

Outer Dowsing Offshore Wind Preliminary Environmental Information Report Volume 1, Chapter 22: Onshore Ornithology

Date: June 2023

Outer Dowsing Document No: 6.1.22

Internal Reference: PP1-ODOW-DEV-CS-REP-0027

Rev: V1.0

Company:	Outer Dowsing Offshore Wind	Asset:	Whole Asset			
Project:	Whole Wind Farm	Sub Project/Package:	Whole Asset			
Document Title or Description:	Volume 1, Chapter 22: Onshore Ornithology					
Document Number:	6.1.22	3 rd Party Doc No (if applicable):	N/A			
<i>Outer Dowsing Offshore Wind accepts no liability for the accuracy or completeness of the information in this document nor for any loss or damage arising from the use of such information.</i>						
Rev No.	Date	Status/Reason for Issue	Author	Checked by	Reviewed by	Approved by
V1.0	June 2023	Final	SLR	GoBe	Shepherd and Wedderburn	Outer Dowsing Offshore Wind

Table of Contents

22 Onshore Ornithology	9
22.1 Introduction	9
22.2 Statutory and Policy Context	11
22.3 Consultation.....	20
22.4 Baseline Environment.....	27
Study Area	27
Desk Study Sources	27
Study /Survey Methods.....	28
Uncertainty and Technical Difficulties Encountered	28
Ongoing Data Collection	29
Baseline Environment	29
Designated Sites	31
Species.....	46
Important Ornithological Features	70
22.5 Basis of Assessment.....	77
Realistic Worst-Case Scenario.....	77
22.6 Assessment Methodology	88
22.7 Impact Assessment.....	90
Construction.....	90
Operation and maintenance	110
Decommissioning	111
22.8 Cumulative Effects Assessment	111
22.9 Inter-Relationships.....	116
22.10 Transboundary Effects	116
22.11 Summary of effects.....	116
22.12 References	128

List of tables

Table 22.1: Legislation and Policy Context	12
Table 22.2: Summary of consultation relating to Ornithology	21

Table 22.3: Designated sites with ornithological features within the Lincolnshire Node study area.	31
Table 22.4: Designated sites with ornithological features within the Weston Marsh onshore ECC Options.....	33
Table 22.5: Peak counts for relevant SPA and Ramsar qualifying species recorded during winter bird surveys at the Landfall	47
Table 22.6: Peak flock counts for relevant SPA and Ramsar qualifying species recorded during winter bird surveys at the Lincolnshire Node onshore ECC and OnSS.....	53
Table 22.7: Peak flock counts for relevant SPA and Ramsar qualifying species recorded during winter bird surveys at Weston Marsh onshore ECC South of A52 and OnSS	58
Table 22.8: Peak flock counts for relevant SPA and Ramsar qualifying species recorded during winter bird surveys at Weston Marsh onshore ECC North of A52 - additional segments only (A1-A5)	60
Table 22.9: Important Ecological Features (Ornithology)	72
Table 22.10: MDS for Ornithology for all Project elements	79
Table 22.11: Embedded Mitigation relating to Onshore Ornithology for all options	84
Table 22.12: Estimated combined sound power levels – construction plant for Landfall and onshore ECC, dB	100
Table 22.13: Estimated combined sound power levels – construction plant for OnSS options, dB.	100
Table 22.14: Projects considered to have potential for cumulative effects on Onshore Ecology including birds.....	113
Table 22.15: Inter-relationships between the Onshore Ornithology and other chapters within the PEIR	116
Table 22.16: Summary of effects arising from the Project.....	118

List of figures

Figure 22.1: Onshore PEIR Boundary	10
--	----

Abbreviations

Acronym	Expanded name
AIL	Abnormal Indivisible Load
AoS	Area of Search
AQMP	Air Quality Management Plan
BoCC	Birds of Conservation Concern
BTO	British Trust for Ornithology
CIEEM	Chartered Institute of Ecology and Environmental Management
CMS	Construction Method Statement
DCO	Development Consent Order
ECC	Export Cable Corridor
EclA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
ES	Environmental Statement
EnMS	Environmental Management System
ETG	Expert Topic Group
EU	European Union
FLL	Functionally Linked Land
GB	Great Britain
GLNP	Greater Lincolnshire Nature Partnership
GT R4 Ltd	The Applicant. The special project vehicle created in partnership between Corio Generation (a wholly owned Green Investment Group portfolio company), Gulf Energy Development and TotalEnergies.
IOF	Important Ornithological Feature
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
LEDPP	Landscape and Ecology Design Principles Plan
LNR	Local Nature Reserve
LWS	Local Wildlife Site
LWT	Lincolnshire Wildlife Trust
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
N/A	Not Applicable
NERC	Natural Environment and Rural Communities
NGR	National Grid Reference
NNR	National Nature Reserve
NPPF	National Planning Policy Framework
NPS	National Policy Statement
ODOW	Outer Dowsing Offshore Wind (The Project)
OLEMS	Outline Landscape and Ecological Management Strategy
OnSS	Onshore Substation
OS	Ordnance Survey

Acronym	Expanded name
PEIR	Preliminary Environmental Information Report
RIAA	Report to inform Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
SSSI	Site of Special Scientific Interest
SPA	Special Protection Area
The Inspectorate	The Planning Inspectorate
UK	United Kingdom
WeBS	Wetland Bird Survey
Zol	Zone of Influence

Terminology

Baseline	The status of the environment at the time of assessment without the development in place.
Biodiversity Net Gain	An approach to development that leaves biodiversity in a measurably improved state than it was previously. Where a development has an impact on biodiversity, developers are encouraged to provide an increase in appropriate natural habitat and ecological features over and above that being affected, to ensure that the current loss of biodiversity through development will be halted and ecological networks can be restored.
Cumulative Effect	The combined effect of the Project acting cumulatively with the effects of a number of different projects, on the same single receptor/resource. Cumulative impacts are those that result from changes caused by other past, present or reasonably foreseeable actions together with the Project.
Damage	Damage here means any form of impact such as loss of habitat, soil compaction, changes in hydrology, nutrient enrichment, pollution, disturbance of species, spread of invasive species, etc.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP) from the Secretary of State (SoS) for Department for Energy Security and Net Zero (DESNZ).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of an impact with the sensitivity of a receptor, in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the Environmental

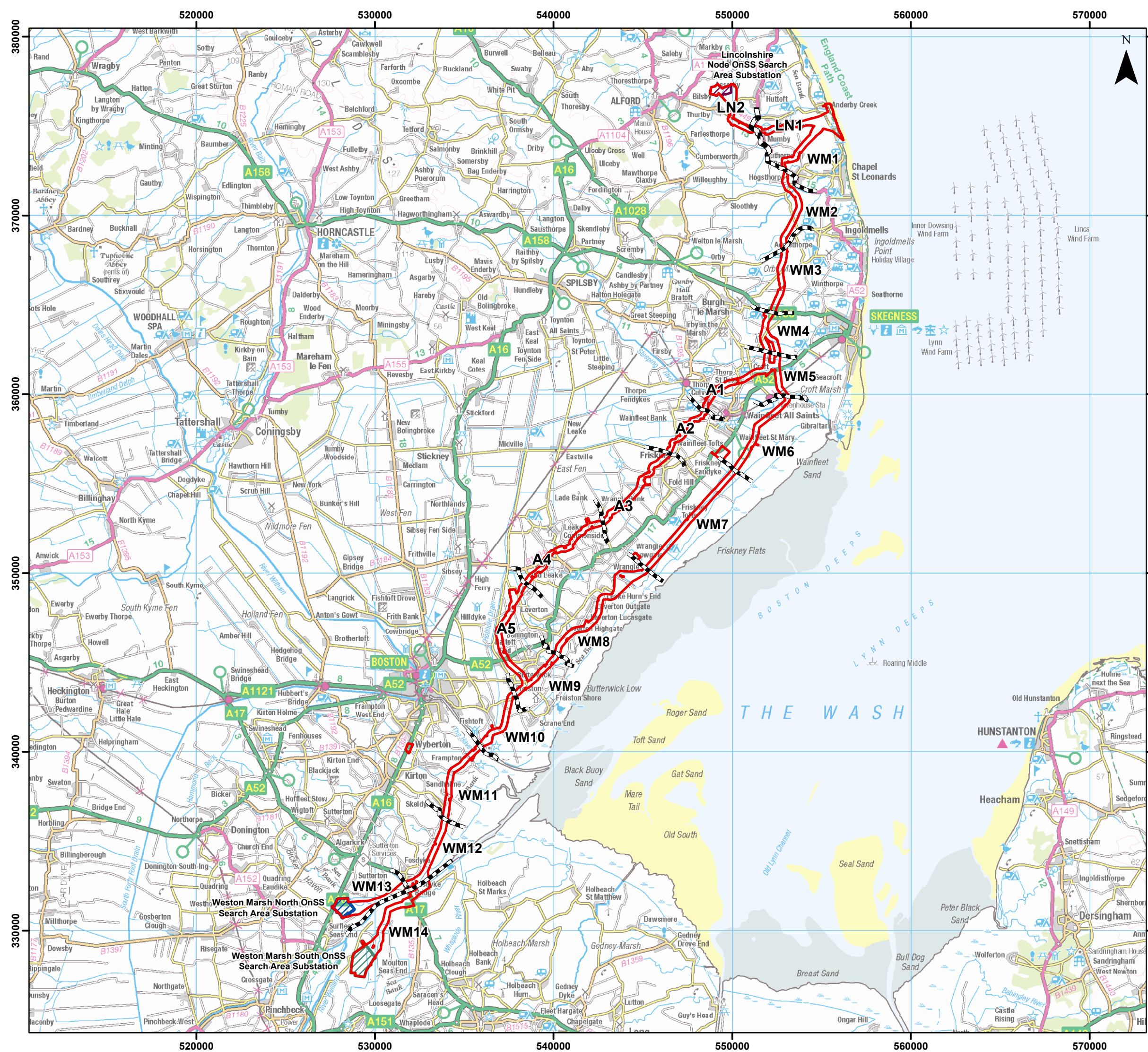
	Impact Assessment (EIA) Regulations, including the publication of an Environmental Statement (ES).
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
Environmental Statement (ES)	The suite of documents that detail the processes and results of the Environmental Impact Assessment (EIA).
Evidence Plan	A voluntary process of stakeholder consultation with appropriate Expert Topic Groups (ETGs) that discusses and, where possible, agrees the detailed approach to the Environmental Impact Assessment (EIA) and information to support Habitats Regulations Assessment (HRA) for those relevant topics included in the process, undertaken during the pre-application period.
Haul Road	The track within the onshore ECC which the construction traffic would use to facilitate construction.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Important Ornithological Feature (IOF)	For the purposes of this assessment, only ornithological features of Local importance or greater and /or subject to special protection are subject to detailed assessment (and are referred to as “important ornithological features”). Effects on other ornithological features of lower importance are considered unlikely to be significant in legal or policy terms so are not subject to detailed assessment.
Indicative Working Width	The indicative working width within the Export Cable Corridor (ECC), required for the construction of the onshore cable route.
Intertidal	Area where the ocean meets the land between high and low tides.
Joint Bays	A joint bay provides a secure environment for the assembly of cable joints as well as bonding and earthing leads. A joint bay is installed between each length of cable.
Landfall	The location at the land-sea interface where the offshore export cable will come ashore.
Mitigation	Mitigation measures, or commitments, are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the Project design) or secondarily added to reduce impacts in the case of potentially significant effects.
Offshore Export Cable Corridor (ECC)	The Offshore Export Cable Corridor (Offshore ECC) is the area within the Preliminary Environmental Information Report (PEIR) Boundary within which the export cable running from the array to landfall will be situated.
Onshore Export Cable Corridor (ECC)	The Onshore Export Cable Corridor is the area within which the export cable running from the landfall to the onshore substation will be situated.
Onshore substation (OnSS)	The Project’s onshore substation, containing electrical equipment to enable connection to the National Grid.

Onshore Infrastructure	The combined name for all onshore infrastructure associated with the Project from landfall to grid connection.
Outer Dowsing Offshore Wind (ODOW)	The Project.
Preliminary Environmental Information Report (PEIR)	The PEIR is written in the style of a draft Environmental Statement (ES) and provides information to support and inform the statutory consultation process in the pre-application phase. Following that consultation, the PEIR documentation will be updated to produce the Project's ES that will accompany the application for the Development Consent Order (DCO).
PEIR Boundary	The PEIR Boundary is outlined in Figure 3.1 of Volume 1, Chapter 3: Project Description and comprises the extent of the land and/or seabed for which the PEIR assessments are based upon
study area	The 2km zone (extending to 15km for national and internationally designated sites) around the onshore infrastructure options
The Applicant	GT R4 Ltd. The Applicant making the application for a DCO. The Applicant is GT R4 Limited (a joint venture between Corio Generation, TotalEnergies and Gulf Energy Development (GULF)), trading as Outer Dowsing Offshore Wind. The project is being developed by Corio Generation (a wholly owned Green Investment Group portfolio company), TotalEnergies and GULF.
The Planning Inspectorate	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
The Project	Outer Dowsing Offshore Wind including proposed onshore and offshore infrastructure
Trackout	Transfer of soil and dust onto public road from construction vehicles
Trenchless technique	Trenchless technology is an underground construction method of installing, repairing, and renewing underground pipes, ducts and cables using techniques which minimize or eliminate the need for excavation. Trenchless technologies involve methods of new pipe installation with minimum surface and environmental disruptions. These techniques may include Horizontal Directional Drilling (HDD), thrust boring, auger boring, and pipe ramming, which allow ducts to be installed under an obstruction without breaking open the ground and digging a trench.

22 Onshore Ornithology

22.1 Introduction

- 22.1.1 This chapter considers the potential significant effects of Outer Dowsing Offshore Wind (the Project) on Onshore Ornithology. Effects on onshore non-avian biodiversity features are considered separately (see Volume 1, Chapter 21: Onshore Ecology). A draft Report to Inform Appropriate Assessment (RIAA) has also been produced for the Project (see Document 7.1).
- 22.1.2 This assessment is preliminary, as ornithological baseline surveys are ongoing. The initial desk study and first season of non-breeding bird surveys are complete at the time of writing. Information available from the remaining baseline surveys will be incorporated into the Environmental Statement (ES) submitted with the Development Consent Order (DCO) application.
- 22.1.3 Specifically, this chapter considers the potential impact of the Project from the Landfall, along the Onshore Export Cable Corridor (ECC), and incorporating the Onshore substation (OnSS) during the construction and decommissioning, and operation and maintenance phases.
- 22.1.4 GT R4 Limited (trading as Outer Dowsing Offshore Wind) hereafter referred to as the 'Applicant', is proposing to develop the Project. The Project will include both offshore and onshore infrastructure including an offshore generating station (windfarm), export cables to landfall, and connection to the electricity transmission network (see Volume 1, Chapter 3: Project Description for full details).
- 22.1.5 There are three Onshore Substation (OnSS) options being considered: Lincolnshire Node, Weston Marsh North and Weston Marsh South, all of which would be fed by an offshore ECC which makes landfall at Wolla Bank. The Lincolnshire Node onshore ECC is an 11km route running north and west from the landfall at Wolla Bank. Both Weston Marsh onshore ECC options run for approximately 80km in a southwest direction. The initial onshore ECC to the south of the A52 before passing to the southeast of Boston. An alternative onshore ECC has also been considered which follows a largely similar ECC to the initial ECC, except where it diverts to the onshore ECC north of the A52, before re-joining the initial ECC prior to crossing the Hobhole Drain. All onshore ECC options are defined by a 300m wide Corridor within which the onshore ECC could be developed. As a collective, the Landfall, onshore ECC and OnSS search zones are referred to as the PEIR Boundary. Figure 22.1 illustrates the extent of the PEIR Boundary for the three OnSS and onshore ECC options described above.
- 22.1.6 Relevant technical appendices that should be read alongside this chapter include:
- Volume 2, Appendix 22.1: Onshore Ornithology Desk Study;
 - Volume 2, Appendix 22.2: Onshore Ornithology Desk Study Confidential Annex;
 - Volume 2, Appendix 22.3: Winter 2022-23 Bird Survey Report; and
 - Volume 2, Appendix 22.4: Bird Species List.
- 22.1.7 Non-avian biodiversity features are discussed in Volume 1, Chapter 21: Onshore Ecology.



Legend

- Onshore PEIR Boundary
- Onshore Segment Break
- Lincolnshire Node OnSS Search Area
- Weston Marsh North OnSS Search Area
- Weston Marsh South OnSS Search Area

Sources:



Coordinate System: British National Grid

0 5 10 km

Scale: 1:200,000

Preliminary Environmental Information Report
 PEIR Boundary Including Route Segments
 Figure 22.1



OUTER DOWSING
OFFSHORE WIND



Date: 10/05/2023
 Produced By: JRS
 Revision: 0.1

© Crown copyright [and database rights] (2022) 0100031673

Document Path: \\gis1\GIS\Projects\05356 - Gobe Consultants Ltd\00012 GTR Outer Dowsing\Tech\GIS\Drawings\Wing\2023 01 PEIR\Onshore\05356 00012 0454 0 PEIR Boundary Including Route Segments.mxd

22.2 Statutory and Policy Context

- 22.2.1 This section identifies the legislation and policy considered relevant to the assessment of effects with respect to Onshore Ornithology. A summary of the key provisions within the relevant legislation and policy is provided in Table 22.1, along with an indication of where the legislation or policy is considered within the Chapter.

Table 22.1: Legislation and Policy Context

Legislation/policy	Key provisions	Section where key provisions addressed
Legislation		
Conservation of Habitats and Species Regulations 2017 (as amended)	Part 2 - Protection of Special Protection Areas (SPA). Part 6 – Assessment of plans and projects.	The relevant provisions of the Conservation of Habitats and Species Regulations are addressed in Sections 22.5-22.9. Alongside the PEIR a draft RIAA has also been produced (Document Reference 7.1), which addresses potential effects on SPAs.
Wildlife and Countryside Act 1981 (as amended)	Protection of nesting birds including species of bird listed under Schedule 1, which are afforded additional protection from disturbance whilst nesting. Protection of Sites of Special Scientific Interest (SSSI).	The relevant provisions of the Wildlife and Countryside Act are addressed in Sections 22.5-22.9.
The Environment Act 2021	The Environment Act has wide ranging provisions including those around environmental governance, environmental regulation, waste and resource efficiency, air quality and environmental recall, water, nature and biodiversity, and conservation covenants. Schedule 15 of the Act is of particular relevance, and introduces “ <i>biodiversity gain in nationally significant infrastructure projects (NSIP)</i> ”. The part of the Environment Act relating to biodiversity net gain (and the associated amendments to the Planning Act) is not yet in force, with the parts relating to	The relevant provisions of the Environment Act are addressed in Sections 22.5-22.9.

Legislation/policy	Key provisions	Section where key provisions addressed
	NSIPs unlikely to commence until November 2025 (in line with the Government target for commencement).	
Natural Environment and Rural Communities (NERC) Act 2006	The NERC Act creates an obligation on the Secretary of State to publish lists of species of principal importance for conservation in England.	The relevant provisions of the NERC Act are addressed in Sections 22.5-22.9.
National Parks and Access to the Countryside Act 1949	Sections 19 and 21 – designation of LNRs.	Local designated sites are presented in Section 22.4.
National Planning Policy		
Overarching NPS for Energy 2023 draft (EN-1)	Details are provided in Section 21.2 of Volume 1, Chapter 21: Onshore Ecology.	<p>The current baseline environment is presented in Section 22.4, embedded mitigation measures presented in Table 22.11 and impact assessment in Section 22.7.</p> <p>Designated sites are presented in Section 22.4.</p> <p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p> <p>Further mitigation, compensation and enhancement measures will be developed within the Landscape and Ecology Design Principles Plan (LEDPP).</p> <p>Project design is an iterative process that has sought to avoid sensitive features wherever possible.</p>

Legislation/policy	Key provisions	Section where key provisions addressed
NPS for Renewable Energy Infrastructure 2023 draft (EN-3)	Details are provided in Section 21.2 of Volume 1, Chapter 21 - Onshore Ecology.	<p>Alongside the PEIR a draft RIAA has been produced (Document Reference 7.1).</p> <p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p> <p>Further mitigation, compensation and enhancement measures will be developed within the LEDPP.</p> <p>Impact assessment is outlined in Section 22.7.</p> <p>Alongside the PEIR a draft RIAA has been produced (Document Reference 7.1).</p>
NPS for Electricity Networks Infrastructure 2023 draft (EN-5)	Details are provided in Section 21.2 of Volume 1, Chapter 21 - Onshore Ecology	Applicable to Ecology and habitats (Volume 1 Chapter 21: Onshore Ecology).
EN-1 Overarching Energy (DECC, 2011a);	<p>Part 4, 4.2 Environmental Statement.</p> <p>Part 4, 4.3 Habitats and Species Regulations.</p> <p>Part 5, 5.3 Biodiversity and geological conservation.</p>	<p>Alongside the PEIR a draft RIAA has been produced (Document Reference 7.1).</p> <p>The current baseline environment is presented in Section 22.4, embedded mitigation measures presented in Table 22.11 and impact assessment in Section 22.7.</p> <p>Designated sites are presented in Section 22.4.</p> <p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p>

Legislation/policy	Key provisions	Section where key provisions addressed
		<p>Further mitigation, compensation and enhancement measures will be developed within the LEDPP.</p> <p>Project design is an iterative process that has sought to avoid sensitive features wherever possible.</p>
<p>EN-3 Renewable Energy Infrastructure (DECC, 2011b), which covers nationally significant renewable energy infrastructure (including offshore generating stations in excess of 100 MW)</p>	<p>Part 2, 2.6 Offshore windfarm impacts – biodiversity Part 2, 2.6 Offshore windfarm impacts – birds</p>	<p>Consultation to date is outlined in Section 22.3.</p> <p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p>
<p>EN-5 Electricity Networks Infrastructure (DECC, 2011c), which covers the electrical infrastructure associated with an NSIP</p>	<p>Part 1, 1.7 Appraisal of sustainability and Habitats Regulations Assessment. Part 2, 2.7 Biodiversity and Geological conservation</p>	<p>Alongside the PEIR a draft RIAA has been produced (Document Reference 7.1).</p> <p>Section 2.7 primarily relates to overhead lines and risks to birds arising from collision and electrocution, however for the Project, cables will be buried, thereby avoiding such potential impacts.</p>
<p>National Planning Policy Framework</p>	<p>Section 15: Conservation and enhancing the natural environment Details are provided in Section 21.2 of Volume 1, Chapter 21: Onshore Ecology</p>	<p>Site Selection and Consideration of Alternatives (see Volume 1, Chapter 4) illustrates how all direct impacts on designated sites have been avoided through project design.</p> <p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline</p>

Legislation/policy	Key provisions	Section where key provisions addressed
		<p>surveys are complete and more detailed Project information is available.</p> <p>Further mitigation, compensation and enhancement measures will be developed within the LEDPP.</p> <p>The hierarchy of designated sites is provided in Section 22.4: Baseline Environment.</p> <p>Priority bird species have been included within the desk-based study (Section 22.4) and impact assessment (22.7).</p>
<p>Natural Environment White Paper 2011</p>	<p><u>Commitment 14</u>: ‘Protecting natural value through the planning system.’ Using the NPPF as a vehicle.</p> <p><u>Commitment 15</u>: ‘Offsetting the impacts of development on biodiversity.’</p> <p><u>Commitment 16</u>: ‘Planning for low carbon infrastructure.’</p>	<p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p> <p>Impact assessment is outlined in Section 22.7.</p> <p>Further mitigation, compensation and enhancement measures will be developed within the LEDPP.</p>
<p>Biodiversity 2020: A Strategy for England’s Wildlife and Ecosystem Services</p>	<p><u>Outcome 1 – Habitats and Ecosystems (including freshwater environments)</u>: <i>By 2020 we will have put in place measure so that biodiversity is maintained and enhanced, further degradation has been halted and where possible, restoration is underway, helping deliver more resilient and coherent ecological networks, healthy and well-functioning ecosystems, which deliver multiple benefits for wildlife and people, including:</i></p>	<p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p> <p>Impact assessment is outlined in Section 22.7.</p> <p>Further mitigation, compensation and enhancement measures will be developed within the LEDPP.</p>

Legislation/policy	Key provisions	Section where key provisions addressed
	<ul style="list-style-type: none"> ▪ 1A. <i>Better wildlife habitats with 90% of priority habitats in favourable or recovering condition and at least 50% of SSSIs in favourable condition, while maintaining at least 95% in favourable or recovering condition;</i> ▪ 1B. <i>More, bigger and less fragmented areas for wildlife, with no net loss of priority habitat and an increase in the overall extent of priority habitats by at least 200,000 ha;</i> ▪ 1C. <i>By 2020, at least 17% of land and inland water, especially areas of particular importance for biodiversity and ecosystem services, conserved through effective, integrated and joined up approaches to safeguard biodiversity and ecosystem services including through management of our existing systems of protected areas and the establishment of nature improvement areas;</i> ▪ 1D. <i>Restoring at least 15% of degraded ecosystems as a contribution to climate change mitigation and adaptation.</i> <p><i><u>Outcome 3 – Species:</u> By 2020, we will see an overall improvement in the status of our wildlife and will have prevented further human-induced extinctions of known threatened species.</i></p>	
Local Planning Policy		

Legislation/policy	Key provisions	Section where key provisions addressed
<p>East Lindsey Core Strategy</p> <p>SP 24 Biodiversity and Geodiversity</p>	<p>Details are provided in Section 21.2 of Volume 1, Chapter 21 - Onshore Ecology.</p>	<p>Statutory and non-statutory designations will be avoided and safeguarded through careful design. Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p> <p>Further mitigation, compensation and enhancement measures will be developed within the LEDPP. Impact assessment is outlined in Section 22.7.</p>
<p>East Lindsey Core Strategy</p> <p>SP 25 – Green Infrastructure</p>	<p>Details are provided in Section 21.2 of Volume 1, Chapter 21 - Onshore Ecology.</p>	<p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p> <p>Further mitigation, compensation and enhancement measures will be developed within the LEDPP.</p>
<p>South East Lincolnshire Local Plan 2011-2036</p> <p>Policy 28 – The Natural Environment</p>	<p>Details are provided in Section 21.2 of Volume 1, Chapter 21 - Onshore Ecology.</p>	<p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p> <p>Further mitigation, compensation and enhancement measures will be developed within the LEDPP. Alongside the PEIR a draft RIAA has been produced (Document Reference 7.1).</p>
<p>Lincolnshire Biodiversity Action Plan: Action for Wildlife in Lincolnshire 2nd Edition (2006)</p>	<p>The Lincolnshire BAP sets out definitions of Priority Habitats and Species present within the county, refining, where appropriate, descriptions provided in the UK BAP.</p>	<p>Embedded mitigation measures are provided in Table 22.11. These will be updated in the ES once baseline surveys are complete and more detailed Project information is available.</p>

Legislation/policy	Key provisions	Section where key provisions addressed
		Further mitigation, compensation and enhancement measures will be developed within the LEDPP.

