.5.57 explains that project activities may disturb foraging areas that support the herring gull that forms part of the assemblage feature of Alde-Ore Estuary Ramsar. Thus, there is potential for indirect effects on the Alde-Ore Estuary Ramsar.

d = 5.3.5.62 explains that explains that project activities may disturb foraging areas that support the herring gull feature of Alde-Ore Estuary Ramsar. Thus, there is potential for indirect effects on the Alde-Ore Estuary Ramsar.

e = 5.3.5.67 explains that there will be an increase in SSC within areas that support the herring gull that forms part of the assemblage of Alde-Ore Estuary Ramsar. Thus, there is potential for indirect effects on the Alde-Ore Estuary Ramsar.

f = 5.3.5.83 explains that the increased vessel presence has the potential to disturb the herring gull that forms part of the assemblage of the Alde-Ore Estuary Ramsar.

g = Paragraph 5.3.4.7 explains that the Proposed Project is too distant from the Ramsar site for these features to be affected.

h = Paragraphs 5.3.5.5 to 5.3.5.9 explain that during construction and decommissioning significant effects on functionally-linked land associated with the SPA cannot be dismissed, at least until bird surveys are complete, as the site lies within 2km of the SPA and habitats suitable for SPA birds lie within the footprint of the Proposed Project.

i = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus, it is not anticipated that there will be a likely significant effect on the seabird features of the Alde-Ore Estuary Ramsar.

Table 5.3.6: Detailed screening matrix assessing the qualifying features of the Minsmere-Walberswick SPA against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Minsmere-Walberswick SPA																				
EU Code: UK9009101																				
Distance to NSIP: 5.6 km to Onshore Scheme and 1.7 km to Offshore Scheme																				
Effect	**Loss of functionally-linked land**		**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**In combination effects**		
Stage of Proposed Development	**C**	**D**	**C**	**C**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Botaurus stellaris; Great bittern (Breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	Xi	Xj	Xi
Anas strepera; Gadwall (Non-breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	Xi	Xj	Xi
Anas strepera; Gadwall (Breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	Xi	Xj	Xi
Anas crecca; Eurasian teal (Breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	Xi	Xj	Xi
Anas clypeata; Northern shoveler (Breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	Xi	Xj	Xi
Anas clypeata; Northern shoveler (Non-breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	✓i	Xj	✓i

Name of European site and Designation: Minsmere-Walberswick SPA																				
EU Code: UK9009101																				
Distance to NSIP: 5.6 km to Onshore Scheme and 1.7 km to Offshore Scheme																				
Effect	Loss of functionally-linked land		Temporary physical disturbance to subtidal benthic habitats and species			Permanent loss of subtidal benthic habitats and species		Temporary increase in SSC			Introduction and spread of INNS			Airborne sounds and visual disturbance			In combination effects		
Stage of Proposed Development	C	D	C	C	D	C	D	C	O	D	C	O	D	C	O	D	C	O	D
Circus aeruginosus; Eurasian marsh harrier (Breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	✓i	Xj	✓i
Circus cyaneus; Hen harrier (Non-breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	✓i	Xj	✓i
Recurvirostra avosetta; Pied avocet (Breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	✓i	Xj	✓i
Sterna albifrons; Little tern (Breeding)	Xa	Xa	✓d	✓d	✓d	✓e	✓e	✓f	✓f	✓f	Xg	Xg	Xg	✓h	✓h	✓h	✓i	Xj	✓i
Caprimulgus europaeus; European nightjar (Breeding)	Xa	Xa	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	✓i	Xj	✓i
Anser albifrons albifrons; Greater white-fronted goose (Non-breeding)	✓b	✓b	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xg	Xg	Xg	Xc	Xc	Xc	✓i	Xj	✓i

a = Paragraphs 5.3.5.5 to 5.3.5.9 explain that Natural England guidance indicates that these species only travel up to 2km from their designated sites to roost or forage. Since Minsmere-Walberswick is over 5km from the Proposed Project there will therefore be no impacts of the Onshore Scheme on functionally-linked land for these species.

b = Paragraphs 5.3.5.5 to 5.3.5.9 explain that during construction and decommissioning significant effects on functionally-linked land associated with this species cannot be dismissed, at least until bird surveys are complete, as the site lies within 10km of the SPA and habitats suitable for greater white-fronted goose lie within the footprint of the Proposed Project.

c = 5.3.5.57, 5.3.5.62, 5.3.5.67, 5.3.5.83 Explain that only seabird features will be affected by temporary physical disturbance to subtidal benthic habitats and species, permanent loss of subtidal benthic habitats and species, temporary increase in SSC, or airborne sounds and visual disturbance.

