The Great Grid Upgrade

Sea Link

# Preliminary Environmental Information Report

**Volume: 1**

**Part 4 Offshore Scheme**

**Chapter 6 Ornithology**

**Version A**

October 2023

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| Document Properties | |
|---|---|
| **Organisation** | AECOM |
| **Author** | AECOM |
| **Approved by** | AECOM |
| **Title** | Preliminary Environmental Information Report<br>Part 4, Chapter 6, Ornithology |
| **Data Classification** | Public |

**Version History**

| Date | Version | Status | Description/Changes |
|---|---|---|---|
| 24/10/2023 | A | FINAL | First issue |

# 4.6 Ornithology

## 4.6.1 Introduction

4.6.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents information about the preliminary environmental assessment of the likely significant effects to birds identified to date, that could result from the Offshore Scheme of the Proposed Project only (as described in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**). Potential effects to birds from the Onshore Scheme of the Proposed Project are dealt with in **Volume 1, Part 2 and Part 3 Chapter 3, Ecology and Biodiversity**.

4.6.1.2 This chapter describes the methodology used, the datasets that have informed the preliminary assessment, baseline conditions, mitigation measures and the preliminary significant residual effects to birds in the marine environment that could result from the Offshore Scheme of the Proposed Project.

4.6.1.3 The draft Order Limits, which illustrate the boundary of the Proposed Project, are illustrated on **Figure 1.1.1 Draft Order Limits** and the Offshore Scheme Boundary is illustrated on **Figure 1.1.4 Offshore Scheme Boundary**.

4.6.1.4 This chapter should be read in conjunction with:

- **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**;
- **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**;
- **Volume 1, Part 1, Chapter 6, Scoping Opinion and EIA Consultation**;
- **Volume 1, Part 4, Chapter 1, Evolution of the Offshore Scheme**;
- **Volume 1, Part 4, Chapter 4, Fish and Shellfish;** and
- **Volume 1, Part 4, Chapter 8: Shipping and Navigation.**

4.6.1.5 This chapter is supported by the following figures:

- **Volume 3, Figure 4.6.1: Study Area;**
- **Volume 3, Figure 4.6.2: Relevant Designated Sites for the Protection of Ornithology;**
- **Volume 3, Figure 4.6.3: Lesser Black-backed Gull Spatial Variation in Predicted Densities (individuals/km$^2$) in January and July (Source: Waggit *et al*., 2020);**
- **Volume 3, Figure 4.6.4: Herring Gull Spatial Variation in Predicted Densities (individuals/km$^2$) in January and July (Source: Waggit *et al*., 2020);** and
- **Volume 3, Figure 4.6.5: Razorbill Spatial Variation in Predicted Densities (individuals/km$^2$) in January and July (Source: Waggit *et al*., 2020).**

4.6.1.6 This chapter is supported by the following appendices:

- **Volume 2, Appendix 1.4.A Outline Code of Construction Practice**; and

- **Volume 2, Appendix 1.4.F Outline Schedule of Environmental Commitments and Mitigation Measures**.

## 4.6.2 Regulatory and Planning Context

4.6.2.1 This section sets out the legislation and planning policy that is relevant to the preliminary marine ornithology assessment. A full review of compliance with relevant national and local planning policy will be provided within the Planning Statement that will be submitted as part of the application for Development Consent.

4.6.2.2 Policy generally seeks to minimise adverse effects on birds from development and to avoid significant adverse effects. This applies particularly to designated sites including Special Protection Areas (SPAs), Ramsar sites, and Sites of Special Scientific Interest (SSSIs) that have ornithological qualifying features. This also applies to other habitats outside of designated sites, including intertidal areas and foraging areas at-sea, that are of value to birds.

### Legislation

#### Marine and Coastal Access Act 2009

4.6.2.3 The Marine and Coastal Access Act 2009 (Ref 6.1) provides the legal mechanism to help ensure clean, healthy, safe, productive and biologically diverse oceans and seas. The act makes provisions for the designation of Marine Conservation Zones for the purpose of conserving marine flora and fauna (including birds) and marine habitats and protected features. This include conserving species which are rare or threatened.

#### The Conservation of Habitats and Species Regulations 2017 (amended 2019)

4.6.2.4 The Conservation of Habitats and Species Regulations 2017 (Ref 6.2) (amended 2019 (Ref 6.3)) as retained EU law are amended to incorporate the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC) on 31 December 2020 into UK legislation out to the 12 nautical mile (NM) limit. The regulations cover both England and Wales. The amendments in 2019 involved transferring the functions from the European Commission to relevant English and Welsh authorities. The 2017 regulations included the classification, and registration of, Special Protection Areas (SPA) for birds. The 2019 changes to the regulations made provisions for the creation of a national site network in the UK which comprised of the sites in both inshore and offshore marine areas of the UK which were already designated under the European Union's Natura 2000 network (including SPAs), and new sites designated under the updated regulations. Management objectives for the national site network were also established.

#### The Conservation of Offshore Marine Habitats and Species Regulations 2017

4.6.2.5 The Conservation of Offshore Marine Habitats and Species Regulations 2017 (Ref 6.4) as retained EU law are amended to incorporate the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC) on 31 December 2020, and applies within the UK Offshore Marine Area (beyond the 12 NM limit). It provides the legal mechanism for implementing protection requirements for habitats and species, including the designation of protected sites in the offshore environment and the management of such sites.

### The Wildlife and Countryside Act 1981

4.6.2.6 The Wildlife and Countryside Act 1981 (Ref 6.5) (as amended) includes provisions relating to nature conservation. It aims to limit and/or prohibit activities which could adversely impact wild birds, their nests and eggs, including any activity which:

- Intentionally kills, injures or takes any wild bird;
- Takes, damages or destroys the nest of a wild bird included in Schedule ZA1;
- Takes, damages or destroys the nest of any wild bird while that nest is in use or being built;
- Obstructs or prevents any wild bird from using its nest;
- Takes or destroys an egg of any wild bird;
- Disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; and
- Disturbs dependent young of such a bird.

### The Marine Strategy Regulations 2010

4.6.2.7 The Marine Strategy Regulations 2010 (Ref 6.6) originally implemented the Marine Strategy Framework Directive (2008/56/EC) into UK legislation. At the end of the Brexit transition period, the Marine Strategy Regulations 2010 became retained EU law. The regulations require a marine strategy to be produced for all UK waters, which aims to protect and preserve the marine environment by preventing deterioration and restoring marine ecosystems which have been adversely affected. This includes preventing inputs such as pollution into the marine environment and managing human activities to avoid significant adverse impacts.

### Section 41 of the Natural Environment and Rural Communities Act (NERC) 2006

4.6.2.8 Section 41 of the NERC 2006 (Ref 6.7) imposes a requirement on the Secretary of State to publish a list of species and habitats of principal importance for the purpose of conservation of biodiversity. The conservation of biodiversity may include the enhancement, restoration or protection of populations and habitats.

### The Countryside and Rights of Way (CRoW) Act 2000 (as amended)

4.6.2.9 The CRoW Act 2000 (as amended) (Ref 6.8) normally gives a public right of access to land mapped as 'open country' (mountain, moor, heath and down) or registered common land.

### Environment Act 2021

4.6.2.10 The Environment Act 2021 (Ref 6.9) sets clear statutory targets for the recovery of the natural world in four priority areas: air quality, biodiversity, water, and waste, and includes the introduction of statutory requirements relating to Biodiversity Net Gain (BNG).

### Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the Birds Directive)

4.6.2.11 The Birds Directive (Ref 6.10) was incorporated as at 31 December 2020 into the Conservation of Habitats and Species Regulations 2017 (Ref 6.2) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (Ref 6.4) as retained EU law. The Directive concerns the conservation of naturally occurring wild birds in the European Member States to which the Treaty applies. This includes the prohibition of deliberate killing or capture by any method, deliberate destruction of, or damage to, their nests and eggs or removal of their nests, taking their eggs in the wild and keeping these eggs even if empty, deliberate disturbance of these birds particularly during the period of breeding and rearing, in so far as disturbance would be significant having regard to the objectives of this Directive, and keeping birds of species the hunting and capture of which is prohibited.

## National Policy

### National Policy Statements

4.6.2.12 National Policy Statements (NPS) set out the primary policy tests against which the application for a Development Consent Order (DCO) for the Proposed Project would be considered. Table 4.6.1, Table 4.6.2 and Table 4.6.3 below provide details of the current, elements of NPS (EN-1) Overarching National Policy Statement for Energy (Ref 6.11), NPS (EN-5) for Electricity Networks Infrastructure (Ref 6.12) and NPS (EN-3) for Renewable Energy Infrastructure (Ref 6.13) which were published in 2011 and are relevant to this chapter. Table 4.6.1, Table 4.6.2 and Table 4.6.3 also outline draft policies of EN-1 (Ref 6.14), EN-3 (Ref 6.15) and EN-5 (Ref 6.16) which recently underwent consultation (closed 23 June 2023) as part of a review of the NPS to ensure policies were brought up to date following the production of an Energy white paper in 2020[1]. The tables below detail how and where both current and draft policies are covered in the PEIR or will be covered within the Environmental Statement (ES).

Table 4.6.1: NPS EN-1 requirements relevant to ornithology (Current policies and draft updates which underwent consultation in June 2023).

| NPS EN-1 section | Where this is covered in the PEIR |
|---|---|
| ***Current NPS EN-1 policies*** | |
| 4.3.1 (part) "... *Applicants should also refer to Section 5.3 of this NPS on biodiversity and geological conservation. The applicant should seek the advice of Natural England and/or the Countryside Council for Wales and provide the IPC with such information as it may reasonably require to determine whether an Appropriate Assessment is required. In the event that an Appropriate Assessment is required, the applicant must provide the IPC with such information as may reasonably be required to* | Natural England, Countryside Council for Wales and the Planning Inspectorate (the body that replaced the IPC) will be provided with the required information before completion of the ES stage.<br>All proposed mitigation is present in 4.6.8. These measures will be expanded on as further environmental |

[1] https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future

| NPS EN-1 section | Where this is covered in the PEIR |
|---|---|
| *enable it to conduct the Appropriate Assessment. This should include information on any mitigation measures that are proposed to minimise or avoid likely effects".* | information is available and the proposed Project design is refined.<br>Further information can also be found in **Volume 1, Part 5, Chapter 3 Habitat Regulations Screening Report.** |
| 4.10.6 (part) "*…Applicants are advised to make early contact with relevant regulators, including EA and the MMO, to discuss their requirements for environmental permits and other consents".* | Early contact with relevant regulators, including the Marine Management Organisation (MMO) and Environment Agency (EA) has been made and is ongoing. A record of consultation will be provided in the ES. |
| 5.3.6 (part) "*…In having regard to the aim of the Government's biodiversity strategy the IPC should take account of the context of the challenge of climate change: failure to address this challenge will result in significant adverse impacts to biodiversity".* | The potential effects of climate-related issues on ornithology are described in section 4.6.7.37 |
| 5.3.8 *"…In taking decisions, the IPC should ensure that appropriate weight is attached to designated sites of international, national and local importance; protected species; habitats and other species of principal importance for the conservation of biodiversity; and to biodiversity and geological interests within the wider environment".* | The baseline of internationally, nationally and locally designated sites of importance for birds, and where relevant, protected species, and habitats and species of principal importance present in the Study Area are described in section 4.6.7. |
| 5.3.11 (part) *"…Where a proposed development on land within or outside an SSSI is likely to have an adverse effect on an SSSI (either individually or in combination with other developments), development consent should not normally be granted. Where an adverse effect, after mitigation, on the site's notified special interest features is likely, an exception should only be made where the benefits (including need) of the development at this site clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs. The IPC should use requirements and/or planning obligations to mitigate the harmful aspects of the development and, where possible, to ensure the conservation* | An assessment of impacts, including, where relevant, bird species or assemblages representing qualifying features of SSSIs, is provided in section 4.6.9. These impacts will be further considered as additional environmental information becomes available and the proposed Project design is refined.<br>Mitigation against harmful aspects of the development to ensure conservation of birds is set out in section 4.6.8. |

| NPS EN-1 section | Where this is covered in the PEIR |
|---|---|
| *and enhancement of the site's biodiversity or geological interest.".* | |
| 5.3.12 (part) *"…As a public authority, the IPC is bound by the duties in relation to MCZs imposed by sections 125 and 126 of the Marine and Coastal Access Act 2009".* | There are no Marine Conservation Zones (MCZ) present within the Study Area for the protection of birds. |
| 5.3.15 *"…Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, the IPC should maximise such opportunities in and around developments, using requirements or planning obligations where appropriate".* | Embedded measures and proposed mitigation to conserve biodiversity are provided in section 4.6.8. These measures will be expanded on as further environmental information is available and the proposed Project design is refined.<br>Opportunities to provide features of benefit for birds, where practicable, will be considered as the proposed Project design evolves. |
| 5.3.17 *"…Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales and thereby requiring conservation action. The IPC should ensure that these species and habitats are protected from the adverse effects of development by using requirements or planning obligations. The IPC should refuse consent where harm to the habitats or species and their habitats would result, unless the benefits (including need) of the development outweigh that harm. In this context the IPC should give substantial weight to any such harm to the detriment of biodiversity features of national or regional importance which it considers may result from a proposed development".* | Preliminary impacts to birds have been reported in section 4.6.9 These impacts will be explored further, where necessary, as additional environmental information is available and the Proposed Project design is refined. |
| ***Draft NPS EN-1 policies which underwent consultation in June 2023*** | |
| 4.4.7 "... *Applicants are encouraged to approach the marine licensing regulator (MMO in England and Natural Resources Wales in Wales) in pre-application, to ensure that they are aware of any needs for additional marine licenses alongside their DCO application".* | Contact and engagement with the MMO is ongoing. A record of consultation will be provided in the ES.<br>Consultation with Natural England was undertaken during the scoping stage and is ongoing. Relevant comments are provided in section 4.6.3. |

| NPS EN-1 section | Where this is covered in the PEIR |
|---|---|
| 4.4.8 "…*Applicants for a development consent order must take account of any relevant Marine Plans and are expected to complete a Marine Plan assessment as part of their project development, using this information to support an application for development consent*" | Marine Plans are identified in Table 4.6.5 and considered in section 4.6.9 Preliminary Assessment of Effects. |
| 4.4.9 "…*Applicants are encouraged to refer to Marine Plans at an early stage, such as in preapplication, to inform project planning, for example to avoid less favourable locations as a result of other uses or environmental constraints*". | Marine Plans are identified in Table 4.6.5 and considered in section 4.6.9 Preliminary Assessment of Effects. |
| 5.4.11 "…*It is important that relevant guidance on managing environmental impacts of infrastructure in marine protected areas is followed, and that equal consideration of the effect of proposals should be given to all MPAs regardless of the legislation they were designated under. This is because all sites contribute to the network of MPAs and therefore to overall network integrity*." | All designated sites in place for the protection of birds have been considered in section 4.6.7 Baseline Conditions and section 4.6.9 Preliminary Assessment of Effects regardless of the legislation under which they were designated. |
| 5.4.17 (part) "... *Where the development is subject to EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance (including those outside England), on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats".* | The baseline of internationally, nationally and locally designated sites of ecological or geological conservation importance, protected species and habitats and other species identified as being of principal importance in the Study Area are described in section 4.6.7. This baseline will be updated, where necessary, if further environmental information becomes available and as the Proposed Project design is refined. |
| 5.4.18 "…*The applicant should provide environmental information proportionate to the infrastructure where EIA is not required to help the Secretary of State consider thoroughly the potential effects of a proposed project".* | EIA is required for the Proposed Project. Consultation with Natural England was undertaken during the scoping stage and is ongoing. Relevant comments are provided in section 4.6.3. |
| 5.4.19 *"… The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests".* | Mitigation measures have been included in section 4.6.8. These measures will be expanded on as further environmental information is available and the |

| NPS EN-1 section | Where this is covered in the PEIR |
|---|---|
| | Proposed Project design is refined.<br>Opportunities to provide features of benefit for birds, where practicable, will be considered as the proposed Project design evolves.. |
| 5.4.22 (part)..." *The design of Energy NSIP proposals will need to consider the movement of mobile /migratory species such as birds, fish and marine and terrestrial mammals and their potential to interact with infrastructure. As energy infrastructure could occur anywhere within England and Wales, both inland and onshore and offshore, the potential to affect mobile and migratory species across the UK and more widely across Europe (transboundary effects) requires consideration, depending on the location of development.*" | All features of conservation importance including mobile and migratory bird species have been considered in both the initial baseline (section 4.6.7) and preliminary assessment of effects (section 4.6.9) and in **Volume 1, Part 5, Chapter 3, Habitat Regulations Screening Report** |
| 5.4.23 *"…Energy projects will need to ensure vessels used by the project follow existing regulations and guidelines to manage ballast water".* | Relevant mitigation measures identified at this stage, including regulations and guidelines to manage ballast water, are provided in section 4.6.8. |

