



**The Great Grid Upgrade**

Eastern Green Link 5 (EGL 5)

# Preliminary Environmental Information Report

Volume 1

Part 3

Chapter 20 Intertidal and Offshore Ornithology

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nationalgrid

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# 20. Intertidal and Offshore Ornithology

## 20.1 Introduction

- 20.1.1 This chapter presents the preliminary findings of the Environmental Impact Assessment (EIA) undertaken to date for the offshore elements of the Eastern Green Link 5 (EGL 5) English Offshore Scheme with respect to intertidal and offshore ornithology. The preliminary assessment is based on information obtained to date. It should be read in conjunction with the description of the Project provided in **Volume 1, Part 1, Chapter 4: Description of the Project**.
- 20.1.2 This chapter describes the methodology used, the datasets that have informed the preliminary assessment, baseline conditions, environmental measures, and the preliminary intertidal and offshore ornithology effects that could result from the English Offshore Scheme during the construction, operation (and maintenance), and decommissioning phases. Specifically, it relates to the English Offshore elements of the Scheme seaward of Mean High Water Springs (MHWS) including the Intertidal Zone between MHWS and Mean Low Water Springs (MLWS).
- 20.1.3 It should be noted that **Volume 1, Part 2, Chapter 6: Biodiversity** assesses the potential impacts of the English Onshore Scheme on ornithology receptors down to MLWS. This chapter focuses on the potential impacts of the English Offshore Scheme on intertidal and offshore ornithology receptors up to MHWS. There is therefore an overlap between the assessments at the Anderby Creek Landfall.
- 20.1.4 This chapter should be read in conjunction with and considered alongside the following technical aspect chapters found in **Volume 1**:
- **Part 2, Chapter 6: Biodiversity** assesses the potential impacts of the English Onshore Scheme on ornithology receptors down to MLWS, and the intertidal and offshore ornithology assessment up to MHWS, therefore, there is an overlap between the assessments at the Anderby Creek Landfall. This chapter focuses on the potential impacts of the offshore scheme on intertidal and offshore ornithology receptors only, however, should be read in conjunction with **Part 2, Chapter 6 Biodiversity**.
  - **Part 3, Chapter 18: Intertidal and Subtidal Benthic Ecology** due to the close association between some habitats, flora and fauna, and the availability of prey species for intertidal and / or offshore ornithological receptors.
  - **Part 3, Chapter 19: Fish and Shellfish** due to the importance of fish and shellfish as prey species for intertidal and / or offshore ornithological receptors and the potential for fish and shellfish to be affected by the English Offshore Scheme.
- 20.1.5 There is spatial overlap with the onshore assessments that are being progressed for the English Onshore Scheme (see **Volume 1, Part 2 English Onshore Scheme**), with the Intertidal Zone sharing common receptors. This chapter should also therefore be read in conjunction with the following chapters found in **Volume 1**:
- **Part 2, Chapter 6: Biodiversity;**
  - **Part 2, Chapter 7: Cultural Heritage;** and
  - **Part 2, Chapter 9: Water Environment.**

- 20.1.6 This chapter is supported by the following figures in **Volume 3, Part 3**:
- **Figure 20-1: Study area for Intertidal & Offshore Ornithology;**
  - **Figure 20-2: Relevant Designated Sites for Intertidal & Offshore Ornithology;**
  - **Figure 20-3: Red-throated Diver Density Distribution;**
  - **Figure 20-4: Common Scoter Density Distribution;**
  - **Figure 20-5: Little Gull Density Distribution;** and
  - **Figure 24-3: Interconnector and Telecommunication Cables within the study area.**
- 20.1.7 This chapter is supported by the following appendices in **Volume 2**:
- **Volume 2, Part 3, Appendix 20.A: Supporting Information: Intertidal and Offshore Ornithology;**
  - **Volume 2, Part 3, Appendix 23.B: Outline Fisheries Liaison and Coexistence Plan (FLCP);**
  - **Volume 2, Part 1, Appendix 2.A: Regulatory and Planning Context;**
  - **Volume 2, Part 1, Appendix 5.A: Outline Register of Design Measures;**
  - **Volume 2, Part 1, Appendix 2.B: Marine Plan Policy Assessment;**
  - **Volume 2, Part 1, Appendix 5.B: Outline Code of Construction Practice;** and
  - **Volume 2, Part 1, Appendix 5.C: Outline Construction Environmental Management Plan.**
- 20.1.8 As set out in **Volume 1, Part 1, Chapter 1: Introduction**, cable installation and some associated activities beyond 12 Nautical Miles (NM), and emergency repair of the installed cable within the draft Order Limits are exempt under the Marine and Coastal Access Act 2009 (MCAA 2009). This chapter presents a preliminary assessment of the cable route from MHWS at the Anderby Creek Landfall to the maritime boundary between England and Scotland adjacent waters. This is to ensure all Likely Significant Effects (LSEs) of the English Offshore Scheme have been assessed. However, consent is not being sought for the exempt cable and only external cable protection and dredging for sandwave clearance will be included in the Deemed Marine Licence (DML) beyond 12 NM.

## Limitations

- 20.1.9 The information provided in this Preliminary Environmental Information Report (PEIR) is preliminary and presents the initial assessment of effects on intertidal and offshore ornithology receptors with the purpose of securing feedback from stakeholders to inform the final assessment. The final assessment of potential significant effects will be reported in the Environmental Statement (ES). The PEIR has been produced to fulfil the Applicant's consultation duties in accordance with Section 42 of the Planning Act 2008 (PA 2008) and enable consultees to develop an informed view of the preliminary potential significant effects of the English Offshore Scheme.
- 20.1.10 Various technical assessments were undertaken to inform the Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) EIA. Where relevant (i.e., where construction methodologies are essentially identical, or where an impact pathway would occur over a

similar spatial / temporal scope) the conclusions of those assessments have been used to scope 'in' or 'out' various impact pathways. These are not necessarily proposed to be repeated to inform the PEIR for this Project.

- 20.1.11 This PEIR has been collated based on a range of publicly available data and information. The data has been supplemented by ongoing vantage point surveys at the Anderby Creek Landfall. However, no project-specific offshore ornithological surveys have been undertaken as the publicly available information is considered sufficient for the nature of the English Offshore Scheme. In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.
- 20.1.12 Geographical Information Systems (GIS) shapefiles for common tern (*Sterna hirundo*) and Sandwich tern (*Thalasseus sandvicensis*) indicating their usage of the Greater Wash Special Protection Area (SPA) have been requested from the Joint Nature Conservation Committee (JNCC), however, at the time of writing these have not been received. Figures describing the distribution of common tern and Sandwich tern within the Greater Wash SPA will be included in the ES if the information is received.
- 20.1.13 It is assumed that the data collated is accurate. It should be noted that the survey data currently available for the Greater Wash SPA was published in 2016 (Ref 20.1). Natural England commissioned more recent surveys of the Greater Wash SPA in 2022 and 2023, the results of which are currently unpublished. Specific permission for the outcomes of the survey to be used for this PEIR had not been received at the time of writing this chapter. It is the Applicant's intention to use this information to inform the ES. This PEIR chapter has therefore been informed by the 2016 survey data.
- 20.1.14 Whilst some datasets are limited as they provide a short 'snapshot' of the populations present within the Greater Wash SPA during one day in one particular season, the Applicant has also made use of available data from offshore wind farm projects in the area of the English Offshore Scheme. Whilst the Applicant recognises that the use of data from offshore wind projects will not provide a full 'picture' of seasonal and annual variation in species distribution and density, it will assist in the identification of trends, for example certain hotspots for red-throated diver (*Gavia stellata*).
- 20.1.15 The assessment has been undertaken based on the description of the English Offshore Scheme presented in **Volume 1, Part 1, Chapter 4: Description of the Project**. To allow flexibility due to changing seabed conditions or features, it is assumed that the English Offshore Scheme could be installed anywhere within the draft Order Limits. Whilst indicative locations have been provided for external cable protection based on infrastructure crossings, it is also assumed that remedial external cable protection could be used at any point along the English Offshore Scheme and therefore anywhere within the draft Order Limits.
- 20.1.16 In the absence of data, a precautionary approach has been taken based on professional judgement, based on experience of similar linear projects, have been used where required to inform the scope of the assessment.

## Preliminary significance conclusions

- 20.1.17 All effects in relation to intertidal and offshore ornithology have been assessed as **not significant** between Section 20.10 and Section 20.13. Further details of the methodology behind the assessment, and a detailed narrative of the assessment itself are provided within the Section 20.4.

## 20.2 Relevant Technical Guidance

### Technical guidance

- 20.2.1 The legislation and planning policy which has informed the assessment of effects with respect to intertidal and offshore ornithology is provided within **Volume 1, Part 1, Chapter 2: Regulatory and Policy Overview** and **Volume 2, Part 1, Appendix 2.A: Regulatory and Planning Context**. Further information on policies relevant to the English Offshore Scheme is provided in **Volume 1, Part 1, Chapter 2: Regulatory and Policy Overview**. A preliminary marine plan assessment is provided as **Volume 2, Part 1, Appendix 2.B: Marine Plan Policy Assessment**. Relevant technical guidance, specific to intertidal and offshore ornithology, that has informed this PEIR and will inform the assessment within the ES is summarised below.
- 20.2.2 A summary of the technical guidance for intertidal and offshore ornithology is given in **Table 20-1**.

Table 20-1 Technical guidance relevant to the intertidal and offshore ornithology assessment

Technical guidance document	Context
Natural England Conservation Advice for Marine Protected Areas (Ref 20.2)	Provides conservation advice for Marine Protected Areas within England's territorial waters.
JNCC Conservation Advice for Marine Protected Areas (Ref 20.3)	Provides conservation advice for Marine Protected Areas up to England's Exclusive Economic Zone (EEZ) limit.
Joint Statutory Nature Conservation Bodies (SNCBs) Interim Displacement Advice Note (Ref 20.4)	Group for ornithology (MIG-Birds) with contributions from JNCC, Natural England, Natural Resources Wales, Northern Ireland Environment Agency and NatureScot (formerly Scottish Natural Heritage). Although prepared to advise on how offshore wind development should present information on the extent and potential consequences of seabird displacement, certain aspects can be applied to vessel disturbance. Updated in 2022 to include reference to the Joint SNCB Interim Advice on the Treatment of Displacement for Red-Throated Diver.
Joint SNCB Interim Advice on the Treatment of Displacement for Red-Throated Diver (Ref 20.5)	Provides updated advice on the treatment of displacement of red-throated diver in relation to offshore wind development and supersedes the 2017 advice note. Recommends a displacement buffer of at least 10 km for impact assessment where an offshore wind farm is within 10 km of a SPA designated for non-breeding red-throated diver, and 4 km for vessel disturbance.
Natural England's Best Practice Protocol for Vessels in Red-Throated Diver SPAs (Ref 20.6)	Natural England has developed text for licence conditions of vessel management plans for proposals where a red-throated diver Best Practice Protocol is required. The Protocol is to be adopted where there is

Technical guidance document	Context
	a need to minimise risk from vessel disturbance from activities like cable installation or where construction, Operation and Maintenance vessels will transit through a site designated for this species.
Natural England offshore wind cabling: ten years' experience and recommendations (Ref 20.7)	Provides evidence for Natural England's advice on impact assessments for cable projects and their advice for routeing and mitigation.
Natural England and JNCC guidance on key sensitivities of habitats and Marine Protected Areas in English waters to aggregate extraction (Ref 20.8)	Provides advice on marine bird sensitivities to impacts such as visual disturbance, above water noise and changes in suspended solids (water clarity).
Nature conservation considerations and environmental best practice for subsea cables for English Inshore and UK offshore waters (Ref 20.9)	Jointly developed between Natural England, JNCC and the European Subsea Cable Association (ESCA), this report identifies the main pressures, sensitive habitats, and best practice during development of subsea cables.
The Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Ref 20.10)	Sets out the industry standard approach to Ecological Impact Assessment (EIA) for assessing the potential effects of a project on ecological receptors.

## 20.3 Consultation and Engagement

### Overview

- 20.3.1 The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**. Feedback from engagement has been used to define the assessment approach and to ensure that appropriate baseline information is used to drive the design of the scheme to avoid, prevent and reduce any likely environmental effects.
- 20.3.2 An overview of the technical engagement undertaken or planned to inform the coastal and marine physical processes assessment is provided in paragraphs 20.3.5 to 20.3.8.

### Scoping Opinion

- 20.3.3 A Scoping Opinion was adopted by the Secretary of State, administered by the Planning Inspectorate, on 13 October 2025. A summary of the relevant responses received in the Scoping Opinion in relation to intertidal and offshore ornithology, and confirmation of how these have been addressed within the assessment to date, is presented in **Table 20-2**.
- 20.3.4 The information in the PEIR is preliminary and not all Scoping Opinion comments have been addressed at this stage, however, all comments will be addressed within the ES.

Table 20-2 Summary of EIA Scoping Opinion responses for the intertidal and offshore ornithology

Consultee	Category	Consideration	How addressed in this PEIR
Planning Inspectorate ID 4.4.1	Temporary Increase and Deposition of Suspended Sediments	The Inspectorate agrees that given alternative feeding grounds are available for these species [seaducks, geese and swans], that this matter can be scoped out, noting the temporary nature of the potential effect. The applicant's attention is drawn to the 'Chapter 21: Intertidal and Offshore Ornithology' section of the JNCC's response which requests that the common scoter [ <i>Melanitta nigra</i> ] is to be scoped in due to insufficient evidence concerning this species' sensitivity to suspended sediments. The Inspectorate advises that effects on this species should not be scoped out of further assessment. In the absence of information such as evidence demonstrating clear agreement with relevant statutory bodies, the Inspectorate is not in a position to agree to scope these matters from the assessment. Accordingly, the ES should include an assessment of these matters or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of an LSE.	The potential for significant effects on common scoter has been considered by the EIA and assessed in the Preliminary Assessment - see Section 20.10.
Planning Inspectorate ID 4.4.2	Temporary Increase and Deposition of Suspended Sediments	The Scoping Report states that harriers and waders are not diving birds and therefore are unlikely to be adversely affected by a decrease in water clarity. The Inspectorate notes that waders rely on visual cues when hunting and given the NE's comments regarding the sediment modelling (refer to ID 4.1.7 of this Opinion) and for this reason, the Inspectorate cannot exclude the possibility of significant effects. This matter should be assessed in the ES, or the absence of significant effects should be demonstrated with evidence of agreement from relevant consultation bodies.	The potential for significant effects on waders has been considered by the EIA and assessed in the Preliminary Assessment - see Section 20.10.
Planning Inspectorate ID 4.4.3	Changes in Distribution of Prey Species	The Scoping Report states that these activities will take place over a small section of the seabed, are transient in their nature	The impact pathway for 'changes in the distribution of prey species' has been

Consultee	Category	Consideration	How addressed in this PEIR
		and that alternative foraging areas are available. The applicant's attention is also drawn to ID 4.3.1 of this Opinion.	assessed for all species in Section 20.11.
Planning Inspectorate ID 4.4.4	Changes in Distribution of Prey Species	The Inspectorate is content to scope this matter out during decommissioning, noting that external cable protection will not be deposited during decommissioning.	Acknowledged. Impact pathway for 'changes in the distribution of prey species during deposit of external cable protection during decommissioning' continues to remain scoped out as agreed.
Planning Inspectorate ID 4.4.5	Visual and Physical Disturbance or Displacement	It is noted that these species are unlikely to be significantly or affected by the proposed development as they are less sensitive to noise and visual disturbance. The Inspectorate is therefore content to scope this matter out during all phases of the proposed development.	Acknowledged. Impact pathway for 'visual / physical disturbance or displacement due to the presence of project vessels and equipment on terns, gulls, kittiwakes and gannets during construction, Operation and Maintenance, and decommissioning' continues to remain scoped out as agreed.
Planning Inspectorate ID 4.4.6	Accidental spills due to the presence of Project vessels and equipment	The Inspectorate is content to scope this matter out noting the legal requirements upon vessels to manage any accidental releases or spills of materials or chemicals. The ES should include details of the mitigation and explain how its delivery is assured with reference to relevant documents.	Acknowledged. Impact pathway for 'accidental spills due to the presence of Project vessels and equipment on all species during construction, Operation and Maintenance, and decommissioning' continues to remain scoped out as agreed. Details of relevant mitigation measures are described in <b>Table 20-7</b> .
JNCC	Baseline Conditions	JNCC note in Section 21.4.3 that a 10km buffer has been applied for red-throated diver and 4 km buffer for other diving birds in relation to disturbance from offshore wind turbines. For disturbance associated with vessels, we recommend that a	Acknowledged. A 2 km buffer for red-throated diver and a 2.5 km buffer for common scoter has been applied, as seen in Section 20.4.