d = 5.3.5.57 explains that project activities may disturb foraging areas that support the little tern feature of Minsmere-Walberswick SPA. Thus, there is potential for indirect effects on the Minsmere-Walberswick SPA.

e = 5.3.5.62 explains that project activities may disturb foraging areas that support the little tern feature of Minsmere-Walberswick SPA. Thus, there is potential for indirect effects on the Minsmere-Walberswick SPA.

f = 5.3.5.67 explains that there will be an increase in SSC within areas that support the little tern feature of Minsmere-Walberswick SPA. Thus, there is potential for indirect effects on the Minsmere-Walberswick SPA.

g = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of Minsmere-Walberswick SPA.

h =5.3.5.83 explains that the increased vessel presence has the potential to disturb the little tern feature of the Minsmere-Walberswick SPA.

i = Section 5.3.6 explains that there will be several other schemes (Nautilus Interconnector, LionLink Interconnector and East Anglia ONE and TWO wind farms) which will all have landfall in a similar location to the Proposed Project and also connect to the proposed Friston substation and could be under construction at the same time as the Proposed Project. Therefore, potential effects ‘in combination’ cannot be dismissed.

j = Section 5.3.6 explains that, once the schemes are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance in a worked agricultural landscape.

Table 5.3.7: Detailed screening matrix assessing the qualifying features of the Minsmere-Walberswick Ramsar against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Minsmere-Walberswick Ramsar					
EU Code: N/A					
Distance to NSIP: 5.6 km to Onshore Scheme					
Effect	**Loss of functionally-linked land**		**In combination effects**		
Stage of Proposed Development	**C**	**D**	**C**	**O**	**D**
Ramsar criterion 1 - The site contains a mosaic of marine, freshwater, marshland and associated habitats, complete with transition areas in between. Contains the largest continuous stand of reedbeds in England and Wales and rare transition in grazing marsh ditch plants from brackish to fresh water.	**Xa**	**Xa**	**Xb**	**Xb**	**Xb**
Ramsar criterion 2 - This site supports nine nationally scarce plants and at least 26 red data book invertebrates. Supports a population of the mollusc *Vertigo angustior* (Habitats Directive Annex II; British Red Data Book Endangered).	**Xa**	**Xa**	**Xb**	**Xb**	**Xb**

a = Paragraph 5.3.4.7 explains that the Proposed Project is too distant from the Ramsar site for these features to be affected.

b = Paragraph 5.3.6.1 explains that the Proposed Project is too distant from the Ramsar site for these features to be affected.

Table 5.3.8: Detailed screening matrix assessing the qualifying features of the Thanet Coast to Sandwich Bay SPA against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Thanet Coast and Sandwich Bay SPA																										
EU Code: UK9012071																										
Distance to NSIP: 470m from Onshore Scheme, 0 km from Offshore Scheme																										
Effect	**Disturbance**			**Collision risk**	**Pollution**			**Direct habitat loss**	**Loss of functionally-linked land**		**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**O**	**C**	**O**	**D**	**C**	**C**	**D**	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
European golden plover *Pluvialis apricaria* (Non-breeding)	**Xa**	**Xa**	**Xa**	**✓b**	**Xc**	**Xd**	**Xc**	**Xe**	**✓f**	**✓f**	**Xg**	**Xg**	**Xg**	**✓h**	**✓h**	**Xi**	**Xi**	**Xi**	**Xj**	**Xj**	**Xj**	**Xk**	**Xk**	**Xk**	**Xl**	**Xm**	**Xl**
Ruddy turnstone *Arenaria interpres* (Non-breeding)	**Xa**	**Xa**	**Xa**	**Xb**	**Xc**	**Xd**	**Xc**	**Xe**	**Xi**	**Xi**	**Xg**	**Xg**	**Xg**	**✓h**	**✓h**	**Xi**	**Xi**	**Xi**	**Xj**	**Xj**	**Xj**	**Xk**	**Xk**	**Xk**	**Xl**	**Xm**	**Xl**
Little tern *Sterna*	**Xa**	**Xa**	**Xa**	**Xb**	**Xc**	**Xd**	**Xc**	**Xe**	**Xi**	**Xi**	**Xg**	**Xg**	**Xg**	**✓h**	**✓h**	**Xi**	**Xi**	**Xi**	**Xj**	**Xj**	**Xj**	**Xk**	**Xk**	**Xk**	**Xl**	**Xm**	**Xl**