Table 4.6.2: NPS EN-3 requirements relevant to ornithology (Current policies and draft updates which underwent consultation in June 2023).

| NPS EN-3 section | Where this is covered in the PEIR |
|---|---|
| ***Current NPS EN-3 policies*** | |
| 2.6.29 *"…Biodiversity considerations to which applicants and the IPC should have regard concerning offshore infrastructure include:…birds".* | Birds which have been considered in this PEIR are presented in section 4.6.7. |
| 2.6.107 *"Aviation and navigation lighting should be minimised to avoid attracting birds, taking into account impacts on safety".* | All mitigation measures are set out in section 4.6.8 |
| ***Draft NPS EN-3 policies which underwent consultation in June 2023*** | |
| 3.8.81 *"The applicant should assess the effects of the cable and any associated infrastructure on the marine, coastal and onshore environment".* | All effects of cabling on marine ornithological features are assessed in section 4.6.9. |

| NPS EN-3 section | Where this is covered in the PEIR |
|---|---|
| 3.8.150 "*Currently, cumulative impact assessments for ornithology are based on the consented Rochdale Envelope parameters of projects rather than the 'as-built' parameters, which may pose a lower risk to birds".* | Cumulative impacts on ornithology will be assessed at the ES stage. |
| 3.8.257 "*Applicants should undertake a review of up-to-date research and all potential mitigation options presented. Aviation and navigation lighting should be minimised and/or on demand (as encouraged in EN-1 Section 5.5) to avoid attracting birds, taking into account impacts on safety….*". | A review of existing data has been provided in section 4.6.7. All mitigation options are presented in section 4.6.8 including mitigating the use of lighting. |
| 3.8.259 "*Construction vessels and post-construction maintenance vessel traffic….should, where practicable and compatible with operational requirements and navigational safety, avoid rafting seabirds during sensitive periods and follow agreed navigation routes to and from the site and minimise the number of vessel movements overall*". | The effect of disturbance from vessels is discussed in section 4.6.9. |

Table 4.6.3: NPS EN-5 requirements relevant to ornithology (Current policies and draft updates which underwent consultation in June 2023).

| NPS EN-5 section | Where this is covered in the PEIR |
|---|---|
| ***Current NPS EN-5 policies*** | |
| 2.2.6 "... *As well as having duties under section 9 of the Electricity Act 1989, (in relation to developing and maintaining an economical and efficient network), developers will be influenced by Schedule 9 to the Electricity Act 1989 , which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to "have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and … do what [they] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects." Depending on the location of the proposed* | Mitigation measures to conserve ornithological biodiversity are set out in section 4.6.8<br>These measures will be expanded on as further environmental information is available and the Proposed Project design is refined. |

| NPS EN-5 section | Where this is covered in the PEIR |
|---|---|
| *development, statutory duties under section 85 of the Countryside and Rights of Way Act 2000 and section 11A of the National Parks and Access to the Countryside Act 1949 may be relevant".* | |
| 2.5.3 *"…The sensitivities of many coastal locations, as well as the potential environmental, community and other impacts in neighbouring onshore areas, means that optimum onshore connection points for offshore transmission must be considered as part of the overall offshore transmission network design and in conjunction with the onshore network. Optimum onshore connection locations for offshore transmission are those which minimise environmental and other impacts, including to local communities, and follow good design, avoidance and mitigation principles".* | Embedded measures and mitigation are outlined in section 4.6.8. These measures will be expanded on as further environmental information is available and the Proposed Project design is refined. |
| ***Draft NPS EN-5 policies which underwent consultation in June 2023*** | |
| 2.2.10 "...*As well as having duties under Section 9 of the Electricity Act 1989, (in relation to developing and maintaining an economical and efficient network), applicants must take into account Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure, to "have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and …do what [they] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects".* | Mitigation measures to conserve ornithological biodiversity are set out in section 4.6.8.<br>These measures will be expanded on as further environmental information is available and the Proposed Project design is refined. |
| 2.13.15 …"*The sensitivities of many coastal locations and of the marine environment as well as the potential environmental, community and other impacts in neighbouring onshore areas must be considered in the identification onshore connection points."* | Embedded measures and mitigation are outlined in section 4.6.8. These measures will be expanded on as further environmental information is available and the Proposed Project design is refined |

### National Planning Policy Framework

4.6.2.13 The National Planning Policy Framework (NPPF) (Ref 6.17) has the potential to be considered important and relevant to the Secretary of State (SoS) consideration of the

Proposed Project. Biodiversity is stated as one of the factors contributing to the core objectives of sustainable economic development. Table 4.6.4 below provides details of the elements of the NPPF that are relevant to this chapter, and how and where they are covered in the PEIR or will be covered within the ES.

Table 4.6.4: NPPF requirements relevant to ornithology.

| NPPF section | Where this is covered in the PEIR |
|---|---|
| Paragraph 174 "*Planning policies and decisions should contribute to and enhance the natural and local environment by [inter alia] … protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); … [and] recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services; … [and] minimising impacts on and providing net gains for biodiversity; …[and] preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability*". | Measures in place to prevent adverse effects to birds are presented in section 4.6.8. These measures will be expanded on as further environmental information is available and the Proposed Project design is refined |
| Paragraph 180 *"When determining planning applications, local planning authorities should apply the following principles: if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; [and] development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; [and] development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."* | A preliminary assessment of Project-related effects on birds, and mitigation measures, are presented in sections 4.6.8 and 4.6.9 |

| NPPF section | Where this is covered in the PEIR |
|---|---|
| Paragraph 181 *"The following should be given the same protection as habitats sites: possible Special Areas of Conservation; [and] listed or proposed Ramsar sites; [and] sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites."* | There are no possible, potential or proposed designated sites in place for the protection of birds in the Study Area.<br>All established designated sites with ornithological qualifying features are presented in section 4.6.7.<br>Further information on designated sites can be found in **Volume 1, Part 5, Chapter 3 Habitat Regulations Screening Report.** |

### National Planning Practice Guidance

4.6.2.14 This PEIR chapter has also followed National Planning Practice Guidance for the Natural Environment (Ref 6.18), which describes how biodiversity and ecosystems should be taken into account, for the purpose of conserving biodiversity. The PEIR chapter follows guidance on evidence required, such as location of designated sites and the distribution and consideration of protected and priority species. In addition, guidance has been followed around applying policy to avoid, mitigate or compensate for significant harm to biodiversity, to ensure that Proposed Project impacts do not cause significant adverse effects to birds, where possible.

## Marine Planning Policy

The following marine plans are considered relevant to a study of marine ornithology and have been used to inform the assessment of preliminary effects in this chapter:

- The UK Marine Policy Statement (MPS), which was adopted in 2011 and provides the policy framework for the preparation of marine plans and establishes how decisions affecting the marine area should be made (Ref 6.19);
- East Inshore and East Offshore Marine Plan (Ref 6.20); and
- South East Inshore Marine Plan (Ref 6.21).

Table 4.6.5: Marine Planning Policies relevant to ornithology.

| Marine Plan | Where this is covered in the PEIR |
|---|---|
| The UK MPS | In line with policy objectives in the MPS, this PEIR chapter has considered measures that can be taken to avoid biodiversity loss, and has attached appropriate weight to the designated sites (SPAs, Ramsar sites and |

| Marine Plan | Where this is covered in the PEIR |
|---|---|
| | SSSIs) that are at risk of impact from the Proposed Project (section 4.6.7).<br>Species and habitats of principal importance have also been considered, in addition to those which are qualifying features of the sites listed in section 4.6.7. |
| East Inshore and East Offshore Marine Plan | This plan area supports large numbers of seabirds and waterbirds in both inshore and offshore waters. Several policies in the East Inshore and East Offshore Marine Plan relate to biodiversity, and state that proposals occurring within important marine habitat, or with the potential to cause significant adverse impacts to important habitat, should avoid, minimise and mitigate adverse impacts so that they are no longer significant. All preliminary impacts to birds associated with the Offshore Scheme have been assessed in section 4.6.9, with embedded mitigation and additional mitigation measures in place being described in section 4.6.8. |
| South East Inshore Marine Plan | Several policies in the South East Inshore Marine Plan relate to biodiversity, including birds, and state that proposals occurring within important marine habitat, or with the potential to cause significant adverse impacts to important habitat, should avoid, minimise and mitigate adverse impacts so that they are no longer significant. All preliminary impacts to birds associated with the Offshore Scheme have been assessed in section 4.6.9, with embedded mitigation and additional mitigation measures in place being described in section 4.6.8. |

## Local Planning Policy

4.6.2.15 The intertidal area of the Offshore Scheme lies within the jurisdiction of Suffolk County Council, East Suffolk Council, Suffolk Coastal Local Plan, Kent County Council and within the boundary of Thanet District Council Local Plan and Dover District Local Plan. Local Plan policies that are relevant to birds which have informed the assessment in the PEIR are detailed in Table 4.6.6.

Table 4.6.6: Local Planning Policies relevant to ornithology.

| Suffolk and Kent Coastal Local Plans – Policy | Where this is covered in the PEIR |
|---|---|
| Policy SCLP10.1: Biodiversity and Geodiversity | Policy SCLP10.1 states the need for impacts to biodiversity, including intertidal birds, to firstly be avoided, and then mitigated to render them insignificant. If avoidance or mitigation is not possible, compensation for losses must then be made, This PEIR chapter identifies proposed mitigation, including embedded |

| Suffolk and Kent Coastal Local Plans – Policy | Where this is covered in the PEIR |
|---|---|
| | mitigation and control and management measures (section 4.6.8) that will be put in place over the duration of the Proposed Project in order to avoid and mitigate against significant impacts to marine ornithological features in the Study Area. |
| Kent Environment Strategy | In line with the three themes of the Kent Environment Strategy, which aim to support growth in biodiversity and enhance the existing intertidal environment, this PEIR chapter identifies those species most sensitive to change and impact, for example breeding and nesting bird species, and outlines measures that will be put in place to mitigate against adverse effects. This PEIR chapter aims to avoid those impacts created by the Offshore Scheme that could result in reduced growth in biodiversity and cause a decline in the conditions of the existing environment. |

## 4.6.3 Scoping Opinion and Consultation

### Scoping

4.6.3.1 A Scoping Report (Ref 6.22) for the Proposed Project was issued to the Planning Inspectorate (PINS) on 24 October 2022 and a Scoping Opinion (Ref 6.23) was received from the SoS on 1 December 2022. Table 4.6.7 sets out the comments raised in the Scoping Opinion and how these have been addressed in this PEIR or will be addressed within the ES. The Scoping Opinion takes account of responses from prescribed consultees as appropriate.

Table 4.6.7: Comments raised in the Scoping Opinion

| Consultee | Comment | Response |
|---|---|---|
| Planning Inspectorate 5.5.1 | The Scoping Report seeks to scope out this matter [*leaks and spills from vessels*] on the grounds that the measures contained in the CoCP would make the risk of accidental spills/leaks negligible. The Inspectorate agrees that, provided the measures to mitigate the risks of leaks and spills are clearly described in the ES and secured in the draft DCO (dDCO), this matter can be scoped out of further assessment. | Leaks and spills from vessels during all phases have not been included in this chapter, as agreed.<br>Mitigation against risk of leaks and spills from vessels are detailed in section 4.6.8. |
| Planning Inspectorate 5.5.2 | Paragraph 4.6.4.1 states that that only species which are qualifying features of statutory wildlife sites are considered | A comprehensive review of existing data and literature produced for |

| Consultee | Comment | Response |
|---|---|---|
| | within the Scoping Report. As a minimum, the ES should also include assessments of effects on any other species present within the ZoI which are legally protected, or which qualify as species of principal importance. It is noted that intertidal and shoreline bird surveys are ongoing. The Scoping Report does not explain how baseline data will be compiled for the offshore parts of the study area although the references to published data sources implies this will be based on desk studies. The Applicant should seek to agree the approach to gathering baseline data with relevant stakeholders and provide evidence of that agreement in the ES. The ES must present the baseline data clearly, including information on the predicted numbers of individuals of each species likely to be affected by the Proposed Development. The ES must also explain how the baseline data has been derived from published sources. The Applicant's attention is drawn to the comments from Natural England on the need for further information on the approach to gathering baseline data (see Appendix 2 of this Opinion). | surrounding infrastructure projects such as Offshore Wind Farms (OWF) has also been undertaken in this PEIR chapter to identify other important ornithological features that are not qualifying features of relevant designated sites. These species include those of principle importance.<br>Section 4.6.4 details how baseline data have been compiled, through both a desk study and through the carrying out of ornithology surveys at both landfall sites.<br>Where possible, quantification of species in each designated site has been provided.<br>Data is currently being collected as part of onshore surveys and will be available for the ES. |
| Planning Inspectorate 5.5.3 | The Scoping Report provides a detailed explanation of how the significance of effects would be determined, based on the relevant guidance from CIEEM. However, no description has been provided of the methods that will be used to assess impacts and whether these will be quantitative or qualitative. This is a matter of some concern to the Inspectorate, given that the Proposed Development passes through a section of the Outer Thames Estuary SPA. The SPA qualifying features include species such as red-throated diver which are known to be vulnerable to disturbance and which could be affected by construction and maintenance activities. The ES should clearly describe the methods used to quantify the extent of disturbance to the qualifying features. The methodologies used must be | The sensitivity of species to individual impact pathways has been determined following a review of published literature in the relevant impact pathways in section 4.6.9. Where possible, quantification of the impact has been provided. The sensitivity of red-throated diver *Gavia stellata* to disturbance has been discussed in detail in the relevant impact pathways. |

| Consultee | Comment | Response |
|---|---|---|
| | described and their use justified with reference to appropriate guidance and/or agreement with relevant consultation bodies/stakeholders. | |

### Consultation and Project Engagement

4.6.3.2 The Scoping Opinion received from PINS has been considered in this PEIR chapter. Ongoing consultation and Proposed Project engagement with the MMO and the EA is being undertaken and will be incorporated into the ES Stage.

## 4.6.4 Approach and Methodology

4.6.4.1 **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** sets out the overarching approach that has been used in developing the preliminary environmental information. This section describes the technical methods used to determine the baseline conditions, sensitivity of the receptors and magnitude of effects and sets out the significance criteria that have been used for the preliminary marine ornithology assessment.

### Guidance specific to the ornithology assessment

4.6.4.2 Although no specific guidance has been developed for offshore cables, the preliminary marine ornithology assessment has been carried out in accordance with the following good practice guidance documents and conservation status reviews. Guidance for the Onshore Scheme elements have not been included here, as this chapter focuses on birds which have interaction with the marine environment only.

- Chartered Institute for Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in Britain and Ireland – Terrestrial, Freshwater, Coastal and Marine (Ref 6.24)
- National and Local Biodiversity Action Plans (BAPs);
- The Birds of Conservation Concern (BoCC) 5 (Ref 6.25);
- The Scottish Marine Wildlife Watching Code for advice, information and recommendations for watching marine wildlife (Ref 6.26); and
- The Guide to Best Practice for Watching Marine Wildlife to reduce the disturbance of important marine species (Ref 6.27).