22.3 Consultation

- 22.3.1 Consultation is a key part of the DCO application process. Consultation regarding this Chapter has been conducted through the Evidence Plan Process (EPP) Expert Technical Group (ETG) meetings and the Environmental Impact Assessment (EIA) scoping process (ODOW, 2022). An overview of the Project consultation process is presented within Volume 1, Chapter 6: Consultation Process.
- 22.3.2 A summary of the key issues raised, in relation to Onshore Ornithology, within the Scoping Opinion (Case Reference: EN010130, The Inspectorate, 2022) and other consultation, is outlined in Table 22.2 below, together with where these issues are addressed within this Chapter or will be addressed at a later date in the ES. Referencing of responses follows that presented in the Scoping Opinion.
- 22.3.3 The Scoping Opinion was based on an Area of Search (AoS) which has subsequently been reduced and refined as the PEIR Boundary has been fixed for the purposes of this assessment. Therefore, some ecological features highlighted at the Scoping stage are no longer within the area likely to be impacted by the Project. Some issues raised by stakeholders during the consultation process are therefore now considered redundant, as certain features are no longer at risk of being impacted. Any such instances are explained within Table 22.2 below. At the Scoping stage, onshore Ecology and Ornithology were included together, however it was decided to separate them out within the PEIR. Given the large area covered by the Project and the large number of potential features, it is considered that this will keep the chapters to a reasonable size.

Table 22.2: Summary of consultation relating to Ornithology

Natural England onshore surveys meeting 27 th June 2022	Natural England agreed that as much baseline information as possible should be included in the PEIR.	Section 22.4 – A full season of winter bird survey data has been included in this Chapter and Volume 2, Appendix 22.3: Winter Bird Report.
ETG Meeting 12 th October 2022	Wintering bird surveys for two visits per month in both September and October and at least one in November – look to include as much data as is practicable in the PEIR to provide an indication for what is on the site at that time.	See above comment.
ETG Meeting 26 th January 2023	Study area - Wintering birds’ extent considered is 400m beyond the PEIR Boundary.	See Section 22.4.
Natural England Meeting 30 th January 2023	Natural England asked for a justification around the decision for 2km study area for mobile species.	The Applicant responded in a letter dated 17 th February 2023 (Doc No. ODO-NAE-LET-0000008) to provide justification.
Meeting with RSPB (8 th March 2023): Emailed comments from RSPB dated 8 th March 2023	Greater Frampton Vision: Landscape Recovery Project: RSPB stated <i>‘we currently have a landscape recovery project running in the area that will be looking at how the land to the south east of Boston can be developed to expand the habitats that have developed so successfully at Frampton Marsh and Freiston Shore to seek to better link the reserve areas and provide a greater area for wildlife we have serious concerns about projects that would limit the ability to deliver the vision for the area. It was encouraging to hear about how the project might help deliver biodiversity benefits as part of net gain actions. We will be happy to explore these and potentially how they could help us deliver the landscape work we would like to in the area, although this will be subject to</i>	Opportunities to support and contribute to the Greater Frampton Vision and will be explored with RSPB over the coming months. Any commitments to the Vision will be clearly set out in the ES.

		<i>securing sufficient certainties that a cable in this location was appropriate.'</i>	
ETG Meeting 16 th March 2023		<p>Breeding bird methodologies are also to be discussed with Natural England (Breeding Bird Methodology and Scope Letter has now been issued to Natural England on 23/03/2023).</p> <p>Natural England highlighted to RSPB that only one years' worth of ornithology surveys will have been completed at the point of the ES. RSPB raised that two years' worth of data is the ideal.</p>	<p>The Applicant is awaiting Natural England's comments on the proposed methodology.</p> <p>The Project has committed to undertaking a second season of winter bird surveys, to be completed in winter 2023-24.</p>
Scoping Opinion (the Inspectorate, 9 September 2022) Comment ID: 3.15.2		<i>'The Environment Statement (ES) should clearly define and justify the study area for each ecological feature, with reference to the ZoI for the Proposed Development. The Applicant's attention is directed to the comments of Natural England (NE) (Appendix 2 of this Opinion) that identifies some concerns with regards to the spatial scope of the data sources, as specified in Table 8.3.1. The Applicant should seek to agree the sources and extent of data sources with relevant consultation bodies, including NE, as the onshore element of the scheme develops further.'</i>	<p>Study areas and data sources referenced for each ecological feature are provided in Section 22.5. Desk study data are presented in Volume 2, Appendix 22.1: Ornithology Desk Study and Volume 2, Appendix 22.2: Confidential Desk Study.</p> <p>The 2km area of search for initial desk study records of bird species is appropriate, as it provides contextual information only, and a full programme of bird surveys will be completed and will form the basis for the impact assessment presented within the ES. Direct impacts from the Project will be limited to a 400m buffer from the Project boundary and the 2km search area therefore extends beyond that.</p> <p>Searches for designated sites extended beyond a distance of 2km.</p>
Scoping Opinion (the Inspectorate, 9 September 2022)		<i>'The Scoping Report contains limited detail concerning the proposed species-specific surveys for onshore ecology and at this stage, the location of the onshore ECC and OnSS is not</i>	Volume 2, Appendix 22.1: Ornithology Desk Study, Volume 2, Appendix 22.2: Confidential Desk Study and Volume 2, Appendix 22.3: Winter Bird Survey

<p>Comment ID: 3.15.6</p>	<p><i>yet known. Effort should be made to agree the approach to surveys with relevant consultation bodies, including Natural England, as part of the EPP. The ES should detail the specific methodologies, this information could be included within appendices to the ES aspect chapter.'</i></p>	<p>Report 2022-2023 provide information regarding desk and field work undertaken to date.</p> <p>Details of the methodologies adopted in further 2023 surveys will be provided in the ES. The scope of the breeding bird surveys has been provided to Natural England for comment (letter dated 23/03/2023).</p>
<p>Scoping Opinion (the Inspectorate, 9 September 2022) Comment ID: 3.15.67</p>	<p><i>'Public bodies have a responsibility to avoid releasing environmental information that could bring about harm to sensitive or vulnerable ecological features. Specific survey and assessment data relating to the presence and locations of species such as badgers, rare birds and plants that could be subject to disturbance, damage, persecution, or commercial exploitation resulting from publication of the information, should be provided in the ES as a confidential annex. All other assessment information should be included in an ES chapter, as normal, with a placeholder explaining that a confidential annex has been submitted to the Inspectorate and may be made available subject to request.'</i></p>	<p>Information relating to Schedule 1 listed birds nest sites has been included within Volume 2, Appendix 22.2: Confidential Desk Study.</p>
<p>Scoping Opinion (Natural England, 9 September 2022)</p>	<p><i>'Natural England advises that consideration is given to functionally linked land when assessing potential impacts of the onshore cable route. We have provided Discretionary Advice Service (DAS) advice to the Applicant on this.'</i></p>	<p>Winter bird surveys have been undertaken across the full PEIR Boundary and surrounding 400m buffer to identify any potentially functionally linked land (FLL)¹. Further surveys are ongoing and planned, to establish the baseline. The baseline, based on data collected to</p>

¹ 'Functionally linked land' (FLL) is a term often used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a Special Protection Area (SPA)/Ramsar site has been designated. These habitats are frequently used by SPA species and support the functionality and integrity of the designated sites for these features (Bowland Ecology, 2021).

		date, is described in Section 22.4 and the assessment in Section 22.7. FLL is also assessed in the Draft RIAA (Document Reference: 7.1).
Scoping Opinion (Natural England, 9 September 2022)	<p>Table 8.3.1 - The desk-based study includes data for birds obtained from the British Trust for Ornithology (BTO) for 'selected species only, Wetland and Farmland Birds' for the AoS and a 2km search radius. Birds are mobile species and many forage over greater distances. Natural England advises that consideration be given as to whether the desk-based study area should be extended for birds.</p> <p>Table 8.3.1 Bird Data. Natural England advises that consideration needs to be given to extending the search area based on data obtained from the Wetland Bird Surveys.</p>	<p>Refer to explanation above regarding the 2km search area.</p> <p>WeBS data will be obtained to inform the ES once route design has been further developed.</p> <p>Further information is provided in Volume 2, Appendix 22.1: Ornithology Desk Study and Volume 2, Appendix 22.2: Confidential Desk Study.</p>
Scoping Opinion (Natural England, 9 September 2022)	<p>Table 8.3.1 - It is not clear why the Applicant has chosen an AoS plus 15km buffer for the desk-based study area for designated sites. Birds are mobile species, and some will forage at greater distances than 15km.</p> <p>Natural England advises that the scoping area should be based on the potential for species to be present within the area, the Impact Risk Zone (IRZ) for designated sites, as available on the Multi-agency Geographic Information for the Countryside (MAGIC) website, the ecology, i.e., foraging areas of designated species of sites in proximity to the proposed development area.</p>	<p>Screening for designated sites was based on an initial 15km search area around the Scoping Project boundary, which covered a greater area than the PEIR Boundary. The search area has been extended where there is evidence of possible connectivity beyond this distance, for example to include the North Norfolk SPA in relation to non-breeding pink-footed goose (Section 22.4)</p>
Scoping Opinion (Natural England, 9 September 2022)	<p>Table 8.3.1 - It is noted that RSPB reserves are located within or adjacent to the scoping area. Natural England suggest the Applicant liaise with RSPB.</p>	<p>The Applicant has engaged with RSPB and RSPB have been invited to attend the relevant ETG meetings.</p>

<p>Scoping Opinion (Natural England, 9 September 2022)</p>	<p>Natural England welcomes that the cable route selection will avoid impacts to designated sites and features of conservation importance. Natural England welcome the use of the avoid, reduce, mitigate hierarchy.</p>	<p>Comments noted.</p>
<p>Scoping Opinion (Natural England, 9 September 2022)</p>	<p>Table 8.3.4 - It is noted that it is proposed that <i>'appropriate surveys to determine the location of protected and priority species once the preferred landfall, cable route corridor and OnSS location are known'</i>. We advise that surveys should be undertaken during optimum survey periods in line with Natural England species guidance.</p>	<p>Details of the scope of the winter bird surveys are provided in Volume 2, Appendix 22.3: Winter Bird Survey Report 2022-2023. Details of the scope of ongoing breeding bird surveys have been shared with Natural England (letter dated 23 March 2023) and will be presented in the ES.</p>
<p>Scoping Opinion (Natural England, 9 September 2022)</p>	<p>Bird survey areas and buffer. Natural England advises that it is the Applicant's responsibility to determine whether there is sufficient information/evidence to exclude areas from surveys.</p>	<p>No areas have been excluded from winter bird surveys. The survey area for breeding birds has been shared with Natural England and will be presented in the ES.</p>
<p>Scoping Opinion (Natural England, 9 September 2022)</p>	<p>Bullet point 3 on page 454 - It is noted that the following area has been proposed for wintering bird surveys, <i>'where located within the preferred cable route corridor and OnSS plus 400 m.'</i></p> <p>There is no set distance from The Wash SPA to determine if surrounding agricultural areas are functionally linked as this is normally informed by project specific surveys. We are aware that the northern area around The Wash is becoming increasingly important for pink footed geese and golden plover.</p> <p>Natural England advises that <i>"it is the Applicant's responsibility to determine whether there is sufficient information/evidence to exclude areas from surveys. As previously commented to the Applicant (29th July 2022), if it cannot be determined that areas are not functionally linked</i></p>	<p>Winter bird surveys have been completed covering land within 400m of the 300m-wide PEIR Boundary corridor, along the full length of the route, inclusive of the Landfall and OnSS options.</p> <p>The Project has committed to undertaking a second season of winter bird surveys in 2023-24.</p>

	<p><i>to a designated site for passage and over wintering Annex I birds then surveys should be carried out. Our standard advice would be two years of survey data to be obtained to inform possible mitigation measures. Given the proposed submission dates of Autumn 2023 this will be difficult. If less than two years of data is collected, then consideration should be given to extending the 400m buffer area either side of the cable corridor in order to obtain further data to help demonstrate the relative importance of the cable corridor with the surrounding habitats.”</i></p>	
<p>Scoping Opinion (Natural England, 9 September 2022)</p>	<p>As per comments provided above. In addition, and as our previous comments to the Applicant (29th July 2022):</p> <p><i>“The concern would be the PEIR being submitted before the full suite of surveys have been completed. The full impacts cannot be assessed, and therefore correctly mitigated for, without the full survey results.</i></p> <p><i>Natural England will therefore not have provided formal Statutory Nature Conservation Body (SNCB) advice on the full suite of onshore ecology surveys prior to the application. Whilst the data may not be available at the time of submission, it is advised that the 2022 surveys are repeated in 2023 to provide that certainty into examination.”</i></p>	<p>Comments are noted.</p> <p>A single season of winter bird surveys has been completed and results are presented in Volume 2, Appendix 22.3: Winter Bird Survey Report. The Project has committed to undertaking a second season of winter bird surveys in 2023-24. Breeding bird surveys are ongoing and therefore where there are data gaps relating to breeding birds they are clearly stated within this report.</p>

22.4 Baseline Environment

- 22.4.1 This section seeks to establish the current baseline conditions and identify the presence of and potential for important ecological features within the study and survey areas, as far as is possible at this time.
- 22.4.2 Ornithological surveys necessary to inform the Ecological Impact Assessment (EclA) process are ongoing in 2023. Therefore, only the desk study and those surveys completed by the end of March 2023 are presented within this PEIR. The baseline information presented herein comprises:
- Desk study; and
 - Winter 2022-2023 bird surveys.
- 22.4.3 Full details are presented in the associated appendices, with detail necessary for the assessment summarised within this Chapter.
- 22.4.4 Species names referenced in this Chapter and Appendices (Volume 2, Appendix 22.1: Ornithology Desk Study, Volume 2, Appendix 22.2: Confidential Desk Study and Volume 2, Appendix 22.3: Winter Bird Survey Report 2022-2023) are listed in Volume 2, Appendix 22.4: Outer Dowsing Bird Species, in taxonomic order and including scientific names.

Study Area

- 22.4.5 The study /survey areas selected for each ornithological feature are listed below:
- Desk study areas include the following:
 - Internationally designated sites (SPA and Ramsar Sites) and nationally designated sites SSSI within 15km (See Figure 3.1 and Figure 3.3 of Volume 2, Appendix 22.1: Ornithology Desk Study). In addition, pink-footed goose from the North Norfolk SPA and Ramsar, which is located beyond a distance of 15km, has been included, based on advice received from Natural England;
 - Onshore elements of Local Nature Reserves (LNR) and Local Wildlife Sites (LWS) within 2km from the PEIR Boundary (see Figure 3.2 and Figure 3.4 of Volume 2, Appendix 22.1: Ornithology Desk Study); and
 - Natural Environment and Rural Communities Act (2006, as amended) Section 41 Priority Species and specially protected or notable species within 2km from the PEIR Boundary.
 - Non-breeding bird surveys within the PEIR Boundary and a 400m buffer.
- 22.4.6 This chapter considers potential impacts to birds present above Mean High Water Springs (MHWS) only. Whilst survey results from intertidal bird surveys are presented within this chapter and Volume 2, Appendix 22.3: Outer Dowsing Winter Bird Survey Report 2022-2023, potential impacts on birds below MHWS is covered in Volume 1, Chapter 12: Offshore and Intertidal Ornithology.

Desk Study Sources

- 22.4.7 A desk-based study has been undertaken to identify sources of pre-existing ecological data

of relevance to the Project. The results of this study are provided in Volume 2, Appendix 22.1: Outer Dowsing Desk Study Ornithology and Volume 2, Appendix 22.2: Confidential Desk Study. The sources consulted included the following:

- Joint Nature Conservation Committee (JNCC);
- MAGIC website and Natural England’s datasets at data.gov.uk;
- Greater Lincolnshire Nature Partnership (GNLP); and
- Lincolnshire Wildlife Trust: Nature conservation from the Humber to the Wash (LWT).

Study /Survey Methods

22.4.8 Winter bird surveys included through the tide surveys of the Landfall area between September 2022 and March 2023 (two visits per month). Through the tide surveys commence at either low or high tide and continue for approximately six hours to high or low tide. Winter bird surveys of the rest of the PEIR Boundary (except the Weston Marsh onshore ECC north of the A52) plus a 400m buffer were completed between September 2022 and March 2023 (two visits per month). Winter bird surveys of Weston Marsh onshore ECC North of the A52, which was only added to the Project’s proposals in November 2022, took place between November 2022 and March 2023 (two visits per month). Full details are provided in Appendix 22.3. The method involved driving and walking between observation points where birds in wetland habitats, fields and the surrounding landscape could be viewed. Surveys specifically targeted wintering waterbirds, however other notable species, e.g., Schedule 1/Annex 1 raptors or particularly large concentrations of passerine species of conservation concern, were also recorded.

Uncertainty and Technical Difficulties Encountered

- 22.4.9 Further ornithological surveys required for robust impact assessment are currently ongoing and therefore it is only possible to assess impacts on a limited range of important ornithological features at this stage. A full assessment for all important ornithological features will be provided in the ES.
- 22.4.10 At the time of writing the baseline for birds has not been fully characterised and therefore for some species, sufficient information to determine the importance of populations which may be present within the study area is not available. Such valuations will be informed by data generated during further surveys, such as breeding birds and a second season of non-breeding bird surveys and will be presented within the ES.
- 22.4.11 Winter bird surveys were completed at the end of March 2023 and there has been very limited time to include the results from those surveys in the PEIR. The methods and results are presented in Volume 2, Appendix 22.3: Winter Bird Survey Report 2022-2023, however only an initial analysis of the dataset has been undertaken due to the time constraints and therefore the assessment presented herein is preliminary and indicative, with further analysis and assessment to be undertaken at the ES stage.
- 22.4.12 Access was restricted during the survey period and the degree of access varied for each visit; however, the majority of the survey area could be viewed from public rights of way and the areas to which access was granted. Therefore, the limitation is not significant.

- 22.4.13 Surveys of the Weston Marsh onshore ECC North of the A52 commenced in November 2022, as the onshore ECC was only added as an alternative option following the preparation for winter bird surveys commencing. Given that this onshore ECC is located further inland from The Wash and is dominated by agricultural fields, the omission of September and October surveys is not considered to be significant. Year two surveys will however ensure full coverage of the survey area from September to March inclusive.
- 22.4.14 As parts of the scheme design remain unresolved, the Maximum Design Scenarios (MDS) for each onshore ECC have informed the assessment and these are detailed in Section 22.5.

Ongoing Data Collection

- 22.4.15 Baseline data will continue to be collated and assessed beyond the publication date of this PEIR for inclusion within the EclA.
- 22.4.16 Further surveys, which have been presented to the ETG members and were submitted to Natural England for review, include:
- Breeding bird survey, comprising four visits between April to July 2023, will cover land within the PEIR Boundary plus 100m buffer where:
 - specially protected species could occur, i.e., those listed on Schedule 1 of the Wildlife and Countryside Act, as amended, and those listed on Annex 1 of the EC Birds Directive;
 - wetland, scrub and woodland habitats potentially supporting sensitive and declining species, such as breeding waders or notable wildfowl, and turtle dove could occur; and
 - permanent above ground infrastructure will be built (such as OnSS).
 - Breeding bird survey will be based on an adapted version of the Common Bird Census (CBC, Gilbert *et al.*, 1998) method and will cover permanent above ground infrastructure and wetland, scrub and woodland habitats. Species-specific surveys will be based on the respective species methodologies detailed in Gilbert *et al.* 1998, Hardey *et al.* 2013 and Shawyer 2011 and will be targeted where there is potentially suitable habitat for such species and taking into account desk study records. Bird Survey Guidelines published online in 2021 (Bird Survey Steering Group 2022) adopt a default position that a minimum of six survey visits should be carried out during the breeding season, unless a robust justification can be made as to why fewer visits are required. In this case, given that most effects on breeding bird species will be temporary in nature and given also the very large scale of the survey area, four visits between early April and July are proposed.
 - Non-breeding bird surveys completed in winter 2022-23 will be repeated between September 2023 and March 2024. The results of these surveys will be made available to the relevant consultees upon completion and, where appropriate, at key stages throughout the survey season.

Baseline Environment

- 22.4.17 The three onshore ECC options, Lincolnshire Node and Weston Marsh onshore ECC South of the A52 and Weston Marsh onshore ECC North of the A52, are situated on the Lincolnshire

coast on low-lying, predominantly agricultural land. Each onshore ECC is described in more detail in Section 21.4 of Volume 1, Chapter 21: Onshore Ecology and is summarised briefly below. Due to the length of each onshore ECC, they have been divided into segments to assist with locating features of interest, as illustrated in Figure 22.1. The segments for Weston Marsh onshore ECC North and South of the A52 have been presented in the same section to avoid excessive repetition of descriptions for segments which are common to both options (as further explained below).

Lincolnshire Node

22.4.18 The Lincolnshire Node onshore ECC is an 11km long onshore ECC from landfall at Wolla Bank. The onshore ECC runs west and then in a north westly direction to the substation zone south of Asserby. It has been divided into two indicative segments:

- LN1 - Landfall to A52 – Mumby, and
- LN2 - A52 – Mumby to Lincolnshire Node.

Weston Marsh

22.4.19 The two Weston Marsh onshore ECC options are both approximately 80km long with Landfall at Wolla Bank and the onshore ECC progressing southwest to terminate at the two substation zones: Weston Marsh North Substation zone and Weston Marsh South Substation zone.

22.4.20 The two options follow the same ECC from Landfall to Low Road, but then bifurcate and run approximately parallel to each other with one ECC running to the south of the A52, and the alternative onshore ECC running to the north of the A52. The two options then converge at Church End Lane and follow the same ECC to terminate at the OnSS.

22.4.21 Weston Marsh North substation search area lies to the north of River Welland and covers an area of approximately 80 ha. The Weston Marsh South substation search area is located south of the River Welland adjacent to the existing National Grid infrastructure. It covers an area of approximately 150 ha.

22.4.22 The onshore ECC segments are as follows:

- WM1 - Landfall to A52 – Hogsthorpe;
- WM2 – A52 Hogsthorpe to Marsh Lane;
- WM3 - Marsh Lane to A158 Skegness Road;
- WM4 - A158 Skegness Road to Low Road;
- WM5 - Low Road to Steeping River;
- WM6 – Steeping River to Ivy House Farm/Marsh Yard;
- WM7 - Ivy House Farm/Marsh Yard to Staples Farm;
- WM8 - Staples Farm to Crowhall Lane;
- WM9 - Crowhall Lane to Church End Lane;
- A1 - Low Road to Steeping River;

- A2 - Steeping River to Fodder Dike Bank /Fen Bank;
- A3 - Fodder Dike Bank /Fen Bank to Broadgate;
- A4 - Broadgate to Ings Drove;
- A5 - Ings Drove to Church End Lane;
- WM10 - Church End Lane to The Haven;
- WM11 - The Haven to Marsh Road;
- WM12 - Marsh Road to Fosdyke Bridge;
- WM13 - Fosdyke Bridge to Weston Marsh Substation North; and
- WM14 - Fosdyke to Weston Marsh Substation South.

Designated Sites

Lincolnshire Node

22.4.23 Figures 3.1 to Figure 3.2 of Volume 2, Appendix 22.1: Ornithology Desk Study show the location of statutory and non-statutory ornithological designated sites in relation to Lincolnshire Node. Descriptions for each site, including details of relevant ornithological qualifying/interest features, or references to birds within the citation text, are provided in Volume 2, Appendix 22.1: Ornithology Desk Study.

22.4.24 Table 22.3 presents the designated sites with ornithological features, or references to birds within citation text, within the relevant study areas for Lincolnshire Node and their distance from the nearest segment.

Table 22.3: Designated sites with ornithological features within the Lincolnshire Node study area

SPAs and Ramsars			
The Wash SPA and Ramsar	16.3	LN1 - Landfall to A52 – Mumby	S
Greater Wash SPA	Inside PEIR Boundary (below MHWS only)	LN1 - Landfall to A52 – Mumby	E
Gibraltar Point SPA and Ramsar	13.3	LN1 - Landfall to A52 – Mumby	S
Humber Estuary SPA and Ramsar ²	9.7	LN2 - A52 – Mumby to Lincolnshire Node	NW
SSSIs – with notified bird features			
Saltfleetby-Theddlethorpe Dunes SSSI (and NNR)	9.7	LN2 - A52 – Mumby to Lincolnshire Node	N
Gibraltar Point SSSI (and NNR)	13.3	LN1 - Landfall to A52 – Mumby	S
The Wash SSSI (and NNR)	16.3	LN1 - Landfall to A52 – Mumby	S
SSSIs – without notified bird features (birds mentioned in citation only)			

² The Humber Estuary SSSI boundary is located >15km from the PEIR boundary at the closest point.