Name of European site and Designation: Thanet Coast and Sandwich Bay SPA																											
EU Code: UK9012071																											
Distance to NSIP: 470m from Onshore Scheme, 0 km from Offshore Scheme																											
Effect	**Disturbance**			**Collision risk**	**Pollution**			**Direct habitat loss**	**Loss of functionally-linked land**		**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**O**	**C**	**O**	**D**	**C**	**C**	**D**	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
albifrons (Breeding)																											

a = Paragraphs 5.3.5.37 to 5.3.5.39 explain that noise and visual disturbance of these species will not arise during construction and decommissioning, as the Kent Onshore Scheme is situated 470m from the SPA, on the other side of a golf course.

b = Paragraphs 5.3.5.44 to 5.3.5.48 explain that during operation, a collision risk may exist as golden plover are present in fields to the north of the new section of overhead line proposed to cross the River Stour.

c = Paragraphs 5.3.5.40 to 5.3.5.43 explain that, while pollution during construction and decommissioning is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

d = Paragraphs 5.3.5.51 to 5.3.5.53 explain that, while pollution during operational maintenance is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

e = Paragraph 5.3.5.31 explains that there will be no direct loss of any area of SPA, SAC or Ramsar site due to the Proposed Project.

f = Paragraphs 5.3.5.32 to 5.3.5.36 explain that during construction and decommissioning significant effects on functionally-linked land associated with the SPA may arise as golden plover can travel up to 10km inland from their coastal sites to forage and roost and a large flock of the species has been recorded within the permanent footprint of the Proposed Project on at least one occasion.

g = Paragraph 5.3.5.57 explains that there is no anticipated effect of temporary physical disturbance on the features of Thanet Coast and Sandwich Bay SPA.

h = Paragraph 5.3.5.62 explains that will be a permanent loss of subtidal offshore areas of the Thanet Coast and Sandwich Bay SPA, including foraging ground of the seabird features. Thus, there is potential for indirect effects on the seabird features of the Thanet Coast and Sandwich Bay SPA.

i = Paragraph 5.3.5.66 explains that there is no anticipated effect of increased SSC on the features of Thanet Coast and Sandwich Bay SPA.

j = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of Thanet Coast and Sandwich Bay SPA.

k = Paragraph 5.3.5.83 explains that there is no anticipated effect of airborne sounds and physical disturbance on the features of Thanet Coast and Sandwich Bay SPA.

l = Section 5.3.6 explains that Nautilus Interconnector may landfall in North Kent but this is remote from the landfall of the Proposed Project. Therefore, potential effects ‘in combination’ can be dismissed.

m = Section 5.3.6 explains that, once the schemes are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance in a worked agricultural landscape.

Table 5.3.9: Detailed screening matrix assessing the qualifying features of the Thanet Coast and Sandwich Bay Ramsar against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Thanet Coast and Sandwich Bay Ramsar																			
EU Code: N/A																			
Distance to NSIP: 470m from Onshore Scheme, 0 km from Offshore Scheme																			
Effect	**Loss of functionally-linked land**		**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**In combination effects**		
Stage of Proposed Development	**C**	**D**	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Ramsar criterion 2 - Supports 15 British Red Data Book wetland invertebrates	**Xa**	**Xa**	**Xc**	**Xc**	**Xc**	**✓d**	**✓d**	**Xe**	**Xe**	**Xe**	**Xf**	**Xf**	**Xf**	**Xg**	**Xg**	**Xg**	**Xh**	**Xh**	**Xh**
Ramsar criterion 6 – Non-breeding population of turnstone	**Xb**	**Xb**	**Xc**	**Xc**	**Xc**	**✓d**	**✓d**	**Xe**	**Xe**	**Xe**	**Xf**	**Xf**	**Xf**	**Xg**	**Xg**	**Xg**	**Xh**	**Xh**	**Xh**

a = Paragraph 5.3.4.7 explains that the Proposed Project is too distant from the Ramsar site for these features to be affected.

b = Paragraph 5.3.5.32 explains that this species does not use land within the footprint of the Kent Onshore Scheme.

c = Paragraph 5.3.5.57 explains that there is no anticipated effect of temporary physical disturbance on the features of Thanet Coast and Sandwich Bay Ramsar.

d = Paragraph 5.3.5.62 explains that will be a permanent loss of subtidal offshore areas of the Thanet Coast and Sandwich Bay Ramsar, including foraging ground of the seabird features. Thus, there is potential for indirect effects on the seabird features of the Thanet Coast and Sandwich Bay Ramsar.

e = Paragraph 5.3.5.66 explains that there is no anticipated effect of increased SSC on the features of Thanet Coast and Sandwich Bay Ramsar.

f = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of Thanet Coast and Sandwich Bay Ramsar.

g = Paragraph 5.3.5.83 explains that there is no anticipated effect of airborne sounds and physical disturbance on the features of Thanet Coast and Sandwich Bay Ramsar.h = Paragraph 5.3.5.32 explains that this species does not use land within the footprint of the Kent Onshore Scheme. Paragraph 5.3.6.1 explains that the Proposed Project is too distant from the Ramsar site for these features to be affected.