### Assessment Criteria

4.6.4.3 Several factors will be considered when assessing the impacts to birds resulting from the Offshore Scheme (see section 4.6.1), including sensitivity of the receptors, magnitude of the impact, and the overall significance of effects. The preliminary assessment of effects will consider the scale of the impact, duration of the impact and whether the adverse effect caused by the impact is reversible or not.

4.6.4.4 Throughout the assessment of effects, professional judgment and knowledge of birds have been applied. The methodologies for assessing sensitivity and value, magnitude and significance are described in more detail below.

### Sensitivity and value of the receptor

4.6.4.5 To define the value of the receptor, the importance of the receptor on an international, national and local scale will be considered. This will be reflected by its level of statutory or policy protection.

4.6.4.6 To define sensitivity, the vulnerability of the receptor to change and its ability to recover will be considered. Vulnerability to various impacts differs between different species of birds, for example those that are more vulnerable to activities from marine vessels due to time spent at sea such as red-throated diver, or those which are more vulnerable to disruption to intertidal habitat such as waders and waterbirds. In addition, ability to recover also differs between species, with some more likely to recover over a shorter timeframe due to increased fecundity for example.

4.6.4.7 When defining sensitivity, criteria set out in **Volume 1, Part 1, Chapter 5 PEIR Approach and Methodology** will be followed: very high, high, medium, and low.

### Magnitude of impact

4.6.4.8 The magnitude of an impact that could affect birds is influenced by several factors, including the scale of the change (and how much the receptor is likely to be affected), the spatial extent over which the impact is likely to occur, and the duration and frequency of the impact.

4.6.4.9 Birds are highly mobile species and may simply be able to fly or swim away from an affected area for the duration of an impact, potentially returning once the impact is removed, although the magnitude may be greater if repeated disturbance or displacement occurs. For birds that may be nesting or foraging, avoidance of the impact could interfere with breeding success or result in increased energy exertion to find new foraging grounds. Thus, when determining the magnitude of impacts on birds, life history, ecology, habitat use, foraging extent and proximity of the impact to designated sites of the receptor will be considered.

4.6.4.10 When defining the magnitude of the impact, criteria detailed in **Volume 1, Part 1, Chapter 5 PEIR Approach and Methodology** will be followed: large, medium, small, and negligible.

### Significance of effects

4.6.4.11 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** the general approach taken to determining the significance of effect in this preliminary assessment is only to state whether effects are likely or unlikely to be significant, rather than assigning significance levels.

4.6.4.12 To determine the likely significance, all factors contributing to sensitivity and magnitude of the receptors have been assessed, as well as any mitigation measure, both embedded and additional, which could reduce the overall significance of an impact.

4.6.4.13 Professional judgement has also been applied, and a precautionary approach has been adopted to ensure the worst-case scenario is assessed.

## Baseline Data Gathering and Forecasting Methods

4.6.4.14 The following data sources have been used to characterise the baseline conditions:

- Citations and conservation objectives for designated sites;
- Seabird foraging ranges (Ref 6.28);
- Distributions of seabirds within the North East Atlantic (Ref 6.29);
- Information on Annex I species by Joint Nature Conservation Committee (JNCC) and Natural England (for example departmental briefs for designated sites);
- Survey reports and Environmental Impact Assessments (EIAs) produced for surrounding construction projects, for example the Thanet Offshore Wind Farm (Ref 6.30 and Ref 6.31);
- Assessment of the density of red-throated diver in the Outer Thames Estuary SPA by Natural England (Ref 6.32); and
- Wetland Bird Surveys peak counts of non-breeding seabirds and waterbirds in designated sites.

4.6.4.15 Data from bird surveys conducted by AECOM at the Pegwell Bay and Suffolk landfalls are ongoing to determine the presence of both breeding and non-breeding birds using the intertidal habitat in these locations. Further information on these surveys are presented in **Volume 1, Part 2, Chapter 3: Ecology and Biodiversity** and **Part 3, Chapter 3: Ecology and Biodiversity**. Data from these surveys will be used in the ES to further inform the baseline characterisation.

## Assumptions and Limitations

4.6.4.16 Consistent with the approach outlined during non-statutory scoping, no specific surveys for birds in the offshore environment have been undertaken for the Proposed Project. This is because the availability of ornithological data available for the North Sea region is considered to be sufficient to characterise the baseline, ensuring the assessment is based on a good understanding of the existing environment.

# 4.6.5 Basis of Assessment

4.6.5.1 This section sets out the assumptions that have been made in respect of design flexibility maintained within the Proposed Project and the consideration that has been given to alternative scenarios and the sensitivity of the preliminary assessment to changes in the construction commencement year.

4.6.5.2 Details of the available flexibility and assessment scenarios are presented in **Volume 1, Part 1, Chapter 4 Proposed Project Description** and **Part 1, Chapter 5 PEIR Approach and Methodology**.

## Flexibility Assumptions

4.6.5.3 4.3.5.3 The main preliminary assessments have been undertaken based on the description of the Proposed Project provided in **Volume 1, Part 1 Chapter 4 Description of the Proposed Project**. To take account of the flexibility allowed in the Proposed Project, consideration has been given to the potential for preliminary effects to be of greater or different significance should any of the permanent or temporary

infrastructure elements be moved within the Limits of Deviation (LoD) or draft order Limits.

4.6.5.4 The assumptions made regarding the use of flexibility for the main assessment, and any alternatives assumptions are set out in

Table 4.6.8: Flexibility assumptions

| Element of flexibility | Proposed Project assumption for initial preliminary assessment | Flexibility assumption considered |
|---|---|---|
| Lateral LoD marine HVDC cable | The extent of the draft Order Limits for the Proposed Project (Offshore Scheme Boundary). | The worst-case scenario assessed for the Offshore Scheme is one bundled HVDC (x2) and one fibre optic cable in once trench.<br><br>This bundled scenario maybe placed anywhere within the Offshore Scheme Boundary. |

## Coordination Including Co-Location

4.6.5.5 The Proposed Project includes an option for co-location with National Grid Ventures proposed Nautilus and LionLink interconnector projects as explained in **Volume 1, Part 1, Chapter 5 PEIR Approach and Methodology**.

4.6.5.6 Table 4.6.9 details where the option of co-location is relevant to the preliminary ornithology assessment and how this option has been assessed and reported in section 4.6.9, preliminary assessment of effects.

Table 4.6.9: Consideration of co-location

| Element of coordination | How it has been considered within the preliminary assessment |
|---|---|
| Suffolk landfall | **Sea Link Only**<br><br>Four ducts (one per cable and one spare).<br><br>**Sea Link (with co-location)**<br><br>Up to ten ducts. |

## Sensitivity Test

4.6.5.7 It is likely that under the terms of the draft DCO, construction could commence in any year up to five years from the granting of the DCO which is assumed to be 2026. Consideration has been given to whether the preliminary effects reported would be any

different if the works were to commence in any year up to year five. Where there is a difference, this is reported in section 4.6.9, preliminary assessment of effects

## 4.6.6 Study Area

4.6.6.1 The Offshore Scheme runs from mean high-water springs (MHWS) at the landfall in Suffolk, to MHWS at the landfall in Pegwell Bay in Kent, crossing the outer Thames Estuary in the southern North Sea. The marine HVDC cable route is up to 130 km in length and is situated entirely within UK territorial waters. The Study Area for marine ornithological receptors (hereafter referred to as 'Study Area') includes all areas currently under consideration for the Offshore Scheme.

4.6.6.2 Bird species are highly mobile and have a wide-ranging nature across the marine environment. Thus, local impacts could have potential implications on wider populations. Based on the maximum likely zones of influence of the Offshore Scheme, i.e., the area over which impacts on sensitive ornithological receptors could occur, the Study Area for the baseline characterisation extends to a 10 km corridor around the Offshore Scheme in the marine environment up to MHWS. This Study Area captures any marine and coastal sites designated for the protection of ornithological features within 10 km of the Offshore Scheme.

4.6.6.3 The Study Area for the marine ornithology baseline is shown in **Figure 4.6.1 Study Area**.

## 4.6.7 Baseline Conditions

4.6.7.1 The following sections describe the baseline conditions for marine ornithological features likely to be present in the Offshore Scheme and wider Study Area, as defined in section 4.6.6. Breeding and non-breeding species have been considered separately, due to differing times of the year where breeding and non-breeding birds are more likely to be present in the Study Area in higher numbers. Seabirds and waterbirds have also been considered separately due to differences in habitat use. Seabirds spend more time at-sea and forage further distances compared to waterbirds which have tendencies to spend more time in the intertidal zone and in shallower waters.

### Relevant Designated Sites

4.6.7.2 The Offshore Scheme directly passes through six sites that are designated nationally or internationally for the protection of seabirds and waterbirds (**Figure 4.6.2 Relevant Designated Sites for the Protection of Ornithology**). These are the Outer Thames Estuary SPA, Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar, Sandwich and Pegwell Bay National Nature Reserve (NNR), Sandwich Bay to Hacklinge Marshes Site of Special Scientific Interest (SSSI), and Leiston-Aldeburgh SSSI (Table 4.6.10). A further six sites intersect with the Study Area, these being Minsmere-Walberswick SPA, Minsmere-Walberswick Ramsar, Minsmere-Walberswick Heaths and Marshes SSSI, Alde-Ore Estuary SPA, Alde-Ore Estuary Ramsar and Alde-Ore Estuary SSSI. Only sites where the qualifying features i.e., seabirds and waterbirds, are likely to interact with the Offshore Scheme have been considered in this baseline. Where information is available to allow qualifying populations to be quantified, this is provided in Table 4.6.10.

Table 4.6.10: Sites Designated for Marine Ornithology within the Study Area

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| Outer Thames Estuary SPA | Little tern (*Sternula albifrons*) (Breeding) 746 individuals (2011 – 2015) 19.64% of GB population.<br>Common tern (*Sterna hirundo*) (Breeding) 532 individuals (2011 – 2015) 2.66% of GB population<br>Red-throated diver (Non-breeding) (6,466 individuals 1989 – 2006/07; 38% of GB population) | The Offshore Scheme passes through the SPA for approximately 29 km, at two locations. Firstly, as the Offshore Scheme leaves the Suffolk landfall and secondly, midway along the route of the Offshore Scheme at the outer reaches of the Thames Estuary. Thus, the Offshore Scheme passes directly through the areas designated for foraging common tern and little tern, and non-breeding (wintering) red-throated diver. All three cited species are likely to be present in the Study Area and interact with the Offshore Scheme. |
| Leiston-Aldeburgh SSSI | Many species of bird regularly breed using the great mix of habitats available. These include nightjar (*Caprimulgus europaeus*), woodlark (*Lullula arborea*) and skylark (*Alauda arvensis*) on the dry grassland and heath. The scrub and woodland support tree pipit (*Anthus trivialis*), turtle dove (*Streptopelia turtur*), bullfinch (*Pyrrhula pyrrhula*) and nightingale (*Luscinia megarhynchos*). The marshes, the open water and their margins, in particular, support a diverse range of breeding birds, including water rail (*Rallus aquaticus*), marsh harrier (*Circus aeruginosus*), gadwall (*Anas strepera*) and grasshopper warbler (*Locustella naevia*). The site is also attractive to wintering waterfowl including Bewick's swan (*Cygnus columbianus*) and bittern (*Botauris stellaris*) and | Where the Offshore Scheme leaves the landfall in Suffolk, it passes through approximately 0.05 km of the coastal portion of the SSSI. The qualifying features noted in the citation are associated with terrestrial and freshwater habitats within the SSSI and are unlikely to interact with the Offshore Scheme. As there is likely to be no or negligible interaction between these species and the Offshore Scheme, they are not considered further in the assessment. |

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| | regularly supports important populations of white-fronted goose (*Answer albifrons*), gadwall and teal (*Anas crecca*). | |
| Thanet Coast and Sandwich Bay SPA | **Breeding seabird (Annex I)**<br>Little tern (30 pairs; >1% GB population)<br>**Non-breeding waterbirds**<br>Golden plover (*Pluvialis apricaria*) (Annex I) (1,980 individuals; 1% of GB population (1985/86-1989/90))<br>Ruddy turnstone (*Arenaria interpres*) (1,340 individuals; 3% GB wintering population (1986/87-1990/91))<br>Ringed plover (*Charadrius hiaticula*) (370 individuals; >1% GB wintering population (1986/87-1990/91))<br>Grey plover (*Pluvialis squatarola*) (530 individuals; >2% GB wintering population (1986/87-1990/91))<br>Sanderling (*Caldiris alba*) (700 individuals; >5% GB wintering population (1986/87-1990/91))<br>Lapland bunting (*Calcarius lapponicus*) (40 individuals; ~11% GB wintering population (1986/87-1990/91))<br>Large numbers of migratory passerine birds also pass through the site during both the spring and autumn. | The Offshore Scheme passes through approximately 1.9 km of saltmarsh and intertidal mudflats within the SPA where it leaves the landfall in Pegwell Bay, Kent. As such, little tern and cited non-breeding wader species are likely to occur within the Study Area and interact with the Offshore Scheme. |
| Thanet Coast and Sandwich Bay Ramsar | **Breeding seabird (Annex I)**<br>Little tern<br>**Non-breeding waterbirds**<br>Ruddy turnstone<br>Ringed plover<br>Grey plover | The Offshore Scheme passes through approximately 1.9 km of saltmarsh and intertidal mudflats within the Ramsar site where it leaves the landfall in Pegwell Bay, Kent. As such, little tern and cited non-breeding wader species are likely to occur within the Study Area and interact with Offshore Scheme. |

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| | Sanderling | |
| Sandwich Bay to Hacklinge Marshes SSSI | **Breeding seabirds (Annex I)**<br>Little tern<br>**Breeding waterbirds**<br>Oystercatcher (*Haematopus ostralegus*)<br>Ringed plover<br>**Non-breeding waterbirds**<br>Grey plover<br>Sanderling<br>Dunlin (*Calidris alpina*)<br>Oystercatcher<br>Curlew (*Numenius arquata*)<br>Redshank (*Tringa totanus*)<br>Brent goose (*Branta bernicla*)<br>Shelduck (*Tadorna tadorna*) | The Offshore Scheme passes through approximately 2 km of the SSSI when it leaves the landfall in Pegwell Bay, Kent. As such, little tern and cited breeding and non-breeding wader species are likely to occur within the Study Area and interact with the Offshore Scheme. |
| Sandwich and Pegwell Bay NNR | **Breeding waterbirds**<br>Oystercatcher<br>Ringed plover<br>**Breeding terrestrial birds**<br>Nightingale<br>Cuckoo (*Cuculus canorus*)<br>**Non-breeding seabirds**<br>Little tern (Annex I)<br>Sandwich tern (*Sterna sandvicensis*) (Annex I) | The Offshore Scheme passes through approximately 2 km of the NNR when it leaves the landfall in Pegwell Bay, Kent. As such, little tern, sandwich tern and cited breeding and non-breeding wader species are likely to occur within the Study Area and interact with the Offshore Scheme.<br>The noted features (Nightingale and Cuckoo) that are associated with terrestrial habitats within the NNR are unlikely to occur within the Study Area or interact with |

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| | **Non-breeding waterbirds**<br>Cormorant (*Phalacrocorax carbo*)<br>Dunlin<br>Sanderling<br>Grey plover<br>Black-tailed godwit (*Limosa limosa islandica*)<br>Redshank<br>Snipe (*Gallinago gallinago*)<br>Wigeon (*Anas penelope*)<br>Teal<br>Shelduck<br>Brent goose | the Offshore Scheme. As there is likely to be no or negligible interaction between these species and the Offshore Scheme they are not considered further in the assessment. |
| Alde-Ore Estuary SPA | **Breeding seabirds**<br>Little tern (Annex I) s (Eastern Atlantic – breeding) 2% of the GB breeding population 5 count mean, 1993-4,1996-8<br>Sandwich tern (Annex I) (Western Europe/Western Africa) 1.2% of the GB breeding population 5 year mean, 1992-1996<br>Lesser black-backed gull (*Larus fuscus*) (Western Europe/Mediterranean/Western Africa) 11.3% of the breeding population 5 year mean 1994-1998<br>**Breeding waterbirds and terrestrial birds**<br>Marsh harrier (Annex I) at least 1.9% of the GB breeding population 5 year mean, 1993-1997 | Where the Offshore Scheme leaves the Suffolk landfall it is approximately 1.07 km to the north of Alde-Ore Estuary SPA. The Offshore Scheme is within the foraging ranges of little tern, sandwich tern and lesser black backed gull (Ref 6.28) and these three species have the potential to interact with the Offshore Scheme.<br>The remaining species (marsh harrier, avocet, redshank and ruff) are more strongly associated with the freshwater and estuarine habitats of the SPA and are unlikely to interact with the Offshore Scheme off the Suffolk coast. |