Sea Bank Clay Pits SSSI	Inside Boundary	PEIR	LN1 - Landfall to A52 – Mumby	N/A
Hoplands Wood SSSI	5.1		LN2 - A52 – Mumby to Lincolnshire Node	SW
Willoughby Wood SSSI	5.3		LN2	SW
Muckton Wood SSSI	11.1		LN2 - A52 – Mumby to Lincolnshire Node	WNW

Local Wildlife Sites (birds mentioned in citations)

Anderby Creek Sand Dunes	Inside Boundary	PEIR	LN1 - Landfall to A52 – Mumby	N/A
Chapel Six Marshes	Inside Boundary	PEIR	LN1 - Landfall to A52 – Mumby	N/A
Marsh Yard to Anderby Creek Dunes	Inside Boundary	PEIR	LN1 - Landfall to A52 – Mumby	N/A
Wolla Bank South	Inside Boundary	PEIR	LN1 - Landfall to A52 – Mumby	N/A
Anderby Gravity Outfall	0.06		LN1 - Landfall to A52 – Mumby	NE
Chapel Pit Nature Reserve (non-SSSI)	0.3		LN1 - Landfall to A52 – Mumby	SE
Chapel Point Dunes, South	1.0		LN1 - Landfall to A52 – Mumby	SE
Moggs Eye Sea Bank Ponds	1.2		LN1 - Landfall to A52 – Mumby	N
Huttoft Carr Terrace to Marsh Yard Dunes	1.4		LN1 - Landfall to A52 – Mumby	N
Hogsthorpe Pit	1.8		LN1 - Landfall to A52 – Mumby	SSW

Lincolnshire Wildlife Trust Reserves (birds mentioned in reserve descriptions)

Anderby Marsh	Inside Boundary	PEIR	LN1 - Landfall to A52 - Mumby	N/A
Chapel Six Marshes	Inside Boundary	PEIR	LN1 - Landfall to A52 - Mumby	N/A
Wolla Bank Pit	Inside Boundary	PEIR	LN1 - Landfall to A52 - Mumby	N/A
Wolla Bank Reedbed	Inside Boundary	PEIR	LN1 - Landfall to A52 - Mumby	N/A
Chapel Pit	0.3		LN1 - Landfall to A52 - Mumby	SE

Weston Marsh South of A52 and North of A52

- 22.4.25 Figures 3.3 to Figure 3.4 of Volume 2, Appendix 22.1: Ornithology Desk Study show the location of statutory and non-statutory designated sites in relation to Weston Marsh South of A52 and North of A52.
- 22.4.26 Table 22.4 presents the designated sites with ornithological features within the study areas for the two Weston Marsh onshore ECC options in relation to individual segments of the onshore ECC.

Table 22.4: Designated sites with ornithological features within the Weston Marsh onshore ECC Options

SPAs and Ramsars				
Greater Wash SPA	Inside Boundary (below MHWS only)	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	E
The Wash SPA and Ramsar	0.15		WM11 - The Haven to Marsh Road (both ECCs)	E
Gibraltar Point SPA and Ramsar	2.3 (South of A52)		WM6 - Steeping River to Ivy House Farm /Marsh Yard	E
	3.7 (North of A52)		WM5 - Low Road to Steeping River	E
Humber Estuary SPA and Ramsar	12.1		WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	NW
SSSIs – with notified bird features				
The Wash SSSI and NNR	0.15		WM11 - The Haven to Marsh Road (both ECCs)	E
Gibraltar Point SSSI and NNR	2.3 (South of A52)		WM6 - Steeping River to Ivy House Farm /Marsh Yard	E
	3.7 (North of A52)		WM5 - Low Road to Steeping River	
Saltfleetby-Theddlethorpe Dunes SSSI (and NNR)	12		WM1	NW
SSSIs – without notified bird features (birds mentioned in citation only)				
Sea Bank Clay Pits SSSI	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (Both ECCs)	N/A
Surfleet Lows SSSI	3.5		WM14 - Fosdyke Bridge to Weston Marsh Substation South (both ECCs)	SW
Hoplands Wood	6.7		WM2	W
Willoughby Wood SSSI	6.3		WM2 - A52 – Hogsthorpe to Marsh Lane (both ECCs)	W
Local Wildlife Sites				
Anderby Creek Sand Dunes	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	N/A
Chapel Six Marshes	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	N/A
Hogsthorpe Pit	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	N/A
Marsh Yard to Anderby Creek Dunes	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	N/A

Wolla Bank South	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	N/A
Havenside	Inside Boundary	PEIR	WM10 - Church End Lane to The Haven (both ECCs)	N/A
Hobhole Bank	Inside Boundary	PEIR	WM10 - Church End Lane to The Haven (both ECCs)	N/A
Moulton Marsh	Inside Boundary	PEIR	WM14 - Fosdyke Bridge to Weston Marsh Substation South (both ECCs)	NE
Risegate Eau	Inside Boundary	PEIR	WM13 - Fosdyke Bridge to Weston Marsh Substation North (both ECCs)	N/A
Anderby Gravity Outfall	0.06		WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	N
Middlemarsh Farm	0.08		WM4 - A158 – Skegness Road to Low Road; (both ECCs)	ESE
Frampton Hall	0.3		WM11 - The Haven to Marsh Road (both ECCs)	WNW
Chapel Pit Nature Reserve (non-SSSI)	0.3		WM1 - Landfall to A52 - Hogsthorpe (both ECCs)	ESE
Moulton River	0.4		WM14 - Fosdyke Bridge to Weston Marsh Substation South (Both ECCs)	SE
Surfleet Seas End Saltmarsh	0.7		WM14 - Fosdyke Bridge to Weston Marsh Substation South (both ECCs)	WSW
Sloothby Low Lane	0.7		WM2 - A52 – Hogsthorpe to Marsh Lane (both ECCs)	WNW
Middlemarsh Meadows	0.7		WM4 - A158 – Skegness Road to Low Road; (both ECCs)	NNE
Vernatt's Drain	0.7		WM14 - Fosdyke Bridge to Weston Marsh Substation South (both ECCs)	SW
Chapel Point Dunes, South	1.0		WM1 - Landfall to A52 - Hogsthorpe (both ECCs)	SE
Moggs Eye Sea Bank Ponds	1.2		WM1 - Landfall to A52 - Hogsthorpe (both ECCs)	N
Hobhole Drain, Simmon House Bridge to Benington Bridge	1.4 (North of A52)		A4 - Broadgate to Ings Drove (North of A52)	W
Huttoft Carr Terrace to Marsh Yard Dunes	1.4		WM1 - Landfall to A52 - Hogsthorpe (both ECCs)	N

Pinchbeck Marsh	1.5		WM14 - Fosdyke Bridge to Weston Marsh Substation South (both ECCs)	SW
Lincolnshire Wildlife Trust Reserves				
Anderby Marsh	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	NNE
Wolla Bank Pit	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	ENE
Wolla Bank Reedbed	Inside Boundary	PEIR	WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	NE
Chapel Pit	0.3		WM1 - Landfall to A52 – Hogsthorpe (both ECCs)	ESE
Moulton Marsh	Inside Boundary	PEIR	WM14 - Fosdyke Bridge to Weston Marsh Substation South (both ECCs)	N/A
Frampton Marsh	0.7		WM11 - The Haven to Marsh Road (both ECCs)	SE
RSPB Reserves				
Frampton Marsh	0.01		WM11 - The Haven to Marsh Road (both ECCs)	S
Freiston Shore	1.46		WM9 - Crowhall Lane to Church End Lane	SE

Lincolnshire Node and Weston Marsh North and South of the A52 – Further details of SSSIs and RSPB Reserves with ornithological features

Sea Bank Clay Pits SSSI

22.4.27 Sea Bank Clay Pits SSSI consists of a number of separate locations along the coast, including two within the PEIR boundary at the landfall and a third section which is 350m from the PEIR boundary at the closest point. The following features are listed within ‘Condition of Features’: eutrophic lakes; invertebrate assemblage and lowland fens. No bird features are listed as notified features.

22.4.28 The citation states the following in relation to bird features *“the pits are also important for breeding, wintering and passage birds”*. For Unit 3 ‘Wolla Bank Reedbed’ the condition assessment states: *“The excavations over about a third of the pit will allow the small patch of reed in the northwest corner of the site to spread and allow the establishment of a larger reedbed capable of supporting breeding reedbed birds such as reed bunting and reed warbler and to support the local bittern population over winter”*.

Saltfleetby to Theddlethorpe Dunes SSSI

22.4.29 Saltfleetby to Theddlethorpe Dunes SSSI is located 9.7km to the north of the PEIR Boundary (segment LN2) and is notified for a range of coastal habitats and the associated flora and fauna. Bird features listed in the ‘Condition of Features’ are:

- Breeding birds:

- little tern; and
- assemblages of breeding birds – scrub.
- Non-breeding birds:
 - >20,000 waterbirds;
 - dark-bellied brent goose;
 - dunlin;
 - knot;
 - redshank;
 - sanderling; and
 - wigeon.

22.4.30 The citation states the following in relation to birds *“The intertidal sands and muds provide extensive feeding and roosting grounds for wildfowl and waders including brent geese, shelduck and dunlin”*. *“Yellow wagtails breed on the saltmarsh and there is a small colony of little tern on the shingle bank”*. *“Breeding birds [of freshwater marsh and dune slacks] include water rail, snipe, and reed, grasshopper and sedge warblers”*. *“There are outstanding breeding densities of birds in the dune scrub, with whitethroat a major constituent. Also present are lesser whitethroat and long eared owl. The oldest areas of scrub now contain breeding blackcap, garden warbler and nightingale”*.

Gibraltar Point SSSI

22.4.31 Gibraltar Point SSSI is located 2.3km to the east of the PEIR Boundary (segment WM6). Bird features listed in the ‘Condition of Features’ are:

- Breeding birds:
 - little tern; and
 - assemblages of breeding birds – sand dunes and saltmarshes.
- Non-breeding birds:
 - >20,000 waterbirds;
 - bar-tailed godwit;
 - dark-bellied brent goose;
 - dunlin;
 - grey plover;
 - knot;
 - oystercatcher;
 - ringed plover;
 - sanderling; and

- wigeon.

22.4.32 The citation states in relation to birds: *“The diversity of coastal habitats present supports a good variety of breeding birds such as mallard, shelduck ringed plover, little tern, oystercatcher and redshank. Gibraltar Point is also an important site for wintering and passage waders. Numbers of oystercatcher, grey plover, knot, sanderling and bar-tailed godwit are of international significance, and the area is of national importance for its numbers of ringed plover”*.

The Wash SSSI

22.4.33 Bird features listed in the ‘Condition of Features’ are:

- Breeding birds:
 - common tern;
 - little tern;
 - redshank;
- Non-breeding birds:
 - >20,000 waterbirds;
 - avocet;
 - bar-tailed godwit;
 - Bewick’s swan;
 - black-tailed godwit;
 - dark-bellied brent goose;
 - common scoter;
 - curlew;
 - dunlin;
 - gadwall;
 - golden plover;
 - goldeneye;
 - grey plover;
 - knot;
 - oystercatcher;
 - pink-footed goose;
 - pintail;
 - redshank;
 - ringed plover;

- sanderling;
- shelduck;
- turnstone;
- ‘variety of wintering species’;
- whooper swan; and
- wigeon.

22.4.34 The citation states in relation to birds: *“The intertidal mudflats and saltmarshes represent one of Britain's most important winter-feeding areas for waders and wildfowl outside of the breeding season. Enormous numbers of migrant birds, of international significance, are dependant on the rich supply of invertebrate food. The saltmarsh and shingle communities are of considerable botanical interest and the mature saltmarsh is a valuable bird breeding zone”*.

Surfleet Lows SSSI

22.4.35 Surfleet Lows SSSI is located 3.5km to the west of Weston Marsh (WM14 segment) and the feature listed in ‘Condition of Features’ is lowland mire grassland and rush pasture. No bird features are listed as notified features.

22.4.36 The citation states the following in relation to birds *“Winter flooding of the meadow attracts ducks such as mallard, teal and wigeon, and good numbers of snipe. Reed warblers breed here, and at least 50 other species of bird have been recorded”*.

Muckton Wood, Hoplands Wood and Willoughby Wood SSSIs

22.4.37 Hoplands Wood SSSI is an ancient woodland site and the feature listed in ‘Condition of Features’ is lowland mixed deciduous woodland. No bird features are listed as notified features. The citation states the following in relation to birds *“This favours a rich and varied ground flora and breeding bird community”* and *“Breeding birds include woodcock, tawny owl, greater spotted woodpecker, tree creeper and four species of warblers”*. The SSSI is located 5.1km to the west of the PEIR boundary at the closest point (LN2 segment).

22.4.38 Willoughby Wood is an ancient woodland site and the feature listed in ‘Condition of Features’ is lowland mixed deciduous woodland. No bird features are listed as notified features. The citation states the following in relation to birds *“The site is notable for its breeding birds”* and *“Breeding birds include heron, woodcock, tawny owl and greater spotted woodpecker”*. Willoughby Wood SSSI is located 6.3km to the west of the PEIR boundary.

22.4.39 Muckton Wood SSSI is located 11.1km northwest of the PEIR boundary (LN2 segment) and the feature listed in ‘Condition of Features’ is lowland mixed deciduous woodland. No bird features are listed as notified features. The citation states the following in relation to birds *“The site supports one of the largest heronries in the county with over 30 breeding pairs. Other breeding birds include greater spotted woodpecker, treecreeper and an abundance of warblers”*.

RSPB Frampton Marsh

22.4.40 The Frampton Marsh reserve boundary is approximately 10m to the south of the PEIR

boundary at the closest point, as shown in Figure 3.4.4 of Volume 2, Appendix 22.2: Confidential Desk Study. The southern half of the Reserve overlaps with The Wash SPA, Ramsar and SSSI. The closest point is between an access road for the Project and the access road to the Frampton Marsh Reserve. The distance from the PEIR boundary to the nearest open ground/wetland within the Reserve is approximately 150m and there is approximately 275m between the onshore ECC and the nearest open ground/wetland within the Reserve. There is a mature linear strip of woodland along the access road to the Reserve, which provides a screen to the open wetland habitats within the Reserve, particularly to the north and west. There is an existing access track along the northeastern boundary of the Reserve. The reserve is important for wintering wildfowl, migrating waders and breeding waders (RSPB, 2023a), but does not have listed features, as is the case for certain statutory sites for example.

RSPB Freiston Shore

22.4.41 RSPB Freiston Shore is located 1.46km to the south of WM9 segment of the PEIR boundary at the closest point, as shown in Figure 3.4.4 of Volume 2, Appendix 22.2: Confidential Desk Study. The majority of the reserve overlaps with The Wash SPA, Ramsar and SSSI. The reserve does not have specific listed features but is described as *“a tidal saltmarsh which also encompasses the habitats of saline lagoons and wet grassland”*. *“Freiston Shore has one of the UK’s largest ‘managed realignment’ projects, in which the RSPB has worked with the Environment Agency to convert 66 hectares of coastal farmland into tidal saltmarsh”* (RSPB, 2023b).

Wolla Bank to Lincolnshire Node and Weston Marsh North and South of the A52 – LWS’s (with reference to birds) within and adjacent to the PEIR Boundary

Anderby Creek Sand Dunes LWS

22.4.42 Anderby Creek Sand Dunes LWS is located within the onshore PEIR Boundary, at the Landfall. The citation states that it was selected as an LWS by passing criteria (GLNP, 2013):

- C03 – *“All BAP quality coastal sand dunes and dune grassland at least 0.5ha in extent”*; and
- NG1 – *“Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”*.

22.4.43 In relation to birds, the citation states *“Fauna noted during the survey were reed bunting, reed warbler, swallow, wren, woodpigeon”*.

Marsh Yard to Anderby Creek Dunes LWS

22.4.44 Marsh Yard to Anderby Creek Dunes LWS is located adjacent to the onshore PEIR Boundary at the northern end of the Landfall area. The citation states that it was selected as an LWS by passing criteria:

- C03 – *“All BAP quality coastal sand dunes and dune grassland at least 0.5ha in extent”*.

22.4.45 In relation to birds, the citation states *“Birds and invertebrates seen during the survey included migrating whimbrel, reed bunting, house martin”*.

Wolla Bank South LWS

22.4.46 Wolla Bank South LWS is located within the PEIR Boundary at the southern section of the Landfall area. The citation states that it was selected as an LWS by passing criteria:

- NG1 – *“Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”;*
- WE1 – *“Wet reedbeds at least 0.5ha in extent where the vegetated element comprises at least 90% common reed Phragmites australis”;*
- SL1 – *“All BAP quality saline lagoons”;* and
- CO3 - *“All BAP quality coastal sand dunes and dune grassland at least 0.5ha in extent”.*

22.4.47 In relation to birds, the citation states *“A wide range of birds and invertebrates were noted during the survey, including coot, sedge and reed warbler, swift, common whitethroat”.*

Chapel Six Marshes LWS

22.4.48 Chapel Six Marshes LWS is located adjacent to the PEIR Boundary at the southern section of the Landfall area. The citation states that it was selected as an LWS by passing criteria:

- SUP2 – *“Areas that add to the wildlife value of adjacent land of at least LWS quality”;*
- WE1 – *“Wet reedbeds at least 0.5ha in extent where the vegetated element comprises at least 90% common reed Phragmites australis”;*
- SL1 – *“All BAP quality saline lagoons”;* and
- CO3 - *“All BAP quality coastal sand dunes and dune grassland at least 0.5ha in extent”.*

22.4.49 In relation to birds, the citation states *“Fauna noted during the survey were reed warbler”* and *“moorhen, migrating whimbrel, woodpigeon”.*

Anderby Gravity Outfall LWS

22.4.50 Anderby Gravity Outfall LWS is located close to the PEIR Boundary to the northwest of the Landfall area. The citation states that it was selected as an LWS by passing criteria:

- NG1 – *“Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”.*

22.4.51 In relation to birds, the citation states *“A good number of birds, damselflies and other fauna were noted, including reed and sedge warbler, common whitethroat, wren, swallow, swift, house martin”.*

Hogsthorpe Pit LWS

22.4.52 Hogsthorpe Pit LWS is located adjacent to the PEIR Boundary in the WM1 segment. The citation states that it was selected as an LWS by passing criteria:

- STA2 – Standing water.

22.4.53 In relation to birds, the citation states *“Coot, moorhen and common dragonflies were seen”.*

Middlemarsh Farm LWS

22.4.54 Middlemarsh Farm LWS is located approximately 80m from the PEIR Boundary at WM4

segment. The citation states that it was selected as an LWS by passing criteria:

- GM1 – “Grassland at least 2ha in extent that is subject to a low intensity grazing regime and holds surface water in the winter months and supports a breeding bird population that scores a minimum bird index score of 13 using Table 13 (a)”; and
- GM2 – “Grassland at least 2ha in extent that is subject to a low intensity grazing regime and holds surface water in the winter months and supports a wintering/passage bird population that satisfies the threshold count for at least two of the species listed in Table 13 (b)”.

22.4.55 In relation to birds, the citation states “The impressive list of breeding birds since 2008 includes lapwing, redshank, snipe, avocet, yellow wagtail, reed and sedge warbler, reed bunting, skylark, shoveler, mallard and mute swan. Wigeon, lapwing, curlew and other birds use the area in winter”.

Hobhole Bank LWS

22.4.56 Hobhole Bank LWS is located within the PEIR Boundary at WM10. The citation states that it was selected as an LWS by passing criteria:

- MOS1 – “Areas at least 0.25ha in extent that support a combination of two or more individual habitats, each with a species index score that is no more than three points below the qualifying threshold”;
- NG1 – “Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”; and
- CG1 – “Calcareous grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 8”.

22.4.57 In relation to birds, the citation states “It supports a good bird assemblage and is known locally for the long-eared owls which over winter on site”.

Havenside LWS

22.4.58 Havenside LWS is located partly within the PEIR Boundary at The Haven (segment WM10). The citation states that it was selected as an LWS by passing criteria:

- NG1 – “Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”.
- MOS1 – “Areas at least 0.25ha in extent that support a combination of two or more individual habitats, each with a species index score that is no more than three points below the qualifying threshold”;
 - CG1 – “Calcareous grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 8”.
 - SW2 – Seasonally wet areas.
- C01 – “All BAP quality saltmarsh at least 0.5ha in extent, or linear riversides at least 50m long”.

22.4.59 In relation to birds, the citation states “The mosaic of woodland, grassland and wetland is

very valuable in the local context and of significant value to local bird, mammal and invertebrate populations”.

Moulton Marsh LWS

22.4.60 Moulton Marsh LWS is located partly within the PEIR Boundary in the WM14 segment. The citation states that it was selected as an LWS by passing criteria:

- SW1 – Seasonally wet areas;
- CO1 – *“All BAP quality saltmarsh at least 0.5ha in extent, or linear riversides at least 50m long”*
- SL1 – *“All BAP quality saline lagoons”*; and
- MOS2 – Mosaic.

22.4.61 Bird species are not referenced in the citation.

Risgate Eau LWS

22.4.62 Risgate Eau LWS is located adjacent to the PEIR Boundary at Weston Marsh North OnSS Search Area. The citation states that it was selected as an LWS by passing criteria:

- FW2 – *“Running or standing water with a minimum species index score of 10 using Table 11”*;
- MOS1 – *“Areas at least 0.25ha in extent that support a combination of two or more individual habitats, each with a species index score that is no more than three points below the qualifying threshold”*;
- NG1 – *“Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”*;
- SUP5 (Deptford Pink) – *“Areas at least 0.1ha in extent with a species index score within 50% of any criterion threshold and a self-sustaining population of a species (or suite of species) of conservation value”*; and
- WE2 – *“Wetland at least 0.5ha in extent with a minimum species index score of eight using Table 12”*.

22.4.63 In relation to birds, the citation states *“Other fauna recorded were reed warbler, kingfisher, common snipe, grey heron, moorhen, green sandpiper”*.

Chapel Pit Nature Reserve (non-SSSI) LWS

22.4.64 Chapel Pit LWS is located approximately 300m south of the PEIR Boundary at the Landfall. The citation states that it was selected as an LWS by passing criteria:

- SUP2 – *“Areas that add to the wildlife value of adjacent land of at least LWS quality”*.

22.4.65 Bird species are not referenced in the citation.

Chapel Point Dunes, South LWS

22.4.66 Chapel Point Dunes South LWS is located approximately 1km south of the PEIR Boundary at the Landfall. The citation states that it was selected as an LWS by passing criteria:

- CO3 - *“All BAP quality coastal sand dunes and dune grassland at least 0.5ha in extent”*.

22.4.67 In relation to birds, the citation states *“Amongst the birds and invertebrates encountered during the survey were swallow, house martin, dunnock, goldfinch”*.

Moggs Eye Sea Bank Ponds LWS

22.4.68 Moggs Eye Sea Bank Ponds LWS is located approximately 1km north of the PEIR Boundary at the WM1 segment. The citation states that it was selected as an LWS by passing criteria:

- SW1 – Seasonally wet areas;

22.4.69 In relation to birds, the citation states *“The local resident mentioned that a garganey was present in 2003, and made a reference to the possibility of bitterns visiting”*.

Huttoft Carr Terrace to Marsh Yard Dunes LWS

22.4.70 Huttoft Carr Terrace to Marsh Yard Dunes LWS is located approximately 1.4km north of the PEIR Boundary at the WM1 segment. The citation states that it was selected as an LWS by passing criteria:

- CO3 - *“All BAP quality coastal sand dunes and dune grassland at least 0.5ha in extent”*.

22.4.71 In relation to birds, the citation states *“Birds, butterflies and moths seen during the survey included common whitethroat, reed bunting, swallow, Sandwich tern”*.

Frampton Hall LWS

22.4.72 Frampton Hall LWS is located approximately 0.3km from the PEIR Boundary at the WM11 segment. The citation states that it was selected as an LWS by passing criteria:

- WD5 – *“Parkland or wood-pasture at least 1ha in extent that supports at least one veteran tree”*; and
- SW2 - Seasonally wet areas.

22.4.73 In relation to birds, the citation states *“The site also has significant nature conservation value for local bird and invertebrate populations”*.

Moulton River LWS

22.4.74 Moulton River LWS is located approximately 0.4km south of the PEIR Boundary at the WM14 segment. The citation states that it was selected as an LWS by passing criteria:

- FW2 – *“Running or standing water with a minimum species index score of 10 using Table 11”*; and
- SUP3 – *“Linear features that connect, and therefore add to the wildlife value of, adjacent land of at least LWS quality”*.

22.4.75 In relation to birds, the citation states *“Amongst the vertebrates recorded were common toad, mallard, reed bunting, sedge warbler, common snipe, little egret, swallow, skylark, linnets and the declining corn bunting”*.

Surfleet Seas End Saltmarsh LWS

22.4.76 Surfleet Seas End Saltmarsh LWS is located approximately 0.7km west of the PEIR Boundary at the WM14 segment (Weston Marsh South OnSS). The citation states that it was selected as an LWS by passing criteria:

- C01 – *“All BAP quality saltmarsh at least 0.5ha in extent, or linear riversides at least 50m long”.*

22.4.77 In relation to birds, the citation states *“Few birds were observed on the day, but this stretch of river is known to be valuable for birds with regular visits from waders of all sorts, birds of prey, sand martins and many others”.*

Sloothby Low Lane LWS

22.4.78 Sloothby Low Lane LWS is located approximately 0.7km west of the PEIR Boundary at the WM14 segment (Weston Marsh South OnSS). The citation states that it was selected as an LWS by passing criteria:

- NG1 – *“Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”;*
- STA2 – Standing water; and
- SW2 - Seasonally wet areas.

22.4.79 In relation to birds, the citation states *“short-eared owl was seen frequently throughout both visits; it was hunting over the site and adjacent arable fields and resting in the deep ditches. An owl box has been constructed at the end of the central branch of the site”.* Also *“redwing, moorhen, mute swan, woodpigeon, heron, magpie, pheasant, long-tailed tit, blackbird, skylark, carrion crow, linnets were also recorded”.*

Middlemarsh Meadows LWS

22.4.80 Middlemarsh Meadows LWS is located approximately 0.7km east of the PEIR Boundary at the WM4 segment. The citation states that it was selected as an LWS by passing criteria:

- NG1 – *“Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”.*

22.4.81 In relation to birds, the citation states *“Fauna noted during survey were sedge and reed warbler, chaffinch, wren, blue tit, starling, woodpigeon”.*

Vernatt’s Drain LWS

22.4.82 Vernatt’s Drain LWS is located approximately 0.7km south west of the PEIR Boundary at the WM14 segment (Weston Marsh South OnSS). The citation states that it was selected as an LWS by passing criteria:

- NG1 – *“Neutral grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7”;*
- CG1 – *“Calcareous grassland at least 0.1ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 8”.*
- SW1 & 2 – seasonally wet areas;
- FLO3;
- MOS1 - *“Areas at least 0.25ha in extent that support a combination of two or more individual habitats, each with a species index score that is no more than three points below the qualifying threshold”;*

22.4.83 In relation to birds, the citation states *“The site supports a good range of fauna, including breeding populations of reed and sedge warblers, reed bunting and sand martin”*.