Consultee	Category	Consideration	How addressed in this PEIR
		buffer of 2 km is applied for red throated diver and 2.5 km for common scoter.	
JNCC	Baseline Conditions	Sections 21.4.6 – 21.4.15 appear to be repeated in the following Sections (21.4.16 – 21.4.25), and Tables 21-9 and 21-10 duplicate the content of Tables 21-7 and 21-8. JNCC advise that future documents be streamlined to reduce repetition and minimise the risk of reader fatigue, while ensuring that the chapter remains self-contained and comprehensible as discussed in the General Comments section of this response.	Acknowledged. Has been addressed throughout the PEIR.
JNCC	Baseline Conditions	Please note that common tern has been incorrectly labelled as a non-breeding feature for the Greater Wash SPA.	Acknowledged. Common tern has been correctly labelled as a breeding feature of the Greater Wash SPA in <b>Table 20-5</b> .
JNCC	Baseline Conditions	Please note that the seasonality for little gull in the Greater Wash SPA is August to May. In Table 21-12, this is presented as July to May. Similarly, the breeding season for little tern should be April to August, rather than April to September as presented in the table.	Acknowledged. The seasonality of little gull is presented in <b>Table 20-6</b> .
JNCC	Temporary Increase and Deposition of Suspended Sediment	Within the conservation advice package for Greater Wash SPA, the Advice on Operations states that there is insufficient evidence for the sensitivity of common scoter to suspended sediments. For this reason, an impact pathway may exist and therefore impacts from “temporary increase and deposition of suspended sediments” should be scoped in for seaducks and be taken to further assessment.	Acknowledged. The impact pathway for ‘temporary increase and deposition of suspended sediment’ has been assessed for common scoter in Section 20.10.
JNCC	Further Data to be gathered / processed	JNCC welcome the acknowledgement of the need for a vessel / disturbance assessment should the timing of the works be unknown at the PIER and ES stages. However, we reiterate that, as a case of best practice, where possible the operations overlapping with the Greater Wash SPA should be scheduled	Acknowledged. Taken forward in Project timeline discussions.

Consultee	Category	Consideration	How addressed in this PEIR
		outside of the wintering period (September to April inclusive) and advise that works are in accordance with the best practice advice for red-throated diver.	
Natural England Point 24	Assessment Methodology	The Applicant describes the potential impacts arising from the construction, Operation and Maintenance, and decommissioning of the English Offshore Scheme on intertidal and offshore ornithology (21.1.1). However, it is unclear if all pre-commencement activities associated with construction and potential impacts are considered (Table 4-6).	Acknowledged. Pre-commencement activities have been considered in <b>Table 20-11</b> .
Natural England Point 25	Baseline Conditions	Natural England notes that a displacement buffer of both 4 km (Table 21-4) and 10 km (21.4.3) is quoted for assessment of disturbance to red throated diver, whilst a displacement distance of 2 km for red-throated diver and 2.5 km for common scoter will be used for a vessel disturbance assessment (21.7.2).	Acknowledged. Displacement buffers are demonstrated in Section <b>Table 20-4</b> .
Natural England Point 26	Baseline Conditions	Natural England notes the Applicant's intention to use the 2022/2023 winter RTD ornithological survey data to inform their EIA. Natural England welcomes the Applicant's intention to use the most up-to-date survey data, noting that NE survey data can be made available for January and February 2022, in addition to the two October 2022, and January and February 2023 survey data.	Acknowledged. Data has been requested and will be incorporated as part of the ES.
Natural England Point 27	Baseline Conditions	Natural England notes that regular patterns of species occurrence are categorised into resident, summer visitors (breeding) and winter visitors (non-breeding).	Acknowledged. Species seasonality has been categorised as demonstrated in paragraph 20.5.12 and <b>Table 20-6</b> .
Natural England Point 28	Baseline Conditions	Species seasonality for designated sites - Natural England recommends this table receives QA (e.g., little gull, ringed plover) before inclusion at the PEIR stage.	Acknowledged. Species seasonality for designated sites has been updated and is presented in <b>Table 20-5</b> has been updated since scoping.

Consultee	Category	Consideration	How addressed in this PEIR
Natural England Point 29	Mitigation Measures	Design and control measures are discussed, including Environmental Management Plans (EMPs) and other environmental measures relevant to offshore and intertidal ornithology. Natural England notes these will be provided with the PEIR and ES.	Acknowledged. A summary of environmental measures is demonstrated in <b>Table 20-7</b> . These are also demonstrated in <b>Volume 2, Part 1, Appendix 5.A: Outline Register of Design Measures</b> and <b>Volume 2, Part 1, Appendix 5.C: Outline Construction Environmental Management Plan</b> .
Natural England Point 30	Further data to be gathered / processed	The Applicant states that Natural England recommends a seasonal restriction on licensable activities taking place within the Greater Wash SPA between September and April inclusive, during the wintering period for red-throated diver and common scoter.	Acknowledged. Taken forward in Project timeline discussions.
Natural England Point 31	Assessment Methodology	Natural England notes that both a spatial and temporal assessment of vessel impacts from works is planned, including ideally on a monthly basis - Natural England welcomes the Applicant's intention to conduct both a spatial and temporal assessment, including using the 'bird-days-lost' method, noting that for the Greater Wash SPA, under the operation 'power cable: laying, burial and protection' and 'Operation and Maintenance' for the visual disturbance pathway, the pressure benchmark states; 'The daily duration of transient visual cues exceeds 10% of the period of site occupancy by the feature', for both red throated diver and common scoter. We highlight however that the benchmark should not be considered a threshold per se, as stated in the report on which the Advice on Operations is based (Pérez-Domínguez et al, 2016), i.e., a benchmark does not signify a threshold above which the defined sensitivity score applies and below which there is lower or no sensitivity, we agree that a month-by-month assessment would be preferred.	Acknowledged. Disturbance or displacement from project vessels is assessed in Section 20.12.

<b>Consultee</b>	<b>Category</b>	<b>Consideration</b>	<b>How addressed in this PEIR</b>
Natural England Point 32	Assessment Methodology	Natural England notes that the Cumulative Effects chapter of the PEIR will present the long and short lists of 'other developments' which will be considered at the ES stage.	Acknowledged. <b>Volume 1, Part 4, Chapter 27: Cumulative Effects</b> presents the long and short lists of 'other developments' for the inter-project cumulative effects which will be considered at the ES stage.
Natural England Point 33	Assessment Methodology	Natural England notes that it is the Applicant's intention to use a variety of data sources, including NE's most recent survey data of the Greater Wash SPA, as well as the original pre designation survey data, and outputs from nearby offshore wind farms. For reference, the NE datasets available are; density surfaces from the NE winter surveys of the Greater Wash SPA from January and February 2022, and density surfaces from winter surveys of the Greater Wash SPA plus 10 km seaward buffer, from October 2022 (2 surveys), and January and February 2023.	Acknowledged. A summary of data sources used to inform the intertidal and offshore ornithology assessment is presented in <b>Table 20-3</b> .

## Technical engagement

- 20.3.5 In respect of the intertidal and offshore ornithology assessment, key consultees have been identified and focussed engagement (through both informal and formal consultation) is being undertaken and recorded throughout the pre-application stages of the English Offshore Scheme up until the end of March 2026. Key consultees of specific relevance to intertidal and offshore ornithology identified are:
- Natural England;
  - JNCC;
  - Lincolnshire Wildlife Trust; and
  - Marine Management Organisation (MMO).
- 20.3.6 Key areas of consultation include engagement on disturbance / displacement effects on red-throated diver and common scoter (*Melanitta nigra*) within the Greater Wash SPA and proposed mitigation.
- 20.3.7 The Applicant is also developing the EGL 3 Project and the EGL 4 Project, both of which are planned to make landfall at Anderby Creek (Ref 20.11). The EGL 3 Project and EGL 4 Project are two 2-Gigawatt High Voltage Direct Current (HVDC) links between King's Lynn (England) and Aberdeenshire (EGL 3) and Fife (EGL 4) in Scotland. Each will comprise over 600 km of subsea and underground HVDC cables. The EGL 3 Project and the EGL 4 Project follow a similar route to the English Offshore Scheme, particularly for the first ~175 km from the Anderby Creek Landfall (**Volume 3, Part 3, Figure 24-3**). The EGL 4 Project then diverges from the English Offshore Scheme, whilst the EGL 3 Project remains in relatively proximity to the draft Order Limits until the intersection with Scottish adjacent waters, with the exception of a separation between projects to avoid an area of predicted Annex I *Sabellaria spinulosa* biogenic reef (Ref 20.12). Detail on the EGL 5 scheme can be found in **Volume 1, Part 1, Chapter 1: Introduction** and **Volume 1, Part 1, Chapter 4: Description of the Project**.
- 20.3.8 As the EGL 3 Project is in a similar geographical location and shares a common route for the most part with the English Offshore Scheme, the statutory consultation for the EGL 3 Project has been undertaken alongside the non-statutory consultation for the EGL 5 Project. Where appropriate, the Applicant has applied the consultation to this PEIR chapter. At the time of writing, Technical Working Groups (TWGs) are being held for the EGL 3 Project, with key topics relating to intertidal and offshore ornithology including interpretation of the 2022/2023 aerial survey data for the Greater Wash SPA and the methodology for vessel displacement assessment(s). The outcomes of the TWGs will be review and considered for EGL 5 as appropriate. Project-specific engagement will be held following publication of this PEIR.

## 20.4 Data Gathering Methodology

- 20.4.1 This PEIR has been collated based on a range of publicly available data and information only. It is assumed that the data collated is accurate. The data has been supplemented with additional information acquired as part of the Stakeholder engagement process. The sources of data used are noted in **Table 20-3**.

## Study area

- 20.4.2 The study area for intertidal and offshore ornithology and its relation to the English Offshore Scheme is illustrated in **Volume 3, Part 3, Figure 20-1**.
- 20.4.3 The study area has been defined recognising the highly mobile nature of birds and the distance over which they can range. This includes the English Offshore Scheme draft Order Limits plus an additional 19.8 km buffer either side. This buffer is informed by the tidal excursion, which varies along the English Offshore Scheme. It acts as a precautionary maximum zone of influence and incorporates the area within which there is the potential for direct impacts associated with the deposition of suspended sediments. It is consistent with **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes** and has been validated through fine sediment modelling calculations presented in **Volume 2, Part 3, Appendix 17.A: Fine Sediment Modelling Spreadsheet**. The zone of influence is influenced by the conclusions of **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes**, which should be read in conjunction with this chapter. The intertidal and offshore ornithology study area has considered:
- Seabird foraging ranges (Ref 20.13; Ref 20.14);
  - Recent recommendations from SNCBs regarding maximum disturbance / displacement ranges for sensitive bird species (Ref 20.4, Ref 20.5); and
  - Maximum tidal excursion to encompass the potential impact pathway from increased suspended sediment concentrations, which could affect a bird's ability to seek prey. This is considered to be the maximum distance at which the suspended sediment plume is likely to reach, as described in **Volume 2, Part 3, Appendix 17.A: Fine Sediment Modelling Spreadsheet**.
- 20.4.4 Natural England advised that they have previously considered a 2 km buffer for the assessment of vessel displacement effects for red-throated diver and common scoter which are particularly vulnerable to disturbance (Ref 20.4). There is recent evidence of disturbance effects on common scoter beyond 2 km, with an average disturbance distance of  $1,600 \pm 777$  m (Ref 20.15). Through statutory consultation for the EGL 3 Project, Natural England has accepted that a 2.5 km disturbance buffer is appropriate for common scoter, retaining the 2.0 km buffer for red-throated diver. Therefore, a maximum buffer of 2.5 km has been applied to the draft Order Limits to consider disturbance / displacement effects. As such, the 19.8 km buffer used to define the study area is sufficiently precautionary to cover the potential effects of displacement as well as potential effects resulting from changes in water clarity.

## Desk study

- 20.4.5 Extensive contemporary and historic information are available regarding the ornithological characteristics of the North Sea and will be used to inform this PEIR and the ES. A summary of the key data, including the source and nature of that data is outlined in **Table 20-3**.

Table 20-3 Data sources used to inform the intertidal and offshore ornithology assessment

Organisation	Data source	Data provided
NIRAS on behalf of The Crown Estate (TCE)	Woodward <i>et al.</i> (2019) (Ref 20.14)	Seabird foraging ranges.
British Trust for Ornithology (BTO)	Thaxter <i>et al.</i> (2012) (Ref 20.13)	Seabird foraging ranges.
BTO Non-Estuarine Waterbird Surveys (NEWS)	Wetland Bird Survey Data – Results of the third Non-Estuarine Waterbird Survey, including Population Estimates for Key Waterbird Species (Austin <i>et al.</i> , 2017) (Ref 20.16)	Populations: Numbers and Trends by Count Sector.
BTO Wetland Bird Survey (WebS)	Waterbirds in the UK 2023/2024: The Wetland Bird Survey and Goose & Swan Monitoring Programme (Calbrade <i>et al.</i> , 2025) (Ref 20.17)	Annual survey reports of wetland waterbirds: Sector: Anderby Location Code: 35S01 Habitat: goose and swan 'fields'.
JNCC	Lawson <i>et al.</i> , (2015) (Ref 20.1)	An assessment of the numbers and distributions of wintering red-throated diver, little gull and common scoter in the Greater Wash.
Natural England and JNCC	Conservation Advice for Protected Sites: Greater Wash SPA (Ref 20.18)	Description of the Greater Wash SPA including designated features, advice on operations and advice on seasonality.
National Grid	Eastern Green Link 3 (EGL 3) and Eastern Green Link 4 (EGL 4) Preliminary Environmental Information Report. Volume 1, Part 3, Chapter 21: Intertidal and Offshore Ornithology. (Ref 20.11)	Baseline environmental information, consultation records and preliminary assessment for intertidal and offshore ornithology for the EGL 3 and EGL 4 Projects, which share a similar geographical location to EGL 5.
Environmental Statements from Offshore Wind Farm (OWF) Developments. From Planning Inspectorate Public Register	Outer Dowsing Offshore Wind Environmental Statement Chapter 12: Offshore and Intertidal Ornithology (Outer Dowsing Offshore Wind (2024) (Ref 20.19)	Offshore wind farms collect two years of aerial and boat-based data for marine birds within array sites to inform Development Consent applications. The following OWFs lie within the wider

Organisation	Data source	Data provided
	Hornsea 4 Offshore Wind Farm Environmental Statement, Volume A2, Chapter 5: Offshore and Intertidal Ornithology (APEM, 2021) (Ref 20.20)	region around the draft Order Limits and data from the consent applications has been analysed to inform the baseline description.
	Hornsea Offshore Wind Farm Project One Environmental Statement, Volume 5, Chapter 5.5.1: Ornithology Technical Report (RPS 2013) (Ref 20.21)	
	Hornsea 3 Offshore Wind Farm Environmental Statement, Volume 2, Chapter 5: Offshore Ornithology (NIRAS Consulting Ltd., 2018) (Ref 20.22)	
International Convention for the Conservation of Nature (IUCN)	The IUCN Red List of Threatened Species (Ref 20.23)	Extinction risk status of protected species.
National Bird Atlas	Balmer <i>et al.</i> , (2013) (Ref 20.24)	Results of the five years of breeding season and wintering surveys across the UK at a 10 km resolution.
Department for Business, Energy & Industrial Strategy	Offshore Energy Strategic Environmental Assessment (SEA) 4 (BEIS, 2022) (Ref 20.25)	Literature review of knowledge of marine bird baseline.