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| | Avocet (*Recurvirostra avosetta*) (Annex I) (Western Europe/Western Mediterranean – breeding) 23.1% of the GB breeding population 5 year mean, 1990-1994<br>**Non-Breeding waterbirds and terrestrial birds**<br>Avocet (Annex I) (Western Europe/Western Mediterranean – breeding) 60.3% of the GB population 5-year peak mean<br>Redshank (Eastern Atlantic – wintering) 1.1% of the population 5-year peak mean 1991/92-1995/96<br>Ruff (*Calidris pugnax*) (Annex I) (Western Africa – wintering) 0.4% of the GB population 5-year peak mean 1991/92-1995/96 | |
| Alde-Ore Estuary Ramsar | **Breeding seabirds**<br>Lesser black-backed gull (14,070 pairs; 11.3% GB breeding population)<br>Little tern (Annex I) (48 pairs; 2% of the GB population)<br>Sandwich tern (Annex I) (169 pairs; 1.2% GB population)<br>**Breeding waterbirds**<br>Avocet (Annex I) (104 pairs; 23.1% GB population)<br>Marsh harrier (Annex I) (3 pairs; 1.9% GB population)<br>**Non-breeding waterbirds**<br>Avocet (Annex I) (766 individuals; 1.1% GB population)<br>Redshank (1919 individuals; 1.1% GB population)<br>Black-tailed godwit (268 individuals; 3.6% GB population)<br>Shelduck (1059 individuals; 1.4% GB population<br>Shoveler (106 individuals; 1.1% GB population | Where the Offshore Scheme leaves the Suffolk landfall it is approximately 1.07 km to the north-east of the Alde-Ore Estuary Ramsar site. As with the Alde-Ore Estuary SPA, the Offshore Scheme is within the foraging ranges of little tern, sandwich tern and lesser black backed gull (Ref 6.28) and these three species have the potential to interact with the Offshore Scheme.<br>The remaining species are more strongly associated with the freshwater and estuarine habitats of the SPA and are unlikely to interact with the Offshore Scheme off the Suffolk coast. |

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| | Spotted redshank (*Tringa erythopus*) (3 individuals; 2.5% GB population<br>Teal (1931 individuals; 1.4% GB population)<br>European white-fronted goose (97 individuals; 1.6% GB population)<br>Wigeon (4366 individuals; 1.6% GB population | |
| Alde-Ore Estuary SSSI | **Breeding seabirds**<br>Common tern (Annex I)<br>Arctic tern (*Sterna paradisaea*) (Annex I)<br>Sandwich tern (Annex I)<br>Little tern (Annex I)<br>Common gull (*Larus canus*)<br>Black-headed gull (*Chroicocephalus ridibundus*)<br>Lesser black-backed gull<br>Herring gull *(Larus argentatus)*<br>**Breeding waterbirds**<br>Avocet (Annex I)<br>Gadwall<br>Shoveler<br>Oystercatcher<br>Ringed plover<br>Short-eared owl (*Asio flammeus*) (Annex I)<br>Wheatear (*Oenanthe answer*)<br>Marsh harrier (Annex I) | Where the Offshore Scheme leaves the Suffolk landfall it is approximately 1.07 km to the northeast of the Alde-Ore Estuary SSSI. The Offshore Scheme is within the foraging ranges of common tern, arctic tern, sandwich tern, little tern, common gull, black-headed gull, lesser black backed gull and herring gull (Ref 6.28) and these species have the potential to interact with the Offshore Scheme.<br>The remaining species are more strongly associated with the terrestrial, freshwater and estuarine habitats of the SPA and are unlikely to interact with the Offshore Scheme off the Suffolk coast |

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| Minsmere-Walberswick SPA | Little tern (Annex I) (32 pairs; 1% GB breeding population<br>Bittern (Annex I) (5 booming males/breeding pairs presumed; 22% of GB breeding population)<br>Marsh harrier (Annex I) (15 breeding females; 20% of GB breeding population)<br>Avocet (Annex I) (47 pairs; 12% of GB breeding population)<br>Nightjar (Annex I) (24 pairs; 1% of GB population)<br>Gadwall (24 pairs; 4% GB breeding population)<br>Teal (73 pairs; 1% of GB breeding population)<br>Shoveler (*Anas clypeata*) (23 pairs; 2% GB breeding population)<br>Bearded tit (*Panurus biarmicus*)<br>Garganey (*Anas querquedula*)<br>Water rail<br>Cetti's warbler (*Cettia cetti*)<br>Savi's warbler (*Locustella lusciniodes*)<br>**Non-breeding**<br>Hen harrier (*Circus cyaneus*) (Annex I) (15 individuals; 2% of GB wintering population)<br>European white-fronted goose (100 individuals; 2% GB wintering population (1985/86-1989/90)<br>Gadwall (90 individuals; 1% GB wintering population (1985/86-1989/90)<br>Shoveler (100 individuals; 1% GB wintering population)<br>Bewick's swan (Annex I) | Where the Offshore Scheme leaves the Suffolk landfall it is approximately 1.7 km to the south of the Minsmere-Walberswick SPA. The Offshore Scheme is within the foraging range of little tern (Ref 6.28) and this species has the potential to interact with the Offshore Scheme.<br>The remainder of the qualifying features are associated with the terrestrial and freshwater habitats within the SPA and unlikely to occur within the Offshore Scheme. As there is likely to be no or negligible interaction between these species and the Offshore Scheme they are not considered further in the assessment. |

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| | Wigeon<br>Teal<br>Avocet (Annex I)<br>Spotted redshank<br>Redshank | |
| Minsmere-Walberswick Ramsar | Little tern (Annex I) (20 occupied nests; 32 breeding pairs; 1% GB population)<br>Mediterranean gull (*Larus melanocephalus*) (Annex I) (2 occupied nests; 1.8% GB population)<br>Black-headed gull (2,558 occupied nests; 1.9% GB population)<br>Bittern (Annex I) (5 booming males; 3-4% GB population)<br>Marsh harrier (Annex I) (16 breeding females; 10.5% GB population)<br>Avocet (Annex I) (47 breeding pairs)<br>Nightjar (Annex I) (24 breeding pairs)<br>Bearded tit (~50 breeding pairs)<br>**Non-breeding**<br>Bittern (Annex I) (3 individuals; 3% GB population)<br>Gadwall (261 individuals; 1.5% GB population)<br>Teal (3083 individuals; 1.6% GB population)<br>Shoveler (238 individuals; 1.6% GB population)<br>Ruff (Annex I) (10 individuals; 1.4% GB population)<br>Black-tailed godwit (846 individuals; 5.4% GB population)<br>Spotted redshank (15 individuals; 11% GB population) | Where the Offshore Scheme leaves the Suffolk landfall it is approximately 9.12 km to the south of the Minsmere-Walberswick Ramsar site. The Offshore Scheme is within the foraging ranges of little tern, Mediterranean gull and black-headed gull (Ref 6.28) and these three species have the potential to interact with the Offshore Scheme.<br>The remainder of the qualifying features are associated with the terrestrial and freshwater habitats within the Ramsar and unlikely to occur within the Offshore Scheme. As there is likely to be no or negligible interaction between these species and the Offshore Scheme they are not considered further in the assessment. |

| Designated Site | Reason for Designation/Qualifying Features | Relationship to the Offshore Scheme and potential for cited qualifying species to interact with the Offshore Scheme |
|---|---|---|
| | Common greenshank (*Tringa nebularia*) (9 individuals; 1.5% GB population)<br>European white-fronted goose (212 individuals; 3.6% GB population)<br>Hen harrier (Annex I) (15 individuals; 2% GB population) | |
| Minsmere-Walberswick Heaths and Marshes SSSI | **Breeding species**<br>Reed warbler (*Acrocephalus scirpaceus*)<br>Bearded tit<br>Bittern (Annex I)<br>Marsh harrier (Annex I)<br>Cetti's warbler<br>Garganey<br>Water rail<br>Avocet (Annex I)<br>Shoveler<br>Gadwall<br>Teal<br>Shelduck<br>Redshank<br>Black-tailed godwit<br>**Non-breeding species**<br>Wigeon<br>Shelduck<br>Redshank<br>Dunlin | Where the Offshore Scheme leaves the Suffolk landfall it is approximately 8.37 km to the south of the Minsmere-Walberswick Heaths and Marshes SSSI.<br>The site contains important habitat for breeding and non-breeding bird populations, including several Annex I species. However, the qualifying features are associated with the terrestrial and freshwater habitats within the SSSI and unlikely interact with the Offshore Scheme. As there is likely to be no or negligible interaction between these species and the Offshore Scheme they are not considered further in the assessment. |

## Review of Existing Data

4.6.7.3 The southern North Sea is a busy area for shipping and recreation, along with hosting many renewable energy projects (OWFs) and other marine infrastructure. As such, the area is well studied and has been subject to extensive surveys of birds in the marine environment. These demonstrate that this region of the North Sea is of lower ornithological interest during the breeding season than more northern areas. This is because there are very few seabird colonies in this region and therefore little dependence on these waters for foraging.

4.6.7.4 As such, much of the focus of impact assessments, post-consent monitoring surveys and marine designations within the southern North Sea has been on seabirds in the non-breeding period. A review of ornithological surveys and monitoring at OWFs and other relevant infrastructure in the southern North Sea and relevant to the Offshore Scheme has been undertaken and the key species associated with these sites are provided in Table 4.6.11. These data have been used to help inform the baseline of the Offshore Scheme.

Table 4.6.11: A summary of existing data

| Scheme Name | Approximate Distance to Offshore Scheme and Direction | Most Recent Ornithological Monitoring Result Sources | Important Ornithological Features |
|---|---|---|---|
| East Anglia One offshore wind farm | 0.36 km to the north of the Offshore Scheme as it approaches the Suffolk landfall | East Anglia ONE Offshore Wind Farm Environmental Statement: Chapter 12 Offshore Ornithology (Ref 6.33).<br>Site-specific aerial surveys of the windfarm and a 4 km buffer between September 2016 and August 2018 to complete 24 months of data. | Red-throated diver, fulmar (*Fulmarus glacialis*), gannet (*Morus bassanus*), razorbill (*Alca torda*), guillemot (*Uria aalge*), sandwich tern, kittiwake (*Rissa tridactyla*), black-headed gull, little gull (*Hydrocoloeus minutus*), Mediterranean gull, common gull, lesser black-backed gull, herring gull and great black-backed gull (*Larus marinus*) |
| East Anglia Two offshore wind farm | 0.36 km to the north of the Offshore Scheme as it approaches the Suffolk landfall | East Anglia TWO Offshore Wind Farm Environmental Statement: Chapter 12 Offshore Ornithology (Ref 6.34).<br>Site-specific aerial surveys of the windfarm site and a 4 km buffer between November 2015 – April 2016, September 2016 and October 2017, and May to August 2018. | Red-throated diver, black-throated diver (*Gavia artica*), great northern diver (*Gavia immer*), gannet, cormorant, razorbill, guillemot, black-headed gull, little gull, common gull, lesser black-backed gull, herring gull and great black-backed gull |
| Thanet offshore wind farm | 0.62 km to the east of the Offshore Scheme as it approaches the landfall in Kent. | Thanet Extension Offshore Wind Farm: Annex 4-1: Baseline Technical Report – Offshore Ornithology (Ref 6.30).<br>Thanet Extension Offshore Wind Farm: Environmental Statement Volume 2: Chapter 4: Offshore Ornithology (Ref 6.31).<br>Boat surveys were conducted over one day per month from January to March | Red-throated diver, fulmar, gannet, common gull, kittiwake, herring gull, great black-backed gull, lesser black-backed gull, razorbill and guillemot were all recorded widely across the survey area during the non-breeding season in low densities. |

| Scheme Name | Approximate Distance to Offshore Scheme and Direction | Most Recent Ornithological Monitoring Result Sources | Important Ornithological Features |
|---|---|---|---|
| | | 2018 and 2019, resulting in six days of survey in total.<br>Aerial surveys were conducted once a month from March 2016 to February 2018. | |
| London Array offshore wind farm | 1.18 km to the west of the Offshore Scheme in the outer reaches of the Thames Estuary. | London Array Offshore Wind Farm: ES – Non-Technical Summary (Ref 6.35).<br>London Array Offshore Wind Farm: ES – Volume 1: Offshore Works (Ref 6.36).<br>Boat surveys were conducted in and around the site of the wind farm, with a 2 km buffer over a period of two days per month for two years and a third winter from dawn through to nightfall. Aerial surveys were conducted over a wider area, between August 2002 – January 2004, during February 2004, and in the winter period between 2004 and 2005. | The key species recorded during non-breeding surveys was red-throated diver. All other species of seabird were recorded in much lower densities, including black-throated diver, great northern diver, fulmar, manx shearwater (*Puffinus puffinus*), gannet, cormorant, shelduck, teal, wigeon, common scoter (*Melanitta nigra*), velvet scoter (*Melanitta fusca*), ringer plover, grey plover, knot (*Calidris canutus*), curlew, little gull, black-headed gull, common gull, lesser black-backed gull, herring gull, great black-backed gull, kittiwake, sandwich tern, common tern, guillemot and razorbill. |
| Greater Gabbard offshore wind farm | 6.35 km to the east of the Offshore Scheme in the outer reaches of the Thames Estuary. | Greater Gabbard Offshore Wind Farm: Environmental Statement (Ref 6.37).<br>There were 13 boat-based surveys conducted between February 2004 and March 2005, covering nine transects over two days during each survey. | A wide variety of non-breeding seabirds were recorded with key species considered to be red-throated diver, common scoter, little gull, herring gull, great black-backed gull, kittiwake, guillemot and razorbill.<br>Surveys during the breeding season recorded limited sightings of foraging little tern and sandwich tern. |
| Galloper offshore wind farm | 11.9 km to the east of the Offshore | Galloper Wind Farm Project: ES – Non-Technical Summary (Ref 6.38). | Surveys identified red-throated diver, great skua (*Stercorarius skua*), Arctic skua (*Stercorarius* |

| Scheme Name | Approximate Distance to Offshore Scheme and Direction | Most Recent Ornithological Monitoring Result Sources | Important Ornithological Features |
|---|---|---|---|
| | Scheme in the outer reaches of the Thames Estuary. | Project specific boat-based and aerial surveys. | *parasiticus*), gannet, fulmar and a variety of gull and auk species, including, lesser black-backed gull, great black-backed gull, common guillemot, razorbill, herring gull, kittiwake and common gull. |
| Gunfleet Sands I and II offshore wind farm | 26 km to the west of the Offshore Scheme, off the Essex coast. | Gunfleet Sands II Offshore Wind Farm: Environmental Statement (Ref 6.39).<br>Boat-based surveys conducted between January 2005 to February 2007. | The most abundant wintering species recorded were gulls, including lesser black-backed gull, herring gull and kittiwake. Red-throated diver was also widely recorded.<br>Birds observed during the breeding season include small numbers of cormorant. |
| Kentish Flats offshore wind farm | 28.5 km to the west of the Offshore Scheme, off the north Kent coast. | Kentish Flats Offshore Wind Farm: ES – Chapter 6 Existing Biological Environment (Ref 6.40).<br>Kentish Flats Offshore Wind Farm, FEPA Monitoring Summary 2004-2008 (Ref 6.41).<br>Kentish Flats Offshore Wind Farm Extension: Environmental Scoping Study (Ref 6.42).<br>Kentish Flats Offshore Wind Farm: Diver Surveys<br>2009-10 (Ref 6.43).<br>108 boat-based surveys over 14 months between 2001 and 2002. A further 12 winter surveys were conducted in the winters of 2008/2009 and 2009/2010 for the distribution of red-throated diver. | Density of birds in the marine environment was low, with red-throated diver and terns identified as most sensitive species in the Study Area.<br>Breeding birds of concern: sandwich tern and common tern.<br>Wintering birds of concern: cormorant, common gull, lesser black-backed gull, herring gull, great black-backed gull. |

| Scheme Name | Approximate Distance to Offshore Scheme and Direction | Most Recent Ornithological Monitoring Result Sources | Important Ornithological Features |
|---|---|---|---|
| Sizewell C | 5 km north | Sizewell C Project: Volume 2 Main Development Site – Chapter 14 Terrestrial Ecology and Ornithology (Ref 6.44) | Breeding birds: avocet, shoveler, gadwall, teal, marsh harrier, little tern, common tern, sandwich tern, lesser black-backed gull, kittiwake<br>Wintering: avocet, shoveler, redshank, gadwall, teal, red-throated diver. |

## Breeding Seabirds

4.6.7.5 The Study Area is located in waters that are used by foraging seabirds, including those from designated sites presented in Table 4.6.10. The breeding season for seabirds varies between species but broadly extends between April and August, with the core breeding period between May and July, during which time their distribution offshore is constrained by the need to return to their breeding sites. Following breeding, seabirds disperse away from their colonies to their wintering areas, for example they may travel west into the Atlantic or southwards through the North Sea.