Wolla Bank to Lincolnshire Node and Weston Marsh North and South of the A52 – LWT Reserves (with reference to birds) within and adjacent to the PEIR Boundary

Anderby Marsh LWT Reserve

22.4.84 Anderby Marsh LWT Reserve is located partly within the PEIR Boundary at The Landfall. The LWT webpage (LWT, 2023) states *“this reserve is managed as a traditional coastal grazing marsh. It is hoped in future that this nature reserve will help support a range of conservation priority birds including lapwing, curlew, redshank, snipe, barn owl, starling and reed bunting. In recent years the marsh has attracted a couple of rare birds such as black-winged stilt and glossy ibis. Wigeon, teal and snipe are regular on the marsh in the winter months. The adjacent reedbed fringes attract numerous reed, sedge and Cetti’s warblers. Marsh harrier is a regular sight in the summer as is cuckoo”*.

Wolla Bank Reedbed LWT Reserve

22.4.85 Wolla Bank Reedbed LWT Reserve is located within the PEIR Boundary at The Landfall, adjacent to Anderby Marsh LWT Reserve. The LWT webpage (LWT, 2023) states *“Water rail, reed warbler, sedge warbler, Cetti’s warbler, grasshopper warbler, reed bunting and whitethroat all nest. Marsh harrier and hobby occur regularly in the summer and short-eared owls can be present in winter. Bearded tit is a regular visitor in the winter. Starling murmurations can sometimes be present in the winter months”*.

Wolla Bank Pit LWT Reserve

22.4.86 Wolla Bank Pit LWT Reserve is located partly within the PEIR Boundary at The Landfall, adjacent to Wolla Bank Reedbed LWT Reserve. The LWT webpage (LWT, 2023) states *“Flooded clay pits with extensive beds of reed and sea club-rush, with great reedmace, fennel pondweed, wild celery, sea arrowgrass and water-crowfoot. There are also colonies of common spotted-orchid and swathes of knapweed. Snipe are frequent visitors in winter, when bittern and bearded tit are occasional visitors. In the breeding season, reed and sedge warblers, reed bunting and little grebe all nest. Many rare migrants have also been seen. Fieldfare, redwing and song thrush can be abundant in the winter”*.

Chapel Pit LWT

22.4.87 Chapel Pit LWT Reserve is located 300m south of the PEIR Boundary at The Landfall, adjacent to Chapel Pit and Chapel Six Marshes LWS’s. The LWT webpage (LWT, 2023) states *“Excavated for clay for the repair of the sea banks following the floods of 1953, the flooded pit has marginal reedbeds and aquatic plants, such as water-crowfoot and great reedmace. 15 species of duck have been recorded, mainly winter visitors. Bearded tit and bittern are recorded occasionally. In summer breeding species include reed and sedge warblers, lesser whitethroat and little grebes can also be seen. In August and September thousands of migrating swallows and house martins roost in the reedbeds. Screens of willows round the banks of the pits have been planted in order to reduce disturbance to birds”*.

Moulton Marsh LWT

22.4.88 Moulton Marsh LWT Reserve is located partly within the PEIR Boundary at WM14. The LWT webpage (LWT, 2023) states *“The maturing woodland now holds a good population of tits and finches, while the scrub areas are habitat for whitethroats and buntings. The lagoons are an important wintering area for little grebe and water rail in winter. Redshank and little egret are regularly seen on the scrapes”*.

Frampton Marsh LWT

22.4.89 Frampton Marsh LWT Reserve is located 700m southeast of the PEIR Boundary at the WM11 segment, adjacent to Frampton Marsh RSPB Reserve and is part of The Wash SPA, Ramsar and SSSI. The LWT webpage (LWT, 2023) states *“The area supports regular breeders such as redshank, oystercatcher, reed bunting, meadow pipit and skylark. In winter the saltings attract wigeon, mallard, shelduck, teal and brent geese, with large flocks of finches and buntings, notably linnet and twite and birds of prey such as hen harrier and merlin. The tidal mudflats form part of the wader feeding grounds, which give the Wash its international status. Large flocks of dunlin occur, as well as considerable numbers of grey plover, whimbrel, curlew, bar-tailed godwit and greenshank”*.

Species

22.4.90 The following sections summarise the winter bird survey results (further details are provided in Volume 2, Appendix 22.3: Winter Bird Survey Report 2022-2023) and desk study results for winter birds (further details in Volume 2, Appendix 22.1: Ornithology Desk Study and Volume 2, Appendix 22.2: Confidential Desk Study). Breeding bird surveys are on-going and breeding birds will therefore be evaluated and assessed within the ES.

Landfall

Qualifying features of identified European sites

22.4.91 Table 22.5 presents the peak counts and frequency of observations from Landfall surveys during winter 2022-23 for those qualifying species from the identified SPAs and Ramsar sites. The Landfall is the same for all three ECC options.

Table 22.5: Peak counts for relevant SPA and Ramsar qualifying species recorded during winter bird surveys at the Landfall

Species	Peak Count (from hourly counts)	% of counts in which species observed	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
Avocet	0	0	2,138 pairs	0	Humber Estuary SPA (breeding) ³	64 pairs	N/A	N/A	N/A
					Humber Estuary SPA (non-breeding)	59	0	2,479	0
Golden plover	34	5%	410,000	0.01%	The Wash Ramsar (non-breeding)	22,033	0.15	15,212	0.22
					Humber Estuary SPA (non-breeding)	30,079	0.11	31,237	0.11
					Humber Estuary Ramsar (non-breeding)	30,709	0.11	31,237	0.11
Lapwing	0	0	635,000	0	The Wash Ramsar (non-breeding)	46,422	0.00	12,976	0.00
Curlew	18	20%	125,000	0.01	The Wash SPA (non-breeding)	3,700	0.49	6,061	0.30
					The Wash Ramsar (passage)	9,438	0.19	No information	N/A
Oystercatcher	4	18%	305,000	0.00	The Wash SPA (non-breeding)	24,000	0.02	22,175	0.02
					The Wash Ramsar (non-breeding)	15,616	0.03	22,175	0.02
Redshank	1	1%	100,000	0.00	The Wash SPA (non-breeding)	4,331	0.02	5,087	0.02
					The Wash Ramsar (non-breeding)	6,373	0.02	5,087	0.02
					Humber Estuary SPA (non-breeding)	4,632	0.02	2,881	0.03
					Humber Estuary Ramsar (non-breeding)	4,632	0.02	2,881	0.03
					Humber Estuary Ramsar (passage)	7,462	0.01	No information	N/A
Dunlin	17	6%	350,000	0.00	The Wash SPA (non-breeding)	29,000	0.06	26,150	0.07

³ Breeding qualifying features of European sites have been included here for completeness but it would not be appropriate to compare the breeding populations with winter bird survey data for the Project as they relate to different seasons. This applies to all breeding qualifying features listed in the table.

Species	Peak Count (from hourly counts)	% of counts in which species observed	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
					The Wash Ramsar (non-breeding)	36,600	0.05	26,150	0.07
					Humber Estuary SPA (non-breeding)	22,222	0.08	15,954	0.11
					Humber Estuary Ramsar (non-breeding)	22,222	0.08	15,954	0.11
					Humber Estuary Ramsar (passage)	20,269	0.08	No information	N/A
Sanderling	19	35%	21,000	0.09	The Wash SPA (non-breeding)	500	3.80	10,079	0.19
					The Wash Ramsar (non-breeding)	3,505	0.54	10,079	0.19
					Gibraltar Point Ramsar (non-breeding)	971	1.96	No information	N/A
					Gibraltar Point SPA (non-breeding)	1,140	1.67	No information	N/A
Ruff	0	0	920	0.00	Humber Estuary SPA (non-breeding)	128	0	80	0
Bar-tailed godwit	0	0	54000	0.00	The Wash SPA (non-breeding)	7,396	0	17509	0
					The Wash Ramsar (non-breeding)	16,546	0	17509	0
					Gibraltar Point SPA (non-breeding)	8,800	0	Unavailable	0
					Gibraltar Point Ramsar (non-breeding)	3,468	0	Unavailable	0
					Humber Estuary SPA (non-breeding)	2,752	0	1561	0
					Humber Estuary Ramsar (non-breeding)	2,752	0	1561	0
Black-tailed godwit	0	0	41000	0	The Wash SPA (non-breeding)	260	0	8597	0

Species	Peak Count (from hourly counts)	% of counts in which species observed	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
					The Wash Ramsar (non-breeding)	6,849	0	8597	0
					Humber Estuary SPA (non-breeding)	1,113	0	4545	0
					Humber Estuary Ramsar (non-breeding)	1,113	0	4545	0
					Humber Estuary Ramsar (passage)	915	0	Unavailable	0
Turnstone	0	0	43000	0	The Wash SPA (non-breeding)	980	0	755	0
Ringed plover	0	0	43,000	0	The Wash Ramsar (non-breeding)	1,500	0	1315	0
Grey plover	1	4%	34,000	0.00	The Wash SPA (non-breeding)	5,500	0.02	8313	0.01
					The Wash Ramsar (non-breeding)	13,129	0.01	8313	0.01
					Gibraltar Point SPA (non-breeding)	2,793	0.04	Unavailable	N/A
					Gibraltar Point Ramsar (non-breeding)	3,980	0.03	Unavailable	N/A
Bewick's swan	0	0	4,350	0	The Wash SPA (non-breeding)	130	0.00	4	0
Dark-bellied brent goose	7	2%	135,000 (brent goose)	0.01	The Wash SPA (non-breeding)	17,000	0.04	11221	0.06
					The Wash Ramsar (non-breeding)	20,861	0.03	11221	0.06
					Gibraltar Point Ramsar (non-breeding)	682	1.03	Unavailable	N/A
Pink-footed goose	2	4%	510,000	0.00	The Wash SPA (non-breeding)	7,300	0.03	34300	0.01
					The Wash Ramsar (non-breeding)	29,099	0.01	34300	0.01
					North Norfolk SPA (non-breeding)	6,000	0.03	47832	0.00

Species	Peak Count (from hourly counts)	% of counts in which species observed	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
					North Norfolk Ramsar (non-breeding)	9,576	0.02	47832	0.00
Gadwall	0	0	31,000	0.00	The Wash SPA (non-breeding)	130	0.00	122	0.00
Wigeon	500	2%	450,000	0.11	The Wash SPA (non-breeding)	3,900	12.82	12226	4.09
Shelduck	1	1%	51,000	0.00	The Wash SPA (non-breeding)	16,000	0.01	2374	0.04
					The Wash Ramsar (non-breeding)	9,746	0.01	2374	0.04
					Humber Estuary SPA (non-breeding)	4,464	0.02	4515	0.02
					Humber Estuary Ramsar (non-breeding)	4,464	0.02	4515	0.02
Pintail	2	1%	20,000	0.01	The Wash SPA (non-breeding)	1,700	0.12	376	0.53
Goldeneye	0	0	21,000	0.00	The Wash SPA (non-breeding)	220	0.00	69	0.00
Common scoter	40	14%	135,000	0.03	The Wash SPA (non-breeding)	830	4.82	1195	3.35
					Greater Wash SPA (non-breeding)	3,449	1.16	Unavailable	N/A
Eider	1	1%	86,000	0.00	The Wash Ramsar (non-breeding)	1,109	0.09	1049	0.10
Little tern	N/A	N/A	1,450 pairs	N/A	Greater Wash SPA (breeding)	798 pairs	N/A	N/A	N/A
					The Wash SPA (breeding)	30 pairs	N/A	N/A	N/A
					Gibraltar Point SPA (breeding)	40 pairs	N/A	N/A	N/A
					Humber Estuary SPA (breeding)	51 pairs	N/A	N/A	N/A
Sandwich tern	N/A	N/A	14,000 pairs	N/A	Greater Wash SPA (breeding)	3852 pairs	N/A	N/A	N/A
Common tern	N/A	N/A	11,000 pairs	N/A	Greater Wash SPA (breeding)	510 pairs	N/A	N/A	N/A

Species	Peak Count (from hourly counts)	% of counts in which species observed	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
					The Wash SPA (breeding)	220 pairs	N/A	N/A	N/A
Black-headed gull	30	55%	2,200,000	0.00	The Wash Ramsar (non-breeding)	31403	0.10	14541	0.21
Bittern	0	0	227 pairs	0	Humber Estuary SPA (breeding)	2 males	N/A	N/A	N/A
					Humber Estuary SPA (non-breeding)	4	0	2	0
Marsh harrier	1	1%	400 pairs		Humber Estuary SPA (breeding)	10 females	N/A	N/A	N/A
Hen harrier	0	0	N/A	0	Humber Estuary SPA (non-breeding)	8	0	Unavailable	0

Lincolnshire Node

22.4.92 Table 22.6 presents the peak counts from the onshore ECC and OnSS surveys within the Lincolnshire Node survey area during winter 2022-23 for those qualifying species from the identified SPAs and Ramsar sites.

Table 22.6: Peak flock counts for relevant SPA and Ramsar qualifying species recorded during winter bird surveys at the Lincolnshire Node onshore ECC and OnSS

Species	Peak flock Count ⁴	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
Avocet	5	2,138 pairs / 8,700 (winter)	0.06 (winter)	Humber Estuary SPA (breeding)	64 pairs	N/A	N/A	N/A
				Humber Estuary SPA (non-breeding)	59	8.47	2,479	0.20
Golden plover	110	410,000	0.03	The Wash Ramsar (non-breeding)	22,033	0.50	15,212	0.72
				Humber Estuary SPA (non-breeding)	30,079	0.37	31,237	0.35
				Humber Estuary Ramsar (non-breeding)	30,709	0.36	31,237	0.35
Lapwing	258	635,000	0.04	The Wash Ramsar (non-breeding)	46,422	0.56	12,976	1.99
Curlew	44	125,000	0.04	The Wash SPA (non-breeding)	3,700	1.19	6,061	0.73
				The Wash Ramsar (passage)	9,438	0.47	No information	No information
Oystercatcher	5	305,000	0.00	The Wash SPA (non-breeding)	24,000	0.02	22,175	0.02
				The Wash Ramsar (non-breeding)	15,616	0.03	22,175	0.02
Redshank	9	100,000	0.01	The Wash SPA (non-breeding)	4,331	0.21	5,087	0.18
				The Wash Ramsar (non-breeding)	6,373	0.14	5,087	0.18
				Humber Estuary SPA (non-breeding)	4,632	0.19	2,881	0.31
				Humber Estuary Ramsar (non-breeding)	4,632	0.19	2,881	0.31
				Humber Estuary Ramsar (passage)	7,462	0.12	No information	N/A
Dunlin	31	350,000	0.01	The Wash SPA (non-breeding)	29,000	0.11	26,150	0.12
				The Wash Ramsar (non-breeding)	36,000	0.08	26,150	0.12
				Humber Estuary SPA (non-breeding)	22,222	0.14	15,954	0.19

⁴ 'Peak flock count' refers to the highest count of a single flock across the survey period. It is considered inappropriate to sum the counts within the survey area on each visit, as the large survey area and survey methodology do not allow for simultaneous/instantaneous counts of the whole area and birds are likely to move between areas/fields, particularly as a single visit took multiple days to complete, and therefore there would be a risk of counting the same birds multiple times. It is acknowledged that it is therefore not an estimate of the peak number of birds within the survey area at any one time and the evaluation section therefore considers the frequency of observations and the peak and average counts from individual fields/land parcels as shown in Volume 2, Appendix 22.3.

Species	Peak flock Count ⁴	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
				Humber Estuary Ramsar (non-breeding)	22,222	0.14	15,954	0.19
				Humber Estuary Ramsar (passage)	20,269	0.15	No information	N/A
Sanderling	11	21,000	0.05	The Wash SPA (non-breeding)	500	2.20	10,079	0.11
				The Wash Ramsar (non-breeding)	3,505	0.31	10,079	0.11
				Gibraltar Point Ramsar (non-breeding)	971	1.13	No information	N/A
				Gibraltar Point SPA (non-breeding)	1,140	0.96	No information	N/A
Ruff	0	920	0.00	Humber Estuary SPA (non-breeding)	128	0.00	80	0
Bar-tailed godwit	0	54000	0.00	The Wash SPA (non-breeding)	7,396	0.00	17509	0
				The Wash Ramsar (non-breeding)	16,546	0.00	17509	0
				Gibraltar Point SPA (non-breeding)	8,800	0.00	Unavailable	0
				Gibraltar Point Ramsar (non-breeding)	3,468	0.00	Unavailable	0
				Humber Estuary SPA (non-breeding)	2,752	0.00	1561	0
				Humber Estuary Ramsar (non-breeding)	2,752	0.00	1561	0
Black-tailed godwit	0	41000	0	The Wash SPA (non-breeding)	260	0	8597	0
				The Wash Ramsar (non-breeding)	6,849	0	8597	0
				Humber Estuary SPA (non-breeding)	1,113	0	4545	0
				Humber Estuary Ramsar (non-breeding)	1,113	0	4545	0
				Humber Estuary Ramsar (passage)	915	0	Unavailable	0
Turnstone	0	43000	0	The Wash SPA (non-breeding)	980	0	755	0
Ringed plover	0	43,000	0	The Wash Ramsar (non-breeding)	1,500	0	1315	0
Grey plover	0	34,000	0.00	The Wash SPA (non-breeding)	5,500	0.00	8313	0

Species	Peak flock Count ⁴	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site population	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
				The Wash Ramsar (non-breeding)	13,129	0.00	8313	0
				Gibraltar Point SPA (non-breeding)	2,793	0.00	Unavailable	0
				Gibraltar Point Ramsar (non-breeding)	3,980	0.00	Unavailable	0
Bewick's swan	0	4,350	0	The Wash SPA (non-breeding)	130	0.00	4	0
Dark-bellied brent goose	7	135,000 (brent goose)	0.005	The Wash SPA (non-breeding)	17,000	0.04	11221	0.06
				The Wash Ramsar (non-breeding)	20,861	0.03	11221	0.06
				Gibraltar Point Ramsar (non-breeding)	682	1.02	Unavailable	0
Pink-footed goose	17	510,000	0.00	The Wash SPA (non-breeding)	7,300	0.23	34300	0.05
				The Wash Ramsar (non-breeding)	29,099	0.06	34300	0.05
				North Norfolk SPA (non-breeding)	6,000	0.28	47832	0.04
				North Norfolk Ramsar (non-breeding)	9,576	0.18	47832	0.04
Gadwall	87	31,000	0.28	The Wash SPA (non-breeding)	130	66.92	122	71.31
Wigeon	460	450,000	0.10	The Wash SPA (non-breeding)	3,900	11.79	12226	3.76
Shelduck	15	51,000	0.03	The Wash SPA (non-breeding)	16,000	0.09	2374	0.63
				The Wash Ramsar (non-breeding)	9,746	0.15	2374	0.63
				Humber Estuary SPA (non-breeding)	4,464	0.34	4515	0.33
				Humber Estuary Ramsar (non-breeding)	4,464	0.34	4515	0.33
Pintail	0	20,000	0.00	The Wash SPA (non-breeding)	1,700	0.00	376	0
Goldeneye	0	21,000	0.00	The Wash SPA (non-breeding)	220	0.00	69	0
Common scoter	33	135,000	0.02	The Wash SPA (non-breeding)	830	3.98	1195	2.76
				Greater Wash SPA (non-breeding)	3,449	0.96	Unavailable	N/A

Species	Peak flock Count ⁴	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site	Citation population	Peak count as % of designated site population	Most recent WeBS count (2015/16-19/20) for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
Eider	0	86,000	0.00	The Wash Ramsar (non-breeding)	1,109	0.00	1049	0
Little tern	N/A	1,450 pairs	N/A	Greater Wash SPA (breeding)	798 pairs	N/A	N/A	N/A
				The Wash SPA (breeding)	30 pairs	N/A	N/A	N/A
				Gibraltar Point SPA (breeding)	40 pairs	N/A	N/A	N/A
				Humber Estuary SPA (breeding)	51 pairs	N/A	N/A	N/A
Sandwich tern	N/A	14,000 pairs	N/A	Greater Wash SPA (breeding)	3852 pairs	N/A	N/A	N/A
Common tern	N/A	11,000 pairs	N/A	Greater Wash SPA (breeding)	510 pairs	N/A	N/A	N/A
				The Wash SPA (breeding)	220 pairs	N/A	N/A	N/A
Black-headed gull	112	2,200,000	0.01	The Wash Ramsar (non-breeding)	31403	0.36	14541	0.77
Bittern	0	227 pairs	0	Humber Estuary SPA (breeding)	2 males	N/A	N/A	0
				Humber Estuary SPA (non-breeding)	4	0	2	0
Marsh harrier	2	400 pairs	N/A	Humber Estuary SPA (breeding)	10 females	N/A	N/A	N/A
Hen harrier	0	Unavailable	0	Humber Estuary SPA (non-breeding)	8	0	Unavailable	0

Weston Marsh

Qualifying features of identified European sites

22.4.93 Table 22.8 presents the peak counts from surveys of Weston Marsh onshore ECC South of the A52 and OnSS (the whole ECC) during winter 2022-23 for those qualifying species from the identified SPAs and Ramsar sites and Table 22.9 presents that same information in relation to Weston Marsh onshore ECC North of the A52 (only the alternative ECC segments A1-A5).

Table 22.7: Peak flock counts for relevant SPA and Ramsar qualifying species recorded during winter bird surveys at Weston Marsh onshore ECC South of A52 and OnSS

Species	Peak flock Count	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site population	Citation population	Peak count as % of designated population	Most recent WeBS count for designated site (Austin <i>et al.</i> 2023)	Peak count as % of WeBS count
Avocet	5	2,138 pairs / 8,700 (winter)	0.06 (winter)	Humber Estuary SPA (breeding)	64 pairs	N/A	N/A	N/A
				Humber Estuary SPA (non-breeding)	59	8.47	2,479	0.20
Golden plover	110	410,000	0.03	The Wash Ramsar (non-breeding)	22,033	0.50	15,212	0.72
				Humber Estuary SPA (non-breeding)	30,079	0.37	31,237	0.35
				Humber Estuary Ramsar (non-breeding)	30,709	0.36	31,237	0.35
Lapwing	400	635,000	0.06	The Wash Ramsar (non-breeding)	46,422	0.86	12,976	3.08
Curlew	54	125,000	0.04	The Wash SPA (non-breeding)	3,700	10.81	6,061	0.89
				The Wash Ramsar (passage)	9,438	0.57	No information	N/A
Oystercatcher	23	305,000	0.01	The Wash SPA (non-breeding)	24,000	0.10	22,175	0.10
				The Wash Ramsar (non-breeding)	15,616	0.15	22,175	0.10
Redshank	35	100,000	0.04	The Wash SPA (non-breeding)	4,331	0.81	5,087	0.69
				The Wash Ramsar (non-breeding)	6,373	0.55	5,087	0.69
				Humber Estuary SPA (non-breeding)	4,632	0.76	2,881	1.21
				Humber Estuary Ramsar (non-breeding)	4,632	0.76	2,881	1.21
				Humber Estuary Ramsar (passage)	7,462	0.47	No information	N/A
Dunlin	46	350,000	0.01	The Wash SPA (non-breeding)	29,000	0.16	26,150	0.18
				The Wash Ramsar (non-breeding)	36,600	0.13	26,150	0.18
				Humber Estuary SPA (non-breeding)	22,222	0.21	15,954	0.29
				Humber Estuary Ramsar (non-breeding)	22,222	0.21	15,954	0.29
				Humber Estuary Ramsar (passage)	20,269	0.23	No information	N/A
Sanderling	11	21,000	0.05	The Wash SPA (non-breeding)	500	2.20	10,079	0.11
				The Wash Ramsar (non-breeding)	3,505	0.31	10,079	0.11
				Gibraltar Point Ramsar (non-breeding)	971	1.13	No information	N/A
				Gibraltar Point SPA (non-breeding)	1,140	0.96	No information	N/A
Ruff	0	920	0.00	Humber Estuary SPA (non-breeding)	128	0	80	0
Bar-tailed godwit	0	54000	0.00	The Wash SPA (non-breeding)	7,396	0	17509	0
				The Wash Ramsar (non-breeding)	16,546	0	17509	0
				Gibraltar Point SPA (non-breeding)	8,800	0	Unavailable	0
				Gibraltar Point Ramsar (non-breeding)	3,468	0	Unavailable	0
				Humber Estuary SPA (non-breeding)	2,752	0	1561	0
				Humber Estuary Ramsar (non-breeding)	2,752	0	1561	0
Black-tailed godwit	16	41000	0.04	The Wash SPA (non-breeding)	260	6.15	8597	0.19
				The Wash Ramsar (non-breeding)	6,849	0.23	8597	0.19
				Humber Estuary SPA (non-breeding)	1,113	1.44	4545	0.35
				Humber Estuary Ramsar (non-breeding)	1,113	1.44	4545	0.35
				Humber Estuary Ramsar (passage)	915	1.75	Unavailable	N/A
Turnstone	2	43000	0.00	The Wash SPA (non-breeding)	980	0.20	755	0.26
Ringed plover	4	43,000	0.01	The Wash Ramsar (non-breeding)	1,500	0.27	1315	0.30
Grey plover	7	34,000	0.02	The Wash SPA (non-breeding)	5,500	0.13	8313	0.08
				The Wash Ramsar (non-breeding)	13,129	0.05	8313	0.08