## Survey work

- 20.4.6 Due to the temporary and transient nature of construction, offshore site-specific bird surveys are not considered necessary for the English Offshore Scheme, which is consistent with the approach taken by other subsea electricity interconnectors in UK waters, for example EGL 3 and EGL 4, Viking Link and GridLink.
- 20.4.7 Vantage point surveys for wintering, breeding, passage and intertidal bird species will be undertaken for the English Onshore Scheme. Surveys commenced following the completion of vantage point surveys for the EGL 3 Project and the EGL 4 Project in December 2025 and are intended to collect a total of 24 months of bird survey data at the Anderby Creek Landfall. The vantage point surveys will conduct spatial distribution surveys of waders and wildfowl on the intertidal shorelines at low tide and on the sea surface at high tide. Vantage point data collected at the Anderby Creek Landfall for the EGL 3 and EGL 4 Projects between September 2024 and December 2025 will be available for use in the ES.

## 20.5 Overall Baseline

### Current baseline

#### Introduction

- 20.5.1 Intertidal and offshore ornithology refers to the diversity, abundance and function of marine bird species present in the study area up to MHWS, at all life stages including feeding, breeding, overwintering and migrating. Marine birds are highly mobile but can be constrained during certain times of the year by factors such as their need to return to a colony to feed and care for chicks, or when they are flightless during a post-breeding moult. Species can also be restricted by their foraging strategy, the availability of prey species and their sensitivity to human activities such as vessel traffic (Ref 20.8).
- 20.5.2 For the purposes of this PEIR, marine birds have been grouped according to Atterbury *et al.*, (2021) (Ref 20.8) based on their sensitivity and exposure to impacts. Further detail on the functional groups can be found in the Scoping Report for EGL 5 (Ref 20.26). The five functional groups used are:
- Divers, grebes and mergansers;
  - Seaducks, geese and swans;
  - Terns, gulls, kittiwakes and gannets;
  - Waders and harriers; and
  - Auks.
- 20.5.3 The proposed Anderby Creek Landfall and the first 33.3 km of the English Offshore Scheme are within the Greater Wash SPA. Offshore, the English Offshore Scheme study area lies within a shallow area of low salinity which is of importance for a number of bird species, in particular divers, gulls, seaduck and terns (Ref 20.25; Ref 20.27). There are several offshore designated sites in the wider region that include a variety of marine habitats of importance for breeding and non-breeding birds, including extensive intertidal mudflats and sandflats, subtidal sandbanks and biogenic reef. The area off the Lincolnshire coastline is characterised by extensive sandbank features present at depths of less than 25 m, many of which are protected for their importance in providing habitat and affecting water and sediment dynamics (Ref 20.25).
- 20.5.4 Water depth across the study area generally increases with distance along the English Offshore Scheme, being 25 m below Mean Sea Level (MSL) offshore of Spurn Head, 55-60 m below MSL offshore of Flamborough Head and 75 m below MSL at the northern end of the study area as illustrated in **Volume 3, Part 3, Figure 17-2: Bathymetry and Seabed Features**. Shallow coastal waters in the region are highly productive and provide supporting habitat for a diverse range of bird species. As explained further in **Paragraph 20.5.13**, species diversity and abundance is typically higher around the coast than further offshore.

#### Intertidal birds

- 20.5.5 The Anderby Creek Landfall lies within the WeBS site Anderby (Location Code 35S01). The site is set back from the MHWS mark in the adjacent fields with the habitat noted as goose and swan 'fields'. Analysis of the last five years of peak count data as published in 2023/2024 WeBS report (Ref 20.17), and shown in **Volume 2, Part 3, Appendix 20.A:**

**Supporting Information: Intertidal and Offshore Ornithology.** This suggests that the average number of birds using the site has increased over the last five years with the average total five-year count being 1,039 individuals. The peak count was in 2022/2023, with a five-year high of 1,531. Thirty-eight different species have been recorded in the last five years using the site, although 16 species have only been identified in one or two years in low numbers. The most prevalent functional group are ‘waders’ (17 species) with ‘seaducks, geese and swans’ (14 species) also highly represented. Four species of gull and two species of ‘divers, grebes and mergansers’ have been noted. The final species is Sandwich tern, which was recorded in low numbers in 2021/2022 and 2022/2023.

- 20.5.6 The top five abundant species over the last five years are (in order of abundance) wigeon (*Anas penelope*), black-headed gull (*Chroicocephalus ridibundus*), lapwing (*Vanellus vanellus*), teal (*A. crecca*) and curlew (*Numenius arquata*). Of the marine birds present black-headed gull and herring gull (*Larus argentatus*) are the most numerous.
- 20.5.7 Vantage point surveys have been undertaken at Anderby Creek in support of the EGL 3 Project and EGL 4 Project, which are also of relevance to the EGL 5 Landfall. The EGL 3 and EGL 4 PEIR noted that the surveys were ongoing at the time of writing but that preliminary results recorded red-throated diver and common scoter on only two surveys to date. A peak count of two red-throated diver in September 2024 and a peak count of 25 common scoter were recorded in January 2025 within the first few hundred metres out to sea (Ref 20.11).

### Marine birds

- 20.5.8 The recent OESEA4 (Ref 20.25) discusses aspects of the UK baseline environment to facilitate discussion around the potential for future development of renewable energy and oil and gas abstraction. It characterises the UK bird fauna as ‘western Palaearctic’, meaning that most species are found across western Europe and extend into western Asia and northern Africa.
- 20.5.9 Digital aerial bird surveys from OWFs in the study area and local region (Outer Dowsing, Hornsea 3 & 4, and Hornsea One) consistently identified the marine birds listed in **Table 20-4** as being present in the study area (Ref 20.19, Ref 20.20, Ref 20.21, and Ref 20.22).

Table 20-4 Marine birds present in the study area

Functional group	Species
Divers, grebes, and mergansers	Black-throated diver ( <i>G. arctica</i> ), cormorant ( <i>Phalacrocorax carbo</i> ), great crested grebe ( <i>Podiceps cristatus</i> ), great northern diver ( <i>G. immer</i> ), European shag ( <i>Gulosus aristotelis</i> ), red-breasted merganser ( <i>Merus serrator</i> ), red-necked grebe ( <i>P. grisegena</i> ), red-throated diver, Slavonian grebe ( <i>P. auritus</i> ).
Auks	Atlantic puffin ( <i>Fratercula arctica</i> ), common guillemot ( <i>Uria aalge</i> ), razorbill ( <i>Alca torda</i> ), little auk ( <i>Alle alle</i> ).
Terns, gulls, kittiwakes, and gannets	Arctic skua ( <i>Stercorarius parasiticus</i> ), Arctic tern ( <i>Sterna paradisaea</i> ), Balearic shearwater ( <i>Puffinus mauretanicus</i> ), black-headed gull, black tern ( <i>Chlidonias niger</i> ), common gull ( <i>L. canus</i> ), Cory’s shearwater ( <i>Calonectris borealis</i> ), common tern, fulmar ( <i>Fulmarus glacialis</i> ), gannet ( <i>Morus bassanus</i> ), great black-backed gull ( <i>L. marinus</i> ), great skua ( <i>S. skua</i> ), herring gull, kittiwake ( <i>Rissa tridactyla</i> ), Leach’s petrel

Functional group	Species
	( <i>Hydrobates leucorhous</i> ), lesser black-backed gull ( <i>L. fucus</i> ), little gull ( <i>Hydrocoloeus minutus</i> ), little tern ( <i>Sternula albifrons</i> ), long-tailed skua ( <i>S. longicaudus</i> ), Manx shearwater ( <i>P. puffinus</i> ), pomarine skua ( <i>S. pomarinus</i> ), Sabine's gull ( <i>Xema sabini</i> ), Sandwich tern, sooty shearwater ( <i>Ardenna grisea</i> ), storm petrel ( <i>H. pelagicus</i> ), yellow-legged gull ( <i>L. michahellis</i> ).
Seaducks, geese and swans	Common scoter, eider ( <i>Somateria mollissima</i> ), goldeneye ( <i>Bucephala clangula</i> ).
Waders and harriers	Bar-tailed godwit ( <i>Limosa lapponica</i> ), curlew, dunlin ( <i>Calidris alpina</i> ), grey phalarope ( <i>Phalaropus fulicarius</i> ), knot ( <i>C. canutus</i> ), lapwing, oystercatcher ( <i>Haematopus ostralegus</i> ), whimbrel ( <i>N. phaeopus</i> ).

### Designated sites

- 20.5.10 Designated sites that fall within the study area, which include intertidal and / or offshore ornithology species as protected features, have been identified in **Table 20-5** below and can be seen in **Volume 3, Part 3, Figure 20-2**. A separate Habitats Regulations Assessment (HRA) (**Volume 2, Part 1, Appendix 2.C: Habitats Regulations Assessment (HRA) Stage 1 Screening Report**) has been produced which provides site descriptions and considers all relevant designated sites, therefore designated sites are not assessed further in this chapter.
- 20.5.11 It should be noted that the Lincolnshire Coronation Coast National Nature Reserve (NNR) was recently declared by Natural England and encompasses the previously designated Donna Nook NNR, Saltfleetby – Theddlethorpe Dunes NNR and the Saltfleetby - Theddlethorpe Nature Reserve in addition to a 100.3 hectare extension inland of the Saltfleetby – Theddlethorpe Dunes NNR (Ref 20.28). Details on the designated features are not currently available on the Natural England Designated Sites viewer but are expected to include the SPA and Site of Special Scientific Interest (SSSI) birds that are protected within the Saltfleetby – Theddlethorpe Dunes SSSI and the Humber Estuary SPA which it overlaps.

Table 20-5 Designated sites within the study area

Note: Breeding (b), non-breeding (nb), non-marine / intertidal birds are in light grey.

Site name	Distance away from the draft Order Limits (km)	Site description	Relevant designated features
Greater Wash SPA	Intersects for 33.34 km	The Greater Wash SPA lies along the east coast of England, predominantly in the coastal waters of the mid-southern North Sea between the counties of Yorkshire to the north and Suffolk to the south. It covers an area of c. 3,536 km <sup>2</sup> and supports the largest breeding populations of little terns within the UK SPA network by protecting important foraging areas. It also supports the second largest aggregations of non-breeding red-throated diver and little gull (Ref 20.29). The Greater Wash SPA includes a range of marine habitats, including intertidal mudflats and sandflats, subtidal sandbanks and biogenic reef, including <i>Sabellaria</i> reefs and mussel beds. Much of the area is less than 30 m water depth, with a deep channel of 90 m depth at The Wash approaches.	Red-throated diver (nb) Little gull (nb) Common scoter (nb) Sandwich tern (b) Little tern (b) Common tern (b)
Humber Estuary SPA	7.32 km	The Humber Estuary SPA is located on the east coast of England and comprises extensive wetland and coastal habitats. The inner estuary supports extensive areas of reedbed, with areas of mature and developing saltmarsh backed by grazing marsh in the middle and outer estuary. On the north Lincolnshire coast, the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. Parts of the estuary are owned and managed by conservation organisations. The estuary supports important numbers of waterbirds (especially geese, ducks and waders) during the migration periods and in winter. In summer, it supports important breeding populations of bittern, marsh harrier, avocet and little tern (Ref 20.30). The SPA covers an area of 37,630.24ha and qualifies under Article 4.2 of the Directive (79 / 409 / EEC) as it is used regularly by over 20,000 waterbirds	Avocet ( <i>Recurvirostra avoceta</i> ) (b, nb) Bar-tailed godwit (nb) Bittern ( <i>Botaurus stellaris</i> ) (b, nb) Black-tailed godwit ( <i>Limosa limosa</i> ) (nb) Dunlin (nb) Golden plover ( <i>Pluvialis apricaria</i> ) (nb) Hen harrier ( <i>Circus cyaneus</i> ) (nb) Knot (nb)

Site name	Distance away from the draft Order Limits (km)	Site description	Relevant designated features
		(waterbirds as defined by the Ramsar Convention) in any season.	Redshank ( <i>Tringa totanus</i> ) (nb) Ruff ( <i>Calidris pugnax</i> ) (nb) Shelduck ( <i>Tadorna tadorna</i> ) (nb) Little tern (b) Marsh harrier ( <i>Circus aeruginosus</i> ) (b)
Humber Ramsar	Estuary 7.32 km	<p>The Humber Estuary Ramsar site is 379.88 km<sup>2</sup>. It drains a catchment of some 24,240 km<sup>2</sup> and is the site of the largest single input of freshwater from Britain into the North Sea. It has the second-highest tidal range in Britain (max 7.4 m) and approximately one-third of the estuary is exposed as mud or sand flats at low tide. Vegetation includes extensive reedbeds, areas of mature and developing saltmarsh, backed by grazing marsh or low sand dunes with marshy slacks and brackish pools. The area regularly supports internationally important numbers of various species of breeding and wintering waterbirds, as well as passage birds, notably internationally important populations of ringed plover and sanderling. The site supports Britain's most southeasterly breeding colony of grey seal (<i>Halichoerus grypus</i>). Human activities include tourism, recreation, commercial and recreational fishing, livestock grazing, and hunting (Ref 20.31).</p>	Bar-tailed godwit (nb) Black-tailed godwit (nb) Dunlin (nb) Golden plover (nb) Knot (nb) Redshank (nb) Shelduck (nb)
Lincolnshire Coronation NNR	7.32 km Coast	<p>The Lincolnshire Coronation Coast NNR is an important reserve which contains tidal sands and mudflats, salt and freshwater marshes and sand dunes. The site spans over 951 hectares. On the foreshore, accreting mud and silt flats and saltmarsh in the north give way to a narrower sandy beach at</p>	Please refer to <b>Paragraph 20.5.11.</b>

Site name	Distance away from the draft Order Limits (km)	Site description	Relevant designated features
		the southern end. The sand dunes are also much wider in the north and there is an extensive freshwater marsh between two dune ridges, which converge into a narrower ridge south of Churchill Lane at Theddlethorpe (Ref 20.32).	
Saltfleetby-Theddlethorpe Dunes Site of Special Scientific Interest (SSSI)	7.32 km	The Saltfleetby to Theddlethorpe Dunes SSSI is a nationally important site which comprises of salt and freshwater marshes, flats and dunes. These habitats support a variety of rich flora and fauna. There are outstanding assemblages of invertebrates, vascular plants and breeding birds, and it is the most north-easterly breeding site in the UK for the natterjack toad ( <i>Epidalea calamita</i> ). The extensive intertidal sands and mudflats provide perfect grounds for feeding and roosting waterfowl and waders including shelduck, dunlin and brent geese. Saltmarsh communities in succession dominate the area and attract yellow wagtails which breed on the marsh and a small colony of little tern on the shingle bank (Ref 20.33).	Dark-bellied Brent goose ( <i>Branta bernicla bernicla</i> ) (nb) Dunlin (nb) Knot (nb) Redshank (nb) Sanderling ( <i>Calidris alba</i> ) (nb) Wigeon (nb) Little tern (b)
Humber Estuary SSSI	7.69 km	The Humber Estuary SSSI is 108.66 km <sup>2</sup> and extends from Grimbsy Dock to Humber Mouth Subtidal. The current condition of the site has been classed as unfavourable (recovering) condition, with a section between Humberston and Louth Canal of favourable condition along the coast. Another favourable section is located off the coast which forms the Donna Nook NNR (Ref 20.34). The site supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds along the lowland open waters. Wintering waterfowl and passage waders are widely distributed throughout the estuary. The distribution of species reflects the varying habitats and species ecology across the site. The sandy sediments of the outer estuary are populated by assemblages of knot and grey plover, while the	Avocet (nb) Bar-tailed godwit (nb) Bittern (nb) Black-tailed godwit (nb) Curlew (nb) Dark-bellied Brent goose (nb) Dunlin (nb) Golden plover (nb) Goldeneye (nb) Greenshank ( <i>Tringa nebularia</i> ) (nb)

Site name	Distance away from the draft Order Limits (km)	Site description	Relevant designated features
		<p>upper estuary is characterised by large concentrations of wigeon.</p> <p>The Humber Estuary also supports a breeding bird assemblage across the open waters in the lowlands, including nationally important numbers of bittern, marsh harrier, avocet and bearded tit. Breeding avocets were first recorded at the site in 1992 and in recent years numbers of the species have sustainably increased. Most of the assemblage are found in concentrations within the lagoons, clay pits and reedbeds at Far Ings (Ref 20.35).</p>	<p>Grey plover (<i>Pluvialis squatarola</i>) (nb)</p> <p>Knot (nb)</p> <p>Lapwing (nb)</p> <p>Oystercatcher (nb)</p> <p>Pochard (<i>Aythya ferina</i>) (nb)</p> <p>Redshank (nb)</p> <p>Ringed plover (<i>Charadrius hiaticula</i>) (nb)</p> <p>Ruff (nb)</p> <p>Sanderling (nb)</p> <p>Scaup (<i>Aythya marila</i>) (nb)</p> <p>Shelduck (nb)</p> <p>Teal (nb)</p> <p>Turnstone (<i>Arenaria interpres</i>) (nb)</p> <p>Whimbrel (nb)</p> <p>Wigeon (nb)</p>
Gibraltar Point SSSI	14.68 km	<p>The Gibraltar Point SSSI is a 581.3 hectare site located on the east coast of England. The site is of national importance for its sand dune and other coastal habitats and associated fauna. The dune and saltmarsh habitats show all stages in colonisation and succession of sand and mud by flora. The variety of coastal habitats support a range of bird species, including wintering and passage wildfowl and waders, with oystercatcher, grey plover, knot, and bar-tailed godwit present</p>	<p>Bar-tailed godwit (nb)</p> <p>Dark-bellied Brent goose (nb)</p> <p>Dunlin (nb)</p> <p>Grey plover (nb)</p> <p>Knot (nb)</p>

Site name	Distance away from the draft Order Limits (km)	Site description	Relevant designated features
		in internationally important numbers. The site also supports breeding bird species, including little tern, ringed plover, and oystercatcher, as well as mallard and shelduck in fewer numbers (Ref 20.36).	Little tern (b) Oystercatcher (nb) Ringed plover (nb) Sanderling (nb) Wigeon (nb)

## Species seasonality

20.5.12 There are four regular patterns of species occurrence in the UK: resident, summer visitors (breeding), winter visitors (non-breeding) (Ref 20.25) and passage (Ref 20.37). **Table 20-6** provides information on the seasonality of each species listed as a qualifying feature of the designated sites identified above. Information on seasonality has been recorded from Natural England’s conservation advice packages (Ref 20.2). Where seasonality between sites differs, all months where species presence is noted have been identified. Species seasonality has only been considered for marine birds. Species not considered to be marine birds (including lapwing, hen harrier, bittern and marsh harrier) have not been included in the seasonality table.