4.6.7.6 With reference to and Table 4.6.11, the following sections set out information for characterising the baseline conditions for seabirds most likely to occur within the Study Area during the breeding season, that have the potential to interact with the Offshore Scheme.

### Lesser black-backed Gull

4.6.7.7 Waggit *et al*. (Ref 6.29) present the distributions of seabirds within the North East Atlantic. These data note that around the UK, there are higher concentrations of lesser black-backed gull associated with the southern North Sea, including the area of the Offshore Scheme, with density increasing considerably in the summer months (**Figure 4.6.3 Lesser Black-backed Gull Spatial Variation in Predicted Densities (individuals/km$^2$) in January and July**). A density hotspot for the species in the summer occurs around the Suffolk landfall, including the Alde-Ore Estuary SPA, for which lesser black-backed gull is a qualifying featureTable 4.6.10. The figure demonstrates the importance of the marine areas offshore from the Alde-Ore Estuary SPA in providing foraging areas for individuals from the breeding colony. This suggests that lesser black-backed gull is likely to be present throughout Study Area, including within the Offshore Scheme, during foraging trips from breeding colonies.

4.6.7.8 In the Alde-Ore Estuary SPA, lesser black-backed gull occurs in two separate colonies mixed with herring gull, located at Orford Ness and Havergate Island (Ref 6.45). Both colonies have similar breeding rates, with both also suffering from mammalian egg predation resulting in decreased breeding success. In recent years, the number of lesser black-backed gull breeding pairs has been increasing, with a peak of 2,399 pairs observed in 2015 (cited in Ref 6.45).

### Herring gull

4.6.7.9 Breeding herring gull is a qualifying feature of the Alde-Ore Estuary SPA and Alde-Ore Estuary SSSI. Although qualifying due to the breeding population, herring gull is present and frequently recorded around the Alde-Ore Estuary throughout the year (Ref 6.45). Distribution data of seabirds presented in Ref 6.29 show herring gull to be widespread within the Study Area throughout the year (**Figure 4.6.4 Herring Gull Spatial Variation in Predicted Densities (Individuals/km$^2$) in January and July**).

4.6.7.10 In the Alde-Ore Estuary SPA and SSSI, breeding herring gull colonies are mixed with lesser black-backed gull at Havergate Island and Orford Ness (Ref 6.45). In the Alde-Ore Estuary the herring gull population has experienced considerable declines, from 5,000 breeding pairs in the late 1990s to 150 breeding pairs in 2009 (cited in Ref 6.45).

### Black-headed gull

4.6.7.11 The black-headed gull is a breeding feature of both the Minsmere-Walberswick Ramsar site and the Alde-Ore Estuary SSSI (Table 4.6.10). A large number of nests are thought to be present in these sites (e.g., 2,558 nests in Minsmere-Walberswick Ramsar site), with 23 pairs also known to have bred on Orford Ness in 2018, which is a decrease from previous years (Ref 6.46). Black-headed gull is one of the most widely distributed breeding seabirds around the UK, and despite being a breeding feature of the Minsmere-Walberswick Ramsar site and the Alde-Ore Estuary SSSI, it can be found in high numbers throughout the year (Ref 6.47). The foraging range of black-headed gull (18.5 km; Ref 6.28) suggests it is likely that this species will be present along the Offshore Scheme at the Suffolk coast during the breeding season.

### Mediterranean gull

4.6.7.12 The Mediterranean gull is a breeding qualifying feature of the Minsmere-Walberswick Ramsar site and the Alde-Ore Estuary SPA (Table 4.6.10). The species is considered to be present in UK waters throughout the year, with a more widespread distribution in the winter (Ref 6.48). However, the species is known to be present in these two designated sites in only small numbers (for example, there are only considered to be two occupied nests in the Minsmere-Walberswick Ramsar site).

4.6.7.13 The Mediterranean gull is considered to be the most recent addition to the population of breeding seabirds in the UK, with most breeding colonies occurring on the south and south-east coasts of the UK (Ref 6.49). Breeding pairs in the UK increased from approximately 100 pairs in 2000, to 600-700 pairs in 2010.

4.6.7.14 However, the foraging range of Mediterranean gull (20 km; Ref 6.28) suggests that this species is likely to be present throughout the Offshore Scheme, particularly during foraging trips.

### Common gull

4.6.7.15 Breeding common gull is a qualifying feature of the Alde-Ore Estuary SSSI, albeit it very low numbers, with breeding colonies predominantly confined to Scotland and Northern Ireland (Ref 6.50). During the breeding season, the species can be found both in colonies and nesting solitarily. The highest numbers of common gull in the UK can be found in the winter rather than the summer, when a high proportion of individuals arrive from the continent (Ref 6.48). Thus, the non-breeding population is larger than the breeding population. Therefore, the presence of common gull in the Study Area during the breeding season is considered to be limited.

### Terns

4.6.7.16 Breeding populations and/or foraging grounds of little tern, common tern, sandwich tern and arctic tern are protected by several designated sites within the Study Area (Table 4.6.10). The foraging ranges of all four species (Ref 6.28) suggest individuals associated with SPAs that are not directly intersected by the Offshore Scheme may nevertheless be present within the Offshore Scheme whilst foraging. However, potential abundance of foraging terns is likely to be higher within the Offshore Scheme at locations closer to the nesting colonies. A previous study mapped the use of foraging habitat by tern species (Ref 6.51). The SPAs of interest in this baseline were not assessed, however results of foraging habitat usage across SPAs around the UK were consistent, showing that the highest usage was in the direct vicinity of the breeding

colony. Usage decreased with distance from the colony, suggesting the presence of tern species within the Offshore Scheme is most likely to occur in sections of the route that are close to coastal areas of the SPAs. All SPAs designated for the protection of breeding tern species outlined in Table 4.6.10 are situated along the coastline.

4.6.7.17 The numbers of breeding little tern pairs in the Minsmere-Walberswick SPA, for which it is designated, were assessed as low compared to breeding colonies elsewhere in the UK during work to quantify marine environment usage by little terns around their colonies (Ref 6.52). Despite this, an estimation of foraging extent suggests little tern from this SPA could be foraging within the Offshore Scheme (Image 4.6.1; Ref 6.53).

4.6.7.18 The Alde-Ore Estuary SPA and Thanet Coast and Sandwich Bay SPA are considered to no longer be regularly occupied by tern species (Ref 6.51 and Ref 6.53). Alde-Ore Estuary SPA previously held 2% and 1.2% of the Great British breeding populations of little tern and sandwich tern respectively (Ref 6.54). Similarly, arctic tern has previously been considered to breed on Havergate Island within Alde-Ore Estuary SPA and SSSI (Ref 6.55), however there is very little recent evidence to confirm this is still the case. The Alde-Ore Estuary SPA is the only site within the study area that is designated for the protection of breeding sandwich tern. Thus, the presence of sandwich tern within the Offshore Scheme is expected to be limited, with the potential being restricted to occasional visitors in small numbers. For little tern, any individuals present within the Offshore Scheme are expected to be from the Sandwich Bay to Hacklinge Marshes SSSI rather than from the Alde-Ore Estuary SPA or Thanet Coast and Sandwich Bay SPA. However, small numbers of occasional visitors may occur.

4.6.7.19 The Outer Thames Estuary SPA is designated to protect important foraging grounds for common tern and little tern visiting from surrounding breeding colonies. The nearest designated site for common tern is Foulness (Mid-Essex Coast Phase 5) SPA located approximately 38.4 km away, and thus outside of the foraging range of the species (Ref 6.28). However, the Seabird 2000 Census (Ref 6.56) showed that common tern is present along much of the south east coast of England, including in proximity to the Suffolk landfall. Thus, it is possible that common tern may be found foraging in the Outer Thames Estuary SPA within the Offshore Scheme where it approaches the Suffolk coast. Little tern, in small numbers, may also occasionally be present within the Offshore Scheme in the Outer Thames Estuary SPA during foraging trips from its relevant designated sites.

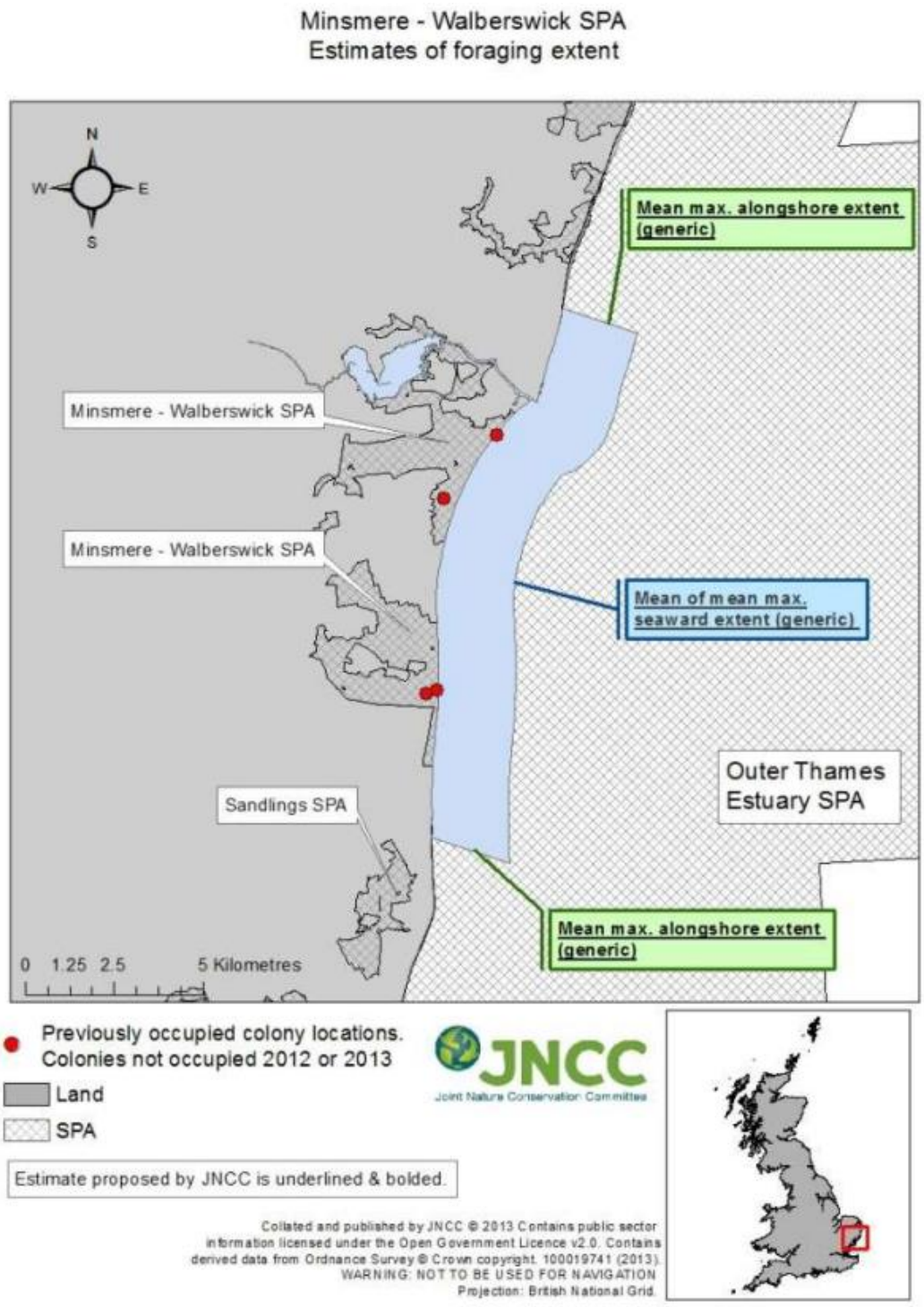


Image 4.6.1 Estimation of foraging extent of little terns from the Minsmere-Walberswick SPA

4.6.7.20 A summary of the status and distribution of seabirds within the Study Area during the breeding season, is provided in Table 4.6.12.

Table 4.6.12: Presence and Seasonal Distribution of Seabirds Within the Study Area During the Breeding Season

| Receptor | Summary of Data Relevant to the Study Area | Regular presence in the Study Area and taken forward as an Important Ecological Feature (IEF) |
|---|---|---|
| Lesser black-backed gull | Qualifying feature of the Alde-Ore Estuary SPA and Alde-Ore Estuary Ramsar, which support 11.3% of the GB breeding population during the breeding season (Ref 6.57). Breeding and nesting sites are found on offshore islands and next to freshwater inland waterbodies, as well as on coastal cliffs and in saltmarshes (Ref 6.58). The main breeding period is from May – June (Ref 6.59). Typically, its diet consists of fish and crustaceans. | **Yes.**<br>Density distribution maps produced by Ref 6.29 show this species to be present throughout the Study Area, including the Offshore Scheme due to their long foraging range, with a hotspot located around the Alde-Ore Estuary SPA and Ramsar near the Suffolk landfall. |
| Herring gull | Qualifying feature of the Alde-Ore Estuary SPA and SSSI sites and are present in the Study Area throughout the year despite being breeding features of these sites (Ref 6.45). The number of breeding pairs has declined in recent years, but the species is considered to be most abundant around Havergate Island and Orford Ness.<br>Nests are typically found on rocky coastlines with cliff but can also be found in sand dunes and shingle banks (Ref 6.60). | **Yes.**<br>Density distribution maps produced by Ref 6.29 show this species to be present throughout the Study Area, including the Offshore Scheme throughout the year due to their long foraging ranges, with a concentration around Alde-Ore Estuary. |
| Black-headed gull | This species is a qualifying feature of the Minsmere-Walberswick Ramsar and Alde-Ore Estuary SSSI, with large numbers of nests known to occur in both sites (Ref 6.46). It is one of the most widely distributed breeding seabirds in the UK and is present throughout the year, nesting on open ground in wetlands and marshes (Ref 6.47). | **Yes.**<br>Due to their wide-ranging distribution around the UK and their presence in the Minsmere-Walberswick Ramsar and Alde-Ore Estuary SSSI, as well as their long foraging ranges, this species is expected to be present throughout the Study Area, including the Offshore Scheme throughout the year. |
| Mediterranean gull | A qualifying feature of the Minsmere-Walberswick Ramsar and Alde-Ore Estuary SPA, this species has a widespread distribution around the UK throughout the year. However, during the breeding season, it is considered to be present in small numbers (Ref 6.48). | **Yes.**<br>During the breeding season, they are expected to be present in the Study Area, including the Offshore Scheme in small numbers, potentially up to 20 km away from their breeding sites. |