Species	Peak flock Count	UK (winter) or Britain (breeding) population	or (breeding) national population	Peak count as % of national population	Designated site population	Citation population	Peak count as % of designated population	Most recent WeBS count 2015/16-2019/20 for designated site (Austin <i>et al.</i> 2023)	Peak count as % of WeBS count
					Gibraltar Point SPA (non-breeding)	2,793	0.25	Unavailable	N/A
					Gibraltar Point Ramsar (non-breeding)	3,980	0.18	Unavailable	N/A
Bewick's swan	0	4,350		0.00	The Wash SPA (non-breeding)	130	0.00	4	0.00
Dark-bellied brent goose	1,100	135,000 (brent goose)		0.81	The Wash SPA (non-breeding)	17,000	6.47	11221	9.80
					The Wash Ramsar (non-breeding)	20,861	5.27	11221	9.80
					Gibraltar Point Ramsar (non-breeding)	682	161.29	Unavailable	N/A
Pink-footed goose	610	510,000		0.12	The Wash SPA (non-breeding)	7,300	8.36	34300	1.78
					The Wash Ramsar (non-breeding)	29,099	2.10	34300	1.78
					North Norfolk SPA (non-breeding)	6,000	10.17	47832	1.28
					North Norfolk Ramsar (non-breeding)	9,576	6.37	47832	1.28
Gadwall	87	31,000		0.28	The Wash SPA (non-breeding)	130	66.92	122	71.31
Wigeon	460	450,000		0.10	The Wash SPA (non-breeding)	3,900	11.79	12226	3.76
Shelduck	15	51,000		0.03	The Wash SPA (non-breeding)	16,000	0.09	2374	0.63
					The Wash Ramsar (non-breeding)	9,746	0.15	2374	0.63
					Humber Estuary SPA (non-breeding)	4,464	0.34	4515	0.33
					Humber Estuary Ramsar (non-breeding)	4,464	0.34	4515	0.33
Pintail	0	20,000		0.00	The Wash SPA (non-breeding)	1,700	0.00	376	0.00
Goldeneye	0	21,000		0.00	The Wash SPA (non-breeding)	220	0.00	69	0.00
Common scoter	33	135,000		0.02	The Wash SPA (non-breeding)	830	3.98	1195	2.76
					Greater Wash SPA (non-breeding)	3,449	0.96	Unavailable	N/A
Eider	0	86,000		0.00	The Wash Ramsar (non-breeding)	1,109	0.00	1049	0.00
Little tern	N/A	1,450 pairs		N/A	Greater Wash SPA (breeding)	798 pairs	N/A	N/A	N/A
					The Wash SPA (breeding)	30 pairs	N/A	N/A	N/A
					Gibraltar Point SPA (breeding)	40 pairs	N/A	N/A	N/A
					Humber Estuary SPA (breeding)	51 pairs	N/A	N/A	N/A
Sandwich tern	N/A	14,000 pairs		N/A	Greater Wash SPA (breeding)	3852 pairs	N/A	N/A	N/A
Common tern	N/A	11,000 pairs		N/A	Greater Wash SPA (breeding)	510 pairs	N/A	N/A	N/A
					The Wash SPA (breeding)	220 pairs	N/A	N/A	N/A
Black-headed gull	137	2,200,000		0.01	The Wash Ramsar (non-breeding)	31403	0.44	14541	0.94
Bittern	0	227 pairs		0	Humber Estuary SPA (breeding)	2 males	0	Unavailable	0
					Humber Estuary SPA (non-breeding)	4	0	2	0
Marsh harrier	2	400 pairs		N/A	Humber Estuary SPA (breeding)	10 females	N/A	N/A	N/A
Hen harrier	0			0	Humber Estuary SPA (non-breeding)	8	0	Unavailable	0

Table 22.8: Peak flock counts for relevant SPA and Ramsar qualifying species recorded during winter bird surveys at Weston Marsh onshore ECC North of A52 - additional segments only (A1-A5)

Species	Peak flock Count	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site population	Citation population	Peak count as % of designated population	Most recent WeBS count 2015/16-2019/20 for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
Avocet	0	2,138 pairs / 8,700 (winter)	0 (winter)	Humber Estuary SPA (breeding)	64 pairs	N/A	N/A	N/A
				Humber Estuary SPA (non-breeding)	59	0	2,479	0
Golden plover	950	410,000	0.23	The Wash Ramsar (non-breeding)	22,033	4.31	15,212	6.25
				Humber Estuary SPA (non-breeding)	30,079	3.16	31,237	3.04
				Humber Estuary Ramsar (non-breeding)	30,709	3.09	31,237	3.04
Lapwing	2,500	635,000	0.39	The Wash Ramsar (non-breeding)	46,422	5.39	12,976	19.27
Curlew	77	125,000	0.06	The Wash SPA (non-breeding)	3,700	2.08	6,061	1.27
				The Wash Ramsar (passage)	9,438	0.82	No information	N/A
Oystercatcher	2	305,000	0.00	The Wash SPA (non-breeding)	24,000	0.01	22,175	0.01
				The Wash Ramsar (non-breeding)	15,616	0.01	22,175	0.01
Redshank	9	100,000	0.01	The Wash SPA (non-breeding)	4,331	0.21	5,087	0.18
				The Wash Ramsar (non-breeding)	6,373	0.14	5,087	0.18
				Humber Estuary SPA (non-breeding)	4,632	0.19	2,881	0.31
				Humber Estuary Ramsar (non-breeding)	4,632	0.19	2,881	0.31
				Humber Estuary Ramsar (passage)	7,462	0.12	No information	N/A
Dunlin	0	350,000	0.00	The Wash SPA (non-breeding)	29,000	0.00	26,150	0.00
				The Wash Ramsar (non-breeding)	36,600	0.00	26,150	0.00
				Humber Estuary SPA (non-breeding)	22,222	0.00	15,954	0.00
				Humber Estuary Ramsar (non-breeding)	22,222	0.00	15,954	0.00
				Humber Estuary Ramsar (passage)	20,269	0.00	No information	0
Sanderling	0	21,000	0.00	The Wash SPA (non-breeding)	500	0.00	10,079	0.00
				The Wash Ramsar (non-breeding)	3,505	0.00	10,079	0.00
				Gibraltar Point Ramsar (non-breeding)	971	0.00	No information	0
				Gibraltar Point SPA (non-breeding)	1,140	0.00	No information	0
Ruff	2	920	0.22	Humber Estuary SPA (non-breeding)	128	1.5625	80	2.5
Bar-tailed godwit	0	54000	0.00	The Wash SPA (non-breeding)	7,396	0	17509	0
				The Wash Ramsar (non-breeding)	16,546	0	17509	0
				Gibraltar Point SPA (non-breeding)	8,800	0	Unavailable	0
				Gibraltar Point Ramsar (non-breeding)	3,468	0	Unavailable	0
				Humber Estuary SPA (non-breeding)	2,752	0	1561	0
				Humber Estuary Ramsar (non-breeding)	2,752	0	1561	0
Black-tailed godwit	0	41000	0	The Wash SPA (non-breeding)	260	0	8597	0
				The Wash Ramsar (non-breeding)	6,849	0	8597	0
				Humber Estuary SPA (non-breeding)	1,113	0	4545	0
				Humber Estuary Ramsar (non-breeding)	1,113	0	4545	0
				Humber Estuary Ramsar (passage)	915	0	Unavailable	0
Turnstone	0	43000	0	The Wash SPA (non-breeding)	980	0	755	0
Ringed plover	2	43,000	0.00	The Wash Ramsar (non-breeding)	1,500	0.13	1315	0.15
Grey plover	0	34,000	0.00	The Wash SPA (non-breeding)	5,500	0.00	8313	0.00
				The Wash Ramsar (non-breeding)	13,129	0.00	8313	0.00

Species	Peak flock Count	UK (winter) or Britain (breeding) population	Peak count as % of national population	Designated site population	Citation population	Peak count as % of designated site population	Most recent WeBS count 2015/16-2019/20 for designated site (Austin <i>et al.</i> , 2023)	Peak count as % of WeBS count
				Gibraltar Point SPA (non-breeding)	2,793	0.00	Unavailable	0
				Gibraltar Point Ramsar (non-breeding)	3,980	0.00	Unavailable	0
Bewick's swan	0	4,350	0	The Wash SPA (non-breeding)	130	0.00	4	0
Dark-bellied brent goose	0	135,000 (brent goose)	0.00	The Wash SPA (non-breeding)	17,000	0.00	11221	0.00
				The Wash Ramsar (non-breeding)	20,861	0.00	11221	0.00
				Gibraltar Point Ramsar (non-breeding)	682	0.00	Unavailable	0.00
Pink-footed goose	17	510,000	0.00	The Wash SPA (non-breeding)	7,300	0.23	34300	0.05
				The Wash Ramsar (non-breeding)	29,099	0.06	34300	0.05
				North Norfolk SPA (non-breeding)	6,000	0.28	47832	0.04
				North Norfolk Ramsar (non-breeding)	9,576	0.18	47832	0.04
Gadwall	2	31,000	0.01	The Wash SPA (non-breeding)	130	1.54	122	1.64
Wigeon	12	450,000	0.00	The Wash SPA (non-breeding)	3,900	0.31	12226	0.10
Shelduck	2	51,000	0.00	The Wash SPA (non-breeding)	16,000	0.01	2374	0.08
				The Wash Ramsar (non-breeding)	9,746	0.02	2374	0.08
				Humber Estuary SPA (non-breeding)	4,464	0.04	4515	0.04
				Humber Estuary Ramsar (non-breeding)	4,464	0.04	4515	0.04
Pintail	0	20,000	0.00	The Wash SPA (non-breeding)	1,700	0.00	376	0.00
Goldeneye	0	21,000	0.00	The Wash SPA (non-breeding)	220	0.00	69	0.00
Common scoter	0	135,000	0.00	The Wash SPA (non-breeding)	830	0.00	1195	0.00
				Greater Wash SPA (non-breeding)	3,449	0.00	Unavailable	0.00
Eider	0	86,000	0.00	The Wash Ramsar (non-breeding)	1,109	0.00	1049	0.00
Little tern	N/A	1,450 pairs	N/A	Greater Wash SPA (breeding)	798 pairs	N/A	N/A	N/A
				The Wash SPA (breeding)	30 pairs	N/A	N/A	N/A
				Gibraltar Point SPA (breeding)	40 pairs	N/A	N/A	N/A
				Humber Estuary SPA (breeding)	51 pairs	N/A	N/A	N/A
Sandwich tern	N/A	14,000 pairs	N/A	Greater Wash SPA (breeding)	3852 pairs	N/A	N/A	N/A
Common tern	N/A	11,000 pairs	N/A	Greater Wash SPA (breeding)	510 pairs	N/A	N/A	N/A
				The Wash SPA (breeding)	220 pairs	N/A	N/A	N/A
Black-headed gull	51	2,200,000	0.00	The Wash Ramsar (non-breeding)	31403	0.16	14541	0.35
Bittern	0	227 pairs	0	Humber Estuary SPA (breeding)	2 males	0	Unavailable	0
				Humber Estuary SPA (non-breeding)	4	0	2	0
Marsh harrier	1	400 pairs	N/A	Humber Estuary SPA (breeding)	10 females	N/A	N/A	N/A
Hen harrier	2	N/A	N/A	Humber Estuary SPA (non-breeding)	8	25	Unavailable	N/A

All Onshore ECC Options

22.4.94 A review of the comparative information presented in Table 22.5 –Table 22.8, alongside the data in Appendix 22.3, indicates that there are 15 non-breeding species which may be present in numbers which exceed 1% of the relevant designated site population (citation and /or most recent WeBS estimate). This is considered to be a reasonable threshold for identifying whether the survey area is likely to be important for a species or not⁵. As explained in the tables above, given that the peak flock count has been used and is not a summed count for the whole survey area due to the risk of double counting, the raw data has also been considered, including the frequency of records and peak and average flock counts for each field /land parcel (see Volume 2, Appendix 22.3: Winter Bird Survey Report 2022-2023), to identify potentially important populations. The distribution and abundance of those species during the winter 2022-23 surveys, including reference to relevant data obtained via the desk study, is outlined in the following sections.

Avocet

22.4.95 The winter bird survey yielded one record of avocet from within the survey area, comprising a group of five birds on 20 March 2023 at Anderby Marsh (within LN1/WM1 segment). These may have been passage birds or birds prospecting for nest sites. Desk study information indicates that avocet have been recorded in the breeding season at three nature reserves which each overlap with the PEIR Boundary plus 100m buffer. Further details are provided in Volume 2, Appendix 22.2: Confidential Desk Study and details are not provided here in accordance with the data restrictions provided by GLNP. There are also breeding records from a fourth reserve, which is at the edge of the 100m buffer, but the suitable habitat is >300m from the PEIR Boundary. Whilst the desk study records are generally at low resolution, no further records of breeding avocet are thought to be from areas within 100m of the PEIR Boundary. Breeding bird surveys have not yet been undertaken to confirm the breeding population and distribution in relation to the PEIR Boundary.

Golden plover

22.4.96 Winter 2022-23 bird surveys recorded nine observations of golden plover with a peak flock count of 110 from Wolla Bank to Lincolnshire Node; 25 observations with a peak flock count of 110 from Weston Marsh South of the A52; and 72 observations with a peak flock count of 950 from Weston Marsh North of the A52 (segments A1-A5 only). Observations were of birds feeding and loafing within fields across the survey area.

Lapwing

22.4.97 Winter 2022-23 bird surveys recorded 20 observations of lapwing with a peak flock count of 258 from Wolla Bank to Lincolnshire Node; 72 observations with a peak flock count of 400 from Weston Marsh South of the A52; and 190 observations with a peak flock count of 2,500 from Weston Marsh North of the A52 (segments A1-A5 only). No observations were from the Landfall surveys.

⁵ It is widely accepted, e.g. within the Guidelines for the Selection of Biological SSSIs (Drewitt, Whitehead & Cohen, 2020), that a site holding >1% of the biogeographic population is important at the relevant level, e.g. a site holding >1% of the national population of a species is nationally important for that species. The threshold is also used in the Ramsar Convention and UK SPA Selection Guidelines (JNCC 1999, Stroud *et al.* 2001)

Curlew

22.4.98 There were 291 observations of curlew within the onshore PEIR Boundary plus 400m survey area during the winter 2022/23 bird surveys (excluding Landfall surveys), with a peak flock count of 77 individuals. Curlew were widespread throughout the survey area, utilising arable and pasture fields, as well as Anderby Marsh (LN1/WM1) and The Haven (WM10 and 11). A high proportion of the records, and the peak flock count, were from Weston Marsh North of the A52 (A1-A5 segments).

Redshank

22.4.99 There were 52 observations of redshank within the onshore PEIR Boundary plus 400m survey area during the winter 2022/23 bird surveys (excluding Landfall surveys), with a peak flock count of 35 individuals. The records were clustered at the River Welland, The Haven and Anderby Marsh. There were only two records from the Landfall surveys, and the remainder were evenly spread between the three onshore ECC options.

Sanderling

22.4.100 There were 28 observations of sanderling within the PEIR Boundary plus 400m survey area during the winter 2022/23 bird surveys (excluding Landfall surveys), with a peak flock count of 11 individuals. All records were from the beach at the Landfall. The peak count during the Landfall surveys was 19.

Ruff

22.4.101 Winter bird surveys in 2022/23 recorded ruff on three occasions, with flocks of 11, 31 and 39 birds in October, November and March. Each of these records was of birds using habitats located >400m away from the PEIR Boundary. Notable flocks observed on land adjacent to and beyond the survey area were recorded incidentally. There was also a single record of two ruffs from within the PEIR Boundary plus 400m buffer, within the Weston Marsh onshore ECC North of the A52 section, however this flock was over-flying only. Given that all records of this species were either from beyond the zone of influence of the Project, or over-flying, based on winter 2022-23 survey data it is concluded that there is no connectivity between the Project and the Humber Estuary SPA in relation to non-breeding ruff.

22.4.102 This species is therefore excluded from further assessment.

Black-tailed godwit

22.4.103 There were only two observations of black-tailed godwit within the PEIR Boundary plus 400m survey area during the winter 2022-23 bird surveys, with a peak flock count of 16 individuals. Both records were of feeding birds at The Haven (WM11), in December and January.

Dark-bellied brent goose

22.4.104 There were 21 observations of dark-bellied brent goose within the PEIR Boundary plus 400m buffer survey area during the winter 2022-23 bird surveys (excluding Landfall surveys), with a peak flock count of 1,100 individuals. Thirteen observations were from The Haven and adjacent fields (WM10 and 11), mainly of feeding birds. There were also three flights recorded offshore.

Pink-footed goose

22.4.105 There were 39 observations of pink-footed goose on the ground within the PEIR Boundary plus 400m survey area during the winter 2022-23 bird surveys (excluding Landfall surveys), with a peak flock count of 610 individuals. Six observations, including the peak count, were from fields on the outskirts of Skegness. Twenty-two of the records were from Weston Marsh onshore ECC North of the A52, predominantly of small flocks. There were an additional four observations of birds in flight, three of which comprised of one-two birds offshore.

Gadwall

22.4.106 There were 15 observations of gadwall within the PEIR Boundary plus 400m survey area during the winter 2022-23 bird surveys (excluding Landfall surveys), with a peak flock count of 87 individuals. Five of the records were from Anderby Marsh and two from Wolla Bank Pit (LN1 /WM1).

Wigeon

22.4.107 There were 24 observations of wigeon within the PEIR Boundary plus 400m survey area during the winter 2022/23 bird surveys (excluding Landfall surveys), with a peak count of 500 individuals. Ten observations were from Anderby Marsh (LN1 /WM1), four from a waterbody near Rookery Farm and a single record on the sea.

Common scoter

22.4.108 There were ten observations of common scoter during the winter 2022/23 bird surveys (excluding Landfall surveys), with a peak count of 34 individuals. All records were offshore of the Landfall area, with five flocks feeding, four swimming and one loafing. All records were >350m offshore from MHWS, ranging to 590m offshore. Common scoter were recorded on 12 counts during the Landfall surveys with a peak count of 40.

Black-headed gull

22.4.109 There were 130 observations of black-headed gull within the PEIR Boundary plus 400m survey area during the winter 2022/23 bird surveys, with a peak flock count of 137 individuals. Black-headed gulls were widespread throughout the survey area, utilising agricultural fields. The species was recorded during 46 of the counts at the Landfall with a peak count of 30. Whilst the peak flock count was below 1% of the relevant designated sites populations, given the relatively high number of records, the species has been included as a potentially important population.

Hen harrier

22.4.110 There were three observations of hen harrier during the winter bird surveys in 2022-23, each of a single bird in flight, from November and December. These were however each from the intertidal habitats of The Wash located >1km from the PEIR Boundary, recorded incidentally. There was a single record of two birds obtained from within the PEIR Boundary plus 400m buffer, from Weston Marsh onshore ECC North of the A52, over an arable field. The desk study search identified six records of non-breeding hen harrier from within 2km of the Lincolnshire Node onshore ECC and OnSS area, 1,268 from Weston Marsh South of the A52 and 48 from Weston Marsh North of the A52 (A1-A5 segments only) within the 2km search

area. The desk study records are generally at low resolution however and with limited supporting information.

Other SSSI wintering bird species

22.4.111 Of the remaining European site qualifying species, the following are included as non-breeding interest features of the identified SSSIs. Where citation or WeBS population estimates are available these have been provided and a 1% threshold has been used to identify potentially important ornithological features, as described for the European sites above.

Oystercatcher

22.4.112 Oystercatcher were recorded in low numbers within each of the three ECC options (including Landfall, onshore ECC and OnSS), with a peak flock count of 23 individuals (and the highest frequency of observations – 35 observations) in the Weston Marsh ECC south of the A52. The Great Britain (GB) wintering population is estimated to be 305,000 individuals (Woodward *et al.*, 2020). Oystercatcher (non-breeding) occurs in internationally important numbers in the Gibraltar Point SSSI and nationally important numbers in the Humber Estuary SSSI. It is also a qualifying feature of The Wash SPA and Ramsar and the peak flock count equates to approximately 0.1% of the citation and most recent WeBS count for The Wash. The Humber Estuary most recent WeBS count is 5,806 (2017/18-2021/22) and the peak flock count equates to 0.4% of that. The species is however included as an important feature on the basis of the frequency of observations.

Dunlin

22.4.113 Dunlin were recorded during Landfall surveys on five occasions with a peak count of 17 individuals, at Lincolnshire Node on nine occasions with a peak flock count of 31 and at Weston Marsh south of the A52 on ten occasions with a peak flock count of 46. None were recorded from Weston Marsh north of the A52, where habitats are largely unsuitable. The GB wintering population is estimated to be 350,000 individuals (Woodward *et al.*, 2020). Dunlin is a qualifying feature of The Wash SPA and Ramsar and Humber Estuary SPA and Ramsar (non-breeding and passage). The peak flock count equates to 0.07% of the most recent WeBS count for The Wash and 0.11% of the most recent WeBS count for The Wash (wintering). Dunlin occurs in nationally important numbers within The Humber Estuary SSSI and is also mentioned within the citation for Saltfleetby-Theddlethorpe Dunes SSSI. The most recent WeBS count for the Humber Estuary is 15,954 (2016/17-2020/21) and the peak flock count equates to 0.2% of that. On this basis, the species has not been included as an important feature.

Bar-tailed godwit

22.4.114 There were no records of bar-tailed godwit from within the survey area for the three ECC options (onshore ECC and OnSS) or Landfall. Bar-tailed godwit is a qualifying feature of The Wash SPA and Ramsar, Humber Estuary SPA, Ramsar and SSSI and Gibraltar Point SPA, Ramsar and SSSI.

Turnstone

22.4.115 There was single observation of turnstone of two individuals from Weston Marsh ECC south

of the A52. There were no other records from the other ECC options or Landfall. Turnstone is a qualifying species of The Wash SPA and Humber Estuary SSSI.

Ringed plover

22.4.116 There were five observations of ringed plover with a peak flock count of four individuals from Weston Marsh south of the A52, and a single observation of two individuals from Weston Marsh north of the A52. Ringed plover is a qualifying species of The Wash Ramsar, Gibraltar Point SSSI and Humber Estuary SSSI. The most recent WeBS count for the Humber Estuary is 1,070 (2017/18-2021/22) and the peak flock count equates to 0.4% of that. This species is therefore not included as an important ornithological feature.

Grey plover

22.4.117 There were six observations of grey plover with a peak flock count of seven individuals, from Weston Marsh south of the A52, and no observations from the other two ECC options. There were three observations from the Landfall, each of a single bird. Grey plover is a qualifying feature of The Wash SPA, Gibraltar Point SSSI and Humber Estuary SSSI. The GB wintering population is estimated to be 34,000 individuals (Woodward *et al.*, 2020). The most recent WeBS count for the Humber Estuary is 2,985 (2017/18-2021/22) and the peak flock count equates to 0.23% of that. This species is therefore not included as an important ornithological feature.

Shelduck

22.4.118 A single shelduck was recorded at the Landfall, six observations from Wolla Bank to Lincolnshire Node (peak flock count of 15 individuals), eight observations from Weston Marsh south of the A52 (peak flock count of 15 individuals) and a single observation of two birds from Weston Marsh north of the A52. Shelduck is a qualifying feature of The Wash SPA, Humber Estuary SSSI and is mentioned in the citation for Saltfleetby-Theddlethorpe Dunes SSSI and as a breeding feature of Gibraltar Point SSSI. The most recent WeBS count for the Humber Estuary is 6,486 (2017/18-2021/22) and the peak flock count equates to 0.23% of that. This species is therefore not included as an important ornithological feature.

Goldeneye

22.4.119 There were no records of goldeneye from within the survey area for the three ECC options (onshore ECC and OnSS) or landfall. Goldeneye is a qualifying feature of The Wash SPA and Humber Estuary SSSI.

Bittern

22.4.120 There were no records of bittern from within the survey area for the three ECC options (onshore ECC and OnSS) or Landfall. Bittern is a qualifying feature of Humber Estuary SPA and SSSI (breeding and non-breeding).

Other priority and designated site wintering bird species

22.4.121 A further eight waterbird species and 11 non-waterbird species of elevated conservation concern (Annex 1, NERC Section 41 or Birds of Conservation Concern (BoCC) Red listed⁶) were recorded during the winter bird surveys. All additional notified bird features of SSSI's

⁶ Schedule 1 has not been included as it relates to breeding birds only.

within the search area were breeding birds, which will be assessed at the ES stage. The individual bird features referenced within the LWS and LWT reserve citations are primarily non-waterbirds or are breeding species and will also be assessed at the ES stage. Their populations and distribution within the survey area are outlined in the following sections.

22.4.122 Several of these species were secondary species (i.e. excluding water birds and Annex 1 or Schedule 1 species including raptors) which were only recorded incidentally during the winter bird surveys and therefore the results provide an indication of distribution and abundance within the survey area rather than being a comprehensive dataset.

Whooper swan

22.4.123 Whooper swan is listed on Annex 1 and is BoCC Amber listed. There were three observations from Lincolnshire Node, 11 observations from Weston Marsh onshore ECC South of the A52 and 21 observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of 17 individuals. The records were primarily from arable fields. The GB wintering population is estimated to be 16,000 individuals (Woodward *et al.*, 2020).

Pochard

22.4.124 Pochard is BoCC Red listed and there was only a single observation of this species during the winter surveys, of nine individuals, however that was from Frampton Marsh located >500m from the PEIR boundary, so was outwith the ZoI of the Project. This species is therefore not included as an important ornithological feature.

Woodcock

22.4.125 Woodcock is BoCC Red listed, and the species was recorded on three occasions from the Weston Marsh onshore ECC North of the A52 survey area, with two of the records of single birds in flight, and the other a single bird on the ground 200m outside of the PEIR Boundary. The GB wintering population is estimated to be 1,400,000 individuals (Woodward *et al.*, 2000). Based on the low abundance recorded within the survey area this species is not included as an important ornithological feature.

Green sandpiper

22.4.126 Green sandpiper is BoCC Amber listed and there were 15 observations, all from Weston Marsh onshore ECC North of the A52, with a peak flock count of three, with birds in flight. The GB wintering population is estimated to be 290 individuals (Woodward *et al.*, 2020). Given the small number of observations, birds in flight, and low abundance, this species is not included as an important ornithological feature.