Table 5.3.10: Detailed screening matrix assessing the qualifying features of the Thanet Coast SAC against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Thanet Coast SAC													
EU Code: UK0013107													
Distance to NSIP: < 1 km from Offshore Scheme													
Effect	**Temporary increase in SSC**			**Introduction and spread of INNS**			**Airborne sounds and visual disturbance**			**Thermal emissions**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**O**	**C**	**O**	**D**
Reefs	**Xa**	**Xa**	**Xa**	**Xb**	**Xb**	**Xb**	**Xc**	**Xc**	**Xc**	**Xd**	**✓e**	**Xf**	**✓e**
Submerged or partially submerged sea caves	**Xa**	**Xa**	**Xa**	**Xb**	**Xb**	**Xb**	**Xc**	**Xc**	**Xc**	**Xd**	**✓e**	**Xf**	**✓e**

a = Paragraph 5.3.5.67 explains that Thanet Coast SAC is less than 1 km from the Offshore Scheme and is designated for benthic habitats including reef, which has the potential to be impacted by increases in SSC and deposition.

b = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of Thanet Coast SAC.

c = Paragraph 5.3.5.83 explains that there is no anticipated effect of airborne sounds and physical disturbance on the features of Thanet Coast SAC

d = Paragraph 5.3.5.91 explains that there is no anticipated effect of thermal emissions on the features of Thanet Coast SAC.

e = Section 5.3.6 explains that there will be several other schemes within the vicinity of the Proposed Project and could be under construction at the same time as the Proposed Project. Therefore, potential effects 'in combination' cannot be dismissed.

f = Section 5.3.6 explains that, once the projects are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance.

Table 5.3.11: Detailed screening matrix assessing the qualifying features of the Sandwich Bay SAC against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Sandwich Bay SAC												
EU Code: UK0013077												
Distance to NSIP: 0 m from Offshore Scheme, 470m from Onshore Scheme												
Effect	**Pollution**			**Temporary increase in SSC**			**Introduction and spread of INNS**			**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**
Embryonic shifting dunes	**Xa**	**Xb**	**Xa**	**Xc**	**Xc**	**Xc**	**Xd**	**Xd**	**Xd**	**Xe**	**Xe**	**Xe**
Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes"); Shifting dunes with marram	**Xa**	**Xb**	**Xa**	**Xc**	**Xc**	**Xc**	**Xd**	**Xd**	**Xd**	**Xe**	**Xe**	**Xe**
Fixed dunes with herbaceous vegetation ("grey dunes"); Dune grassland*	**Xa**	**Xb**	**Xa**	**Xc**	**Xc**	**Xc**	**Xd**	**Xd**	**Xd**	**Xe**	**Xe**	**Xe**
Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*); Dunes with creeping willow	**Xa**	**Xb**	**Xa**	**Xc**	**Xc**	**Xc**	**Xd**	**Xd**	**Xd**	**Xe**	**Xe**	**Xe**
Humid dune slacks	**Xa**	**Xb**	**Xa**	**Xc**	**Xc**	**Xc**	**Xd**	**Xd**	**Xd**	**Xe**	**Xe**	**Xe**

a = Paragraphs 5.3.5.40 to 5.3.5.43 explain that, while pollution during construction and decommissioning is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

b = Paragraphs 5.3.5.51 to 5.3.5.53 explain that, while pollution during operational maintenance is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

c = Paragraph 5.3.5.66 explains that there is no anticipated effect of increased SSC on the features of Sandwich Bay SAC.

d = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of Sandwich Bay SAC.

e = Section 5.3.6 explains that Nautilus Interconnector may landfall in North Kent but this is remote from the landfall of the Proposed Project. Therefore, potential effects 'in combination' can be dismissed.