| Receptor | Summary of Data Relevant to the Study Area | Regular presence in the Study Area and taken forward as an Important Ecological Feature (IEF) |
|---|---|---|
| | Breeding is thought to mostly occur on the south and south east coasts of England (Ref 6.49). | |
| Common gull | Qualifying feature of the Alde-Ore Estuary SSSI, albeit in very low numbers. Although this is a breeding feature, common gull is most abundant in the UK in the winter months and is widespread around the UK coastline (Ref 6.48). Breeding is considered to be predominantly in Scotland and Northern Ireland (Ref 6.50)<br>Common gull commonly nest on coastlines and in inland habitats (Ref 6.50). | **No.**<br>Due to limited breeding numbers in the south-east of England, particularly along the Suffolk and Kent coasts, the species is unlikely to occur regularly in substantial numbers within the Study Area. |
| Little tern | Qualifying feature of the Outer Thames Estuary SPA, Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar, Sandwich and Pegwell Bay NNR, Sandwich Bay to Hacklinge Marshes SSSI, Minsmere-Walberswick SPA, Alde-Ore Estuary SPA, Alde-Ore Estuary Ramsar and Alde-Ore Estuary SSSI.<br>The number of little tern has been declining in the UK since the 1980s, with number of fledged chicks per pair also decreasing (Ref 6.61). Breeding has stopped completely in the Sandwich and Pegwell Bay NNR (Ref 6.62). Numbers have declined in the Minsmere-Walberswick SPA, and the Alde-Ore Estuary SPA, Ramsar and SSSI, and Thanet Coast and Sandwich Bay SPA are no longer considered regularly occupied by the species (Ref 6.53).<br>However, Thanet Coast and Sandwich Bay SPA is still considered to support 0.3% of the GB little tern breeding population (Ref 6.63). This compares to 19.64% of the GB population protected by the Outer Thames Estuary SPA (Ref 6.65). This was made up of 746 individuals between 2011 – 2015 (Ref 6.53). Breeding pairs are also believed to remain in Sandwich Bay to Hacklinge Marshes SSSI (Ref 6.64). | **Yes.**<br>Little tern is likely to be present in the Study Area, where the Offshore Scheme passes through sites designated for the protection of the species along the coast. However, presence is expected to be limited to small numbers of individuals from Sandwich Bay to Hacklinge Marshes SSSI at the Pegwell Bay landfall, and foraging within the Outer Thames Estuary SPA close to the Suffolk landfall, during the breeding season. |

| Receptor | Summary of Data Relevant to the Study Area | Regular presence in the Study Area and taken forward as an Important Ecological Feature (IEF) |
|---|---|---|
| | Little tern uses nesting sites which are typically sand and shingle beaches on the coast as well as spits (Ref 6.53), and has the shortest foraging range out of all three tern species considered in this baseline, staying in close range to its breeding sites. Its diet consists of small fish and invertebrates (Ref 6.61). | |
| Common tern | The Outer Thames Estuary SPA protects important foraging areas for 2.66% of the GB common tern population during the breeding season (Ref 6.65). There were 532 individuals present between 2011-2015 (Ref 6.53). Common tern is also a qualifying feature of the Alde-Ore Estuary SPA and Alde-Ore Estuary SSSI, although the Alde-Ore Estuary is no longer considered to be regularly occupied by tern species (Ref 6.51 and Ref 6.53).<br>Breeding and nesting sites are confined to low lying ground on the waters edge on both the coast and next to freshwater bodies (Ref 6.66). | **Yes**.<br>Common tern is likely to be present in the Study Area, including the Offshore Scheme when foraging in the Outer Thames Estuary SPA near the Suffolk landfall during the breeding season. |
| Arctic tern | Qualifying feature of the Alde-Ore Estuary SPA and Alde-Ore Estuary SSSI with previous breeding observed on Havergate Island (Ref 6.55), however there is very little recent evidence of breeding arctic tern to confirm that it is still a regular user of these sites. The species' distribution is more concentrated in Scotland and the north of England (Ref 6.67). | **No.**<br>Due to the species' more northerly distribution and lack of evidence for recent breeding activity in the Alde-Ore Estuary, presence in the Study Area is expected to be limited to very occasional visitors, potentially during the breeding season. |
| Sandwich tern | Qualifying feature of the Alde-Ore Estuary SPA and Alde-Ore Estuary Ramsar. However, tern species are no longer considered to be regular users of these sites (Ref 6.51). The UK population of sandwich tern is now confined to a small number of large colonies with high densities of nesting birds (Ref 6.68).<br>The highest densities of sandwich tern are found at coastal breeding sites between March – August. | **No.**<br>Due to the limited abundance of this species in the Alde-Ore Estuary SPA and Ramsar, presence in the Study Area is expected to be limited to occasional visitors during foraging trips during the breeding season. |

## Breeding Waterbirds

4.6.7.21 The landfall locations in both Suffolk and Kent are currently subject to surveys to determine the baseline breeding bird assemblages. As this information is not available at the time of writing, a preliminary assessment cannot be provided. Where relevant, a detailed assessment will be provided in both the onshore and offshore scheme Environmental Statements.

## Non-Breeding Seabirds and Waterbirds

4.6.7.22 The Offshore Scheme passes through five designated sites that support a variety of non-breeding seabird and seaduck species Table 4.6.10at both landfalls, and within the wider sea area. These species are all considered likely to be present within the Offshore Scheme and are discussed further below.

### Red-throated Diver

4.6.7.23 The Offshore Scheme passes through the Outer Thames Estuary SPA in two locations for approximately 29 km. Firstly, as the Offshore Scheme leaves the Suffolk landfall and secondly, midway along the route of the Offshore Scheme at the outer reaches of the Thames Estuary. The Outer Thames Estuary SPA is designated, in part, for the protection of foraging areas for non-breeding red-throated diver. Red-throated diver typically arrive in UK coastal waters in September with numbers declining by February, although the main period of occurrence in coastal offshore waters is from October to March (Ref 6.69). They feed on a wide variety of fish, which they catch by diving from the surface and pursuing their prey underwater. The population of red-throated diver within the Outer Thames Estuary SPA is estimated at 22,280 ± 4293 individuals (± Standard Deviation (SD)), with a density of 5.68 individuals/km2 (Ref 6.32). This is an increase on the estimate of 6,466 individuals provided in 2010 (Ref 6.70).

4.6.7.24 Aerial surveys conducted by Natural England and HiDef in 2018 to assess population and distribution of red-throated diver in the Outer Thames Estuary SPA show that the species is present in high densities throughout much of the SPA including both shallower and deeper waters, with areas of lower density typically associated with the presence of wind farms in the southern North Sea, i.e., birds are displaced from the area of the wind farm array and immediate area surrounding the array (Ref 6.32; Image 4.6.2).

4.6.7.25 Surveys conducted as part of the construction of OWFs outside the Outer Thames Estuary SPA have also recorded red-throated diver. The Thanet Extension OWF recorded a peak of 194 individuals within the site in the wintering season (December to January) with a density of 2.66 individuals/km$^2$ (Ref 6.71). Red-throated diver has also been recorded foraging offshore in Pegwell Bay during a survey of intertidal ornithology as part of the Thanet Extension OWF (Ref 6.71). However, whilst red-throated diver is likely to be sporadically recorded along the entirety of the Offshore Scheme during the non-breeding season, those areas intersecting with the Outer Thames Estuary SPA are likely to have higher numbers, as these areas have been shown to regularly support the species and represent important foraging areas.

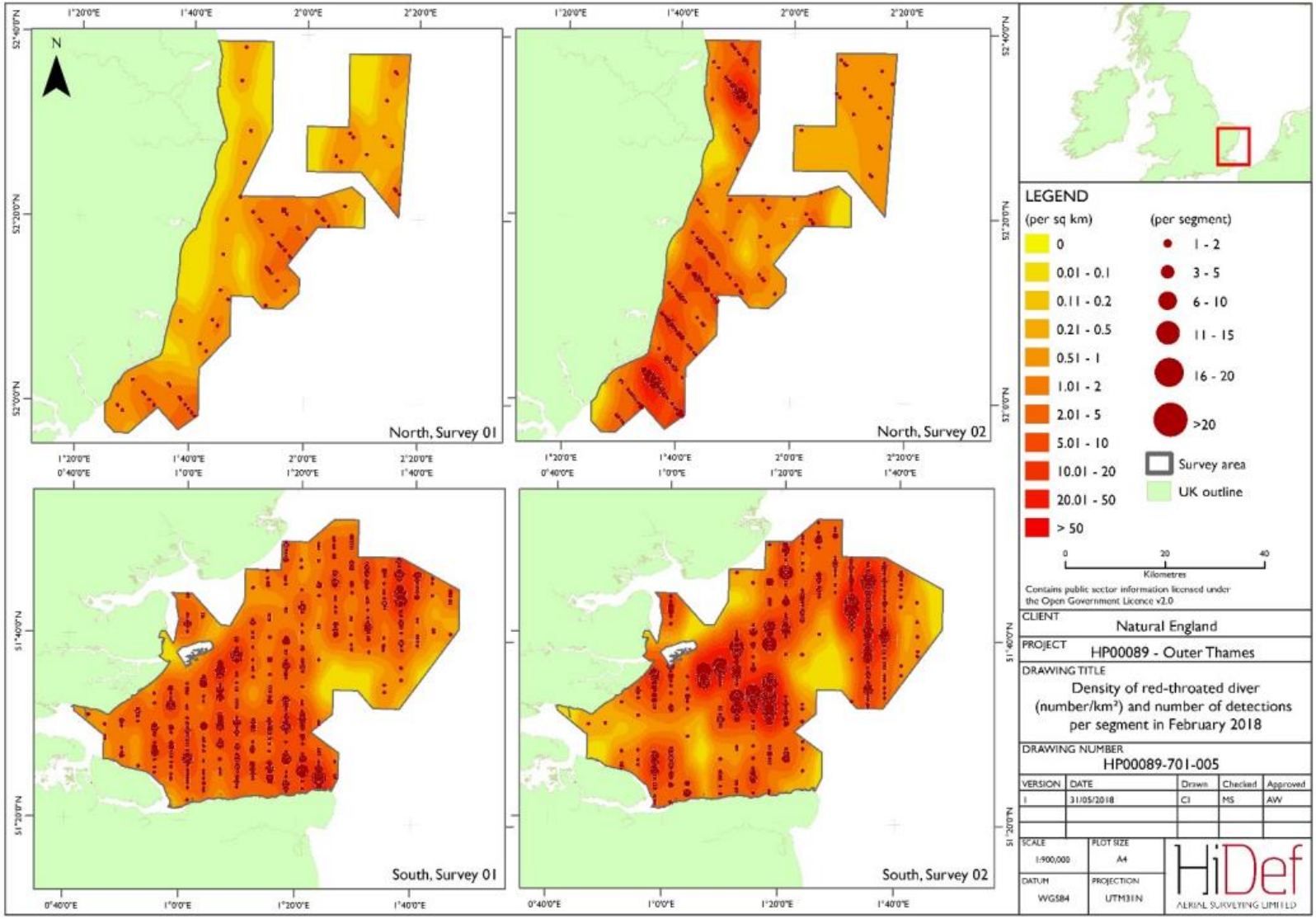


Image 4.6.2 Density of red-throated diver (number/km$^2$) within the Outer Thames Estuary across two surveys conducted in February 2018 (Source: Ref 6.32)

### Gull species

4.6.7.26 Several gull species are considered likely to be present in the Study Area during the winter, based on a literature review of reports produced for existing infrastructure (Table 4.6.11). These are: herring gull, common gull, little gull, great black-backed gull, lesser black-backed gull, and kittiwake.

4.6.7.27 The review of data for the Study Area suggests that gull species are widespread during the winter months, as set out previously in Table 4.6.11. Herring gull increases in numbers considerably in the winter months compared to summer, shown by distribution data (**Figure 4.6.4 Herring Gull Spatial Variation in Predicted Densities (Individuals/km2) in January and July**; Ref 6.29) and is likely to be present throughout the study area and Offshore Scheme during the non-breeding season.

4.6.7.28 Common gull increases in numbers around the UK in the winter compared to the summer. As a result, it has a very widespread winter distribution around the UK (Ref 6.48). Due to its widespread distribution during the non-breeding season common gull is expected to be present throughout the Offshore Scheme, albeit in low numbers (Ref 6.28).

4.6.7.29 Little gull is the smallest gull species globally (Ref 6.72) but has a limited non-breeding distribution in the North Sea, with peak numbers of individuals occurring in early autumn off the east coast (Ref 6.73). Due to its limited offshore presence, it is not expected to be present in large numbers in the Offshore Scheme.

4.6.7.30 Great black-backed gull is widely distributed around the North Sea coast in the non-breeding season (Ref 6.74) and is therefore likely to be present in the Offshore Scheme in low numbers, particularly at coastal locations.

4.6.7.31 Lesser black-backed gull is widely distributed around the North Sea coast in the non-breeding season, although in low numbers as many birds winter in southern Europe and North Africa (**Figure 4.6.3 Lesser Black-backed Gull Spatial Variation in Predicted Densities (individuals/km$^2$) in January and July**; Ref 6.29). Therefore, the species is likely to be present in the Offshore Scheme in low numbers, particularly at coastal locations.

4.6.7.32 Kittiwake is present in the North Sea and the Study Area throughout the year, with numbers increasing in the wintering period (Ref 6.29). During the winter, kittiwake spend most of their time out at sea (Ref 6.75). Several different breeding populations mix together during the winter (Ref 6.76). Kittiwake is expected to be present throughout the Offshore Scheme throughout the non-breeding period, albeit in low numbers.

### Guillemot

4.6.7.33 Non-breeding guillemot is likely to be present in the Offshore Scheme, in low densities (Ref 6.29). Guillemots spend their life at sea, spending the winter in waters well offshore, and only come to land to nest (Ref 6.77). Therefore, this species is only likely to occur sporadically within the Offshore Scheme.

### Razorbill

4.6.7.34 Razorbill is most commonly known to breed on the Atlantic coast of Europe (Ref 6.78). However, a review of data from existing infrastructure in the Study Area (Table 4.6.11) showed that this is also a widespread non-breeding species in the North Sea, including

the Study Area (**Figure 4.6.5 Razorbill Spatial Variation in Predicted Densities (Individuals/km$^2$) in January and July**; Ref 6.29). Density distribution shows that a high density of razorbill extends out into the offshore sections of the North Sea (**Figure 4.6.5 Razorbill Spatial Variation in Predicted Densities (Individuals/km$^2$) in January and July**; Ref 6.29). Therefore, this species is likely to occur within the Offshore Scheme, although sporadically and in low numbers.

### Coastal and Intertidal Water Birds

4.6.7.35 The landfall locations in both Suffolk and Kent are currently subject to surveys to determine the baseline non-breeding bird assemblages. As this information is not present at the time of writing a preliminary assessment cannot be provided. Where relevant, a detailed assessment will be provided in both the onshore and offshore scheme Environmental Statements.

4.6.7.36 A summary of the status and distribution of seabirds and waterbirds within the Study Area during the non-breeding season is provided in Table 4.6.13.