Table 20-6 Species seasonality for designated sites

Key		Annex I Species		Non-Annex I Species										
Protected species	Site	Sensitivity	Seasonality											
			J	F	M	A	M	J	J	A	S	O	N	D

  

Avocet	Humber SPA	Estuary	Breeding Passage																			
Avocet	Humber SPA	Estuary	Non-breeding Passage																			
Bar-tailed godwit	Humber SPA, Ramsar site and SSSI	Estuary	Non-breeding Passage																			
Black-tailed godwit	Humber SPA and Ramsar site	Estuary	Non-breeding Passage																			
Common scoter	Greater Wash SPA		Non-breeding Passage																			
Common tern	Greater Wash SPA		Breeding Passage																			
Curlew	Humber SSSI	Estuary	Non-breeding Passage																			
Dark-bellied Brent goose	Saltfleetby Theddlethorpe Dunes NNR, Humber Estuary SSSI	–	Non-breeding Passage																			
Dunlin	Humber SPA, Ramsar site and Saltfleetby	Estuary SSSI, –	Non-breeding Passage																			

Protected species	Site	Sensitivity	Seasonality													
			J	F	M	A	M	J	J	A	S	O	N	D		
	Theddlethorpe Dunes SSSI and NNR															
Golden plover	Humber Estuary SPA, Ramsar site and SSSI	Non-breeding Passage														
Goldeneye	Humber SSSI	Estuary Non-breeding Passage														
Greenshank	Humber SSSI	Estuary Non-breeding Passage														
Grey plover	Humber SSSI	Estuary Non-breeding Passage														
Knot	Humber Estuary SPA, Ramsar site and SSSI, Saltfleetby – Theddlethorpe Dunes NNR	Non-breeding Passage														
Little gull	Greater Wash SPA	Non-breeding Passage														
Little tern	Humber Estuary SPA, Greater Wash SPA, Humber Estuary SPA, Saltfleetby – Theddlethorpe Dunes SSSI and NNR	Breeding														
Oystercatcher	Humber SSSI	Estuary Non-breeding														
Pochard	Humber SSSI	Estuary Non-breeding Passage														
Redshank	Humber Estuary SPA, Ramsar site and SSSI, Saltfleetby – Theddlethorpe Dunes SSSI and NNR	Non-breeding Passage														

Protected species	Site	Sensitivity	Seasonality														
			J	F	M	A	M	J	J	A	S	O	N	D			
Ringed plover	Humber SSSI	Estuary	Non-breeding Passage														
Ruff	Humber SPA and SSSI	Estuary	Non-breeding Passage														
Red-throated diver	Greater Wash SPA		Non-breeding Passage														
Sanderling	Saltfleetby Theddlethorpe Dunes NNR, Humber Estuary SSSI	–	Non-breeding Passage														
Sandwich tern	Greater Wash SPA		Breeding Passage														
Shelduck	Humber SPA, Ramsar site and SSSI	Estuary	Non-breeding Passage														
Scaup	Humber SSSI	Estuary	Non-breeding														
Turnstone	Humber SSSI	Estuary	Non-breeding Passage														
Teal	Humber SSSI	Estuary	Non-breeding Passage														
Wigeon	Saltfleetby Theddlethorpe Dunes NNR, Humber Estuary SSSI	–	Non-breeding Passage														
Whimbrel	Humber SSSI	Estuary	Non-breeding Passage														

### Species distribution

20.5.13 As described in **Paragraph 20.5.4**, water depth increases with distance along the English Offshore Scheme, with shallower coastal waters providing supporting habitat to many bird species. While other functional groups listed in **Paragraph 20.5.2** typically inhabit bays, estuaries, intertidal and coastal habitats, auks, terns, gulls, kittiwakes, and gannets aggregate around inshore and offshore waters (Ref 20.8). Species that utilise offshore waters often have large breeding foraging ranges (Ref 20.14). However, densities are typically concentrated around the coast during the breeding season before dispersing

more widely across the region (Ref 20.27). Overall, species abundance and diversity are typically higher in coastal waters than further offshore. As the English Offshore Scheme is predominantly located offshore, except for the Anderby Creek Landfall, this section focuses on species distribution within the coastal waters surrounding the Anderby Creek Landfall where the draft Order Limits intersect with the Greater Wash SPA.

20.5.14 The JNCC and Natural England Departmental Brief for the Greater Wash SPA (2016, Ref 20.38) includes figures showing mean density and distribution of the protected species within the site. These figures present data from winter aerial surveys in 2002/03, 2004/05, 2005/06, 2007/08 reported in Lawson *et al.* (2016, Ref 20.1, in JNCC and Natural England, 2016, Ref 20.38) and nesting bird count data from the seabird monitoring programme and site managers. It should be noted that digital aerial surveys were conducted in winter 2021/2022 and 2022/2023 which have not been fully analysed at the time of writing this preliminary environmental assessment. It is possible that common scoter and red-throated diver distributions have changed since the Greater Wash SPA was designated.

20.5.15 As stated in **Paragraph 20.5.10** above, the HRA Screening (**Volume 2, Part 1, Appendix 2.C: Habitats Regulations Assessment (HRA) Stage 1 Screening Report**) provides a detailed assessment of designated sites, including the Greater Wash SPA. The following paragraphs describe the species distribution for ornithology receptors that are protected features of the Greater Wash SPA to provide an indication of the usage of the study area by the various functional groups, where available.

- Red-throated diver: Divers, grebes and mergansers;
- Common scoter: Seaducks, geese and swans; and
- Little gull, common tern and Sandwich tern: Terns, gulls, kittiwakes and gannets.

20.5.16 Red-throated diver use of the study area focuses on the area around the mouth of The Wash and along the coastlines of Lincolnshire and Norfolk out to the 12 NM limit. As illustrated in **Volume 3, Part 3, Figure 20-3**, the highest densities are observed approximately 3 km off the northeast Norfolk coast, with other high-density areas also occurring up to 15 km from the coast around the mouth of The Wash. Densities within the study area are mostly between 0 and 1.5 birds per km<sup>2</sup>, with areas closer to the Landfall recording densities of 0 to 1.0 birds per km<sup>2</sup>. Densities within the draft Order Limits are consistently below 1 bird per km<sup>2</sup>, reflecting infrequent use by red-throated diver (Ref 20.1).

20.5.17 **Volume 3, Part 3, Figure 20-4** illustrates common scoter distribution in relation to the draft Order Limits. Common scoter use of the Greater Wash SPA is focused around the mouth of The Wash and to the north of the Norfolk coastline, where peak densities reach around 40 – 57 birds per km<sup>2</sup>. However, off the Anderby Creek Landfall densities are <10 birds per km<sup>2</sup> indicating that the draft Order Limits are unlikely to be preferred foraging grounds for common scoter. It should be noted that considerable variability in the numbers of common scoter was recorded during the aerial surveys which informed the density estimates (Ref 20.1).

20.5.18 **Volume 3, Part 3, Figure 20-5** demonstrates that little gull usage of the Greater Wash SPA is concentrated around the mouth of The Wash, outside of the boundary of the study area. Little gull density is relatively low within the draft Order Limits, ranging from 0 – 0.25 birds per km<sup>2</sup>, in comparison to ‘hotspots’ of activity at the mouth of The Wash of 0.75 – 0.89 birds per km<sup>2</sup>. Peak density within the study area is 0.75 birds per km<sup>2</sup>. However, this density hotspot is located outside the 4 km buffer around the draft Order Limits and is in the outer extents of the study area, northeast of the Anderby Creek Landfall.

Therefore, the draft Order Limits and the Anderby Creek Landfall do not fall within areas of predicted usage for little gull within the Greater Wash SPA (Ref 20.1).

- 20.5.19 Common tern usage of the Greater Wash SPA is limited to within 30 km of their nesting grounds (Woodward *et al.*, 2019, Ref 20.14). As discussed in **Paragraph 20.1.12** specific common tern density data will be provided in the ES. Analysis of Lawson *et al.* (Ref 20.1) indicates that the highest densities of >37 birds per km<sup>2</sup> are concentrated to within a few kilometres of the north Norfolk coast.
- 20.5.20 Although Sandwich tern have a maximum foraging range of 80 km (Woodward *et al.*, 2019, Ref 20.14), their predicted usage is generally limited to within 30 km of the coastline from their nesting grounds. As discussed in **Paragraph 20.1.12** specific Sandwich tern density data will be provided in the ES. Analysis of Lawson *et al.* (Ref 20.1) indicates that Sandwich tern use of the Greater Wash SPA is focused around their nesting grounds at Scolt Head and Blakeney Point on the north Norfolk coast. Scolt Head lies approximately 35 km south of the draft Order Limits, while Blakeney Point lies further south still at around 52 km from the draft Order Limits.
- 20.5.21 Little tern have the most restricted foraging ranges of all the qualifying species within the Greater Wash SPA. Their main nesting grounds are located around the Spurn Head NNR which lies approximately 20 km northeast of the draft Order Limits and along the north Norfolk coast from Scolt Head to Blakeney Point. As little tern has a maximum foraging range of 5 km, their predicted areas of usage from the nesting grounds will not overlap with the draft Order Limits (Woodward *et al.*, 2019, Ref 20.14).

## Future baseline

- 20.5.22 This section summarises the predicted changes in the absence of the English Offshore Scheme over the next 10–40 years. It should be noted that the assessment process will primarily consider the existing baseline conditions within the study area. Future baseline conditions will be considered as far as reasonably practicable, taking into account the challenges associated with future predictions.
- 20.5.23 The ornithology population in the North Sea has several impacts acting upon it at present, including changes in prey availability due to climate change, alterations in commercial fisheries and cumulative disturbance and displacement from offshore developments and activities in the oil and gas and renewable sectors (Ref 20.39). In addition, some populations are still recovering from the 2022 outbreak of Highly Pathogenic Avian Influenza (HPAI, Avian Influenza) so future monitoring may reveal new population trends in the North Sea (Ref 20.40).
- 20.5.24 Breeding populations of marine bird species in the North Sea are closely monitored as part of the Seabird Monitoring Programme (SMP) which is funded jointly by the BTO and JNCC, in association with the Royal Society for the Protection of Birds (RSPB). The latest annual report from the SMP, published in 2024, provides a detailed analysis of bird survey data from 2021, 2022 and 2023 and considers historic data dating back to 1986, concluding a general declining trend in English seabird populations (Ref 20.41).
- 20.5.25 The most likely pressure on the future baseline for intertidal and offshore ornithology will be climate change. This will both be through indirect impacts such as changes in prey abundance or frequency of extreme weather events, and directly through mortality (Ref 20.42). There is evidence that marine birds are already being, and will continue to be

affected by climate change, as discussed by Burton *et al.* (2023) (Ref 20.43) and summarised as follows:

- Declines in UK and Irish seabird and waterbird indices have been observed since the 1990s and partly reflect population responses to changing climatic conditions affecting species' annual cycles and ranges.
- Changes in fish prey species and adverse weather conditions including strong winds and rough seas as a result of a changing climate have been linked to declines in seabirds' reproductive success.
- Many UK and Irish seabird populations are currently at or near the southern limit of their breeding range and / or are highly sensitive to changes in prey availability and therefore have limited resilience to climate change.
- Impacts on high-latitude breeding grounds mean that Arctic and sub-Arctic breeding waterbirds that winter in the UK and Ireland are amongst the most vulnerable to climate change.
- It is predicted that direct impacts (for example nest and / or egg loss, reduced foraging ability) from severe weather events and sea-level rise as a result of climate change may increase for seabirds and waterbirds in the future.

20.5.26 The potential for cumulative effects will be considered as part of the future ES documents in accordance with the approach and guidance outlined within **Volume 1, Part 4, Chapter 27: Cumulative Effects**.

20.5.27 Additionally, fisheries management has the potential to positively affect the future populations of seabirds along the UK coast, including within the study area. This is especially true of the North Sea, where recent management changes of commercial fisheries included the closing of the sandeel fishing grounds throughout the North Sea (Ref 20.44). This has the intention of increasing prey availability for seabirds which rely on sandeel as a main source of food.

## 20.6 Environmental Measures

20.6.1 As set out in **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Offshore Scheme and will be secured through the DML and in the Development Consent Order (DCO) as relevant. **Table 20-7** outlines how these design and control measures will influence the intertidal and offshore ornithology assessment.

20.6.2 Design measures that are relevant to intertidal and offshore ornithology are denoted by a (D) in the ID reference column in **Table 20-7**. These are also included in **Volume 2, Part 1, Appendix 5.A: Outline Register of Design Measures**.

20.6.3 Several management plans will be provided as Outline Management Plans with the DCO application to support the DML. These include an Outline Construction Environmental Management Plan (CEMP) and Outline Marine Pollution Contingency Plan (MPCP). These documents will outline measures to be implemented to comply with legislation (e.g., in relation to the prevention of oil and chemical spills) during all phases of the English Offshore Scheme. Final management plans will be submitted in accordance with the DML to discharge requirements and licence conditions as appropriate. Control and management measures that are relevant to the intertidal and offshore ornithology assessment are denoted by a (C) in the ID reference column in **Table 20-7**. These are also included in **Volume 2, Part 1, Appendix 5.C: Outline Construction Environmental Management Plan**.