Herring gull

22.4.127 Herring gull is NERC Section 41 and BoCC Red listed. There were 95 records from the landfall, 34 records from Lincolnshire Node, 44 records from Weston Marsh onshore ECC South of the A52 and two records from Weston Marsh onshore ECC North of the A52, with a peak flock count of 80 individuals. The GB wintering population is estimated to be 730,000 individuals (Woodward *et al.*, 2020). This species is included as an important ornithological feature.

Red-throated diver

22.4.128 Red-throated diver is Annex 1 and BoCC Amber listed and was recorded offshore of the Landfall on 11 occasions, each of single individuals (i.e., all records were outside of the onshore PEIR Boundary area above MHWS). The GB wintering population is estimated to be 21,500 individuals (Woodward *et al.*, 2020). On this basis, this species is not included as an important onshore ornithological feature.

Great northern diver

22.4.129 Great northern diver is Annex 1 and BoCC Amber listed and was recorded offshore of the Landfall on seven occasions, each of single individuals (again only recorded outside of the onshore PEIR Boundary area above MHWS). The GB wintering population is estimated to be 4,350 individuals (Woodward *et al.*, 2020). On this basis, this species is not included as an IOF.

Little egret

22.4.130 Little egret is Annex 1 listed and there were 11 observations from Lincolnshire Node, 33 observations from Weston Marsh onshore ECC South of the A52 and 92 observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of five individuals. The GB wintering population is estimated to be 11,500 individuals (Woodward *et al.*, 2020). Given the frequency of observations, this species has been included as an IOF.

Red kite

22.4.131 Red kite is Annex 1 listed and there was a single observation of two birds from Weston Marsh onshore ECC South of the A52 and six observations from Weston Marsh onshore ECC North of the A52 (peak of three birds), with most observations being of birds in flight. The GB wintering population is estimated to be 590-695 individuals (Woodward *et al.*, 2020). Based on the low number of observations, this species has not been included as an IOF.

Barn owl

22.4.132 Barn owl is not listed on the conservation priority lists outside of the breeding season and there was a single observation from Lincolnshire Node and twelve observations from Weston Marsh onshore ECC North of the A52 (peak of three birds), with most observations being of birds in flight. The GB wintering population is estimated to be 4,000-14,000 individuals (Woodward *et al.*, 2020). This species has not been included as a non-breeding IOF.

Kingfisher

22.4.133 Kingfisher is Annex 1 listed and there were 11 observations from Weston Marsh onshore ECC North of the A52 (of single individuals), with most observations being of birds in flight. As a secondary species, the dataset provides an indication of distribution and abundance only, as is the case for several species below. The resident GB breeding population is estimated to be 3,650-6,100 pairs (Woodward *et al.*, 2020). This species has not been included as a non-breeding IOF.

Peregrine

22.4.134 Peregrine is Annex 1 listed and there were two observations from Weston Marsh onshore ECC South of the A52 and four observations from Weston Marsh onshore ECC North of the

A52 (all of single individuals), with most observations being of birds in flight. The resident GB breeding population is estimated to be 1,650 pairs (Woodward *et al.*, 2020). This species has not been included as a non-breeding IOF.

Non-breeding passerines

22.4.135 Non-breeding passerines were not target species during the winter bird surveys, which instead focussed on recording waterbirds. Potential impacts to non-breeding passerines would be largely temporary and they are less susceptible to disturbance than other groups such as waterbirds. Therefore, combined with the low abundances recorded for most species, non-breeding passerines have not been included as IOFs. The results for priority passerine species are however summarised in the following sub-sections.

Skylark

22.4.136 Skylark is NERC Section 41 and BoCC Red listed and there were six observations from Weston Marsh onshore ECC South of the A52 (peak flock count of 280) and 105 observations from Weston Marsh onshore ECC North of the A52 (peak flock count of 85). The GB breeding population is estimated to be 1,500,000 territories (Woodward *et al.*, 2020); a wintering population estimate is unavailable.

Cetti's warbler

22.4.137 Cetti's warbler is not listed on the conservation priority lists outside of the breeding season and there were five observations from Lincolnshire Node, with a peak count of six individuals. All records were from the wetland habitats at Wolla Bank and Chapel Six Marshes. The resident GB breeding population is estimated to be 3,450 males (Woodward *et al.*, 2020).

Tree sparrow

22.4.138 Tree sparrow is NERC Section 41 and BoCC Red listed and there were nine observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of 16 individuals. The GB breeding population is estimated to be 225,000 territories (Woodward *et al.*, 2020); a wintering population estimate is unavailable.

Linnet

22.4.139 Linnet is BoCC Red listed and there was a single observation of 50 birds from Weston Marsh onshore ECC South of the A52 and ten observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of 48 individuals. The GB breeding population is estimated to be 530,000 territories (Woodward *et al.*, 2020); a wintering population estimate is unavailable.

Yellowhammer

22.4.140 Yellowhammer is NERC Section 41 and BoCC Red listed and there was a single observation of seven birds from Weston Marsh onshore ECC South of the A52 and 37 observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of 65 individuals. The GB breeding population is estimated to be 685,000 territories (Woodward *et al.*, 2020); a wintering population estimate is unavailable.

Reed bunting

22.4.141 Reed bunting is NERC Section 41 and BoCC Amber listed and there was a single observation of two birds from Weston Marsh onshore ECC South of the A52 and three observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of 25 individuals. The GB breeding population is estimated to be 255,000 territories (Woodward *et al.*, 2020).

Other protected and priority breeding birds

22.4.142 Breeding bird surveys are ongoing in 2023 and the results will be presented within the ES.

Important Ornithological Features

Methodology for identifying Important Ornithological Features

22.4.143 Ecological features can be important for a variety of reasons and the rationale used to identify them is explained below. Importance may relate, for example, to protected status; species rarity; the extent to which such species are threatened throughout their range; or to their rate of decline.

22.4.144 Important species are considered here to be those:

- Of European conservation importance (as listed on Annex 1 of the Birds Directive) so far as it applies to the UK and as transposed by The Conservation of Habitats and Species Regulations 2017 (as amended);
- Specially protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended);
- A species of principal importance for conservation listed in Section 41 of the NERC Act 2006; and /or
- A potentially important population of a species which is red or amber listed in the UK (Stanbury *et al.*, 2021).
- A qualifying feature of a SPA, Ramsar or SSSI.

22.4.145 Where appropriate, the value of species populations has been determined using the standard '1% criterion' method, as used, for example, within the Guidelines for the Selection of Biological SSSIs (Drewitt, Whitehead & Cohen, 2020). Under this method a site holding >1% of the biogeographic population is important at the relevant level, e.g., a site holding >1% of the national population of a species is nationally important for that species.

22.4.146 The CIEEM Guidelines state that the importance of an ecological feature should be considered within a defined geographical context. At the time of writing, it is not possible to determine the importance of breeding species as baseline surveys have yet to be completed. However, the following frame of reference is used for features for which survey data are available (e.g., wintering birds) and will be used for bird species in the ES:

- International;
- UK;
- National (i.e., England);

- County (i.e., Lincolnshire); and,
- Local (i.e., within 5km of the PEIR Boundary).

22.4.147 For the purposes of this assessment, only ornithological features of Local importance or greater and /or subject to special protection are subject to detailed assessment (and are referred to as “*important ornithological features*”). Effects on other ornithological features of lower importance are considered unlikely to be significant in legal or policy terms so are not subject to detailed assessment.

Identification of Important Ornithological Features

22.4.148 Table 22.9 outlines the Important Ornithological Features that have been identified within the study area for each option, or which based upon desk study information and/or habitat suitability are considered likely to be present within the study area, and which may be affected by the Project.

22.4.149 It has not been possible to evaluate the importance of breeding bird populations for this Chapter, as data are still being collected through ongoing baseline survey. Where this is case, it is acknowledged in tables below.

22.4.150 As baseline data continues to be collected it is possible that some of the valuations provided in Table 22.10 may be subject to change on completion of the ongoing surveys, for example the second year of wintering bird survey.

Table 22.9: Important Ecological Features (Ornithology)

Important Ecological Feature	Reason for Importance	Geographic Scale of Importance	ECC Option of relevance		
			Wolla Bank to Lincolnshire Node	Weston Marsh South of the A52	Weston Marsh North of the A52
The Wash SPA, Ramsar, SSSI and NNR	Site of European Importance	International	Y	Y	Y
FLL for qualifying features of The Wash SPA and Ramsar: <ul style="list-style-type: none"> ▪ Golden plover (non-breeding); ▪ Lapwing (non-breeding); ▪ Curlew (non-breeding and passage); ▪ Redshank (non-breeding); ▪ Sanderling (non-breeding); ▪ Black-tailed godwit (non-breeding); ▪ Dark-bellied brent goose (non-breeding); ▪ Pink-footed goose (non-breeding); ▪ Gadwall (non-breeding); ▪ Wigeon (non-breeding); ▪ Black-headed gull (non-breeding); and ▪ Common tern (breeding) 	Features have been recorded within the survey area with peak flock counts close to or in excess of 1% of the designated sites populations, indicating that FLL for qualifying features is present within the survey area.	International	Y	Y	Y
Greater Wash SPA	Site of European Importance	International	Y	Y	Y
FLL for qualifying features of Greater Wash SPA: <ul style="list-style-type: none"> ▪ Common tern (breeding) 	To be determined based on on-going breeding bird surveys.	International	Y	Y	Y
Gibraltar Point SPA, Ramsar, SSSI and NNR	Site of European Importance	International	Y	Y	Y
FLL for qualifying features of Gibraltar Point SPA and Ramsar: <ul style="list-style-type: none"> ▪ Sanderling (non-breeding); and ▪ Dark-bellied brent goose (non-breeding). 	Features have been recorded within the survey area with peak counts close to or in excess of 1% of the designated sites populations,	International	Y	Y	Y

Important Ecological Feature	Reason for Importance	Geographic Scale of Importance	ECC Option of relevance		
			Wolla Bank to Lincolnshire Node	Weston Marsh South of the A52	Weston Marsh North of the A52
	indicating that FLL for qualifying features is present within the survey area.				
Humber Estuary SPA, Ramsar, SSSI	Site of European Importance	International	Y	Y	Y
FLL for qualifying features of Humber Estuary SPA and Ramsar: <ul style="list-style-type: none"> ▪ Avocet (breeding and non-breeding); ▪ Golden plover (non-breeding); ▪ Redshank (non-breeding and passage); ▪ Ruff (non-breeding); ▪ Black-tailed godwit (non-breeding and passage); ▪ Bittern (breeding); ▪ Marsh harrier (breeding); ▪ Hen harrier (non-breeding). 	Features have been recorded within the survey area with peak counts close to or in excess of 1% of the designated sites populations, indicating that FLL for qualifying features is present within the survey area.	International	Y	Y	Y
North Norfolk SPA, Ramsar and SSSI	Site of European Importance	International	Y	Y	Y
FLL for qualifying features of North Norfolk SPA and Ramsar: <ul style="list-style-type: none"> ▪ Pink-footed goose (non-breeding)⁷ 	Features have been recorded within the survey area with peak counts close to or in excess of 1% of the designated sites populations, indicating that FLL for qualifying features is present within the survey area.	International	Y	Y	Y

⁷ Given the large separation distance between the Project and the North Norfolk SPA and Ramsar, only pink-footed goose has potential for connectivity, based on its large foraging range. Natural England has advised that there have been observations of birds commuting between North Norfolk and the Lincolnshire side of The Wash to feed.

Important Ecological Feature	Reason for Importance	Geographic Scale of Importance	ECC Option of relevance		
			Wolla Bank to Lincolnshire Node	Weston Marsh South of the A52	Weston Marsh North of the A52
Additional priority non-breeding birds:					
Whooper swan	Annex 1 and BoCC Amber listed. See description of baseline environment section for description of frequency, abundance and distribution within the survey area.	International (as Annex 1 species)	Y	Y	Y
Herring gull	NERC Section 41 and BoCC Red Listed. See description of baseline environment section for description of frequency, abundance and distribution within the survey area.	National (as NERC Section 41 species)	Y	Y	Y
Little egret	Annex 1.	International (as Annex 1 species)	Y	Y	Y
Additional priority breeding birds:					
Additional protected and priority breeding birds	Surveys ongoing, suitable habitat is present within the PEIR Boundary which may support protected and/or priority bird species.	Not yet assessed. Surveys ongoing.	Y	Y	Y
SSSIs with notified ornithological interest features:					

<p>The Wash SSSI In addition to the European qualifying features listed above:</p> <ul style="list-style-type: none"> ▪ Breeding redshank; ▪ Non-breeding avocet (included above under Humber Estuary SPA); ▪ Non-breeding whooper swan. 	Overlaps with a European site	International	Y	Y	Y
<p>Gibraltar Point SSSI In addition to the European qualifying features included above:</p> <ul style="list-style-type: none"> ▪ Breeding birds; ▪ Oystercatcher. 	Overlaps with a European site	International	Y	Y	Y
<p>Humber Estuary SSSI In addition to the European qualifying features included above:</p> <ul style="list-style-type: none"> ▪ Breeding birds; ▪ Oystercatcher. 	Overlaps with a European site	International	Y	Y	Y
<p>Saltfleetby-Theddlethorpe Dunes SSSI In addition to the European qualifying features included above:</p> <ul style="list-style-type: none"> ▪ Assemblages of breeding birds – scrub. 	Site of National Importance	National	Y	N	N
RSPB Reserves					
Frampton Marsh	Overlaps with a European site	International	N	Y	Y
Freiston Shore			N	Y	Y
Other designated sites					
LWS Reserves selected for ornithological features or significant value identified to local bird populations within the citation					
Havenside LWS	Site of County Importance	County	N	Y	Y

<p>The Wash SSSI In addition to the European qualifying features listed above:</p> <ul style="list-style-type: none"> ▪ Breeding redshank; ▪ Non-breeding avocet (included above under Humber Estuary SPA); ▪ Non-breeding whooper swan. 	Overlaps with a European site	International	Y	Y	Y
Middlemarsh Farm LWS	Site of County Importance	County	N	Y	Y
Frampton Hall LWS	Site of County Importance	County	N	Y	Y
Surfleet Seas End Saltmarsh LWS	Site of County Importance	County	N	Y	Y
LWT Reserves with ornithological features					
Anderby Marsh	Site of County Importance	County	Y	Y	Y
Wolla Bank Pit			Y		
Wolla Bank Reedbed			Y		
Chapel Pit			Y		
Moulton Marsh			N		
Frampton Marsh	N				

Future Baseline

- 22.4.151 Baseline ecological conditions could evolve in the future as a result of land use policy, environmental improvements and development pressures. There may also be some changes to the baseline over time as a result of natural variation and weather events.
- 22.4.152 Climate change is also predicted to result in complex changes to biodiversity. Of most relevance at the Project location is that coastal habitats that cannot respond to sea level rise or coastal erosion by moving inland (for example, due to the presence of urban land or flood defences) are anticipated to be lost, resulting in the loss of supporting habitat for wintering, passage and breeding birds.
- 22.4.153 The above events and trends have the potential to alter the baseline assessment to the EclA over time. However, in the absence of any detailed, quantifiable information it has been assumed that the baseline conditions will remain largely as they are for the purpose of the assessment (with the exception of other developments, where known, which are considered in the assessment of cumulative effects (see Section 22.8)).

22.5 Basis of Assessment

Realistic Worst-Case Scenario

- 22.5.1 As the Project design is ongoing, the MDS identified in Table 22.10 has been selected as having the potential to result in the greatest effect on an identified feature or feature group. These scenarios have been selected from the details provided in Volume 1, Chapter 3: Project Description. Effects of greater significance are not predicted to arise should any other development scenario to that assessed here be taken forward in the final scheme design, within the assessed boundaries. The MDS includes avoidance by design and avoidance by use of trenchless techniques, whereas embedded mitigation measures, which are not strictly related to design, are described in Table 22.11.

Scope of the Assessment

- 22.5.2 During the scoping phase of the assessment, a range of potential impacts on onshore ecology, including ornithology, were identified which may occur during the construction, operation and maintenance, and decommissioning phases. In line with the Scoping Opinion (The Inspectorate, 2022), it was agreed that the majority of impacts remain scoped into the assessment until further Project design details become available.
- 22.5.3 The impacts that have been scoped into the assessment, which are relevant to ornithological features, are listed below:
- Construction:
 - Impact 1: Damage to international and national designated sites, local wildlife sites, and nature reserves within and surrounding the PEIR Boundary;
 - Impact 2: Loss and damage of habitat for protected and priority bird species including FLL;
 - Impact 3: Killing, injury;

- Impact 4: Disturbance of protected and priority bird species, including those utilising FLL;
 - Impact 5: Pollution of waterbodies and watercourses used by protected and priority bird species, especially via suspended solids but potentially also via spillage of vehicle fluids from construction machinery; and
 - Impact 6: Air quality impacts on habitats used by protected and priority bird species.
- Operation and maintenance:
 - Impact 1: Disturbance of designated sites qualifying features, protected and priority bird species during planned and unplanned maintenance works when the proposed development is operational.
 - Decommissioning:
 - Impact 1: Impacts are likely to be similar to construction, but more limited in geographical extent and timescale and there would be no permanent habitat loss.

Potential Transboundary Effects

- 22.5.4 As confirmed in Section 5.10 of the Scoping Report (ODOW, 2022a) no transboundary effects will occur from the onshore aspects of the Project.
- 22.5.5 Natural England commented in the Scoping Opinion (Reference 12) that *“The screening out of transboundary effects arising from the onshore aspects of the Project (section 5.10.6) may fail to highlight effects arising from migratory bird species using the onshore area of the development.”* Then *“Natural England believe that at this stage of the development, it is too early to be screening out any potential impacts until further work has been done. What is the purpose of screening out ‘transboundary effects’ for certain receptors at this stage? It would seem more sensible to assess the impacts, understand their magnitude and extent and then determine whether there was the potential for these impacts to cross boundaries.”*

Table 22.10: MDS for Ornithology for all Project elements

Potential effect	Maximum Design Scenario	Justification
Construction		
Impact 1: Damage to international and national designated sites, LNRs, local wildlife sites, and nature reserves within and surrounding the AoS known for including ornithological features.	Trenchless techniques will be adopted to prevent impacts to designated sites.	The MDS includes the maximum development footprint (temporary and permanent) and therefore the largest possible area of damage and disturbance to ecological features. It also assumes use of the technologies likely to cause most damage where the technology to be used is still uncertain, e.g., trenched crossing of smaller watercourses, and that the most ecologically sensitive habitats would be affected, where there are
Impact 2: Loss and damage of habitat for protected and priority bird species; AND Impact 5: Pollution of waterbodies and watercourses, especially via suspended solids.	Where there is no certainty that trenchless techniques will be used, trenched crossing has been assumed as a worst-case scenario. Trenching options for smaller watercourse crossings are considered to represent the greatest potential impact to ecological features, either directly or indirectly through hydrological changes. For the assessment presented in the PEIR, the onshore ECC is assumed to be a maximum of 80m wide for open trench sections and approximately 120m wide for sections of trenchless technique works, and approximately 15km (Lincolnshire Node), and 60km (Weston Marsh south of the A52 and Weston Marsh north of the A52) in length. Permanent habitat loss associated with the onshore ECC is limited to the transition joint bays. At the time of writing design detail relating to these is not available. Temporary habitat loss during construction includes land disturbed via the worst case onshore ECC. For PEIR, indicative OnSS locations have been provided and the following has been assumed: <ul style="list-style-type: none"> - Maximum of one substation; - Indicative permanent site area for substation of 18ha (up to the permanent fencing); and - Indicative temporary working area for construction of substation of up to 27ha. 	

Potential effect	Maximum Design Scenario	Justification
	<p>The duration of temporary habitat fragmentation is habitat, location and species specific. For PEIR it is considered to last for a maximum period of five years post construction; this being the approximate duration for recovery of a hedgerow or drainage ditch to ecological function for use by most species.</p> <p>The majority of the habitat loss within the PEIR Boundary will be temporary, occurring only during construction, with permanent habitat loss largely limited to the footprint of the OnSS. Habitats will be reinstated on completion of works. The Transition Joint Bays (TJBs) and Joint Bays (JBs) will largely be restored, with some manhole cover type access retained.</p>	<p>different routing options.</p>
<p>Impact 3: Killing, injury;</p> <p>AND</p> <p>Impact 4: Disturbance of protected and priority bird species;</p>	<p>The potential exists for protected or notable species to be impacted by inadvertent injury or killing, or from disturbance via noise and human presence.</p> <p>The maximum adverse scenario for this effect is based on the temporary and permanent habitat loss areas given above.</p> <p>At the time of writing the commencement of construction or duration is not well defined, however with regard to ornithology the year is irrelevant. It is assumed that the construction will take place over 36-months and across all seasons.</p> <p>24-hour working has been assumed to be required on occasion, otherwise it has been assumed that works would be limited to 07:00 to 19:00 from Monday to Saturday. Temporary lighting has been assumed to be necessary during construction hours at the times of year when working hours would otherwise be in darkness (approximately October – April).</p> <p>Section 7 of Volume 1, Chapter 3: Project Description states that “<i>Landfall installation will be undertaken from the TJB site on the west side of Roman Bank, however some form of beach access may also be required for construction vehicles, depending on the preferred method of installation identified</i>”. It describes that the TJB will be located a</p>	

Potential effect	Maximum Design Scenario	Justification
	<p>minimum of 80m to the west of Roman Bank. A landfall logistics compound will be located within the Landfall area. The trenchless works exit pits will be located below mean low water springs (MLWS). The Landfall works are anticipated to take up to a maximum of 36-months to complete.</p> <p>The construction work for the installation of export cables involves a number of discrete activities undertaken along the length of the onshore ECC, the duration of each activity at any location being dependent on the nature of construction activity being undertaken. The works at any location would therefore be intermittent and not continuous for the 36-month construction period.</p>	
<p>Impact 6: Air quality impacts on all ornithological features.</p>	<p>Effects from air quality are largely associated with nutrient nitrogen deposition caused by construction traffic and equipment. The assessment will focus on areas within and close to the construction zone, temporary site compounds and along access roads where the Critical Load could exceed 1%.</p>	
<p>Operation and Maintenance</p>		
<p>Impact 1: Disturbance of designated sites qualifying features, protected and priority bird species during planned and unplanned maintenance works when the proposed development is operational.</p>	<p>Planned maintenance of the onshore ECC requires visits to transition joint bays.</p> <p>Unplanned maintenance may involve the repair of onshore cable faults. This is extremely rare (indicatively one-two events per lifetime). Typically, this involves excavating the two adjacent joint bays, pulling the cable back through the ducting and pulling a new cable through. Alternatively, the area of the fault may be excavated, and two new joint bays installed within this area. Methods for excavation and reburial will be similar to the original installation.</p> <p>The extent or nature of any unplanned corrective maintenance required cannot be predicted at this stage and therefore possible effects in terms of disturbance cannot be assessed. Any unplanned corrective maintenance required would be subject to any necessary consents and consultation with the relevant nature conservation bodies at the time.</p>	<p>Parameters are based on those stated within Volume 1, Chapter 3: Project Description.</p>

Potential effect	Maximum Design Scenario	Justification
	<p>Planned maintenance at the OnSS is likely to be highly localised with a minimal likelihood of disturbance expected to species in adjacent areas.</p> <p>For unplanned major maintenance, vehicles similar to those used for construction may also be required (rigid lorries delivering materials, low loaders delivering plant and individual vehicles for personnel). In the event of a transformer replacement or failure, an Abnormal Indivisible Load (AIL) similar to that used during construction would be required.</p> <p>Lighting at the OnSS would be directional for safety and security. Task specific lighting could be used externally, if required, on a very infrequent basis.</p>	
Decommissioning		
<p>Impact 1: Impacts likely to be similar to construction, but more limited in geographical extent and timescale and there would be no permanent habitat loss.</p>	<p>Removal of the OnSS including areas of hardstanding.</p> <p>Buried cables would be de-energized with the ends sealed and left in place to avoid ground disturbance. Any cables or associated infrastructure that are at a depth of between 0.9m and ground level or upwards as at the dates of decommissioning will be removed.</p> <p>TJBs at Landfall to be left in place.</p>	<p>The MDS includes the maximum footprint and therefore the largest possible area of disturbance to ecological features.</p> <p>It assumes that the most ecologically sensitive habitats would be affected, where there are different routing options.</p>

Embedded Mitigation

- 22.5.6 Primary mitigation in respect of the proposed Landfall, onshore ECC and substation options has involved the sensitive siting and design of the onshore infrastructure during site selection, to ensure potential impacts are avoided or reduced.
- 22.5.7 Mitigation measures that have been identified and adopted as part of the evolution of the Project design so far (embedded into the Project design) and that are relevant to onshore ornithology are listed in Table 22.11. This list of measures may be expanded within the ES, as a result of ongoing survey findings and further development of the Project design.