Table 4.6.13: Presence and Seasonal Distribution of Seabirds and Waterbirds Within the Study Area During the non-breeding Season

| Receptor | Summary of Data Relevant to the Study Area | Regular presence in the Study Area and taken forward as an Important Ecological Feature |
|---|---|---|
| Red-throated diver | Within the Outer Thames Estuary SPA, this species is wide-ranging with high densities in both shallow and deeper waters. Average density in the SPA is 5.68 individuals/km$^2$, with the Offshore Scheme falling within foraging areas for the species. Red-throated diver is also present beyond the boundaries of the SPA, having been recorded in both intertidal and offshore habitats near Pegwell Bay. | **Yes.**<br>Red-throated diver is expected to be present throughout the Offshore Scheme both within and outside of the Outer Thames Estuary SPA boundary with numbers peaking between December and January. |
| Gull species | Non-breeding herring gull, common gull, lesser black-backed gull and kittiwake are considered to have a widespread distribution in the North Sea during the wintering period, partly due to their long foraging ranges. Non-breeding little gull and great black-backed gull are considered to be present in smaller numbers with a greater onshore presence. | **Yes.**<br>Non-breeding herring gull, common gull, lesser black-backed gull and kittiwake are expected to be widespread throughout the Offshore Scheme during the non-breeding season.<br>Non-breeding little gull and great black-backed gull are considered to have very little presence in the Offshore Scheme during the non-breeding season. |
| Guillemot | Wintering guillemot spend a large proportion of their time at sea and only come to land to nest. Numbers increase in the winter, with individuals exhibiting larger foraging distances. | **Yes.**<br>Due to their offshore presence in the North Sea and Study Area, non-breeding guillemot are expected to be present throughout the Offshore Scheme. |
| Razorbill | Razorbill has a much larger wintering presence in the North Sea compared to the breeding season, with its distribution extending into offshore waters as a result of its foraging range. | **Yes.**<br>Due to their offshore presence, non-breeding razorbill are considered to be present throughout the Offshore Scheme. |
| Waders and waterbirds | All waders and waterbirds which are designated/qualifying features of Thanet Coast and Sandwich Bay SPA/Ramsar, | **Yes.** |

| Receptor | Summary of Data Relevant to the Study Area | Regular presence in the Study Area and taken forward as an Important Ecological Feature |
|---|---|---|
| | Sandwich and Pegwell Bay NNR, and Sandwich Bay to Hacklinge Marshes SSSI are present in Pegwell Bay throughout the wintering period (and during autumn and spring passage) due to the important foraging grounds present, particularly during low tide. Dunlin and curlew are considered to be the most abundant species. | All species are expected to be present in the Offshore Scheme in the intertidal area located at the Pegwell Bay landfall. Numbers are expected to peak between November to February for the wintering season for most species. However, curlew, redshank and ringed plover are expected to peak during the autumn passage period beginning in August. |

### Future Baseline

4.6.7.37 This section considers the potential changes to the baseline ornithological conditions described above over the period of construction, maintenance and operation, and decommissioning of the Proposed Project and Offshore Scheme. These are changes that might occur in the absence of the Proposed Project being constructed.

4.6.7.38 During the lifetime of the Proposed Project and Offshore Scheme, the ornithological baseline is expected to evolve both naturally, and in response to global trends including climate change. For example, migrating birds have difficulty adapting to changing conditions due to limitations on phenotypic plasticity, resulting in a mismatch of timing of reproduction and favourable ecological conditions (Ref 6.79). A recent study of guillemot, for example, has shown that increased temperatures result in a decrease in the amount of time breeding partners spend together at breeding colonies (Ref 6.80). This could result in population decline and decreased fitness in birds.

4.6.7.39 The existing intertidal and subtidal habitats at the landfall areas are likely to continue to be present. However, as a result of hydrological changes and climate-change induced sea level rise, the extent, composition and structure of some habitats may be altered, which could affect the presence and abundance of prey items. This could negatively impact the presence and abundance of seabirds and waterbirds. Climate change is also likely to affect the migration periods of species who arrive either in the summer to breed or in the winter to overwinter on the UK coastline. Higher temperatures could cause species to migrate to the UK earlier in the year and stay for longer periods of time. This could also shorten the amount of time wintering species use habitat in the UK. Some habitats may also be lost due to sea level rise. A reduction in suitable vegetation could also reduce habitat extent.

4.6.7.40 In addition, the marine environment is experiencing increasing levels of human disturbance, for example trampling of intertidal habitat, overexploitation of species which provide a food source to seabirds and waterbirds and increasing marine construction and vessel presence. Declines in little tern due to human disturbance have already been observed in Sandwich and Pegwell Bay NNR (Ref 6.62). Effects are anticipated to vary depending on the species of bird and their life history. For example, species which rely on prey items which are an important anthropogenic food source may experience greater decline compared to species which can adapt to different prey. Species which spend longer periods of time at-sea and/or prefer cliff habitats compared to intertidal habitats may experience a lesser decline. However, the full extent of anthropogenic impact will become clearer as pressure from human disturbance increases.

4.6.7.41 These are factors that will continue to affect the marine environment regardless of whether the Proposed Project is delivered. If the Proposed Project is not delivered, affects from climate change will continue at expected rates.

4.6.7.42 The marine ornithology chapter within the ES will include a further assessment of the likely evolution of the baseline environment without the implementation of the development as far as natural changes from the baseline scenario can be assessed.

## 4.6.8 Mitigation

4.6.8.1 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**, mitigation measures typically fall into one of the three categories: embedded measures; control and management measures; and mitigation measures.

## Embedded Measures

4.6.8.2 Embedded measures have been integral in reducing the effects to birds occurring in the marine environment from the Proposed Project. Measures that that have been incorporated are:

- Sensitive routeing and siting of infrastructure and temporary works;
- Commitments made within **Appendix 1.4.F Outline Schedule of Environmental Commitments**;

## Control and Management Measures

4.6.8.3 The following measures have been included within **Appendix 1.4.A Outline Code of Construction Practice** (CoCP) relevant to the control and management of impacts that could affect ornithological receptors during the construction phase:

- B02: The assumption will be that vegetation with the potential to support breeding birds will not be removed during the breeding bird season (March to August inclusive). If any works become necessary during the breeding bird season, works will be supervised by an Environmental Clerk of Works. Appropriate protection measures will be put in place should active nests be found. These will include exclusion zones around active nests until chicks fledge or nests become inactive as determined by monitoring by the Environmental Clerk of Works;
- GM03: An offshore Construction Environmental Management Plan (CEMP) including an Emergency Spill Response Plan and Waste Management Plan, Marine Pollution Contingency Plan (MPCP), Shipboard Oil Pollution Emergency Plan (SOPEP) and a dropped objects procedure will be produced prior to installation;
- LVS01: All Project vessels shall adhere to the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention) (Ref 6.81);
- LVS02: All Project vessels must comply with the International Regulations for Preventing Collisions at Sea (1972) (Ref 6.82), regulations relating to International Convention for the Prevention of Pollution from Ships (the MARPOL Convention 73/78) (Ref 6.83) with the aim of preventing and minimising pollution from ships and the International Convention for the Safety of Life at Sea (Ref 6.84);
- LVS04: All oil, fuel and chemical spills will be reported to the MMO Marine Pollution response team;
- LVS05: Drilling fluids required for trenchless operations will be carefully managed to minimise the risk of breakouts into the marine environment. Specific avoidance measures would include:
  - the use of biodegradable drilling fluids (PLONOR substances) where practicable,
  - drilling fluids will be tested for contamination to determine possible reuse or disposal; and
  - If disposal is required drilling fluids would be transported by a licensed courier to a licensed waste disposal site.

- MPE03: Cable protection features (e.g. rock placement, mattresses and grout bags) will be installed only where considered necessary for the safe operation of the Project;
- NV01: Construction working will be undertaken within the agreed working hours set out within the DCO. Best practicable means to reduce construction noise will be set out within the CEMP; and
- O01: The CoCP and CEMP will outline the best practice mitigation measures required to be implemented during construction. This would include measures to prevent accidental spillages from occurring and to minimise disturbance of sediments.

### Mitigation Measures

4.6.8.4 Mitigation measures are additional topic and site-specific measures that have been applied to help mitigate or offset any likely significant effects. Mitigation measures included that are relevant to ornithological receptors during construction, operation and maintenance, and decommissioning stages of the Proposed Project are:

- There will be Health, Safety and Environment (HSE) procedures implemented, with strict limits on weather conditions, equipment maintenance and personnel to further reduce the risk of any accidental spills/releases;
- Furthermore, in the event of a spill, a response will be made swiftly;
- Existing shipping lanes will be utilised for vessel transiting routes to avoid additional disturbance where practicable;
- Vessel operators will be made aware of the importance and sensitivity of the species to disturbance;
- Vessels will avoid rafting birds and areas with high densities of birds where practicable;
- Artificial lighting on vessels will be directional and only used when necessary, noting that health and safety requirements will need to be met for safe working practices; and
- To avoid cumulative effects with other projects, with the exception of trenchless installation techniques at landfall, all other construction works will be timed to ensure the overwintering period of the red-throated diver is avoided (in the months of January – March). Further detail on this assessment is presented in **Volume 1, Part 4, Chapter 12: Inter-Project Cumulative Effects**.

## 4.6.9 Preliminary Assessment of Effects

4.6.9.1 The preliminary assessment of the effects of the Offshore Scheme described in this section considers the embedded, control and management and mitigation measures described in section 4.6.8.

4.6.9.2 For the sensitivity test outlined in section 4.6.5, preliminary effects reported would not be any different if the works were to commence in any year up to year five.

4.6.9.3 The preliminary assessment of the effects of the Offshore Scheme on marine ornithology is presented in the following tables.

4.6.9.4 The preliminary effects reported below are the same for the Proposed Project on its own, and the Proposed Project with co-location.

4.6.9.5 The following impact pathway has been scoped out from further assessment:

- Alteration of water quality due to leaks and spills from vessels.

4.6.9.6 The alteration of water quality due to leaks and spills from vessels was scoped out during the scoping stage as the significance of the impact pathway was considered to be negligible due to the mitigation measures committed to in the CoCP (GM03, LVS02, LVS04, LVS05 and O01). During the scoping opinion, the Planning Inspectorate agreed with this approach.

Table 4.6.14: Preliminary assessment of effects on marine ornithology.

| | **Preliminary assessment** |
|---|---|
| Receptor | Red-throated Diver |
| Potential Impact | **Direct disturbance and displacement of birds associated with sound, visual impacts and presence from vessels.** |
| Proposed Project phase | Construction, Maintenance and Decommissioning |
| Duration | Duration of Construction, Maintenance and Decommissioning phases |
| Mitigation | GM03, NV01 and O01<br>Existing shipping lanes will be utilised for vessel transiting routes to avoid additional disturbance.<br>Vessel operators will be made aware of the importance and sensitivity of the species to disturbance.<br>Vessels will avoid rafting birds and areas with high densities of birds. |
| Preliminary sensitivity | This species has a medium sensitivity to disturbance from anthropogenic activities such as shipping and offshore wind farms during construction, maintenance and decommissioning.<br>Sensitivity to disturbance in seabirds from vessel use is dependent on several factors, including duration, type and intensity of disturbance, the phase of the life cycle when the disturbance occurs, the degree of habituation, and the presence of opportunistic predators (Ref 6.85). Resilience to disturbance and displacement varies between species (Ref 6.86). Wintering red-throated divers are understood to be sensitive to anthropogenic sources of disturbance, including shipping traffic and offshore windfarms.<br>Within the marine environment, the evidence base around disturbance and displacement, and subsequent guidance, has been established in relation to assessing the vulnerability of seabird populations to offshore wind farms. Thus, when defining the sensitivity of a species to the construction and presence of other operational marine infrastructure it is important to consider the variation in disturbance profile. The |

| | Preliminary assessment |
|---|---|
| | disturbance profile of construction activities for the Offshore Scheme are significantly different from that of an OWF, particularly in terms of vessel numbers and presence in a given area, *i.e.,* installation vessels will be moving through the installation corridor rather than remaining in one particular location. Thus, the impact will be localised in any one area for a relatively short period of time, with individuals able to use alternative habitat during the disturbance, returning once works are complete. The nature of the works is also temporary and there will be no permanent infrastructure on the sea surface after works are completed. With OWFs the potential for construction activities associated with export cable laying, namely the physical presence of the cable laying vessels, to lead to disturbance and displacement of more sensitive species surrounding the cable laying vessels is only considered where the export cable corridor runs through offshore areas that support higher densities of the more sensitive seabird species, typically within or surrounding SPAs, so this impact pathway is not regularly included within OWF EIAs.<br><br>For red-throated diver, guidance from the Joint SNCB (Ref 6.87) advises that for OWFs a precautionary buffer of 10 km should be applied when considering the potential for displacement effects from the operational OWF. This is a larger area than previous advice, which applied a 4 km buffer for divers and seabirds. The guidance does recognise that the rate of change in displacement appears to vary, perhaps depending upon the region and survey method used. In light of this advice and with consideration of the absence of permanent infrastructure on the sea surface, as well as the profile of construction activities and associated vessel movements set out above, that for the offshore scheme installation, a 2 km potential displacement buffer from construction activities, represents an appropriate worse case. |
| Preliminary magnitude | During the construction phase, there would be several vessels present within the marine environment, as described in **Part 1**, **Chapter 2 Project Description**. The vessels would be slow moving (cable lay vessel average speed CLV is 500 m/hr, trenching vessel average speed between 50m/hr to 400 m/hr) and any potential disturbance would take place in the context of existing sources of disturbance such as commercial shipping, recreational boating, and wind farm service vessels (see **Part 1**, **Chapter 13 Shipping and Navigation** for further details). If cable lay and post lay installation burial is ongoing at the same time. The maximum number of vessels operating at any one time offshore would be nine.<br><br>Red-throated divers tend to form groups on the sea, which means that if a vessel passes through or close to a group, it has the potential to disturb and displace many individuals at once. The effect of the vessel's presence would be disturbance |

| | Preliminary assessment |
|---|---|
| | of the birds whilst they are in foraging or resting habitats on the sea; disturbed birds would have to move elsewhere, which may result in birds having less time to forage and cause them to expend additional energy. However, effects on energy budgets are extremely unlikely to result in population dynamic effects (i.e., increased adult mortality or effects on reproduction) because the effect is temporary and short in duration. It is only likely to affect a small proportion of individuals and there is an abundance of alternative habitat in the wider area. Birds are therefore likely to find alternative feeding/loafing grounds in the short term and effects would be localised.<br>There are high levels of shipping activity and recreational use in the Outer Thames Estuary and southern North Sea, with this part of the North Sea being busy with fishing vessels, cargo vessels and increasingly, vessels associated with the offshore renewables industry. Red-throated Diver are present despite this background of existing vessel presence and shipping activity. The cable installation vessels generate similar levels of noise to other large marine vessels and the context of the existing environment has been taken into consideration.<br>Vessels will travel at a maximum operational speed of 7 km per day, and a maximum transitional speed of 12 knots. As such vessels will be operating during hours of darkness, and lighting will be required in order to ensure operations on the vessels can be conducted safety. Artificial lighting can attract and disorientate seabirds, as well as repel them and cause them to avoid the area (Ref 6.88). Therefore, this lighting will be directed and only used in the vicinity of the work area, to minimise the likelihood of seabirds being attracted to vessels during the night.<br>For maintenance activities, the main winter period (Jan-March) will be avoided. However, if essential works are required then these will be undertaken but with the same general principles of mitigation as that for construction.<br>Whilst red-throated diver are considered to be sensitive to vessel traffic and movements, disturbance from vessel and operative presence and any subsequent displacement, will be temporary and short term. As such the potential magnitude of this impact is considered to be low, with no long-term effect on individuals or the population. |
| Preliminary likely significance of effect | Whilst the preliminary assessment considers the temporary, short-term nature of the construction, maintenance and decommissioning works, in an area which is already busy with shipping traffic, the baseline demonstrates that the offshore scheme passes through areas, particularly those forming part of the Outer Thames Estuary SPA, that are known to support high densities of red-throated diver. It is not anticipated that the addition of a small number of vessels required to construct, maintain and decommission the Offshore Scheme, |