Table 20-7 Summary of the environmental measures

Receptor	Potential changes and effects	Environmental measures	ID reference
Waders	Visual and physical disturbance displacement	The Intertidal Zone would be crossed by a trenchless technique to avoid disturbance or to intertidal sediments and habitats.	OMT01 (D)
Waders	Visual and physical disturbance displacement	The trenchless construction technique exit will be below the 3 m Lowest or Astronomical Tide (LAT) depth contour.	OMT02 (D)
All species	Changes in distribution of species	The cables shall be buried in the seabed, except in areas where burial is not possible e.g., where ground conditions do not allow or at infrastructure crossings.	OMT03 (D)
All species	Changes in distribution of species	External cable protection features would only be installed where considered necessary for the safe operation of the English Offshore Scheme. This includes the repair of cables due to accidental damage, where target burial depth is not achieved and at infrastructure crossings.	OMT04 (D)
All species	Changes in distribution of species	In sites designated for benthic features, external cable protection materials will be selected to match the environment (e.g., when cables are installed in areas of cobbles or other natural rock features, rock of similar grade as the receiving environment should be used as an alternative to the current normal approach of using terrestrially sourced granite) where feasible.	OMT05 (D)
All species	Accidental spills due to the presence of Project vessels and equipment	All project vessels must comply with the International Regulations for Preventing Collisions at Sea (COLREGs) (1972) (Ref 20.45), as amended, particularly with respect to the display of lights, shapes and signals. The masters of other vessels are expected to be familiar with and comply with the COLREGs. Additionally, project vessels would adhere to regulations relating to International Convention for the Prevention of Pollution from Ships (the MARPOL Convention 73/78 (Ref 20.46) with the aim of preventing and minimising pollution from ships and the Safety of Life at Sea (SOLAS) (Ref 20.47).	OMT10 (C)

<b>Receptor</b>	<b>Potential changes and effects</b>	<b>Environmental measures</b>	<b>ID reference</b>
All species	Visual and disturbance displacement	physical Existing shipping lanes would be utilised for vessel transiting routes to avoid or additional disturbance, where practicable.	OO01 (C)
Divers	Visual and disturbance displacement	physical Vessel operators would be made aware of the importance and sensitivity of the or species to disturbance. Vessels will avoid rafting birds and areas with high densities of birds, where practicable.	OO02 (C)
All species	Visual and disturbance displacement	physical Artificial lighting on vessels would be directional and only used when necessary, or noting that health and safety requirements will need to be met for safe working practices.	OO03 (C)

## 20.7 Scope of the Assessment

### Spatial scope

- 20.7.1 The spatial scope of the assessment of intertidal and offshore ornithology covers the area of the English Offshore Scheme contained within the draft Order Limits, together with the study area described in Section 20.4 and illustrated in **Volume 3, Part 3, Figure 20-1**.

### Temporal scope

- 20.7.2 The temporal scope of the assessment of intertidal and offshore ornithology is consistent with the period over which the English Offshore Scheme would be carried out. It assumes construction of the English Offshore Scheme will commence in 2030 and cover a period of five years. Operation would commence in 2035, with periodic maintenance required during the Operation and Maintenance phase of the English Offshore Scheme. It is assumed that maintenance and repair activities could take place at any time during the life span of the English Offshore Scheme.
- 20.7.3 The English Offshore Scheme is expected to have a life span of more than 40 years. If decommissioning requires full or partial removal of the English Offshore Scheme at this point in time, then activities and effects associated with the decommissioning phase are expected to be of a similar level to those during the construction phase, albeit with a lesser duration. The Project could also remain operational for a period after the 40 years or be taken out of service and left within the draft Order Limits after 40 years. Acknowledging the complexities of completing a detailed assessment for decommissioning works up to 40 years in the future, based on the information available, the Project has concluded that impacts from decommissioning would be no greater than those during the construction phase. Furthermore, should decommissioning take place it is expected that an assessment in accordance with the legislation and guidance at the time of decommissioning would be undertaken. In addition, it is expected that the DCO will include a requirement for a written scheme of decommissioning for approval by the relevant consenting authority.

### Identification of receptors

- 20.7.4 The principal intertidal and offshore ornithology receptors that have been identified as being potentially subject to significant effects are summarised in **Table 20-8**.

Table 20-8 Intertidal and offshore ornithology receptors subject to potential effects

Receptor	Reason for consideration
Divers, grebes and mergansers (in particular red-throated diver)	SNCBs have highlighted increasing concern over the disturbance of red-throated diver due to anthropogenic activities, particularly in the Greater Wash area. This species is recognised as being highly sensitive to noise and visual disturbance and once flushed, they may not rapidly resetttle (Ref 20.8).
Seaducks, geese and swans	Species of this functional group are known to be sensitive to noise and visual disturbance (Ref 20.8) and are known

Receptor	Reason for consideration
	to frequent the Greater Wash area. These species are most sensitive when overwintering, with the largest aggregations of birds recorded between December and January (inclusive). The Scoping Opinion for EGL 5 advised the inclusion of an assessment of the potential effect of increased suspended sediments on common scoter.
Terns, gulls, kittiwakes and gannets	Species in this functional group are protected features of several relevant designated sites. As they plunge dive for food they are sensitive to changes in water clarity e.g., as a result of changes in suspended sediments.
Waders	These species are considered to be sensitive to noise and visual disturbance (Ref 20.8). They are largely present within the Intertidal Zone rather than offshore, therefore there is the potential for them to be disturbed by Anderby Creek Landfall enabling works within proximity to the Intertidal Zone.
Auks	Auks are sensitive to noise and visual disturbances (Ref 20.8), with vessel movements through critical foraging areas or aggregations of birds potentially causing disruption. They are also sensitive to changes in water turbidity and prey distribution.

## Potential effects considered within this assessment

20.7.5 The effects on intertidal and offshore ornithology receptors which have the potential to be significant and have been taken forward for detailed assessment are summarised in **Table 20-9**.

Table 20-9 Intertidal and offshore ornithology receptors scoped in for further assessment

Receptor	LSE
Divers, grebes and mergansers Terns, gulls, kittiwakes and gannets Waders Auks Common scoter	<b>Temporary increase and deposition of suspended sediments</b> from activities such as pre-sweeping of sandwaves, cable burial and trenching, cable repair and cable removal during construction, Operation and Maintenance, and decommissioning.  The Planning Inspectorate requested that common scoter and waders be scoped into the assessment for this effect.
Divers, grebes and mergansers Seaducks, geese and swans Terns, gulls, kittiwakes and gannets Waders Auks	<b>Changes in distribution of prey species</b> as an indirect result of temporary habitat loss from pre-sweeping of sandwaves and cable trenching during construction, Operation and Maintenance, and decommissioning.

Receptor	LSE
Divers, grebes and mergansers Seaducks, geese and swans Terns, gulls, kittiwakes and gannets Waders Auks	<b>Changes in distribution of prey species</b> as an indirect result of permanent habitat loss from the installation of external cable protection during construction and Operation and Maintenance.
Divers, grebes and mergansers Seaducks, geese and swans Waders Auks	<b>Visual and physical disturbance or displacement</b> due to the presence of project vessels and equipment during construction, Operation and Maintenance, and decommissioning.

20.7.6 The receptors / effects detailed in **Table 20-10** have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant, as agreed through the Scoping Opinion.

Table 20-10 Summary of effects scoped out of the intertidal and offshore ornithology assessment

Receptors / potential effects	Justification
<b>Changes in distribution of prey species</b> as an indirect result of temporary habitat loss from activities such as pre-sweeping of sand waves, cable burial and trenching, cable repair and cable removal Sea ducks, geese and swans (except for common scoter) Harriers	The Scoping Report proposed scoping this impact pathway out for all Phases of the English Offshore Scheme due to the temporary and transient nature of the potential effect and the alternative foraging areas that are available. The Planning Inspectorate agreed with this conclusion for these receptors, as a result, this has been scoped out.
<b>Changes in distribution of prey species</b> as an indirect result of permanent habitat loss from the deposit of external cable protection during decommissioning	Scoped out for decommissioning as no further external cable protection would be deposited during decommissioning. The Planning Inspectorate agreed with this conclusion, as a result, this has been scoped out.
All species	
<b>Visual / physical disturbance</b> Terns, gulls, kittiwakes and gannets	These species are considered to be low to moderately sensitive to noise and visual disturbance (Ref 20.8). It is not considered that the presence of vessels associated with the English Offshore Scheme are likely to have a significant impact on this group. The Planning Inspectorate agreed with the conclusion to scope out visual disturbance to terns, gulls, kittiwakes and gannets.

Receptors / potential effects	Justification
<p><b>Accidental spills (Hydrocarbon contamination)</b> &amp; <b>PAH</b></p> <p>All species</p>	<p>Vessels and contractors associated with the English Offshore Scheme will comply with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 which relates to pollution from oil from equipment, fuel tanks and release of sewage (black and grey water). It is a legal requirement that all vessels carry a Shipboard Oil Pollution Emergency Plan (SOPEP). These measures are embedded into the Project design and are set out in <b>Table 20-7</b>. A draft CEMP is provided in <b>Volume 2, Part 1, Appendix 5.C: Outline Construction Environmental Management Plan</b>, and a draft MPCP will be submitted alongside the application for development consent as described in <b>Paragraph 20.6.2</b>. Compliance with Regulations will be sufficient to minimise the risk to the environment.</p> <p>The Planning Inspectorate agreed with scoping out this impact pathway.</p>

## 20.8 Key Parameters for Assessment

### Realistic worst-case design scenario

- 20.8.1 The assessment has followed the Rochdale Envelope approach as outlined in **Volume 1, Part 1, Chapter 4: Description of the Project** and **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**. The assessment of effects has been based on the description of the English Offshore Scheme and parameters outlined in **Volume 1, Part 1, Chapter 4: Description of the Project**. However, where there is uncertainty regarding a particular design parameter, the realistic worst-case design parameters are provided below in **Table 20-11**. Effects of greater adverse significance are not likely to arise should any other development scenario to that assessed here be taken forward in the final design scheme, based on details within the Rochdale Envelope (e.g., different infrastructure layout within the draft Order Limits).
- 20.8.2 In relation to intertidal and offshore ornithology the following assumptions are made regarding the English Offshore Scheme design parameters in order to ensure a realistic worst-case assessment has been undertaken:

Table 20-11 Project worst-case assumptions

Impact	Phase	Maximum Design Scenario (MDS)	Justification
	C O D		
Temporary increase and deposition of suspended sediments	✓ ✓ ✓	<p><b><u>Construction (English Offshore Scheme)</u></b>                      Peak suspended sediment concentrations of more than 10 mg/l predicted to occur up to 8.8 km from the point of release.</p>	<p>The greatest impact distance is predicted to be associated with trenching in the area where there is the highest percentage of fines and fastest flow – see <b>Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes.</b></p>
		<p><b><u>Operation and Maintenance (English Offshore Scheme)</u></b>                      De-burial and re-burial of bundled cable due to repair requirements = 13 km.</p>	<p>Sediment plumes generated as a result of trenching to re-bury repaired sections of cable would not exceed the MDS identified for the construction phase.</p>
		<p><b><u>Decommissioning (English Offshore Scheme)</u></b>                      Refer to the construction phase MDS.</p>	<p>If the English Offshore Scheme is left in-situ, there would be no seabed disturbance, and therefore no temporary increase and deposition of suspended sediments. If the English Offshore Scheme is removed at decommissioning, then the temporary increase and deposition of suspended sediments will be the same as during construction.</p>
Changes in the distribution of prey species	✓ ✓ x	<p><b><u>Construction (English Offshore Scheme)</u></b>                      Permanent habitat loss = 1.94 km<sup>2</sup>                      Total subtidal temporary habitat disturbance = 13.91 km<sup>2</sup></p>	<p>The installation of external cable protection at locations of infrastructure crossings and where the cable cannot be buried to target depth results in the MDS for permanent habitat loss during construction.</p>
		<p><b>External Cable Protection</b></p>	

Impact	Phase	Maximum Design Scenario (MDS)	Justification
	<b>C O D</b>	<p><b>Infrastructure Crossings</b> – 464,000 m<sup>2</sup> in total length (58 crossings).</p> <p><b>External Cable Protection</b> – 1,472,000 m<sup>2</sup> to reach target burial depth assuming rock berm (16 m width x 92 km remedial external cable protection length).</p> <p><b>Seabed Preparation</b></p> <p><b>Trenchless technique exit pits</b> – 2 x 750 m<sup>2</sup></p> <p><b>Boulder clearance</b> – 8.46 km<sup>2</sup>, pre-lay plough with swathe of 20 m assumed across approximately 423 km of the English Offshore Scheme (20 m x 423 km of route) (assumed to be within footprint of the PLGR).</p> <p><b>Pre-Sweeping</b> – 1.2 km<sup>2</sup> precautionary footprint for use of trailing suction hopper dredger and / or Controlled Flow Excavation. Precautionary estimate assuming clearance along 60 m width x 20.04 km).</p> <p><b>Pre-Lay Grapnel</b> – 12.69 km<sup>2</sup> footprint with swathe of 30 m x 423 km route length.</p> <p><b>Cable Burial Trial Trenching</b> – 15,000 m<sup>2</sup> footprint of cable burial trial trenching (15 m x 1,000 m length).</p> <p><b>Cable Installation</b></p> <p>Impact will occur fully within combined footprint from seabed preparation activities.</p>	<p>Seabed preparation for cable burial (e.g., Pre-Lay Grapnel Run (PLGR)), excavation of trenchless technique exit pits, cable burial trial trenching and pre-sweeping of sand waves results in the MDS for temporary habitat loss during construction.</p>

Impact	Phase	Maximum Design Scenario (MDS)	Justification
<b>C O D</b>			
Visual and disturbance displacement	physical or ✓ ✓ ✓	<p><b><u>Operation and Maintenance (English Offshore Scheme)</u></b></p> <p><b>Total subtidal temporary habitat disturbance = 0.315 km<sup>2</sup></b> (from de-burial and re-burial of cable for repair).</p> <p><b>Total permanent habitat loss = 0.336 km<sup>2</sup></b> (from external cable protection during repair and external cable protection remediation).</p>	<p>External cable protection may be required following repair of any cable fault(s) if the repaired sections cannot be re-buried to target depth.</p> <p>Some areas of the cable may require remedial intervention if they become exposed due to shallow burial or sediment mobility. This remediation may take the form of external cable protection.</p>
		<p><b><u>Construction</u></b></p> <p>Maximum of 17 vessels on nearshore and separately on offshore campaigns at any one time.</p> <p>A maximum of nine vessels would be working on the trenchless technique / cable pull-in at any one time.</p> <p>Indicatively 3,103 return vessel transits across English Offshore Scheme.</p>	The maximum number of vessels represents the maximum potential for disturbance.
		<p><b><u>Operation and Maintenance</u></b></p> <p>Maximum of 5 vessels per cable repair operation.</p>	
<p><b><u>Decommissioning</u></b></p> <p>Refer to the construction phase MDS.</p>			

## 20.9 Assessment Methodology

### Overview

- 20.9.1 The intertidal and offshore ornithology assessment generally follows the assessment approach framework as set out in **Part 1, Chapter 5: PEIR Approach and Methodology**. However, while this has informed the approach, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of the intertidal and offshore ornithology assessment.
- 20.9.2 In line with the industry standard approach across offshore EIAs, a four-category sensitivity and magnitude scale, from "Negligible" to "High" has been used. While **Part 1, Chapter 5: PEIR Approach and Methodology** provides for a "Very High" category, this is based on onshore specific guidance, rather than being applicable to offshore receptors.
- 20.9.3 The criteria for characterising the value and sensitivity and magnitude for intertidal and offshore ornithology receptors are outlined in **Table 20-12** and **Table 20-13**, respectively.
- 20.9.4 The assessment of sensitivity has been made with consideration of the rarity and importance of the receptor but primarily focuses on the vulnerability of the receptor to an impact and its ability to recover and adapt. Vulnerability can differ between different functional groups of marine birds and would also vary depending on the impact pathway and season. For example, certain species of diver (e.g., red-throated diver) and seaduck (e.g., common scoter) are more sensitive to visual disturbance than terns and gulls.
- 20.9.5 It should be noted though, that a species may be of international importance (e.g., a designated feature of an SPA) and initially categorised as 'highly' sensitive according to **Table 20-12**. However, if baseline studies and species characteristics show that the species is only rarely or occasionally present in the draft Order Limits, or if it is not sensitive to the impact pathway, professional judgement may justify lowering its sensitivity category. Justification is provided to support any such assessments.
- 20.9.6 The assessment of magnitude has been made with consideration of the extent of the area impacted, likelihood of occurrence, the duration and frequency of the impact and the scale of the change i.e., whether it has an effect at an individual or population level. When determining the magnitude of impacts the life history and ecology of the receptors is important. Factors such as seasonality of presence or whether specific areas are required for foraging and loafing which the species may be unwilling or unable to move away from are considered.
- 20.9.7 The significance of an effect, either adverse or beneficial, has been determined using a combination of the magnitude of the impact and the sensitivity of the receptor. A matrix approach is used throughout all topic areas to ensure a consistent approach within the assessment as shown in **Table 20-14**.