Table 5.3.12: Detailed screening matrix assessing the qualifying features of the Margate and Long Sands SAC against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Margate and Long Sands SAC										
EU Code: UK0030371										
Distance to NSIP: 2 km from Offshore Scheme										
Effect	**Temporary physical disturbance to subtidal benthic habitats and species**			**Introduction and spread of INNS**			**Thermal emissions**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**	**O**	**C**	**O**	**D**
Sandbanks which are slightly covered by sea water all the time	**Xa**	**Xa**	**Xa**	**Xb**	**Xb**	**Xb**	**Xc**	**✓d**	**Xe**	**✓d**

a = Paragraph 5.3.5.58 explains that there is no anticipated effect of temporary physical disturbance on the features of Margate and Long Sands SAC.

b = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of Margate and Long Sands SAC.

c = Paragraph 5.3.5.90 explains that there is no anticipated effect of thermal emissions on the features of Margate and Long Sands SAC.

d = Section 5.3.6 explains that there will be several other schemes within the vicinity of the Proposed Project and could be under construction at the same time as the Proposed Project. Therefore, potential effects 'in combination' cannot be dismissed.

e = Section 5.3.6 explains that, once the projects are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance.

Table 5.3.13: Detailed screening matrix assessing the qualifying features of the Stodmarsh SPA against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Stodmarsh SPA							
EU Code:							
Distance to NSIP: 6.9km from Onshore Scheme							
Effect	**Pollution**			**Collision risk**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**O**	**C**	**O**	**D**
Bittern *Botaurus stellaris*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Gadwall *Anas Strepera*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Hen harrier *Circus cyaneus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Northern shoveler *Anas clypeata*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Gadwall *Anas Strepera*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Great crested grebe *Podiceps cristatus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Lapwing *Vanellus vanellus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Mallard *Anas platyrhynchos*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Moorhen *Gallinula chloropus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Reed bunting *Emberiza schoeniclus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Common tern *Sterna hirundo*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Coot *Fulica atra*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Redshank *Tringa tetanus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Reed Warbler *Acrocephalus scirpaceus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Shelduck *Tadorna tadorna*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Mute Swan *Cygnus olor*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Shoveler *Anas clypeata*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Teal *Anas crecca*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**

Name of European site and Designation: Stodmarsh SPA							
EU Code:							
Distance to NSIP: 6.9km from Onshore Scheme							
Effect	**Pollution**			**Collision risk**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**O**	**C**	**O**	**D**
Tufted Duck *Aythya fuligula*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Water Rail *Rallus aquaticus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Bearded Tit *Panurus biarmicus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Cetti's Warbler *Cettia cetti*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Gadwall *Anas Strepera*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Pochard *Aythya ferina*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Sedge warbler *Acrocephalus schoenobaenus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Gadwall *Anas Strepera*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Shoveler *Anas clypeata*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Bittern *Botaurus stellaris*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Hen harrier *Circus cyaneus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Tufted duck *Aythya fuligua*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Wigeon *Anas Penelope*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
White-fronted geese *Anser albifrons*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Mallard *Anas platyrhynchos*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Lapwing *Vanellus vanellus*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**
Snipe *Gallinago gallinago*	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xc**	**Xc**

a = Paragraphs 5.3.5.40 to 5.3.5.43 explain that, while pollution during construction and decommissioning is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

b = Paragraphs 5.3.5.51 to 5.3.5.53 explain that, while pollution during operational maintenance is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

c = Section 5.3.6 explains that Nautilus Interconnector may landfall in North Kent but this is remote from the landfall of the Proposed Project. Therefore, potential effects 'in combination' can be dismissed.

d = Paragraphs 5.3.5.44 to 5.3.5.48 explain that during operation, a collision risk may exist with regards to birds passing through the new section of overhead line proposed that will cross the River Stour, to reach the SPA.

Table 5.3.14: Detailed screening matrix assessing the qualifying features of the Stodmarsh SAC against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Stodmarsh SAC						
EU Code: UK0030283						
Distance to NSIP: 6.5km from Onshore Scheme						
Effect	**Pollution**			**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**O**	**D**
Desmoulin's whorl snail *Vertigo moulinsiana*	**Xa**	**Xb**	**Xa**	**Xc**	**Xc**	**Xc**

a = Paragraphs 5.3.5.40 to 5.3.5.43 explain that, while pollution during construction and decommissioning is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

b = Paragraphs 5.3.5.51 to 5.3.5.53 explain that, while pollution during operational maintenance is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

c = Section 5.3.6 explains that Nautilus Interconnector may landfall in North Kent but this is remote from the landfall of the Proposed Project. Therefore, potential effects ‘in combination’ can be dismissed.