| | Preliminary assessment |
|---|---|
| | incorporating the mitigation measures listed in section 4.6.84.6.8, will considerably increase disturbance and displacement of birds from baseline vessel traffic conditions.<br>The preliminary assessment concludes that the displacement of red-throated diver during construction of the offshore scheme alone only result in temporary displacement that is **not significant**. |
| Confidence in prediction | Moderate but awaiting further scheme refinement and incorporation of potential additional mitigation. |
| Receptor | Other species of both seabirds and waterbirds, excluding red throated diver.<br>Red-throated Diver are considered to be much more sensitive to disturbance and displacement from vessels and therefore have been considered separately above.<br>Other species of seabird and waterbird are considered less sensitive and therefore are considered together below. |
| Potential impact | **Direct disturbance and displacement of birds associated with sound, visual impacts and presence from vessels** |
| Proposed Project phase | Construction, Maintenance and Decommissioning |
| Duration | Duration of Construction, Maintenance and Decommissioning phases |
| Mitigation | GM03, NV01 and O01<br>Existing shipping lanes will be utilised for vessel transiting routes to avoid additional disturbance.<br>Vessel operators will be made aware of the importance and sensitivity of the species to disturbance.<br>Vessels will avoid rafting birds and areas with high densities of birds. |
| Preliminary Sensitivity | Sensitivities to disturbance from vessels have been assigned using data produced by the MMO (Ref 6.86), Fliessbach *et al*. (Ref 6.89) and Garthe and Hüppop (Ref 6.90) which show the level of displacement cause by vessels. Taking into consideration the expected abundance of species in the Study Area, and their foraging ranges (Ref 6.28) (See Table 4.6.10) the following sensitivities to disturbance are anticipated:<br>• Lesser black-backed gull – Low;<br>• Little tern – Medium;<br>• Sandwich tern – Medium;<br>• Herring gull – Low;<br>• Black-headed gull – Low;<br>• Common tern – Low;<br>• Arctic tern - Low;<br>• Common gull - Low |

| | Preliminary assessment |
|---|---|
| | Fliessbach *et al*. (Ref 6.89) observed that only 17% of lesser black-backed gull (total number observed (n) =1,347) were observed flying off in response to an oncoming vessel. Sandwich tern and common tern were also concluded as having low vulnerability to vessel presence. Little tern was not included in the assessment.<br>Vessel presence has the potential to disturb multiple individuals at any one time. Seabirds are known to raft together at sea in groups. Thus, when a vessel passes through or within close proximity to a raft, many individuals could be disturbed at once.<br>Sensitivity of waders and waterbirds, and Mediterranean gull was not assessed by the MMO (Ref 6.86) and Fliessbach *et al*. (Ref 6.89).<br>The use of offshore habitat by Mediterranean gull suggests a greater potential to interact with vessels; however, their sensitivity is likely to be similar to other gull species i.e., **low**.<br>As waders and waterbirds use intertidal habitat, and vessels will not be operating close to the shore, displacement caused by vessels is considered to be minor. At the Suffolk landfall, exit points are approximately 0.38 km from the intertidal zone, and 0.13 km from the intertidal zone in Pegwell Bay. Vessels are also expected to be stationary when conducting work near the landfalls. Thus, sensitivity of waders and waterbirds is considered to be **low**. |
| Preliminary Magnitude | Disturbance due to the presence of a vessel and the sound produced from vessel activity could interrupt foraging and/or nesting and loafing activities for all species, resulting in the displacement of birds to quieter areas. This could result in reduced foraging time and increased energy expenditure.<br>However, effects on energy expenditure are unlikely to have population-wide effects, for example effects on reproduction, due to the small numbers of individuals likely to be affected in a localised area. In addition, any birds that are present during the disturbance are likely to find alternative foraging and loafing grounds in the wider North Sea area.<br>Although waterbirds are considered to be of low sensitivity, it is possible that some small-scale disturbance could occur during feeding on the intertidal shores during the Proposed Project activities near to the landfall locations. Given the location of designated sites that are intersected at each landfall, several bird species are likely to be present, including all three species of tern.<br>As the vessels used during construction of the Offshore Scheme will be constantly moving their presence in any one location, including in foraging areas, will be temporary. Therefore, birds will be able to return to foraging areas once the vessel has moved on. At the landfalls, vessels may be stationary offshore for a short period of time, but engines will |

| | Preliminary assessment |
|---|---|
| | be turned off for the majority of the works, limiting sound production and thus reducing displacement. Furthermore, in areas where the route does not coincide with important habitat, for example outside of designated sites, numbers of species with the potential to be disturbed will be limited.<br>The majority of the Offshore Scheme study area and the wider North Sea are characterised by heavy shipping activity, both commercial and recreational, which occurs throughout the day and night, with shipping channels crossing the Offshore Scheme in offshore waters. As a result, seabirds will have some habituation to vessel presence and the impacts associated with it.<br>The landfall locations, and thus waterbirds, experience lower densities of shipping traffic compared to offshore waters. However, vessel presence associated with the Proposed Project is expected to be minimal and short-term, and therefore displaced birds are expected to return to the area once the vessels have left.<br>The area of the North Sea, and thus foraging area, in which the Offshore Scheme construction vessels would be operating is considered to be small compared to the wider available foraging habitat in the North Sea. Furthermore, mitigation will also be implemented to ensure lighting is directional and only used when necessary.<br>Thus, the magnitude of the impact to ornithological features is considered to be low |
| Preliminary likely significance of effect | Given the temporary, short-term nature of the construction, maintenance and decommissioning works, in an area that is already busy with shipping traffic, it is not anticipated that the addition of a small number of vessels required for the Proposed Project will considerably increase disturbance and displacement of birds from baseline vessel traffic conditions. In addition, the mitigation listed in section 4.6.8, including the placement of artificial lighting and best practice when working in the vicinity of rafting seabirds, reduces the impact of disturbance.<br>As a result, the effect to seabirds is likely **Not Significant**. |
| Confidence in prediction | Moderate but awaiting further scheme refinement. Also awaiting incorporation of potential additional mitigation if required following further environmental information becoming available and further refinement of the scheme, and baseline characterisation surveys. |
| Receptor | All Species |
| Potential impact | **Direct loss and disturbance of seabed habitat (including, associated prey) used by foraging seabirds and waterbirds** |
| Proposed Project phase | Construction, Maintenance and Decommissioning |

| | Preliminary assessment |
|---|---|
| Duration | Duration of Construction, Maintenance and Decommissioning phases |
| Mitigation | GM03, MPE03 and O01 |
| Preliminary sensitivity | Several activities associated with the Construction, Maintenance and Decommissioning Phases of the Proposed Project have potential to result in direct loss and disturbance to habitat used by ornithological receptors. The main disturbing activities are considered to be:<br>• Trenchless solution;<br>• Route clearance;<br>• Pre-sweeping;<br>• Placement of rock bags/mattresses;<br>• Cable burial, including ploughing, trenching and excavating;<br>• Cable repair; and<br>• Cable removal.<br>A trenchless solution is to be used at the landfalls. As this is a trenchless technique that drills below the ground surface, loss of habitat will be largely avoided. Therefore, at the landfalls, the main area of habitat loss and disturbance to prey species and foraging grounds is only expected to occur at the exit points for the trenchless solution conduits. However, the trenchless solution exit points at both landfalls are situated in deeper water away from the intertidal zone. At the Suffolk landfall, exit points are approximately 0.38 km from the intertidal zone, and approximately 0.13 km from the intertidal zone in Pegwell Bay. Thus, the trenchless solution exit points are not anticipated to disturb intertidal foraging grounds.<br>Only a very small proportion of the overall sandy and muddy habitat present in Pegwell Bay and Suffolk is likely to be lost. The landfall and trenchless solution exit points in Suffolk, and thus the footprint for habitat disturbance and loss, are outside the boundary of designated sites where birds are most likely to be foraging and utilising habitat.<br>The Offshore Scheme will require pre-sweeping, route clearance, cable burial, cable repair and cable removal. The Offshore Scheme crosses through several designated sites, including the Outer Thames Estuary SPA, where densities of seabirds are expected to be highest. These areas include important foraging habitat, such as fish spawning and nursery grounds. The availability of food and prey items is essential for supporting the seabird and waterbird colonies in the North Sea. Crustaceans and fish make up a large proportion of diet for seabirds considered in this chapter with important prey species including sandeel (*Ammodytidae* spp.), Atlantic herring (*Clupea* |

| | Preliminary assessment |
|---|---|
| | *harengus*), European sprat (*Sprattus sprattus*) and crabs (particularly *Liocarcinus* spp. for lesser black-backed gull) (e.g. Ref 6.59; Ref 6.91; Ref 6.92). Spawning grounds for demersal spawners herring and sandeel, and nursery grounds for sandeel occur within close proximity to the Offshore Scheme (**Part 4, Chapter 4 Fish and Shellfish**). Demersal spawners have potential to be affected by construction activities, thus it is possible that prey abundance for birds could be reduced. This could increase energy expenditure for birds travelling further to find suitable sources of prey. Prey species that are more mobile, for example pelagic species, can move away from the area more easily to alternative spawning and nursery grounds.<br>In addition, the disturbance of sediment could result in mobilisation of sediment-bound pollutants and contaminants. Pollutants such as organic compounds, oil, and heavy metals can directly and indirectly impact waterbirds and/or seabirds, resulting in immunosuppression and genotoxicity disruption (Ref 6.93). Diving species such as red-throated diver, and auks are considered to be most sensitive to this impact due to prolonged periods of time spent in the water. However, impacts to water quality through the disturbance of sediment is expected to occur in a very localised area and any pollutants will disperse rapidly. Therefore, the risk to potentially sensitivity species is low.<br>The proportion of important habitat intersected by the Offshore Scheme is minimal compared to the overall area covered by designated sites detailed in section 4.6.7 and therefore is only expected to affect a small number of birds over a short period of time. In addition, the cable will be buried during construction, and habitat will be replaced following cable removal. Therefore, habitat and thus prey species are expected to return following the disturbance. Due to the highly mobile nature of birds, and the long foraging distances (Ref 6.28), it is anticipated that alternative areas of foraging will be found for the duration of the disturbance, with birds returning to the area once disturbance has finished.<br>Considering this, the following sensitivities to this impact pathway have been assigned:<br>• Seabirds – Low<br>• Intertidal waterbirds and waders - Negligible |
| Preliminary magnitude | Activities in deeper water including route clearance, pre-sweeping, cable burial, cable repair and cable removal could disturb and cause the loss of important prey habitat such as fish and shellfish grounds, and smothering of invertebrates, particularly through the production of suspended sediment and subsequent sediment deposition.<br>This could reduce food availability for seabirds foraging at long distances (Ref 6.28). |

| | Preliminary assessment |
|---|---|
| | A key consideration when assessing the magnitude of impact of works is to consider the scale of temporary habitat loss compared with the total area of similar habitat available. The total footprint of the trenchless solution exit points is expected to be 0.79 $m^2$. Therefore, the total area of habitat to be disturbed and lost with three boreholes and one spare is calculated as 3.16 $m^2$ at each landfall. In addition, concrete mattressing is also required to protect the trenchless solution exit points, with up to 10 rock bags/mattresses required per trenchless solution exit.<br>The total area of suitable habitat for both birds and their prey species in the wider Study Area and North Sea, the Proposed Project is very large compared to the relatively small area of habitat expected to be disturbed, with any disturbed prey expected to quickly repopulate the area following completion of installation, and again following completion of decommissioning.<br>As the trenchless solution exit points are located outside the intertidal zone and are not within important foraging grounds, concrete mattressing is not anticipated to cause a major loss of habitat to birds.<br>In addition to the relatively small footprint of habitat loss, compared with the total available in the North Sea, the loss of habitat would only be a short-term, temporary impact.<br>Thus, the magnitude of the impact to birds in the marine environment is considered to be low. |
| Preliminary likely significance of effect | Due to the low sensitivity of seabirds and negligible sensitivity for intertidal waterbirds and waders and given the short-term and temporary nature of the impact over a small area, the effect is likely to be **Not Significant**. |
| Confidence in prediction | Moderate but awaiting further scheme refinement. Also awaiting the incorporation of potential additional mitigation if required following further environmental information becoming available and further refinement of the scheme, and baseline characterisation surveys. |
| Receptor | All species |
| Potential impact | **Alteration of water quality due to increased Suspended Sediment Concentrations (SSC) and disturbance of contaminated sediment** |
| Proposed Project phase | Construction, Maintenance and Decommissioning |
| Duration | Duration of construction, maintenance and decommissioning |
| Mitigation | O01 |
| Preliminary sensitivity | An increase in SSC can have negative impacts on water quality, and thus ornithology features, including the resuspension of sediment-bound contaminants into the water |

| | Preliminary assessment |
|---|---|
| | column, and smothering of important prey items/foraging grounds. Spawning and nursery grounds present in the Study Area, and intertidal and subtidal habitats at the landfalls, are considered to provide an important food source to foraging seabirds and waterbirds. The smothering of such habitats by increased SSC could reduce the ability of birds to successfully find food.<br>In addition, disturbance of sediment could result in the mobilisation of sediment-bound contaminants. Chemical analysis of sediment samples taken in the Study Area (see **Part 4, Chapter 3 Benthic Ecology**) found levels of arsenic, lead and copper to exceed Canadian Council of Ministers of the Environment (CCME)[2] Canadian Sediment Quality Guidelines (CSQG), and lead and copper to exceed Centre for Environment, Fisheries and Aquaculture Science (Cefas) Action Level 1[3] near the Pegwell Bay landfall, but outside the boundary of nearby designated sites relevant to ornithology.<br>Seabirds are considered to be sensitive to this impact due to prolonged periods of time spent in the water, with diving birds including red-throated diver being the most sensitive.<br>Therefore, sensitivity is considered to be high. |
| Preliminary magnitude | The total area of sediment expected to be disturbed during cable installation is 7500 $m^2$, with any sediment dispersion and subsequent plumes and deposition considered to return to baseline conditions within 1500 m of the disturbance (**Part 4, Chapter 2 Physical Environment**). However, due to the movement of vessels and equipment along the cable route, the area of sediment disturbed at any one time is expected to be much smaller than 7500 $m^2$. Therefore, any increase in SSC affecting water quality is also expected to be short-term in any one area. In addition, the North Sea is frequently subjected to sediment disturbance due to wave action, currents and storms. Furthermore, birds are highly mobile and are expected to use alternative feeding grounds close by, returning once the works are complete and sediment has dispersed and settled.<br>Elevated levels of contaminants have been shown to not be present within designated sites with ornithological features (see **Part 4, Chapter 3 Benthic Ecology**) and thus are not expected to be present in important foraging habitat.<br>Thus, the magnitude is considered to be low. |
| Preliminary likely significance of effect | Although seabirds are considered to be sensitive to this impact, the short-term and temporary nature of the impact coupled with the small area likely to be affected, the impact is likely to be **Not Significant**. |

[2] https://www.pla.co.uk/Environment/Canadian-Sediment-Quality-Guidelines-for-the-Protection-of-Aquatic-Life

[3] https://www.gov.uk/guidance/marine-licensing-sediment-analysis-and-sample-plans###Suitability%20of%20material

| | Preliminary assessment |
|---|---|
| Confidence in prediction | Moderate but awaiting further scheme refinement. Also awaiting the incorporation of potential additional mitigation if required following further environmental information becoming available and further refinement of the scheme, and baseline characterisation surveys. |

## 4.6.10 Transboundary Effects

4.6.10.1 A transboundary effect is any significant adverse effect on the environment resulting from human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of another State.

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

4.6.10.3 Furthermore, the PEIR has concluded no significant effects for ornithological receptors in UK waters.

## 4.6.11 Summary

4.6.11.1 Three impact pathways have been considered in this PEIR chapter. Due to the short-term and temporary nature of the Proposed Project activities required to construct, maintain and decommission the Offshore Scheme, impacts to both intertidal waterbirds and waders, and seabirds are considered to be of low magnitude. All impact pathways have been concluded as likely to be **Not Significant**.

Table 4.6.15: Summary of preliminary assessment of impacts

| Impact pathway | Likely significance conclusion |
|---|---|
| Direct disturbance and displacement of birds associated with sound, visual impacts and presence from vessels | Red-throated diver – Not Significant |
| | Other species – Not Significant |
| Direct loss and disturbance of seabed habitat (including, associated prey) used by foraging seabirds and waterbirds | Not Significant |
| Alteration of water quality due to increased Suspended Sediment Concentrations (SSC) and disturbance of contaminated sediment | Not Significant |

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