Table 20-12 Criteria for characterising the sensitivity of receptors

<b>Sensitivity</b>	<b>Description of criteria</b>
High	<p>Receptor is of very high or high importance and rarity, international or national scale (i.e., designated feature of a SPA, Ramsar site or Marine Conservation Zone (MCZ)). Receptor has low tolerance to change i.e., recovery will take longer than 10 years following the cessation of activity or will not occur.</p> <p>The licensable activity is taking place during a sensitive season.</p>
Medium	<p>Receptor is of medium importance and rarity, regional scale (i.e., a designated feature of a SSSI or NNR).</p> <p>Receptor has intermediate tolerance to change i.e., recovery to pre-impact conditions is possible between 5-10 years.</p>
Low	<p>Receptor is of low importance and rarity, local scale. Receptor has high tolerance to change with recovery to pre-impact conditions between 1-5 years.</p>
Negligible	<p>Receptor is common or widespread.</p> <p>The receptor is tolerant to change with no effect on its character.</p> <p>Recovery expected to be relatively rapid, i.e., less than approximately six months following cessation of activity.</p>

Table 20-13 Criteria for characterising the magnitude of an impact

<b>Magnitude</b>	<b>Description of criteria</b>
High	<p>Major disturbance over multiple seasons such that population can no longer use key nesting / foraging / loafing grounds and recruitment declines above that which would be expected from natural fluctuations.</p> <p>A change in the size or extent of distribution of the population that is the interest feature of a specific designated site such that the viability of the population and / or the integrity of the designated site is predicted to be irreversibly altered in the short-to-long term. Recovery from that change would be predicted to be achieved in the long-term (i.e., more than five years) through to permanent duration following cessation of the development activity.</p>
Medium	<p>Significant disturbance over the whole season for a sensitive species such that they are displaced from preferred nesting / foraging / loafing areas, with limited alternatives.</p> <p>A change in the size or extent of distribution of the population that is the interest feature of a specific designated site that is expected to occur in the short and long-term, but which is not expected to alter the long-term viability of the population and / or the integrity of the designated site. Recovery from that change predicted to be achieved in the medium-term (i.e., no more than five years) following cessation of the development activity.</p>
Low	<p>Disturbance is temporary (less than a season), site specific and / or a minor shift away from the baseline condition such as that experienced under natural conditions. Impacts limited to within the Project's footprint. Negligible contribution to cumulative effects.</p>

Magnitude	Description of criteria
	A change in the size or extent of distribution of the population that is the interest feature of a specific designated site that is expected to occur at a sufficiently small scale or of a short duration such that no long-term harm to the viability of the population or the integrity of the designated site is expected. Recovery from that change is predicted to be achieved in the short-term (i.e., no more than one year) following cessation of the development activity.
Negligible	Very little or no detectable change from baseline conditions. Disturbance is within the range of natural variability. Impacts predicted to be brief (one to two days) or for a short period but outside of the key season (up to 3 months). No contribution to cumulative effects.

Table 20-14 Significance matrix

Sensitivity or value	Magnitude of change			
	High	Medium	Low	Negligible
High	Major (significant)	Major (significant)	Moderate (potentially significant)	Minor (not significant)
Medium	Major (significant)	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)
Low	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)	Negligible (not significant)
Negligible	Minor (not significant)	Minor (not significant)	Negligible (not significant)	Negligible (not significant)

## Preliminary assessment of cumulative effects

20.9.8 At the current stage of the English Offshore Scheme (PEIR stage), design information is insufficient to allow for a robust cumulative assessment to be undertaken. Therefore, a cumulative assessment has not been undertaken at this stage; however, **Volume 1, Part 4, Chapter 27: Cumulative Effects** and **Volume 2, Part 4, Appendix 27.A: Long List of other Developments** present the long and short lists of 'other developments' for the inter-project cumulative effects which will be considered at the ES stage (with updates as necessary), and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long list will be reviewed and if necessary updated in the lead up to the ES, as the Project design further evolves and in response to any comments raised at statutory consultation.

## 20.10 Preliminary Assessment of Temporary Increase and Deposition of Suspended Sediments

### All Phases

20.10.1 This impact relates to changes in water clarity (or turbidity) due to changes in suspended sediment concentrations (SSC). Sediment suspension is caused by activities that penetrate the seabed or abrade surface layers. This would include:

- During construction – seabed preparation (including PLGR, boulder clearance, pre-sweeping of sandwaves, trenchless technique pit excavation, unexploded ordnance (UXO) identification and clearance), cable burial, and deposit of external cable protection;
- During Operation and Maintenance – cable de-burial and re-burial for repair and deposit of external cable protection; and
- During decommissioning – removal of the cable.

20.10.2 The SSCs at a particular location depend on the activity, hydrological conditions and the type of sediment present (i.e., the sediment particle size distribution).

20.10.3 **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes** identified that although several activities are likely to create minor elevations in SSCs, pre-sweeping of sandwaves, trenchless technique pit excavation and cable burial (trenching) would cause the largest temporary sediment plumes. The greatest impact distance would be associated with cable trenching during construction in areas with the highest percentage of fines and fast peak flows, with peak SSC of more than 10 mg/l occurring up to 8.8 km from the point of release. Assessments using hydrodynamic modelling tools indicate that impact times are typically of the order of hours or less due to the relatively fast tidal flows i.e., water clarity returns to baseline conditions rapidly.

20.10.4 Certain diving species (such as terns, little gull, red-throated diver) are sensitive to changes in water clarity. Potential impacts on wading species have also been scoped into the preliminary assessment for temporary increase and deposition of suspended sediments as they may rely on visual cues for hunting. Although the functional group 'seaducks, geese and swans' has been scoped out of further assessment for temporary increase and deposition of suspended sediments due to the availability of alternative feeding grounds, common scoter has been specifically scoped in for further assessment due to insufficient evidence concerning this species' sensitivity to suspended sediments. Bird species which are visual foragers depend on clear water to identify and catch potential prey (Ref 20.48). The preliminary assessment below considers the significance of the impact on the key functional groups likely to be affected, noting that potential impacts on bird species which are features of SPAs or Ramsar sites have been assessed in **Volume 2, Part 1, Appendix 2.C: Habitats Regulations Assessment (HRA) Stage 1 Screening Report**. Assessment for the following receptors has been provided:

- Divers, grebes and mergansers;
- Auks;
- Terns, gulls, kittiwakes and gannets;
- Waders; and
- Common scoter.

## Divers, grebes and mergansers

- 20.10.5 Divers, grebes and mergansers are thought to be sensitive to temporary changes in SSCs due to their reliance on underwater visibility for foraging, but there is little evidence to determine whether the sensitivity is high or low in the specific area of the draft Order Limits. Cook and Burton (2010, Ref 20.49, in Natural England site advice) note that they are more sensitive than auks and gannets. Price and Thompson (2006, Ref 20.50) observed great northern diver (common loon) (*Gavia immer*) along a Maryland estuary in North America. They concluded that loon dove for longer periods in areas with higher water clarity, but no relationship was identified between water clarity and distribution of wintering loon. Natural England's Advice on Operations for English SPAs designated for diving species indicates that Slavonian grebe (*Podiceps auritus*) and black-throated diver (*Gavia arctica*) are of medium sensitivity to changes in SSCs, and that great northern diver are of low sensitivity. All assessments have been given a low confidence level by Natural England (Ref 20.51); (Ref 20.52).
- 20.10.6 Species from the group known to be present within the region and that could therefore be found within the draft Order Limits and Zol include red-throated, black throated and great northern diver, shag, cormorant, and Slavonian, red-necked and great crested grebe.
- 20.10.7 As identified in **Paragraph 20.10.5**, some species have a medium sensitivity to changes in SSCs. However, of the species known to be present in the region (see **Paragraph 20.10.6**), all except red-throated diver were not present within the location of the draft Order Limits between 1979 to 1994 (Ref 20.27) and are therefore unlikely to be present in significant numbers during all phases of the English Offshore Scheme. In relation to the draft Order Limits, red-throated diver density was concentrated around The Wash rather than further offshore. However, as illustrated in **Volume 3, Part 3, Figure 20-3**, densities within the draft Order Limits are consistently below 1 bird per km<sup>2</sup>, reflecting infrequent use by red-throated diver (Ref 20.1). Furthermore, the highest densities are observed around the mouth of The Wash and off of the northeast Norfolk Coast, indicating that preferred foraging grounds for red-throated diver are located outside of the draft Order Limits. As there is limited presence of divers, grebes and mergansers within the draft Order Limits and, and that there are alternative suitable foraging grounds in the region, the sensitivity of this group has been assessed as low.
- 20.10.8 The magnitude of the impact for divers, grebes and mergansers has been assessed as negligible. These species' foraging ranges are between 9 and 33 km from the coastline (Ref 20.53, Ref 20.14) suggesting that they are unlikely to be present for the majority of the draft Order Limits. The English Offshore Scheme is largely sited offshore >35 km from the coastline; only short sections of the draft Order Limits namely KP 0 - KP 57 and KP 133 – KP 164 are within the foraging range. The area of the draft Order Limits within the foraging range is approximately 81 km<sup>2</sup>, equivalent to 20% of the overall draft Order Limits.
- 20.10.9 A temporary increase in SSCs could occur on multiple occasions during construction, Operation and Maintenance, and decommissioning. However as discussed in **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes**, on each occasion the change will be for a short period (hours rather than days), with SSCs rapidly reducing once the activity ceases. **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes** further identifies that SSCs naturally vary seasonally, with higher SSCs in the winter months compared to the summer months likely to be a result of increased winter storm activity. SSCs are particularly elevated in the nearshore, where the mean SSC can reach 50 mg/l during winter months and around 20 mg/l in the summer, as shown in **Volume 3, Part 3, Figure 17-12: Seasonal Mean Suspended Sediment Concentration**. The natural SSCs within the foraging range of divers, grebes and

mergansers are approximately 2 – 60 mg/l in the winter and <1 – 20 mg/l in the summer, indicating that these species are accustomed to natural variability in SSCs and recovery (i.e., ability to use the area of foraging) from the impact will be rapid.

20.10.10 In conclusion, for all phases, the significance of the effect of temporary increase and deposition of suspended sediment on divers, grebes and mergansers has been assessed as **negligible** and **not significant**.

### **Auks**

20.10.11 Auks, such as common guillemot, Atlantic puffin and razorbill have been identified as designated species of eight of the relevant SPAs for consideration by **Volume 2, Part 1, Appendix 2.C: Habitats Regulations Assessment (HRA) Stage 1 Screening Report**. Although the English Offshore Scheme does not overlap with these SPAs, the draft Order Limits is within the foraging range of these species, and there is therefore the potential for them to be present. Natural England's Advice on Operations classify guillemot, razorbill and puffin as having medium sensitivity to a change in water clarity, noting that they are less vulnerable than divers, but more vulnerable than gannet. The sensitivity has therefore been assessed as medium for this group.

20.10.12 Of auk species known to be present in the region, guillemot were recorded within the location of the draft Order Limits offshore from Flamborough between 1979 to 1994 (Ref 20.27), however the highest densities occurred around the northeast coast of Scotland. Razorbill were also located in low densities offshore from Flamborough with the highest densities in the Irish Sea, Northern Ireland and northwest coast of Scotland. Black guillemot (*Cephus grylle*) were not present within the location of the draft Order Limits and are therefore unlikely to be present in significant numbers during all phases of the English Offshore Scheme. Little auk were present in high densities offshore from Flamborough and Northumberland from November to February but were not present in high numbers between March and October, as they typically leave to breed in the Arctic. Atlantic puffin were present offshore from Flamborough and Northumberland however densities were highest around the coastline, particularly to the north and northeast of Scotland.

20.10.13 The magnitude of the impact for auks has been assessed as low. Although the density of auk species is typically higher in other parts of the region, **Paragraph 20.10.13** indicates that they are present within the location of the draft Order Limits. A temporary increase in SSCs could occur on multiple occasions during construction, Operation and maintenance, and decommissioning. However as discussed in **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes**, on each occasion the change will be for a short period (hours rather than days), with SSCs rapidly reducing once the activity ceases. **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes** further identifies that SSCs naturally vary seasonally, with higher SSCs in the winter months compared to the summer months likely to be a result of increased winter storm activity. SSCs are particularly elevated in the nearshore, where the mean SSC can reach 50 mg/l during winter months and around 20 mg/l in the summer, as shown in **Volume 3, Part 3, Figure 17-12: Seasonal Mean Suspended Sediment Concentration**. The natural SSCs within the foraging range of auks are approximately 2 – 60 mg/l in the winter and <1 – 20 mg/l in the summer, indicating that these species are accustomed to natural variability in SSCs and recovery (i.e., ability to use the area of foraging) from the impact will be rapid.

20.10.14 In conclusion, for all phases, the significance of the effect of temporary increase and deposition of suspended sediment on auks has been assessed as **Minor** and **Not Significant**.

### **Terns, gulls, kittiwakes and gannets**

20.10.15 Twenty-four different species have been identified within the region that fall within this group. However, the sensitivity to the impact of temporary changes in suspended sediments (change in water clarity) varies between species. Natural England's Advice on Operations classify tern species as having a high sensitivity to a change in water clarity, kittiwake as medium sensitivity and gannet as low sensitivity. Sensitivity within gull species varies depending on their feeding habitats with little gull exhibiting high sensitivity. Foraging distances range from 5 – 57.5 km for tern species, 509.4 km for gannet, 300.6 km for kittiwake and from 18.5 – 236 km for gull species (Ref 20.14). This suggests that different areas of the draft Order Limits will be used by different species depending on their foraging range and the distance of the draft Order Limits from the coastline. The higher sensitivity species (e.g., tern species and little gull) are features of the SPAs within the region. The baseline concluded that the draft Order Limits are not a preferred foraging area for the designated species as summarised below:

- Little gull largely avoid the shallow coastal waters along the Lincolnshire coastline and their usage of the area is concentrated at the mouth of The Wash outside of the draft Order Limits.
- Common tern usage of the Greater Wash SPA is limited to within 30 km of their nesting grounds. Analysis of Lawson *et al.* (Ref 20.1) indicates that maximum densities within the draft Order Limits are less than 1 bird per km<sup>2</sup> (compared to densities of >37 birds per km<sup>2</sup> within a few kilometres of the colonies on the north Norfolk coastline). Specific common tern densities within the draft Order Limits will be calculated for the ES.
- Little tern have a foraging range of 5 km and the draft Order Limits are >5 km from the Spurn Head colony.
- Sandwich tern usage of the Greater Wash SPA is generally limited to within 30 km of their nesting grounds on the north Norfolk coast. Predicted densities within the draft Order Limits are <0.1 birds per km<sup>2</sup>.

20.10.16 As the baseline assessment indicates that the gull and tern receptors already prefer alternative foraging areas within the Greater Wash SPA, and that their use of the draft Order Limits within the Greater Wash SPA is marginal, the sensitivity of the gull and tern receptors has been assessed as low, because they are unlikely to be present within the draft Order Limits during the construction, Operation and Maintenance or decommissioning phases of the English Offshore Scheme.

20.10.17 As gannet also have a low sensitivity, the sensitivity for this group is therefore based on kittiwake which are likely to be present further offshore. The sensitivity has therefore been assessed as medium for this functional group.

20.10.18 The magnitude of the impact for terns, gulls, kittiwake and gannet has been assessed as negligible. A temporary increase in SSCs could occur on multiple occasions during construction, Operation and Maintenance, and decommissioning. However as discussed in **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes**, on each occasion the change will be for a short period (hours rather than days), with SSCs rapidly reducing once the activity ceases. **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes** further identifies that SSCs naturally vary seasonally,

with higher SSCs in the winter months compared to the summer months likely to be a result of increased winter storm activity. SSCs are particularly elevated in the nearshore, where the mean SSC can reach 50 mg/l during winter months and around 20 mg/l in the summer, as shown in **Volume 3, Part 3, Figure 17-12: Seasonal Mean Suspended Sediment Concentration**. The natural SSCs within the foraging range of terns, gulls, kittiwakes and gannets are approximately 2 – 60 mg/l in the winter and <1 – 20 mg/l in the summer, indicating that these species are accustomed to natural variability in SSCs recovery (i.e., ability to use the area of foraging) from the impact will be rapid.