Table 5.3.15: Detailed screening matrix assessing the qualifying features of the Stodmarsh Ramsar against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Stodmarsh Ramsar							
EU Code: N/A							
Distance to NSIP: 6.9km from Onshore Scheme							
Effect	**Pollution**			**Collision risk**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**O**	**C**	**O**	**D**
Ramsar criterion 2 - supports six British Red Data Book wetland invertebrates, two nationally rare plants, and five nationally scarce species, and for supporting a diverse assemblage of rare wetland birds.	**Xa**	**Xb**	**Xa**	**✓d**	**Xc**	**Xd**	**Xc**

a = Paragraphs 5.3.5.40 to 5.3.5.43 explain that, while pollution during construction and decommissioning is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

b = Paragraphs 5.3.5.51 to 5.3.5.53 explain that, while pollution during operational maintenance is a risk, in practice it is illegal to pollute and therefore procedures will be required (including Construction Environment Management Plans and similar) irrespective of the presence of international designations. Therefore, these measures will also avoid significant effects on European Sites.

c = Section 5.3.5.6 explains that Nautilus Interconnector may landfall in North Kent but this is remote from the landfall of the Proposed Project. Therefore, potential effects 'in combination' can be dismissed.

d = Paragraphs 5.3.5.44 to 5.3.5.48 explain that during operation, a collision risk may exist with regards to birds passing through the new section of overhead line proposed that will cross the River Stour, to reach the SPA.

Table 5.3.16: Detailed screening matrix assessing the qualifying features of the Southern North Sea SAC against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Southern North Sea SAC																						
EU Code: UK0030395																						
Distance to NSIP: 0 km from Offshore Scheme																						
Effect	**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Temporary increase in SSC**			**Introduction and spread of INNS**			**Underwater noise**			**Vessel collision risk**			**Effects of EMF emissions**	**Thermal emissions**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**O**	**O**	**C**	**O**	**D**
Harbour porpoise *Phocoena phocoena*	✓a	✓a	✓a	✓b	✓b	✓c	✓c	✓c	Xd	Xd	Xd	✓e	✓e	✓e	✓f	✓f	✓f	✓g	Xh	✓i	Xj	✓i

a = Paragraph 5.3.5.59 explains that the activities may disturb the seabed and impact species that are prey items for the harbour porpoise of the Southern North Sea SAC.

b = Paragraph 5.3.5.62 explains that will be a permanent loss of subtidal offshore areas of the Southern North Sea SAC, including foraging ground of the harbour porpoise. Thus, there is potential for indirect effects on the Southern North Sea SAC.

c = Paragraph 5.3.5.67 explains that will be an increase in SSC within the offshore areas of the Southern North Sea SAC, including foraging ground of the harbour porpoise. Thus, there is potential for indirect effects on the Southern North Sea SAC.

d = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of Southern North Sea SAC.

e = Paragraph 5.3.5.76 explains that the Southern North Sea SAC harbour porpoise feature has the potential to be significantly affected by underwater noise produced by the Offshore Scheme.

f = Paragraph 5.3.5.81 explains that the Southern North Sea SAC harbour porpoise feature has the potential to be significantly affected by collision with vessels that are associated with the Offshore Scheme.

g = Paragraph 5.3.88 explains that the Southern North Sea SAC harbour porpoise feature has the potential to be significantly affected by EMF produced by the Offshore Scheme.

h = Paragraph 5.3.5.91 explains that there is no anticipated effect of thermal emissions on the features of Southern North Sea SAC.

i = Section 5.3.6 explains that there will be several other schemes within the vicinity of the Proposed Project and could be under construction at the same time as the Proposed Project. These projects include Neuconnect, Nautilus and Gridlink interconnectors, North Falls, East Anglia ONE North and TWO, and Five Estuaries offshore windfarms. Therefore, potential effects ‘in combination’ cannot be dismissed.

j = Section 5.3.6 explains that, once the projects are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance.

Table 5.3.17: Detailed screening matrix assessing the qualifying features of the Wash and North Norfolk Coast SAC against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Wash and North Norfolk Coast SAC																		
EU Code: UK0017075																		
Distance to NSIP: 110 km from Offshore Scheme																		
Effect	**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Introduction and spread of INNS**			**Underwater noise**			**Vessel collision risk**			**Airborne sounds and visual disturbance**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**O**	**D**
Sandbanks which are slightly covered by sea water all the time	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Mudflats and sandflats not covered by seawater at low tide	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Coastal lagoons	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Large shallow inlets and bays	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Reefs	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Salicornia and other annuals colonizing mud and sand	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)*	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Mediterranean and thermo-Atlantic halophilous scrubs *(Sarcocornetea fruticosi)*	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**