Table 22.11: Embedded Mitigation relating to Onshore Ornithology for all options

Project phase	Mitigation measures embedded into the Project design
General	
Project Design	<p>Careful siting of the Landfall and onshore ECC and design of key crossing points and avoidance of direct impacts to designated sites with ornithological interest features, including SSSIs, LWSs and LWT reserves. Where the onshore ECC unavoidably crosses those designations, trenchless techniques will be used.</p> <p>Avoidance of direct impacts on key areas of sensitivity including Priority Habitats (coastal sand dunes and reedbeds) which may support concentrations of sensitive bird species, wherever possible.</p>
Construction	
Vegetation Clearance and Other Construction Works	<p>All construction work will be undertaken in accordance with a Construction Method Statement (CMS). The CMS will include the following measures for ornithological protection:</p> <ul style="list-style-type: none"> ▪ Species listed in Schedule 1 of the Wildlife and Countryside Act (1981) as amended, are afforded legal protection from disturbance at the nest site, as well as protection of dependent young. Surveys would therefore take place during each breeding season in which construction occurs to identify the approximate locations of nesting Schedule 1 birds and to review the mitigation measures to ensure they are sufficient to avoid disturbance. Surveys for other priority species which could be significantly disturbed by construction works such as breeding waders would also be undertaken prior to construction commencing. Micro-siting of Project elements will be used to avoid Important Ornithological Features where possible. ▪ An Ecological Clerk of Works (ECoW) will be employed to oversee construction work and minimise risks to Important Ornithological Features. ▪ All habitats will be reinstated as soon as possible after construction. ▪ Removal of potential nesting bird habitat will either take place outside of the breeding season (considered to be March – August inclusive), or where that is not possible (particularly given the long length of the onshore ECCs), a check for the presence of nesting birds by the EcoW will take place in advance of work. Where active nests are located, the relevant areas of vegetation will be retained until such time as young fully fledge, or the nesting attempt has ended. <p>Disturbance to birds will be mitigated through the following measures and commitments:</p> <ul style="list-style-type: none"> ▪ For the trenchless works pits /TJB at the Landfall to the west of Roman Bank, the construction area will be screened (this could include but is not limited to fencing or bunding) during the breeding season (March to August inclusive) to

Project phase	Mitigation measures embedded into the Project design
	<p>provide an acoustic and visual screen between active working areas and suitable breeding habitat at Anderby Marsh and adjacent areas. Fencing will also be used around other working areas, such as compounds, where significant disturbance to breeding birds may otherwise occur.</p> <ul style="list-style-type: none"> ▪ Trenchless technology entry and exit pits and other working areas at sensitive areas such as watercourse crossings would be fenced during the non-breeding season (October to March inclusive) to provide an element of visual and acoustic screening of active working areas. ▪ Details of proposed fencing are still being developed and further details will be provided in the ES. ▪ As a broader measure, to reduce disturbance to important populations of non-breeding birds along the onshore ECC and at the OnSS, during the winter period (October-March inclusive), temporary screening would be used during potentially disturbing construction works within and adjacent to areas used by significant numbers of waterbirds. Further details will be provided in the ES, following the provision of more detailed information regarding construction. ▪ If necessary, works at sensitive areas would be suspended during periods of very cold weather. Disturbance to non-breeding waterbirds is likely to be most critical during periods of prolonged cold weather, when they may be unable to feed in their usual foraging areas and may face reduced prospects for survival. A scheme is in place to minimize the level of disturbance from wildfowl shooting in frozen conditions (JNCC, 2019). Similar measures would be imposed here, with the works suspended after seven consecutive days on which the ground was frozen (as measured at a nearby weather station). Any suspension of works would last for a minimum of seven days thereafter and any lifting of the suspension will take into consideration the need for a period of recovery for waterbirds after the end of the severe weather itself. ▪ Entry and exit pits, and associated working areas, will be set back from sensitive areas such as Anderby Marsh and The Haven as far as possible, in order to avoid disturbance impacts to European site bird features utilising those areas.
OLEMS	<p>Ornithological mitigation and compensation will be identified within an OLEMS to be submitted at ES. The OLEMS will also include details of proposed biodiversity enhancements. An LEDPP will be provided with the PEIR and updated to produce the OLEMS to be submitted alongside the ES once relevant surveys have been completed and proposed measures have been developed further, with a detailed final version prepared at the Detailed Design stage. The LEDPP will set out the key ornithological elements that will be secured in the final OLEMS which The Applicant will be required to submit to the relevant planning authority for approval as a requirement of the DCO.</p>

Project phase		Mitigation measures embedded into the Project design
Pollution Prevention and Emergency Incident Response Plan		<p>Construction practices will incorporate measures to prevent pollution.</p> <p>All construction work will be undertaken in accordance with a Pollution Prevention and Emergency Incident Response Plan (PPEIRP). A draft PPEIRP will be provided with the ES.</p>
Best Practice		<p>All construction work will be undertaken in accordance with the CMS and relevant good practice guidance including, but not limited to:</p> <ul style="list-style-type: none"> ▪ Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors CIRIA (C532) (CIRIA, 2001); and ▪ CIRIA – SuDS Manual (C753) (CIRIA, 2015) including: <ul style="list-style-type: none"> ▪ No discharge to main river watercourses will occur without permission from the Environment Agency (SuDS Manual); ▪ Wheel washers and dust suppression measures to be used as appropriate to prevent the migration of pollutants (SuDS Manual); and, ▪ The adjoining road network shall regularly be monitored for construction waste and dirt arising from the Project construction activities and cleaned as necessary as per the requirements of the SuDS Manual.
Operation and Maintenance		
General		<p>Operational practices will incorporate measures to prevent pollution and increased flood risk, including emergency spill response procedures, clean up and control of any potentially contaminated surface water runoff. These measures will be included within an Environmental Management System (EnMS).</p> <p>The EnMS would also include specific measures to avoid potential impact to protected or priority bird species.</p> <p>Where unplanned operational or maintenance works are required, appropriate mitigation measures would be developed and agreed with relevant consultees prior to works taking place. Primary mitigation will ensure that impacts arising from disturbance during routine maintenance will be avoided.</p>
Decommissioning		

Project phase	Mitigation measures embedded into the Project design
General	<p data-bbox="450 264 2051 331">Decommissioning practices will incorporate measure similar to the construction phase, to prevent impact to ornithological features.</p> <p data-bbox="450 379 2051 491">Provision of a decommissioning plan in advance of decommissioning works will be a requirement of the DCO, to include protection of important ornithological features, based on up-to-date survey information and relevant guidance in place at the time of decommissioning.</p>

22.6 Assessment Methodology

- 22.6.1 The ecological evaluation and impact assessment approach used in this report is based on CIEEM Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland ('CIEEM Guidelines') (CIEEM, 2018, updated in April 2022), which are widely regarded as industry best practice.
- 22.6.2 It has not been possible to complete the impact assessment fully owing to the continuing development of Project design and ongoing field surveys. However, an interim assessment has been provided where possible.

Important Ornithological Features

Avoidance, Mitigation, Compensation and Enhancement

- 22.6.3 Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied, residual effects are then identified along with any necessary compensation measures, and incorporation of proposals for biodiversity enhancement.
- 22.6.4 It is important for the EclA to clearly differentiate between avoidance, mitigation, compensation, and enhancement. These terms are defined here as follows:
- **Avoidance** is used where an impact has been avoided e.g., through changes in the Project design;
 - **Mitigation**, or minimisation, is used to refer to measures to reduce or remedy a specific negative impact *in situ*;
 - **Compensation** describes measures taken to offset residual effects, i.e., where mitigation *in situ* is not possible; and,
 - **Enhancement** is the provision on new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.
- 22.6.5 At this stage, due to the early-stage development of Project design and the ongoing collection of survey data, it is only possible to provide limited information in respect of avoidance, mitigation, compensation and enhancement for certain ornithological features. Proposals will be developed following completion of ongoing surveys and more detailed designs and further details will be provided within the ES.

Impact Assessment

- 22.6.6 The impact assessment process involves the following steps:
- Identifying and characterising potential impacts;
 - Incorporating measures to avoid and mitigate (reduce) those impacts;
 - Assessing the significance of any residual effects after mitigation;

- Identifying appropriate compensation measures to offset significant residual effects (if required); and,
- Identifying opportunities for ecological enhancement.

22.6.7 When describing impacts, reference has been made to the following characteristics, as appropriate:

- Beneficial, negligible or adverse;
- Extent;
- Magnitude;
- Duration (short term <5 years, mid-term 5-10 years, long term >10 years);
- Timing;
- Frequency; and,
- Reversibility.

22.6.8 The impact assessment process considered both direct and indirect impacts:

- Direct ecological impacts are changes that are directly attributable to a defined action, e.g., the physical loss of habitat occupied by an important bird species during the construction process.
- Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process or features, e.g., the interruption of watercourses which cause hydrological changes, which, in the absence of mitigation, could lead to the drying out of downstream habitats used by important bird species.

Significant Effects

22.6.9 The concept of ecological significance is addressed in paragraphs 5.24 through to 5.28 of the CIEEM Guidelines. Significance is a concept related to the weight that should be attached to effects when decisions are made. For the purpose of EclA, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national /local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local and the scale of significance of an effect may or may not be the same as the geographic context in which the feature is considered important.

22.6.10 Paragraphs 5.29-5.34 of the CIEEM Guidelines cover how significant effects are determined. To summarise:

- For designated sites – effects may be significant if they are likely to undermine the conservation objectives of the site; or positively or negatively affect the conservation status of species or habitats for which the site is designated; or may affect the condition of the site or its interest /qualifying features.

- For species – consideration of conservation status is important for evaluating the effects of impacts on individual species and assessing their significance. Conservation status is defined as follows:
 - Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

Assumptions and Limitations

- 22.6.11 Aside from the initial desk study and 2022-23 non-breeding bird surveys, ornithological surveys required for robust impact assessment are currently ongoing and therefore it is only possible to assess impacts on certain ornithological features at this stage. A full assessment for all important ornithological features will be provided in the ES.
- 22.6.12 As the exact onshore ECC and scheme design remain to be resolved, the MDS identified in Table 22.10 has been selected as having the potential to result in the greatest effect on an identified feature or feature group. These scenarios have been selected from the details provided in the Volume 1, Chapter 3: Project Description. Effects of greater significance are not predicted to arise should any other development scenario be taken forward in the final design scheme, assuming that it is within the assessed boundaries.

22.7 Impact Assessment

Construction

- 22.7.1 This section addresses the site clearance and construction phase impacts of the Project to the important ornithological features identified, through reference to the MDS presented in Table 22.10 and assuming that all of the embedded mitigation measures set out in Table 22.11 are implemented. At this stage, it is not possible to assess all potential impacts to ornithological features as the baseline dataset is incomplete and the Project design is ongoing. Instead, the assessment is based on the baseline data collected to date and the MDS and data gaps are highlighted.
- 22.7.2 The 80m preferred onshore ECC will lie somewhere within the 300m wide PEIR Boundary. Regardless of the exact siting of the cable corridor, the impact of habitat loss for important ornithological features would remain broadly similar. However, as the precise area affected is currently unknown, the exact losses are unquantifiable. The OnSS would be situated within a smaller area of the OnSS zone. This assessment is therefore a largely qualitative one and includes anticipated impacts which may alter following completion of further surveys and provision of more detailed design information. This includes impact assessment for wintering birds, given that detailed design information is not yet available and in the absence of a second year of winter bird surveys, it would not seem appropriate to do a detailed quantitative assessment at this stage.

Impact 1: Damage to international and national designated sites, local wildlife sites, and nature reserves (with notified bird features) within and surrounding the PEIR Boundary

Wolla Bank to Lincolnshire Node (onshore ECC and OnSS)

- 22.7.3 There are one statutory and three non-statutory designations with notified bird features

within or adjacent to the PEIR Boundary. These are:

- Greater Wash SPA;
- Anderby Marsh LWT Reserve;
- Wolla Bank Reedbed LWT Reserve; and
- Wolla Bank Pit LWT Reserve.

22.7.4 As assessed for Volume 1, Chapter 21: Onshore Ecology, these designations are largely concentrated along the coast where trenchless techniques will be employed to ensure no temporary or permanent loss of habitats within these designations occurs. The Greater Wash SPA extends offshore from MHWS. This chapter assesses impacts arising from works above MHWS only; for an assessment of impacts below MHWS refer to Volume 1, Chapter 12: Offshore and Intertidal Ornithology.

Weston Marsh North and South of the A52 (onshore ECC and OnSS)

22.7.5 There are one statutory and six non-statutory designations with notified ornithological features within, or adjacent to the PEIR Boundary. These are:

- Greater Wash SPA;
- Frampton Marsh RSPB Reserve;
- Havenside LWS;
- Anderby Marsh LWT Reserve;
- Wolla Bank Pit LWT Reserve;
- Wolla Bank Reedbed LWT Reserve; and
- Moulton Marsh LWT Reserve.

22.7.6 Trenchless techniques will be employed to ensure no temporary or permanent loss of habitats within the onshore elements of these designations occurs.

All project elements

22.7.7 As assessed in Volume 1, Chapter 21: Onshore Ecology, for all designated sites, indirect impacts from construction activities in nearby land parcels are possible and will be minimised through commitment to the embedded mitigation outlined in Table 22.11. Operations on functionally linked land may also be detrimental to the species populations for which sites are designated. Impacts to FLL are considered in the following sections, under Impacts 2 and 4.

22.7.8 **No significant effect** as a result of damage to designated sites is predicted following the implementation of embedded mitigation but will be confirmed following a review of more detailed Project design information and analysis of the completed baseline surveys. Indirect effects on designated sites are assessed separately for Impacts 2, 4, 5 and 6.

Impact 2: Loss and damage of habitat for protected and priority bird species, including FLL

All project elements (onshore ECC and OnSS) - Qualifying features of European sites

Avocet

- 22.7.9 There will be no habitat loss from the Humber Estuary SPA, or any other SPA or Ramsar site within the onshore zone of the Project (i.e., above MHWS).
- 22.7.10 Habitats at the three potential OnSS locations are unsuitable for use by breeding avocet and no breeding records were identified through the desk study from those areas. There is therefore no potential for permanent habitat loss. At the Landfall, the cable will be installed using trenchless techniques and therefore there would be no habitat loss at Anderby Marsh, Anderby Creek or Chapel Six Marshes. Elsewhere along the onshore ECC, habitats are unsuitable for breeding avocet and there were no desk study records of breeding avocet potentially within the PEIR Boundary.
- 22.7.11 Given the avoidance of habitat loss from the only area where avocet was recorded and the areas which are suitable for avocet to breed, **no significant effect** in relation to habitat loss for avocet is predicted.

Golden plover

- 22.7.12 There was only a single record of golden plover from the 2022-23 winter bird surveys from the vicinity of the three OnSS option areas, which once selected, will be the main area affected by permanent habitat loss. This comprised a group of 19 birds in proximity to Weston Marsh South OnSS. On this basis, **no significant effect** on golden plover is predicted as a result of permanent habitat loss.
- 22.7.13 During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging, loafing and roosting habitat, however there will be other similar habitat available nearby. Golden plover utilise a range of agricultural fields throughout the winter, and there is an abundance of similar agricultural land surrounding the PEIR Boundary. Natural England and RSPB (2019) indicates that the breeding population is facing high level threats from climate change and non-climatic threats, whereas the wintering populations may benefit from climate change and face low level non-climatic threats. This indicates that it may not be local factors that are limiting the Wash Ramsar population. Given the availability of alternative foraging habitat, the small scale of habitat loss relative to the foraging range and the temporary nature of the loss, then **no significant effect** on golden plover is predicted as a result of habitat loss.

Lapwing

- 22.7.14 There were no records of lapwing from the 2022-23 winter bird surveys from the vicinity of Weston Marsh North (WMN) OnSS, one record (of 56 birds) from the vicinity of Weston Marsh South (WMS) OnSS and three records (peak of 31 birds) from the vicinity of Lincolnshire Node OnSS. The OnSS to be selected from the three OnSS options, will be the main area for permanent habitat loss. On this basis, **no significant effect** on lapwing is predicted as a result of permanent habitat loss.
- 22.7.15 During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging, loafing and roosting habitat for non-breeding

birds, however there will be other similar habitat available nearby. Lapwings utilise arable fields within the survey area, and there is an abundance of similar agricultural land surrounding the PEIR Boundary. The population size is limited by breeding success and not the availability of over-winter arable farmland habitat (Sheldon *et al.*, 2004). The temporary loss of arable land will be small relative to the foraging range of the species. For those reasons, **no significant effect** on non-breeding lapwing is predicted.

- 22.7.16 Further information is required to assess the effect of temporary habitat loss to breeding lapwing, which is a potential supporting population for The Wash Ramsar, but not a qualifying feature. This includes breeding bird survey population and distribution data. An assessment for breeding lapwing will be provided in the ES.

Curlew

- 22.7.17 There were no records of curlew from the 2022-23 winter bird surveys in the vicinity of WMS OnSS, two records from the vicinity of WMN OnSS (peak count of 7) and two records from Lincolnshire Node OnSS (peak count of 9). The OnSS selected from the three OnSS option areas, will be the main area for permanent habitat loss. On this basis, **no significant effect** on curlew is predicted as a result of permanent habitat loss.
- 22.7.18 During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging, loafing and roosting habitat, however there will be other similar habitat available nearby. Curlews utilise a range of agricultural fields, and there is an abundance of similar agricultural land surrounding the Project. Curlew also utilise the intertidal area and wetland features within the zone of influence of the onshore ECC, however intertidal areas and all natural watercourses including main rivers and ordinary watercourses (not artificial drainage ditches) and flood defences will be crossed by trenchless techniques where technically practical. Given the availability of alternative farmland foraging habitat, the small scale of habitat loss relative to the foraging range and the temporary nature of the loss, no significant effect on non-breeding curlew is predicted.
- 22.7.19 Further information is required to assess the effect of temporary habitat loss to breeding curlew, which is a potential supporting population for The Wash SPA, but not a qualifying feature. This includes breeding bird survey population and distribution data.

Redshank

- 22.7.20 There were no records of redshank from the 2022-23 winter bird surveys in the vicinity of any of the three OnSS option areas and therefore no potential for permanent habitat loss. On this basis, no significant effect on redshank is predicted as a result of permanent habitat loss.
- 22.7.21 The redshank population of The Wash SPA is considered to be in favourable condition, whereas The Wash Ramsar and Humber Estuary SPA and Ramsar populations are in unfavourable condition. During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging and loafing habitat, however there will be other similar habitat available nearby. Low numbers of redshank were recorded utilising farmland habitat within the winter bird survey area, with concentrations of records at The Haven (intertidal habitats) and the Landfall (low numbers using Anderby Marsh). Such areas will be protected from loss of habitat through the use of trenchless techniques. Given the wide availability of alternative farmland foraging habitat, low

numbers of redshank recorded utilising such habitats, and the temporary nature of the loss, there would be **no significant effect** on redshank due to habitat loss.

- 22.7.22 Further information is required to assess the effect of temporary habitat loss on breeding redshank, which is a potential supporting population of The Wash and Humber Estuary SPA and Ramsar sites, but not a qualifying feature. This includes breeding bird survey population and distribution data.

Sanderling

- 22.7.23 There were no records of sanderling from the 2022-23 winter bird surveys (and no suitable habitat) in the vicinity of any of the three OnSS option areas and therefore no potential for permanent habitat loss (no significant effect).
- 22.7.24 Sanderling were recorded at the beach and intertidal area only. Elsewhere along the onshore ECC, habitats are unsuitable for sanderling. On that basis, there would be **no significant effect** on sanderling from works occurring above MHWS in terms of habitat loss.

Black-tailed godwit

- 22.7.25 There were no records of black-tailed godwit from the 2022-23 winter bird surveys in the vicinity of any of the three OnSS option areas and therefore no potential for permanent habitat loss (no significant effect).
- 22.7.26 The species was only observed on two occasions, both at The Haven, in December and January. There will be no habitat loss at The Haven as the feature will be avoided through the use of trenchless techniques. There is therefore no possibility for an impact on the populations of this species as a result of habitat loss and therefore there will be **no significant effect**.

Dark-bellied brent goose

- 22.7.27 There were no records of dark-bellied brent goose from the 2022-23 winter bird surveys in the vicinity of any of the three OnSS option areas and therefore no potential for permanent habitat loss (no significant effect).
- 22.7.28 During the construction phase, there will be temporary loss of farmland within an 80m wide onshore ECC, which will result in the loss of some foraging habitat for dark-bellied brent goose, however there will be other alternative habitat available nearby.
- 22.7.29 The observations of this species were concentrated at The Haven and fields adjacent to The Haven. This included the peak count of 1,100 birds in February. The Haven itself will be avoided through the use of trenchless techniques and therefore there will be no loss of saltmarsh or other intertidal habitats. The entry and exit pits will be set back from The Haven, although the locations are not known at this stage. The birds recorded within the PEIR Boundary in the vicinity of The Haven were utilising arable fields, which are abundant in the wider area. The temporary loss of an approximately 80m wide strip of arable land in this area would be minor in the context of the alternative foraging habitat in the vicinity and wider area. Given the avoidance of The Haven, availability of alternative habitat and the small scale of habitat loss relative to the foraging range of this species, there would be **no significant effect** on dark-bellied brent goose in terms of temporary habitat loss.

Pink-footed goose

- 22.7.30 There were no records of pink-footed goose from the 2022-23 winter bird surveys from the vicinity of the three OnSS option areas and therefore no potential for permanent habitat loss (no significant effect).
- 22.7.31 There were 39 observations of pink-footed goose on the ground within the PEIR Boundary plus 400m survey area during the winter 2022-23 bird surveys, with a peak flock count of 610 individuals. Six observations, including the peak count, were from fields on the outskirts of Skegness and 22 of the records were from Weston Marsh onshore ECC North of the A52, predominantly of small flocks. During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging habitat, however there will be other similar habitat available nearby. Pink-footed geese feed on a range of agricultural crops and grassland, and will commute large distances to foraging grounds, and there is an abundance of similar agricultural land surrounding the Project. Given the favourable conservation condition of the population, the availability of alternative foraging habitat, the small scale of habitat loss relative to the foraging range and the temporary nature of the loss, there would be **no significant effect** on pink-footed goose due to temporary habitat loss.

Gadwall

- 22.7.32 There were no records of gadwall from the 2022-23 winter bird surveys (and no suitable habitat) in the vicinity of any of the three OnSS option areas and therefore no potential for permanent habitat loss (no significant effect).
- 22.7.33 At the Landfall, the cable will be installed using trenchless techniques and therefore there would be no loss of wetland features such as at Anderby Marsh or Wolla Bank, where gadwall have been recorded. Elsewhere along the onshore ECC, habitats are largely unsuitable for gadwall, with a single record from a pond within LN1/WM1. On that basis, there would be **no significant effect** on gadwall due to temporary habitat loss.

Wigeon

- 22.7.34 There were no records of wigeon from the 2022-23 winter bird surveys (and no suitable habitat) in the vicinity of any of the three OnSS option areas and therefore no potential for permanent habitat loss (no significant effect).
- 22.7.35 At the Landfall, the cable will be installed using trenchless techniques and therefore there would be no loss of wetland features such as at Anderby Marsh, where most wigeon were observed. The wetland near Rookery Farm is outwith the PEIR Boundary so will not be subject to habitat loss. On that basis, there would be **no significant effect** on wigeon due to temporary habitat loss.

Common scoter

- 22.7.36 This section assesses the impacts on common scoter from onshore works only (i.e., above MHWS). As non-breeding common scoters have only been recorded offshore, there will be no loss of habitat for this species resulting from the onshore element of the works. On that basis, there would be no significant effect on common scoter due to habitat loss.

Black-headed gull

- 22.7.37 There was a single record of black-headed gull from within 400m of Lincolnshire Node OnSS (23 individuals), two records from Weston Marsh South OnSS (of 24 and 74 individuals) and a single record from Weston Marsh North OnSS (of 80 individuals). The OnSS areas comprise agricultural fields which are abundant in the wider area and therefore loss of a small amount of arable land relative to the wider resource would not undermine the conservation objectives of The Wash Ramsar in respect of black-headed gull. On this basis, **no significant effect** on black-headed gull is predicted as a result of permanent habitat loss.
- 22.7.38 There were 101 records of black-headed gull from Wolla Bank to Lincolnshire Node and Weston Marsh South of the A52 with a peak flock count of 137 birds. For the Weston Marsh north of the A52 section (segments A1-A5 only) there were a total of 29 records with a peak flock count of 51 birds. During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging and loafing habitat, however there will be other similar habitat available nearby. There will be no habitat loss at the beach /intertidal zone or coastal wetlands such as at Anderby Marsh. Given the availability of alternative farmland foraging habitat, and the temporary nature of the loss, there would be **no significant effect** on black-headed gull due to temporary habitat loss.
- 22.7.39 Further information is required to assess the effect of temporary habitat loss to breeding black-headed gull, which is potentially a supporting population for The Wash Ramsar, but not a qualifying feature. This includes breeding bird survey population and distribution data.

Hen harrier

- 22.7.40 There was only a single record of hen harrier (of two birds) from within the winter birds survey area during the 2022-23 surveys, over an arable field. Given the low levels of recorded activity and the abundance of alternative arable land in the wider area, the temporary loss of an approximately 80m wide strip of arable land would have a negligible impact on this species and **no significant effect** is predicted.

Other SSSI and priority wintering bird species

Whooper swan

- 22.7.41 There were no records of whooper swan from the 2022-23 winter bird surveys from the vicinity of the three OnSS option areas and therefore no potential for permanent habitat loss (no significant effect).
- 22.7.42 There were three observations from Lincolnshire Node, 11 observations from Weston Marsh onshore ECC South of the A52 and 21 observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of 17 individuals. The records were primarily from arable fields. During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging habitat, however there will be other similar habitat available nearby. Whooper swan feed on a range of agricultural crops and grassland, and will commute large distances to foraging grounds, and there is an abundance of similar agricultural land surrounding the Project. Given the availability of alternative foraging habitat, the small scale of habitat loss relative to the foraging range and the temporary nature of the loss, there would be **no significant effect** on whooper swan due to temporary habitat loss.

Herring gull

- 22.7.43 There was a single record of herring gull from within 400m of Lincolnshire Node OnSS (11 individuals), two records from Weston Marsh South OnSS (of seven and six individuals) and two records from Weston Marsh North OnSS (of 11 and 18 individuals). The OnSS areas comprise agricultural fields which are abundant in the wider area and therefore loss of a small amount of arable land relative to the wider resource would not undermine the conservation status of the local population of herring gull. On this basis, **no significant effect** on herring gull is predicted as a result of permanent habitat loss.
- 22.7.44 There were 95 records from the landfall, 34 records from Lincolnshire Node, 44 records from Weston Marsh onshore ECC South of the A52 and two records from Weston Marsh onshore ECC North of the A52, with a peak flock count of 80 individuals. During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging and loafing habitat, however there will be other similar habitat available nearby. There will be no habitat loss at the beach /intertidal zone or coastal wetlands such as at Anderby Marsh. Given the availability of alternative farmland foraging habitat, and the temporary nature of the loss, there would be **no significant effect** on herring gull due to temporary habitat loss.