20.10.19 In conclusion, for all phases, the significance of the effect of temporary increase and deposition of suspended sediment on auks has been assessed as **minor** and **not significant**.

### **Waders**

20.10.20 Wading species forage in the Intertidal Zone rather than within the water column, primarily targeting macroinvertebrates such as bivalves, crustaceans, gastropods and polychaete worms (Ref 20.54). Twenty-one species of wading bird have been identified as regularly present within the area of the English Offshore Scheme, 17 of which were identified during WeBS surveys (Ref 20.17), and the remaining four during aerial surveys for OWFs present in the vicinity as discussed in **Paragraph 20.5.9**.

20.10.21 Whilst many species use visual cues to locate their prey, there is evidence that some wading birds use tactile foraging to locate buried prey by detecting vibratory cues in the substrate (Ref 20.55). Cullen (Ref 20.56), observed that some wading birds are able to switch between visual and tactile foraging methods in the case of increasing water turbidity.

20.10.22 Some wading bird species are also able to detect vibrations within the substrate using a specialised bill-tip organ as they ‘probe’ the substrate (Ref 20.55). This bill-tip organ is found in scolopacid shorebirds, which have a long bill relative to their body size, and includes 10 of the 17 species of wading bird that have been identified as being regularly present in the area: the curlew, bar-tailed godwit, dunlin, knot, whimbrel, grey phalarope, black-tailed godwit, ruff, sanderling and redshank (Ref 20.57). Grey heron (*Ardea cinerea*), great white egret (*Ardea alba*) and little egret (*Egretta garzetta*) are all members of the *Ardeidae* family sharing similarities in behaviours, including the use of their long bills to forage predominantly on fish, frogs and water insects (Ref 20.58). Wader species rely on different foraging techniques for example, avocet ingest small prey and mud by sweeping their bill along intertidal flats (Ref 20.59), whereas both golden plover and little ringed plover (*Thinornis dubius*) depend on prey detection by sight.

20.10.23 Oystercatchers have been observed targeting a wide range of intertidal prey, including oysters, mussels and polychaetes, and to have the ability to vary their diet in response to prey availability and environmental conditions (Ref 20.60). Lapwing tend to feed predominantly in wet grassland or grazed pasture, foraging for earthworms, leatherjackets and insect larvae (Ref 20.61), as well as foraging on mudflats at low tide (Ref 20.62). They are therefore not considered sensitive to changes in water turbidity.

20.10.24 The rail family includes water rail (*Rallus aquaticus*), moorhen (*Gallinula chloropus*) and coot (*Fulica atra*). Moorhen and coot have a similar dark colouring but can be distinguished by their bill colours. Additionally, moorhens are not accustomed to diving (Ref 20.63). British and Irish water rails move regularly in season or at times of stress such as severe winters (Ref 20.64). Grey phalarope are a rare winter passage bird which are occasionally recorded on UK coasts following storms between September and

October (Ref 20.65). They tend to forage for marine plankton on the sea surface or small insects in the Intertidal Zone.

- 20.10.25 It should be noted that the dynamic nature of the Intertidal Zone results in naturally high levels of SSCs and that wading bird species present in these environments are adapted to foraging in turbid conditions.
- 20.10.26 The variety in foraging techniques and the adaptability of wading birds to use different methods depending on prey type, availability and environmental conditions means that they are not reliant on visual foraging to identify and capture prey. The sensitivity to the impact has therefore been assessed as low for this functional group.
- 20.10.27 The magnitude of the impact for waders has been assessed as negligible. A temporary increase in SSCs could occur on multiple occasions during construction, Operation and Maintenance, and decommissioning. However as discussed in **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes**, on each occasion the change will be for a short period (hours rather than days), with SSCs rapidly reducing once the activity ceases. **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes** further identifies that SSCs naturally vary seasonally, with higher SSCs in the winter months compared to the summer months likely to be a result of increased winter storm activity. SSCs are particularly elevated in the nearshore, where the mean SSC can reach 50 mg/l during winter months and around 20 mg/l in the summer, as shown in **Volume 3, Part 3, Figure 17-12: Seasonal Mean Suspended Sediment Concentration**. This indicates that these species are accustomed to variability in SSCs, as well as naturally high suspended sediment loads and recovery (i.e., ability to use the area of foraging) from the impact will be rapid.
- 20.10.28 In conclusion, for all phases, the significance of the effect of temporary increase and deposition of suspended sediment on waders has been assessed as **negligible and not significant**.

### **Common scoter**

- 20.10.29 Common scoter are part of the functional group 'seaducks, geese and swans'. Although the Planning Inspectorate agreed that the functional group 'seaducks, geese and swans' could be scoped out with respect to this potential impact due to the availability of alternative feeding grounds, it was requested that common scoter specifically be scoped in for further assessment due to insufficient evidence concerning this species' sensitivity to suspended sediments.
- 20.10.30 Common scoter is a species of diving duck which feed primarily on molluscs and bivalves including razor clams (*Ensis ensis*) and blue mussel (*Mytilus edulis*) and can dive to depths of up to 20 m (Ref 20.66). There is limited evidence to determine their exact mechanism of feeding, however Kaiser *et. al.* (2006) (Ref 20.66) suggest that it is unlikely that common scoter rely on visual foraging as they tend to forage in naturally turbid estuarine waters and for species buried in the top few centimetres of the seabed.
- 20.10.31 Given the current lack of sufficient evidence, a precautionary approach has been taken, and the sensitivity of common scoter to this impact has been assessed as medium.
- 20.10.32 The magnitude of the impact for common scoter has been assessed as negligible. A temporary increase in SSCs could occur on multiple occasions during construction, Operation and Maintenance, and decommissioning. However as discussed in **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes**, on each occasion the change will be for a short period (hours rather than days), with SSCs rapidly reducing

once the activity ceases. **Volume 1, Part 3, Chapter 17: Coastal and Marine Physical Processes** further identifies that SSCs naturally vary seasonally, with higher SSCs in the winter months compared to the summer months likely to be a result of increased winter storm activity. SSCs are particularly elevated in the nearshore, where the mean SSC can reach 50 mg/l during winter months and around 20 mg/l in the summer, as shown in **Volume 3, Part 3, Figure 17-12: Seasonal Mean Suspended Sediment Concentration**. This indicates that these species are accustomed to variability in SSCs, as well as naturally high suspended sediment loads and recovery (i.e., ability to use the area of foraging) from the impact will be rapid.

20.10.33 In conclusion, for all phases, the significance of the effect of temporary increase and deposition of suspended sediment on common scoter has been assessed as **minor and not significant**.

## 20.11 Preliminary Assessment of Changes in Distribution of Prey Species

### All Phases

20.11.1 Marine birds feed on a variety of prey species and can travel great distances to forage. Conversely, they may also have specific habitat preferences which limit their foraging ranges. Seabirds such as gannets and auks typically forage further offshore, feeding on plankton and fish that live within the water column, whereas gulls and terns tend to remain closer to shore (Ref 20.67). Divers, grebes and mergansers feed on small fish in shallow inshore waters, and some diving ducks and gulls forage for benthic invertebrates such as bivalves (Ref 20.67). Fish species such as Atlantic herring (*Clupea harengus*) and sandeel (*Ammodytes* spp.) are known to be of particular importance as a prey species for a variety of seabirds. Sandeel in particular are widely recognised as a critical food source for many seabirds (Ref 20.68; Ref 20.69; Ref 20.70) and have been identified as the most important forage fish in the North Sea.

20.11.2 Temporary disturbance of the seabed during the spawning season for species with a demersal life stage (such as sandeel and herring) could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species for bird species in subsequent years.

20.11.3 Permanent habitat loss from the deposit of external cable protection during construction and Operation and Maintenance could have a direct impact on the availability of suitable habitat for fish and shellfish species (such as herring and sandeel) because of the change from one marine habitat type to another through the change in substratum.

20.11.4 Other impacts on fish and shellfish species such as underwater noise, temporary increase and deposition of suspended sediments and sediment heat changes could also combine with temporary and permanent habitat loss to lead to a change in prey availability.

20.11.5 If fish species are avoiding an area due to a temporary or permanent reduction in suitable habitat or other disturbance, birds may potentially be required to travel greater distances to locate prey, with an associated energetic cost. For example, loss of a preferred prey close to breeding colonies may increase the amount of time birds are at sea foraging or lead to a lower food availability for chick survival. The maintenance of supporting habitats and processes to ensure the provision of prey species for birds is therefore a key consideration in maintaining the favourable conservation status of the individual species.

20.11.6 The MDS for temporary and permanent habitat loss is presented in detail in **Table 20-11**.

20.11.7 The preliminary assessment below considers the significance of the impact on the key functional groups likely to be affected, noting that potential impacts on bird species which are features of SPAs or Ramsar sites have been assessed in the **Volume 2, Part 1, Appendix 2.C: Habitats Regulations Assessment (HRA) Stage 1 Screening Report**. The sensitivity of each functional group has been established, followed by a collective discussion on the magnitude of the impact for all functional groups and assessment of the significance of the effect.

### **Divers, grebes and mergansers**

20.11.8 Divers, grebes and mergansers generally plunge dive to forage for pelagic fish and crustaceans and are able to target prey both within the water column and in benthic environments (Ref 20.71). They are opportunistic foragers and are able to forage in different aquatic habitats, varying both in depth of dive and between fresh- and salt-water environments (Ref 20.71).

20.11.9 Species from the group known to be present within the region and that could therefore be found within the draft Order Limits and Zol include red-throated, black throated and great northern diver, shag, cormorant, and Slavonian, red-necked and great crested grebe.

20.11.10 Species in this functional group typically have high habitat specialisation requirements according to the Joint SNCB Interim Displacement Advice Note (Ref 20.15), meaning that they may be limited in where they can forage. These species' foraging ranges are between 9 and 33 km from the coastline (Ref 20.53, Ref 20.14) suggesting that they are unlikely to be present for the majority of the draft Order Limits. The English Offshore Scheme is largely sited offshore >35 km from the coastline; only short sections of the draft Order Limits namely KP 0 - KP 57 and KP 133 – KP 164 are within the foraging range. The area of the draft Order Limits within the foraging range is approximately 81 km<sup>2</sup>, equivalent to 20% of the overall draft Order Limits.

20.11.11 The sensitivity of divers, grebes and mergansers to changes in the distribution of prey species has been assessed as low based on the availability of alternative foraging grounds, the variation in target species for this group, and the general lack in overlap between foraging range and the draft Order Limits.

### **Seaducks, geese and swans**

20.11.12 Geese and swans are typically surface feeders of intertidal habitats, as well as grazing on saltmarsh and coastal grazing marsh (Ref 20.13). At the Anderby Creek Landfall, a trenchless technique is proposed, which will exit in the subtidal zone. Therefore, there will be no temporary or permanent removal of foraging habitats for geese or swans. Subsequently, there will be no changes to the distribution of availability of prey.

20.11.13 Some diving seaducks such as common eider and common scoter specialise in foraging on shellfish and crustaceans, whereas other species of seaduck such as long-tailed duck, goldeneye and scaup are generalist feeders which feed on a wide range of prey items including but not limited to plants, insects and small fish (Ref 20.8). The Joint SNCB Interim Displacement Advice Note (Ref 20.15) indicates that seaduck species generally have high habitat specialisation.

20.11.14 Seaducks such as common scoter and long-tailed duck utilise coastal waters for foraging, with approximately 20% of the draft Order Limits within the breeding foraging range (see **Paragraph 20.12.12**). Common scoter are a designated feature of the Greater Wash SPA which is intersected by the draft Order Limits for 33.34 km as it approaches Anderby Creek Landfall. However, **Volume 3, Part 3, Figure 20-4** illustrates

that common scoter usage of the SPA is concentrated around the mouth of The Wash and that densities within the draft Order Limits are <10 birds per km<sup>2</sup>. Thus, there are alternative suitable foraging grounds in the region.

20.11.15 The sensitivity of seaducks, geese and swans to changes in the distribution of prey species has been assessed as low based on the availability of alternative foraging grounds, the variation in target species for this group and the general lack in overlap between foraging range and the draft Order Limits.

### **Terns, gulls, kittiwakes and gannets**

20.11.16 This functional group is opportunistic and feeds on a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal (Ref 20.13). Thus, these species are less susceptible to changes in distribution of prey than specialist feeders. All species except gannet are surface feeders; gannet are more accurately described as plunge-divers.

20.11.17 As described in **Paragraph 20.10.15**, this functional group have large breeding foraging ranges, with gannet having the largest range of 509.4 km (Ref 20.14). It is noted that non-breeding foraging distances may be significantly greater as individuals will not be constrained by nesting or rearing chicks.

20.11.18 Common tern, little tern, Sandwich tern and little gull are designated features of the Greater Wash SPA which is intersected by the draft Order Limits for 33.34 km as it approaches Anderby Creek Landfall. However, the baseline assessment indicates that the gull and tern receptors already prefer alternative foraging areas within the Greater Wash SPA, and that their use of the draft Order Limits within the Greater Wash SPA is marginal (see **Paragraphs 20.5.18-20.5.21**).

20.11.19 Given the opportunistic feeding behaviours of this functional group alongside large foraging ranges, infrequent use of the draft Order Limits by protected species and the availability of suitable alternative habitat the sensitivity of terns, gulls, kittiwakes and gannets to changes in the distribution of prey species has been assessed as low.

### **Waders**

20.11.20 Waders are all surface or near-surface feeders that utilise a variety of habitats for foraging including the open coast, grazing marsh, arable land, mud and sandflats, saltmarshes, saline lagoons and rocky coasts (Ref 20.8). Wading species are typically generalist feeders, foraging for a wide range of food sources such as fish, shellfish, amphibians, insects and crustaceans (Ref 20.54; Ref 20.58) with some species such as oystercatchers being opportunistic allowing them able to switch prey based on availability (Ref 20.60). Species such as egrets and herons predominately feed on fish and amphibians but are opportunistic feeders, taking small mammals and chicks on occasion (Ref 20.72).

20.11.21 Activities that are likely to disturb intertidal habitats may affect the availability of suitable prey for this functional group (Ref 20.8). Flight initiation distances in waders varies between species but a set-back distance of 300 m – 500 m is cited during the winter period (Ref 20.72, Ref 20.73).

20.11.22 Waders are known to be present at the Anderby Creek Landfall using the intertidal area for foraging, and the fields behind for resting and foraging. However, a trenchless technique is proposed, which will exit in the subtidal zone between three m and six m below Lowest Astronomical Tide (LAT), avoiding interaction with the Intertidal Zone. The

distance between MLWS and the three m LAT depth contour is approximately 1.1 km, meaning waders feeding on the tide mark are unlikely to be sensitive to vessel presence at the exit points for the trenchless technique.

20.11.23 The sensitivity of waders to changes in the distribution of prey species has been assessed as low based on the availability of alternative foraging grounds, the use of a trenchless technique avoiding the Intertidal Zone, and the separation between the foraging area and the English Offshore Scheme.

### **Auks**

20.11.24 Auks aggregate around the UK in inshore and offshore waters (Ref 20.8). As identified in Paragraph 20.10.12, they are present within the location of the draft Order Limits however, densities are typically highest around Scotland, Northern Ireland and the Irish Sea. Auks are water-column feeders, feeding largely on pelagic and demersal fish such as sandeel, herring, capelin (*Mallotus villosus*) and cod (*Gadus morhua*) (Ref 20.74). However, they can feed on other prey items for example Atlantic puffin stomach contents around the Faroe Islands identified crustacea, squid, polychaete worms and chaetognathids (predatory marine worms) (Ref 20.75); suggesting that although auks predominately eat fish such as sandeel, they are generalist feeders depending on available prey.

20.11.25 The sensitivity of auks to changes in the distribution of prey species has been assessed as low based on the availability of alternative foraging grounds, the variation in target species and the wide foraging ranges for this group.