Name of European site and Designation: Wash and North Norfolk Coast SAC																		
EU Code: UK0017075																		
Distance to NSIP: 110 km from Offshore Scheme																		
Effect	**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Introduction and spread of INNS**			**Underwater noise**			**Vessel collision risk**			**Airborne sounds and visual disturbance**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**O**	**D**
Otter *Lutra lutra*	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Grey seal *Halichoerus grypus*	**✓b**	**✓b**	**✓b**	**✓c**	**✓c**	**Xd**	**Xd**	**Xd**	**✓e**	**✓e**	**✓e**	**✓f**	**✓f**	**✓f**	**✓g**	**✓h**	**Xi**	**✓h**

a = Paragraph 5.3.4.92 explains that due to the distance between Wash and North Norfolk Coast SAC and the Offshore Scheme, it is not anticipated that there will be any likely significant effects to any of the designated features of Wash and North Norfolk Coast SAC, other than the Grey seal, due to the large foraging range of the species. Therefore, the other features of the site were not considered within this assessment.

b = Paragraph 5.3.5.59 explains that the activities may disturb the seabed and impact species that are prey items for the grey seal feature of the Wash and North Norfolk Coast SAC.

c = Paragraph 5.3.5.62 explains that will be a permanent loss of subtidal offshore areas of the Wash and North Norfolk Coast SAC, including foraging ground of the grey seal feature. Thus, there is potential for indirect effects on the Wash and North Norfolk Coast SAC.

d = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of the Wash and North Norfolk Coast SAC.

e = Paragraph 5.3.5.77 explains that there is the potential for individuals from Wash and North Norfolk Coast SAC to interact with the Offshore scheme and thus there is potential for the grey seal feature of Wash and North Norfolk Coast SAC to be significantly affected by the underwater noise generated by the associated activities.

f = Paragraph 5.3.5.81 explains that due to the foraging ranges of grey seals there is potential for individuals from Wash and North Norfolk Coast SAC to interact with vessels associated with the Offshore Scheme.

g = Paragraph 5.3.5.84 explains that there is potential for individuals from Wash and North Norfolk Coast SAC to interact with the airborne sounds and visual disturbance of vessels associated with the Offshore Scheme.

h = Section 5.3.6 explains that there will be several other schemes within the vicinity of the Proposed Project and could be under construction at the same time as the Proposed Project. These projects include North Falls and Five Estuaries offshore windfarm Therefore, potential effects ‘in combination’ cannot be dismissed.

i = Section 5.3.6 explains that, once the projects are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance.

Table 5.3.18: Detailed screening matrix assessing the qualifying features of the Humber Estuary SAC against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Humber Estuary SAC																		
EU Code: UK0030170																		
Distance to NSIP: 160 km from Offshore Scheme																		
Effect	**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Introduction and spread of INNS**			**Underwater noise**			**Vessel collision risk**			**Airborne sounds and visual disturbance**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**O**	**D**
Estuaries	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Mudflats and sandflats not covered by seawater at low tide	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Sandbanks which are slightly covered by sea water all the time	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Coastal lagoons	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Salicornia and other annuals	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**

Name of European site and Designation: Humber Estuary SAC																		
EU Code: UK0030170																		
Distance to NSIP: 160 km from Offshore Scheme																		
Effect	**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Introduction and spread of INNS**			**Underwater noise**			**Vessel collision risk**			**Airborne sounds and visual disturbance**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**O**	**D**
colonizing mud and sand																		
Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)*	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Embryonic shifting dunes	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Fixed coastal dunes with herbaceous	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**

Name of European site and Designation: Humber Estuary SAC																		
EU Code: UK0030170																		
Distance to NSIP: 160 km from Offshore Scheme																		
Effect	**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Introduction and spread of INNS**			**Underwater noise**			**Vessel collision risk**			**Airborne sounds and visual disturbance**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**O**	**D**
vegetation ("grey dunes")																		
Dunes with *Hippophae rhamnoides*	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Sea lamprey *Petromyzon marinus*	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
River lamprey *Lampetra fluviatilis*	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Grey seal *Halichoerus grypus*	**✓b**	**✓b**	**✓b**	**✓c**	**✓c**	**Xd**	**Xd**	**Xd**	**✓e**	**✓e**	**✓e**	**✓f**	**✓f**	**✓f**	**✓g**	**✓h**	**Xi**	**✓h**

a = Paragraph 5.3.4.75 explains that due to the distance between Humber Estuary SAC and the Offshore Scheme, it is not anticipated that there will be any likely significant effects to any of the designated features of Humber Estuary SAC, other than the grey seal, due to the large foraging range of the species. Therefore, the other features of the site were not considered within this assessment.