### **Magnitude of impact and significance of effect**

20.11.26 With regards to fish and shellfish prey, **Volume 1, Part 3, Chapter 19: Fish and Shellfish** considered a number of impact pathways during construction, Operation and Maintenance, and decommissioning on marine species including herring, sandeel and shellfish. The impact pathways considered as part of the preliminary assessment include:

- Temporary habitat loss (Section 19.10);
- Permanent habitat loss (Section 19.11);
- Temporary increase and deposition of suspended sediments (Section 19.12);
- Underwater noise changes (Section 19.13);
- Electromagnetic changes and barrier to species movement (Section 19.14); and
- Temperature increase (Section 19.15).

20.11.27 Herring, sandeel and shellfish were identified as having a sensitivity of low to medium for all impact pathways assessed due to their specific habitat requirements and / or low mobility, making them vulnerable to changes in their environment. The magnitude of the impacts was assessed as low based on the highly localised, temporary nature of the construction works. The significance of all impacts on fish and shellfish prey was **negligible** or **minor** and therefore **not significant**.

20.11.28 Additionally, it is expected that the seabed habitat will recover following the cessation of construction, Operation and Maintenance, and decommissioning activities and will continue to support prey species within the short-term. The environmental baseline survey (Ref 20.76) identified that the sediments along the English Offshore Scheme are

heterogenous, identifying two main sediment types: 'sand' in the offshore sections of the route and 'mixed coarse sediment' in the nearshore. Natural movement of tidal flows and waves would promote recovery of the habitat; additionally, the nearshore environment is exposed to high wave action and therefore demonstrates tolerance to disturbance.

20.11.29 Moreover, activities associated with the construction, Operation and Maintenance, and decommissioning of the English Offshore Scheme are transient, relatively short-term and will take place over a relatively small area of the seabed.

20.11.30 Combined, given the small localised spatial scale of habitat impacts and the conclusion of **Volume 1, Part 3, Chapter 19: Fish and Shellfish** that there will be no significant impacts on prey species, the magnitude of impact on ornithological receptors has been assessed as negligible.

20.11.31 In conclusion, for all phases, the significance of the effect of changes in the distribution of prey species on all receptors has been assessed as **negligible** and **not significant**.

## 20.12 Preliminary Assessment of Visual and Physical Disturbance or Displacement

### Construction and Decommissioning

20.12.1 Intertidal and marine bird species are mobile in nature and may be able to avoid anthropogenic disturbance. However, individual species react differently to offshore development, with some species actively choosing to avoid sources of disturbance (not returning until sometime later), whilst others show little sensitivity, continuing with their activities. Species sensitivity to disturbance can often depend on the time of year. During specific seasons some species may have limited ability to alter their use of an area. For example, during the chick-rearing period, birds need to return frequently to the colony to feed and care for chicks. Birds can be discouraged from using feeding grounds or be forced further afield to forage if there are regular disturbances. Post-breeding, certain species such as Atlantic puffin are flightless, as they undergo a moult causing them to spend extended periods of time rafting on the sea surface, making them vulnerable to vessel movements. For other species, such as red-throated diver, winter and spring months are the most sensitive period as they remain at sea to forage, making them sensitive to unnecessary flight.

20.12.2 Disturbance may result in the bird choosing to move to continue their activity elsewhere either by swimming or flying away. If the bird is continually disturbed, or they must move a significant distance to find alternative grounds, this can cause the birds to expend additional energy and reduce feeding time to avoid obstacles. There may be a significant impact, altering the condition or distribution of species. Displacement occurs when a bird is deterred from entering an area because of the human activity that is taking place, which again may restrict their ability to access prime habitat.

20.12.3 **Table 20-11** presents the realistic worst-case design scenarios with regards to the number of vessels that could be working within the draft Order Limits during the construction and decommissioning phases of the English Offshore Scheme.

20.12.4 The preliminary assessment below considers the significance of the impact on the key functional groups likely to be affected, noting that potential impacts on bird species which

are features of SPAs or Ramsar sites have been assessed in **Volume 2, Part 1, Appendix 2.C: Habitats Regulations Assessment (HRA) Stage 1 Screening Report**. Assessment for the following receptors has been provided:

- Divers, grebes and mergansers;
- Seaducks, geese and swans;
- Waders; and
- Auks.

### **Divers, grebes and mergansers**

- 20.12.5 Divers, grebes and mergansers are highly sensitive to noise and visual disturbance (Ref 20.8). Species from this functional group may not resettle quickly after being flushed, with escape distances (i.e., the distance at which they will move away from a vessel) being several kilometres.
- 20.12.6 Species from the group known to be present within the region and that could therefore be found within the draft Order Limits and Zol include red-throated, black throated and great northern diver, shag, cormorant, and Slavonian, red-necked and great crested grebe. These species' foraging ranges are between 9 and 33 km from the coastline (Ref 20.53, Ref 20.14) suggesting that they are unlikely to be present in the majority of the draft Order Limits. The English Offshore Scheme is largely sited offshore >35 km from the coastline; only short sections of the draft Order Limits namely KP 0 - KP 57 and KP 133 – KP 164 are within the foraging range. The area of the draft Order Limits within the foraging range is approximately 81 km<sup>2</sup>, equivalent to 20% of the overall draft Order Limits.
- 20.12.7 As illustrated in **Volume 1, Part 3, Chapter 22: Shipping and Navigation**, where the draft Order Limit is closer to the coast it is subject to higher levels of shipping activity. The draft Order Limit already lies in areas where the functional group is anticipated to experience displacement, and as established by the establishment of various SPAs in the region there are alternative prime feeding grounds for the species. The sensitivity of the functional group is high to disturbance and / or displacement pressure, therefore the assessment has concluded that the sensitivity of divers, grebes and mergansers to the impact is high.
- 20.12.8 Construction and decommissioning would progress in a linear manner along the draft Order Limits. Disturbance and displacement impacts would be temporary and reversible with individuals able to return once vessels have passed through. There would be no permanent barrier to accessing foraging, loafing and resting areas. Alternative, preferred foraging areas are available in the wider region for the functional group and the English Offshore Scheme would not lead to a change in distribution of species. The magnitude of the impact has been assessed as negligible.
- 20.12.9 In conclusion, the significance of the effect has been assessed as **minor** and **not significant** for divers, grebes and mergansers during construction and decommissioning.

## Seaducks, geese and swans

- 20.12.10 Fourteen species from this functional group have been observed in the fields immediately behind the Anderby Creek Landfall site during the last five years by The Wetland Bird Survey and Goose & Swan Monitoring Programme (Ref 20.17). Although geese and swans migrate over long distances, their core foraging range from night roosts are typically 5 to 25 km depending on the species (Ref 20.77). The impact of vessels on geese and swans is not well recorded. Goodship and Furness (Ref 20.73) collated evidence to advise on likely sensitivity to human disturbance (e.g., pedestrians), recommending a buffer zone of 50 m – 1,000 m depending on the species and the season (breeding or non-breeding).
- 20.12.11 Seaduck such as common scoter and eider are highly sensitive to visual disturbance, with escape distances of 2 – 3.2 km observed (Ref 20.15). MIG-Birds (Ref 20.4) classify seaducks such as common scoter, common goldeneye and common eider as having either a high to very high (4-5 out of 5) disturbance susceptibility or high (4 out of 4) habitat specialisation. As seaduck are the more sensitive species in the functional group they drive the assessment of sensitivity. The sensitivity of the functional group to the impact has been assessed as high.
- 20.12.12 Seaduck are found in coastal waters, generally within 30 km of the coast (based on the foraging range for long-tailed duck, other species within the functional group have shorter foraging ranges). The English Offshore Scheme is largely sited offshore >35 km from the coastline; only short sections of the draft Order Limits namely KP 0 - KP 57 and KP 133 – KP 164 are within the foraging range. The area of the draft Order Limits within the foraging range is approximately 81 km<sup>2</sup>, equivalent to 20% of the overall draft Order Limits.
- 20.12.13 Construction and decommissioning would progress in a linear manner along the draft Order Limits. Disturbance and displacement impacts would be temporary and reversible with individuals able to return once vessels have passed through. There would be no permanent barrier to accessing foraging, loafing and resting areas. Alternative, preferred foraging areas are available in the wider region for the functional group and the English Offshore Scheme would not lead to a change in distribution of species. The magnitude of the impact has been assessed as negligible.
- 20.12.14 In conclusion, the significance of the effect has been assessed as **minor** and **not significant** for seaducks, geese and swans during decommissioning.

## Waders

- 20.12.15 Waders are known to be sensitive to visual disturbance from vessel traffic, but in general there is more habituation to disturbance than species such as divers and seaducks. Flight initiation distances in waders varies between species but a set-back distance of 300 m – 500 m is cited during the winter period (Ref 20.72, Ref 20.73).
- 20.12.16 Waders are known to be present at the Anderby Creek Landfall using the intertidal area for foraging, and the fields behind for resting and foraging. However, a trenchless technique is proposed, which will exit in the subtidal zone between three m and six m below LAT, avoiding interaction with the Intertidal Zone. The distance between MLWS and the 3 m LAT depth contour is approximately 1.1 km, meaning waders feeding on the tide mark are unlikely to be sensitive to vessel presence at the exit points for the trenchless technique.

- 20.12.17 Furthermore, the Anderby Creek Landfall is not a designated site for waders, with alternative preferred foraging habitat found within the Greater Wash SPA and the Humber Estuary SPA. The sensitivity of this functional group has been assessed as low.
- 20.12.18 Vessels used for construction and decommissioning of the English Offshore Scheme would be slow moving in the nearshore and would take place in the context of existing sources of disturbance from recreational vessels and public use of the intertidal area. Disturbance and displacement impacts would be temporary and reversible with individuals able to return once vessels have moved out of the nearshore, if disturbed. There would be no permanent barrier to accessing foraging, loafing and resting areas. Alternative, preferred foraging areas are available in the wider region for the functional group, and the English Offshore Scheme would not lead to a change in distribution of species. The magnitude of the impact has been assessed as negligible.
- 20.12.19 In conclusion, the significance of the effect has been assessed as **negligible** and **not significant** for waders during construction and decommissioning.

## Auks

- 20.12.20 Auks' sensitivity to visual disturbance is lower than that of other functional groups. MIG-Birds (2022) (Ref 20.4) score common guillemot, razorbill and Atlantic puffin as having a disturbance susceptibility of three (out of five), with Atlantic puffin scoring two (out of five). Fliessbach *et al.*, (2019) (Ref 20.15) report escape distances to be on average 395 m ( $\pm$  216 m) for razorbill, suggesting that the zone of influence of displacement and disturbance would be limited to within the draft Order Limits. The sensitivity of the species to the impact has been assessed as low.
- 20.12.21 Construction and decommissioning would progress in a linear manner along the draft Order Limits. Disturbance and displacement impacts would be temporary and reversible with individuals able to return once vessels have passed through. There would be no permanent barrier to access foraging, loafing and resting areas. Alternative, preferred foraging areas are available in the wider region for the functional group, and the English Offshore Scheme would not lead to a change in distribution of species. The magnitude of the impact has been assessed as negligible.
- 20.12.22 In conclusion, the significance of the effect has been assessed as **negligible** and **not significant** for auks during construction and decommissioning.

## Operation

- 20.12.23 The English Offshore Scheme would be designed to minimise any maintenance requirements. It is anticipated that periodic inspection surveys, cable repair and remedial works would be required. **Table 20-11** describes the worst-case assumptions with regards to the number of vessels which could be working within the draft Order Limits during the Operation and Maintenance phase of the English Offshore Scheme. It has been assumed that vessels could be present at any time of the year.
- 20.12.24 The preliminary assessment below considers the significance of the impact on the key functional groups likely to be affected, noting that potential impacts on bird species which are features of SPAs or Ramsar sites have been assessed in **Volume 2, Part 1, Appendix 2.C: Habitats Regulations Assessment (HRA) Stage 1 Screening Report**.
- 20.12.25 The preliminary assessment for visual and physical disturbance or displacement during construction for all functional groups concluded that the species within the group have a sensitivity of medium, with the exception of seaducks, geese and swans, which

concluded a sensitivity of high. The magnitude of the impact during construction and decommissioning was assessed as negligible. During Operation and Maintenance, the number of vessels would be significantly reduced with no activity taking place in the draft Order Limits during some years. The magnitude of the impact during Operation and Maintenance is therefore lower than during construction and decommissioning and the conclusion that the significance of the effects would be **minor** or lower and **not significant** for all functional groups remains valid for the Operation and Maintenance phase.

## 20.13 Transboundary Effects

- 20.13.1 The EIA Regulations require an ES to consider the transboundary effects of a development (paragraph 5 of Schedule 4). Given the nature of the English Onshore Scheme and its proposed location, significant transboundary effects are unlikely as there are no pathways for effects to occur outside of the UK. Similarly, the English Offshore Scheme lies wholly in UK waters. Separate applications will be submitted to the relevant Statutory Authority for the Scottish Schemes. Where the English and Scottish Schemes meet, collaborative environmental assessments will ensure impacts are fully assessed.
- 20.13.2 Given the distance to the UK Exclusive Economic Zone boundary (as outlined in **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**), no potential transboundary impacts have been identified for intertidal and offshore ornithology. This is in line with the preliminary transboundary screening carried out by the Planning Inspectorate (dated 06 November 2025).

## 20.14 Further Work to be Undertaken

- 20.14.1 The information provided in this PEIR is preliminary and the final assessment of potential significant effects will be reported in the ES. This section describes the further work to be undertaken to support the intertidal and offshore ornithology assessment which will be presented in the ES.

### Baseline

#### Greater Wash SPA data

- 20.14.2 Natural England commissioned surveys of the Greater Wash SPA plus a 10 km seaward buffer, which covers a notable extent of the south of the EGL 5 English Offshore Scheme, including the Anderby Creek Landfall. The surveys were undertaken over the 2022/2023 winter period (Natural England 2025, pers. comm.). This data currently remains unpublished, however, it was received by the Applicant for use on the EGL 3 and EGL 4 Projects with specific data use restrictions. The Applicant has requested permission to use the survey results for the EGL 5 English Offshore Scheme. If permission is received, this data will be used to inform the ES.

#### Vantage Point Surveys

- 20.14.3 Vantage point surveys commenced in January 2026 following the completion of vantage point surveys for the EGL 3 Project and the EGL 4 Project in December 2025. The intention is to collect a total of 24 months of bird survey data covering the EGL 5 Project Anderby Creek Landfall. The vantage point surveys will conduct spatial distribution surveys of waders and wildfowl on the intertidal shorelines at low tide and on the sea

surface at high tide. Vantage point data collected at the Anderby Creek Landfall for the EGL 3 and EGL 4 Projects between September 2024 and December 2025 will be available for use in the ES.

## Assessment

### Vessel disturbance assessment

20.14.4 A vessel disturbance assessment will be undertaken for works within the Greater Wash SPA. This assessment would assume the following:

- One hundred per cent displacement would occur from each vessel for the period the vessel is present as a proportion of total time (e.g., if a vessel is present for 12 hours a day throughout the period of site occupancy by a sensitive qualifying feature, a fifty per cent displacement rate would be applied).
- Displacement distances would be up to 2 km for red-throated diver and 2.5 km for common scoter. These distances are based on advice received by Natural England during non-statutory consultation on EGL 5.
- Vessel transit routes through the Greater Wash SPA and within the respective displacement buffers would be assessed (i.e., within 2/2.5 km of the SPA).

20.14.5 The assessment would:

- Use the kernel density estimates provided in Lawson *et al.*, 2015 (Ref 20.1) and the 2022/2023 aerial data (if available) to calculate the number of birds present within the English Offshore Scheme, vessel transit routes and buffer zones. Using both datasets separate would allow calculation of impacts to assess against the relevant reference populations (e.g., the citation population of the Greater Wash SPA, the most recent Greater Wash SPA population estimate, and a wider regional reference population).
- Calculate the proportion of the Greater Wash SPA impacted.
- Estimate the number of vessel days occurring within the Greater Wash SPA between September and April (ideally on a monthly basis).
- Calculate the number of 'bird' days lost (number of birds x number of days) that would be affected.

20.14.6 The assessment would be discussed with Natural England and JNCC to agree approach and appropriate mitigation where necessary.

### Further environmental measures

20.14.7 Further consultation with relevant statutory consultees will be undertaken to define the scope and extents of the environmental measures set out in the assessment above. If, following stakeholder consultation feedback, further design refinement and further assessment, it is identified that additional measures are required, these will be detailed as part of the ES.

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