b = Paragraph 5.3.5.59 explains that the activities may disturb the seabed and impact species that are prey items for the grey seal feature of the Humber Estuary SAC.

c = Paragraph 5.3.5.62 explains that will be a permanent loss of subtidal offshore areas of Humber Estuary SAC, including foraging ground of the grey seal feature. Thus, there is potential for indirect effects on Humber Estuary SAC.

d = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of the Humber Estuary SAC.

e = Paragraph 5.3.5.77 explains that there is the potential for individuals from Humber Estuary SAC to interact with the Offshore scheme and thus there is potential for the grey seal feature of Humber Estuary SAC to be significantly affected by the underwater noise generated by the associated activities.

f = Paragraph 5.3.5.81 explains that due to the foraging ranges of grey seals there is potential for individuals from Humber Estuary SAC to interact with vessels associated with the Offshore Scheme.

g = Paragraph 5.3.5.84 explains that there is potential for individuals from Humber Estuary SAC to interact with the airborne sounds and visual disturbance of vessels associated with the Offshore Scheme.

h = Section 5.3.6 explains that there will be several other schemes within the vicinity of the Proposed Project and could be under construction at the same time as the Proposed Project. These projects include North Falls and Five Estuaries offshore windfarm Therefore, potential effects ‘in combination’ cannot be dismissed.

i = Section 5.3.6 explains that, once the projects are operational the only potential for in combination effects would be if they required maintenance simultaneously. Even if they did, the number of crews and location would not result in significant disturbance.

Table 5.3.19: Detailed screening matrix assessing the qualifying features of the Berwickshire and North Northumberland Coast SAC against the identified impact pathways during construction (C columns), operation (O columns) and decommissioning (D columns).

Name of European site and Designation: Berwickshire and North Northumberland Coast SAC																		
EU Code: UK0017072																		
Distance to NSIP: 412 km from Offshore Scheme																		
Effect	**Temporary physical disturbance to subtidal benthic habitats and species**			**Permanent loss of subtidal benthic habitats and species**		**Introduction and spread of INNS**			**Underwater noise**			**Vessel collision risk**			**Airborne sounds and visual disturbance**	**In combination effects**		
Stage of Proposed Development	**C**	**O**	**D**	**C**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**O**	**D**	**C**	**C**	**O**	**D**
Mudflats and sandflats not covered by seawater at low tide	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Large shallow inlets and bays	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Reefs	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Submerged or partially submerged sea caves	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**	**Xa**
Grey seal *Halichoerus grypus*	**✓b**	**✓b**	**✓b**	**✓c**	**✓c**	**Xd**	**Xd**	**Xd**	**✓e**	**✓e**	**✓e**	**✓f**	**✓f**	**✓f**	**✓g**	**Xa**	**Xa**	**Xa**

a = Paragraph 5.3.4.70 exaplains that due to the distance between Berwickshire and North Northumberland Coast SAC and the Offshore Scheme, it is not anticipated that there will be any likely significant effects to any of the designated features of Berwickshire and North Northumberland Coast SAC, other than the grey seal, due to the large foraging range of the species. Therefore, the other features of the site were not considered within this assessment. Moreover, there is no anticipated 'in combination' effects anticipated.

b = Paragraph 5.3.5.59 explains that the activities may disturb the seabed and impact species that are prey items for the grey seal feature of Berwickshire and North Northumberland Coast SAC.

c = Paragraph 5.3.5.62 explains that will be a permanent loss of subtidal offshore areas of Berwickshire and North Northumberland Coast SAC, including foraging ground of the grey seal feature. Thus, there is potential for indirect effects on Berwickshire and North Northumberland Coast SAC.

d = Paragraph 5.3.5.69 explains that to ensure, that the potential impact of INNS introduction is reduced, management measures have been introduced. Thus it is not anticipated that there will be a likely significant effect on the seabird features of the on Berwickshire and North Northumberland Coast SAC.

e = Paragraph 5.3.5.77 explains that there is the potential for individuals from Berwickshire and North Northumberland Coast SAC to interact with the Offshore scheme and thus there is potential for the grey seal feature of Berwickshire and North Northumberland Coast SAC to be significantly affected by the underwater noise generated by the associated activities.

f = Paragraph 5.3.5.81 explains that due to the foraging ranges of grey seals there is potential for individuals from Berwickshire and North Northumberland Coast SAC to interact with vessels associated with the Offshore Scheme.

g = Paragraph 5.3.5.84 explains that there is potential for individuals from Berwickshire and North Northumberland Coast SAC to interact with the airborne sounds and visual disturbance of vessels associated with the Offshore Scheme.

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