Little egret

- 22.7.45 There were no records of little egret from within 400m of any of the three OnSS options. On this basis, no significant effect on little egret is predicted as a result of permanent habitat loss.
- 22.7.46 There were 11 observations from Lincolnshire Node, 33 observations from Weston Marsh onshore ECC South of the A52 and 92 observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of five individuals. During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some wetland habitat, however the main watercourses and wetlands within the survey area will be avoided by use of trenchless techniques. There will be no habitat loss at the beach /intertidal zone or coastal wetlands such as at Anderby Marsh. Given the commitment to avoid the larger watercourses and wetland features and the temporary nature of the loss, there would be **no significant effect** on little egret due to temporary habitat loss.

Oystercatcher

- 22.7.47 There were no records of oystercatcher from the 2022-23 winter bird surveys in the vicinity of any of the three OnSS options. The OnSS selected from the three OnSS option areas, will be the main area for permanent habitat loss. On this basis, no significant effect on oystercatcher is predicted as a result of permanent habitat loss.
- 22.7.48 During construction, temporary habitat loss along the onshore ECC would result in the temporary loss of some agricultural foraging, loafing and roosting habitat, however there will be other similar habitat available nearby. Oystercatcher utilise a range of agricultural fields, and there is an abundance of similar agricultural land surrounding the Project. Oystercatcher also utilise the intertidal area and wetland features within the zone of influence of the onshore ECC, however intertidal areas and all natural watercourses including main rivers and ordinary watercourses (not artificial drainage ditches) and flood defences will be crossed by trenchless techniques where technically practical. Given the

availability of alternative farmland foraging habitat, the small scale of habitat loss relative to the foraging range and the temporary nature of the loss, **no significant effect** on non-breeding oystercatcher is predicted.

22.7.49 Further information is required to assess the effect of temporary habitat loss to breeding oystercatcher. This includes breeding bird survey population and distribution data.

Additional designated sites with ornithological features

22.7.50 As described in Section 22.4, there are two RSPB reserves, four LWS's and six LWT reserves with ornithological features referenced in the citations within 2km of the PEIR Boundary. Given the commitment to avoid designated sites through the use of trenchless techniques, there would be no habitat loss from any of those sites. Where priority wintering waterbirds have been recorded within the survey area on a frequent basis or there have been notable concentrations of such species, they have been assessed individually in the previous subsections and confirmed no significant effects. Passerine species, which are referenced within citations for some of those designated sites, have been scoped out of the assessment of impacts on non-breeding birds (see Section 22.4). The impact on additional designated sites would therefore be temporary and **not significant**.

Additional protected and priority breeding birds

22.7.51 Breeding bird surveys are on-going in 2023 and the results and impact assessment will be presented within the ES. Impacts on breeding birds are therefore not assessed further within the PEIR.

Impact 3: Killing, injury

All project elements (onshore ECC and OnSS)

Killing and Injury - All breeding bird species

22.7.52 Embedded mitigation measures, as shown in Table 22.11, include that all construction work will be undertaken in accordance with a CMS, which will include measures to protect nesting birds from killing, injury or damage to active nests. This will ensure compliance with the Wildlife and Countryside Act 1981 (as amended) and the protection afforded to nesting birds. With this mitigation in place, the potential impact of killing or injury or damage to active nests will be avoided, and there will therefore be **no significant effect** as a result of this impact pathway.

Impact 4: Disturbance of protected and priority species, including those utilising FLL

Disturbance - Qualifying features of European sites

22.7.53 Disturbance of birds during construction through noise or the presence of site workers and machinery may displace birds with knock-on effects on survival and productivity. Disturbance can lead to effective habitat loss, as birds may not utilise the habitat impacted by the noise or visual disturbance.

22.7.54 A report by The Institute of Estuarine and Coastal Studies (IECS) (Cutts *et al.*, 2009) provides a review of the evidence relating to construction disturbance impacts on waterfowl and was used to develop a Waterbird Disturbance Mitigation Toolkit (Cutts *et al.*, 2013). The Toolkit summarises the following general waterbird disturbance levels from visual stimuli:

- High level disturbance stimuli: close proximity of works (<100m); works or 3rd parties on foreshore; workers on foot; large/fast moving machinery.
- Moderate level disturbance stimuli: high level activities for which birds are habituated; and small /slow moving plant.
- Low level disturbance stimuli: moderate level activities for which birds are habituated; works out of sight; high level works >500m away from birds (or 300m with habituation); moderate level works >300m away (or 250m with habituation).

22.7.55 The study summarises the waterbird responses to construction noise disturbance as:

- High noise level effects – sudden noise of > 60dB (at the bird) or prolonged noise of > 72dB.
- Moderate noise level effects – occasional noise > 55 dB, regular noise 60-72 dB and long-term regular noise >72dB.
- Low noise level effects – noise < 55dB and noise between 55-72dB in some highly disturbed areas.

22.7.56 The Toolkit provides a table presenting standard distance decay rates for noise and states *“Acceptable dose levels (e.g., up to 70dB) are shaded green with dark green unlikely to have any effect whilst the pale green might occasionally induce a low-level behavioural response such as heads-up”*. Above the acceptable 70dB dose threshold *“yellow to orange shading is where a response is likely but mitigation may be effective in reducing disturbance risk; pale red where mitigation is necessary and might be of value, but with remaining risk of effect; dark red where a flight response is almost certain to occur and would be increasingly difficult to mitigate through simple screening etc and may require the cessation of works during high sensitivity periods”*.

22.7.57 The noise assessment for the Project is detailed in Volume 1, Chapter 26: Noise and Vibration. The noise generated by construction operations and the operational noise from the OnSS on International or National ecological sites situated near the Landfall, onshore ECC and OnSS have been predicted and assessed in accordance with the limits contained in AQTAG09 (Air Quality Technical Advisory Group 09). This guidance is intended to be used to assess the potential adverse impact of sound, of an industrial and /or commercial nature on wildlife.

The noise assessment (see Volume 1, Chapter 26: Noise and Vibration) acknowledges that a detailed list of construction plant, operational noise levels and associated on-times for all the construction activities/operations is not yet available. Estimates of the combined sound power levels are however provided for each construction activity, as detailed in Table 22.12 and Table 22.13.

Table 22.12: Estimated combined sound power levels – construction plant for Landfall and onshore ECC, dB

Activity	Combined Sound Power Level (SWL)
1. Establish Access and TCC (including trenchless drilling compounds)	120
2. Site Preparation, Including Fencing, Haul Road Construction and Topsoil Strip	120
3. Transition Bay Excavation	116
4. Transition Bay Wall and Base Construction	114
5. Connection of Cables in Transition Bays	115
6. Roof and Backfill over Transition Bay	118
7. Trench Excavation and duct installation	118
8. Trench Backfill	119
9. Jointing Bay Excavation	116
10. Jointing Bay Base Construction	114
11. Pulling and Connection of Cables	114
12. Backfill over Jointing Bay	118
13. TCC Operations	109
14. Trenchless Drilling Compound Operations (including piling)	116
15. Night-time Trenchless Drilling Operations (excluding piling)	114

Table 22.13: Estimated combined sound power levels – construction plant for OnSS options, dB

Activity	Combined Sound Power Level (SWL)
1. Ground Works	123
2. Building Foundation	115
3. Access Road and Carparks	116
4. Building Fabric and High Voltage Plant	118

Avocet

- 22.7.58 It is understood from desk study searches that there is a breeding population of avocet within and adjacent to the PEIR Boundary (details within Volume 2, Appendix 22.2: Confidential Desk Study). There are also records of breeding from a second location, however suitable wetland habitat is located >300m from the PEIR Boundary. Breeding bird surveys will be carried out in 2023 to confirm precise breeding locations and population size. Recorded non-breeding activity during the 2022-23 winter surveys was limited to a single observation of five avocet at Anderby Marsh in March, which are thought likely to relate to returning breeding birds. **No significant disturbance effect** is therefore predicted for non-breeding avocet based on 2022-23 winter bird survey data.
- 22.7.59 During the construction phase there is a risk of disturbing breeding avocet. Natural England have previously recommended a 300m safe working distance (for non-construction operations such as human presence and shooting) around avocet nest sites (Natural England 2021).
- 22.7.60 There is a grassy bank adjacent, which separates the potential breeding location from the trenchless technique pit and is approximately 2m high and therefore provides visual and

acoustic screening. The dunes and associated vegetation including scrub provide a further complete screen between the potential breeding area and the beach. The intertidal zone within the Landfall area is considered to be largely unsuitable for avocet foraging during the breeding season.

- 22.7.61 For mitigation for avocet, please refer to the embedded mitigation in Table 22.11.
- 22.7.62 For the impact assessment, further information is required to assess the effect on construction disturbance to breeding avocet. This includes breeding bird survey population and distribution data for the Landfall and onshore ECC. Further details of the planned locations of construction infrastructure such as TJBs, exit pits, access roads and compounds will also be required to inform the noise and visual assessment on the bird population.

Golden plover

- 22.7.63 There were 97 observations of golden plover within the PEIR Boundary plus 400m survey area (excluding Landfall surveys) during the winter 2022/23 bird surveys, with a peak flock count of 950 individuals. Observations were of birds feeding and loafing within fields across the survey area. A high proportion of the records, and the peak flock count, were from Weston Marsh North of the A52 (A1-A5 segments).
- 22.7.64 Beyond the areas of temporary and permanent habitat loss, comprising an 80m wide onshore ECC within the PEIR Boundary, construction works may cause visual and noise disturbance to birds utilising adjacent habitats, as described for all species under Impact Four above. Natural England and RSPB (2019) indicates that the breeding population is facing high level threats from climate change and non-climatic threats, whereas the wintering populations may benefit from climate change and face low level non-climatic threats. This indicates that it may not be local factors that are limiting the Wash Ramsar population.
- 22.7.65 Golden plover is classified as a species of moderate sensitivity to disturbance in the Disturbance Toolkit (Cutts *et al.*, 2013), although it is noted that research into disturbance to wintering birds is limited. In relation to visual disturbance, a distance of 200m is cited at which 'high level' stimuli could cause disturbance. The Toolkit considers that noise levels up to 72dB at the feature would be acceptable, with caution above 55dB. It states that golden plover will roost to within 300m of plant and considers a source noise generation of 120-115dB at 300m from golden plover may be acceptable, with caution above 107-112dB. In the absence of specific mitigation and on a precautionary basis, the onshore ECC works may cause disturbance to golden plover utilising farmland habitats at a distance of up to 300m.
- 22.7.66 Disturbance, in the absence of mitigation, has the potential to limit foraging activity and displace birds to potentially sub-optimal foraging and roosting locations and therefore has the potential to impact survival of golden plover within the vicinity. Disturbance would be short-term in duration, with construction lasting for up to 36-months, and would be localised, with works occurring in discrete areas at any one time. Golden plover were primarily recorded in arable fields and there is abundant alternative arable land within the wider area.
- 22.7.67 For mitigation for golden plover please refer to the embedded mitigation in Table 22.13.
- 22.7.68 For the impact assessment, construction disturbance may displace non-breeding golden plover primarily from arable land, however effects will be short-term in duration, localised

at any one time and alternative arable land is common in the wider area. Evidence suggests that availability of arable field habitats is not likely to be a limiting factor for the non-breeding population. With the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on golden plover due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Lapwing

- 22.7.69 There were 266 observations of lapwing within the PEIR Boundary plus 400m survey area (excluding Landfall surveys) during the winter 2022/23 bird surveys, with a peak flock count of 2,500 individuals. No observations were from the Landfall surveys. A high proportion of the records, and the peak flock count, were from Weston Marsh North of the A52 (A1-A5 segments).
- 22.7.70 Beyond the areas of temporary and permanent habitat loss, comprising of an 80m wide onshore ECC within the PEIR Boundary, construction works may cause visual and noise disturbance to birds utilising adjacent habitats, as described for all species for Impact Four.
- 22.7.71 The population of non-breeding lapwing of The Wash Ramsar is in unfavourable condition and the numbers have significantly declined from a citation population of 46,422 to the most recent WeBS estimate of 12,976. The population size is however limited by breeding success and not the availability of over-winter arable farmland habitat (Sheldon *et al.*, 2004).
- 22.7.72 Lapwing is classified as a species of moderate sensitivity to disturbance in the Disturbance Toolkit, although it is noted that research into disturbance to wintering birds is limited. In relation to visual disturbance, a distance of 300m is cited at which 'high level' disturbance stimuli could elicit a disturbance response. The Toolkit considers that noise levels of up to 72dB at the feature would be acceptable, with caution above 55dB. It states that lapwing will roost to within 200m of plant and therefore a source noise generation of 115-120dB at 200m from lapwing may be acceptable, with caution above 87-92dB at 200m range. In the absence of specific mitigation and on a precautionary basis, the onshore ECC works may cause disturbance to non-breeding lapwing utilising farmland habitats at a distance of up to 300m.
- 22.7.73 Disturbance, in the absence of mitigation, has the potential to limit foraging and displace birds to potentially sub-optimal foraging and roosting locations and therefore has the potential to impact survival of lapwing within the vicinity. Lapwing primarily utilise arable fields within the survey area, and similar agricultural land is common in the surrounding area.
- 22.7.74 The embedded mitigation measures would also apply to non-breeding lapwing, including avoiding impact piling other than at the OnSS; screening of certain works; and suspending works during periods of freezing weather.
- 22.7.75 For impact assessment, with the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on lapwing due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
- 22.7.76 Further information is required to assess the effect of disturbance to breeding lapwing, which is potentially a supporting population of The Wash Ramsar, but not a qualifying

feature. This includes breeding bird survey population and distribution data.

Curlew and oystercatcher

- 22.7.77 There were 291 observations of curlew within the PEIR Boundary plus 400m survey area during the winter 2022/23 bird surveys, with a peak flock count of 77 individuals. Curlews were widespread throughout the survey area, utilising arable and pasture fields, as well as Anderby Marsh (LN1/WM1) and The Haven (WM10 and 11). A high proportion of the records, and the peak flock count, were from Weston Marsh North of the A52 (A1-A5 segments).
- 22.7.78 Oystercatcher were recorded in low numbers within each of the three onshore ECC options (including Landfall, onshore ECC and OnSS), with a peak flock count of 23 individuals (and the highest frequency of observations – 35 observations) in the Weston Marsh south of the A52.
- 22.7.79 Beyond the areas of temporary and permanent habitat loss, comprising an 80m wide onshore ECC within the PEIR Boundary, construction works may cause visual and noise disturbance to birds utilising adjacent habitats, as described for all species for Impact Four.
- 22.7.80 Curlew and oystercatcher are classified as species of moderate sensitivity to disturbance in the Disturbance Toolkit. In relation to visual disturbance, a distance of 300m is cited at which ‘moderate’ and ‘high level’ disturbance stimuli could cause disturbance. The Toolkit considers that noise levels up to 117-122dB at source would be acceptable when birds are at 300m range. In the absence of specific mitigation and on a precautionary basis, the onshore ECC works may cause disturbance to non-breeding curlew and oystercatcher utilising farmland habitats at a distance of up to 300m.
- 22.7.81 Disturbance, in the absence of mitigation, has the potential to limit foraging and displace birds to potentially sub-optimal foraging and roosting locations and therefore has the potential to impact survival of curlew and oystercatcher within the vicinity. Curlew and oystercatcher were recorded with a widespread distribution across the survey area, utilising arable and grassland fields, as well as wetlands at Anderby Marsh and The Haven.
- 22.7.82 The embedded mitigation measures would also apply to non-breeding curlew and oystercatcher, including avoiding impact piling other than at the OnSS; screening of certain works; and suspending works during periods of freezing weather.
- 22.7.83 For impact assessment, with the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on curlew or oystercatcher due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
- 22.7.84 Further information is required to assess the implications for the conservation objectives of the relevant designated sites as a result of disturbance to a potentially connected population of breeding curlew, as well as for breeding oystercatcher. This includes breeding bird survey population and distribution data.

Redshank

- 22.7.85 There were 52 observations of redshank within the PEIR Boundary plus 400m survey area during the winter 2022/23 bird surveys, with a peak flock count of 35 individuals. The records were clustered at the River Welland, The Haven and Anderby Marsh. There were

only two records from the Landfall surveys, and the remainder were evenly spread between the three ECC options.

- 22.7.86 Beyond the areas of temporary and permanent habitat loss, comprising an 80m wide onshore ECC within the PEIR Boundary, construction works may cause visual and noise disturbance to birds utilising adjacent habitats, as described for all species for Impact Four. The Wash SPA redshank (non-breeding) population is in favourable condition and The Wash Ramsar (non-breeding) and Humber Estuary SPA and Ramsar (non-breeding and passage) populations are in unfavourable condition.
- 22.7.87 Redshank is classified in the Disturbance Toolkit as a species of high sensitivity to noise disturbance, but which is tolerant of visual disturbance. In relation to visual disturbance, a distance of 100m is cited at which ‘high level’ stimuli could cause disturbance. The Toolkit considers that noise levels up to 70dB at the feature are acceptable, with caution applied at levels above 55dB. In the absence of specific mitigation and on a precautionary basis, the onshore ECC works may cause disturbance to non-breeding redshank at a distance of up to 300m.
- 22.7.88 Disturbance, in the absence of mitigation, has the potential to limit foraging and displace birds to potential sub-optimal foraging and roosting locations and therefore has the potential to impact survival of redshank within the vicinity. Records of redshank during the winter bird surveys were concentrated at the River Welland, The Haven, Hobhole Drain and Anderby Marsh. Works will be set back from such features and crossings will avoid direct impacts through the use of trenchless techniques.
- 22.7.89 The embedded mitigation measures would also apply to non-breeding redshank, including avoiding impact piling other than at the OnSS; screening of certain works; and suspending works during periods of freezing weather.
- 22.7.90 For impact assessment, with the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on redshank due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
- 22.7.91 Further information is required to assess the potential effects of disturbance to breeding redshank, which may act as a supporting population for The Wash SPA and Ramsar. This includes breeding bird survey population and distribution data.

Sanderling

- 22.7.92 There were 28 observations of sanderling within the PEIR Boundary plus 400m survey area (excluding Landfall surveys) during the winter 2022/23 bird surveys, with a peak flock count of 11 individuals. The species was recorded on 29 of the Landfall counts with a peak count of 19. All records were from the beach at the Landfall.
- 22.7.93 Disturbance, in the absence of mitigation, has the potential to limit foraging and displace birds to potentially sub-optimal foraging and roosting locations and therefore has the potential to impact survival of sanderling within the vicinity. The Wash SPA and Ramsar sanderling populations are in favourable condition and whilst recent population data are unavailable for Gibraltar Point SPA and Ramsar, it is assumed from WeBS alerts that they are in unfavourable condition (based on medium term decline although the short-term trend is positive). Sanderling observations were restricted to the beach /intertidal zone

during the 2022-23 surveys.

- 22.7.94 Sanderling is classified as a species of low sensitivity to disturbance in the Disturbance Toolkit. In relation to visual disturbance, a distance of 50m is cited at which ‘high level’ stimuli could cause disturbance. The Toolkit considers that noise levels up to 75dB at the feature are acceptable, with caution applied at levels above 60dB. In the absence of specific mitigation and on a precautionary basis, the onshore ECC works may cause disturbance to non-breeding sanderling at a distance of up to 200m.
- 22.7.95 Volume 1, Chapter 3: Project Description states that “*Landfall installation will be undertaken from the TJB site on the west side of Roman Bank, however some form of beach access may also be required for construction vehicles, depending on the preferred method of installation identified*”. Further information on the scope of works at the beach are therefore required to finalise the assessment of the effect from disturbance to non-breeding sanderling.
- 22.7.96 Some of the embedded mitigation measures would also apply to non-breeding sanderling, including avoiding impact piling other than at the OnSS; screening of certain works; and suspending works during periods of freezing weather.
- 22.7.97 For impact assessment, further information on the scope of works at the beach are required to finalise the assessment of the effect from disturbance to non-breeding sanderling. With the mitigation in place however, disturbance will be minimised, and it is **unlikely there would be a significant effect** on sanderling due to disturbance, and that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Black-tailed godwit

- 22.7.98 The black-tailed godwit non-breeding populations of The Wash SPA and Ramsar and Humber Estuary SPA and Ramsar are in favourable condition. The species was only observed on two occasions during the 2022-23 winter surveys, both at The Haven, in December and January. Given that works will be set back from The Haven, and with the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on black-tailed godwit due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Dark-bellied brent goose

- 22.7.99 Brent geese records within the study area were concentrated at The Haven during the 2022-23 winter surveys, both in fields and saltmarsh. Brent goose is a qualifying species of The Wash SPA and Ramsar and Gibraltar Point Ramsar and the population of The Wash SPA is in favourable condition whereas populations of The Wash Ramsar and Gibraltar Point Ramsar are assumed to be in unfavourable condition.
- 22.7.100 Disturbance has the potential to limit foraging or displace birds and therefore has the potential to impact survival of brent geese within the vicinity. The Disturbance Toolkit classifies brent goose as a species of high sensitivity to visual and noise disturbance and advises that for any visible construction works planned within 400m of brent geese consideration should be given to mitigation options. Owens (1977) however states: “*Brent geese quickly become habituated to most sounds. Unexpected ones, such as nearby gun shots from wildfowlers, usually put the geese to flight. Similarly, the first shots of the day at the Colne Army ranges caused geese to leave the saltings for the mudflats. They quickly*

returned however and ignored all subsequent firing that day. At Foulness, the extremely loud but regular bangs made during weapon testing caused little reaction after the first weeks. Brent Geese fed undisturbed 50m from passing trains at Leigh Marsh.”

22.7.101 The cable crossing of The Haven will be by trenchless techniques, and it is expected that the entry and exit drilling locations, and associated Temporary Construction Compounds (TCC), will be set back from the river (although are expected to be within 400m of it, and therefore within the potential disturbance distance), however the locations and details are yet to be confirmed.

22.7.102 For mitigation, refer to the embedded mitigation in Table 22.13.

22.7.103 For impact assessment, with the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on dark-bellied brent goose due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Pink-footed goose and whooper swan

22.7.104 Pink-footed goose and whooper swan are not included in the Disturbance Toolkit but are likely to have a similar sensitivity to construction disturbance to that described for brent goose and may be impacted by visual and noise disturbance at a distance of up to 400m from the source. Pink-footed geese were recorded during winter bird surveys utilising various fields along the onshore ECC, at relatively low frequency and mainly in low numbers but occasionally in larger flocks, including some which constitute a significant proportion of the designated site populations. Whooper swan were similarly recorded in arable fields across the survey area, with a peak flock count of 17 individuals.

22.7.105 For mitigation, refer to the embedded mitigation in Table 22.13.

22.7.106 For impact assessment, for the same rationale given in relation to temporary habitat loss, including with the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on pink-footed goose or whooper swan due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Gadwall and wigeon

22.7.107 Refer to the introductory section for Impact Four for a description of the construction works at the Landfall and the topographical and vegetation features which would act as partial screens between the working areas and Anderby Marsh and Wolla Bank Pit.

22.7.108 The recommended buffers for gadwall and wigeon from construction activity is 200m (Wallis *et al.*, 2019). High numbers of non-breeding gadwall and wigeon were recorded at Anderby Marsh, relative to The Wash SPA populations. The gadwall and wigeon populations of The Wash are at favourable conservation status.

22.7.109 For mitigation, refer to the embedded mitigation in Table 22.13.

22.7.110 For impact assessment, with the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on gadwall and wigeon (non-breeding) due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

22.7.111 Further information is required to assess the effect of disturbance to a potentially connected population of breeding gadwall. This includes breeding bird survey population and distribution data.

Common scoter

22.7.112 Section 7 of Volume 1, Chapter 3: Project Description provides details of the planned Landfall construction works. This outlines that the cable will be installed by trenchless techniques beneath the beach and coastal strip, with most works above MHWS occurring at the TJB to be located in an agricultural field set at least 80m inland of Roman Bank. The trenchless works exit pit will be located offshore. In relation to works on the beach, the Project Description chapter states “*Landfall installation will be undertaken from the TJB site on the west side of Roman Bank, however some form of beach access may also be required for construction vehicles, depending on the preferred method of installation identified. A number of potential access options have been identified via existing access points. Some improvement works to the access points may be required to enable construction works access*”. In addition, “*There may be temporary closures to parts of the beach and intertidal area during activities such as cable pulling or excavation, but wherever possible access will be maintained across the beach and public diversions established*”.

22.7.113 Studies of disturbance to non-breeding common scoter have focussed on impacts from marine activities such as shipping and the species has been recorded flushing from boats at a distance of >3km (Schwemmer *et al.*, 2011). They have been found to show a weak avoidance of operational offshore windfarms (Dierschke *et al.*, 2016) and are considered to be particularly sensitive to human activities in the marine environment such as shipping and helicopter traffic (see summary in Goodship & Furness, 2022). The potential for human recreational disturbance to this species is limited due to their distance from the shore (Goodship & Furness, 2022). Typically, vehicles elicit less of a disturbance response than people on foot (see Cutts *et al.*, 2013).

22.7.114 For the onshore element of works, given that landfall installation will primarily occur from the TJB which is inland and screened from the shore, the distance at which common scoter have been recorded offshore and that they are likely to be impacted less by plant and vehicles onshore than by vessel activity, it is concluded that the Landfall works (above MHWS) would have **no significant effect** on common scoter.

Black-headed gull and herring gull

22.7.115 Black-headed gull and herring gull are species of low sensitivity to human disturbance and are likely to be tolerant of construction activities in proximity to foraging areas. The embedded mitigation measures would also apply to non-breeding black-headed gull and herring gull, including avoiding impact piling other than at the OnSS; screening of certain works; and suspending works during periods of freezing weather. It is therefore concluded that disturbance would have **no significant effect** on non-breeding black-headed gull or herring gull.

22.7.116 Further information is required to assess the effects of disturbance to breeding black-headed gull, which may be a supporting population for The Wash Ramsar, but not a qualifying feature. That includes breeding bird survey population and distribution data.

Hen Harrier

22.7.117 There was only a single record of Hen Harrier (of two birds) from within the 2022-23 winter birds survey area, over an arable field. Given the low levels of recorded activity and the abundance of alternative arable land in the wider area, construction disturbance would have a negligible impact on this species and the effect would **not be significant**.

Other SSSI notified and conservation priority non-breeding bird species

22.7.118 All relevant SSSI notified bird features have been considered within the European site bird features sub-section, where they were recorded in sufficient numbers to be included as IOFs.

Little egret

22.7.119 There were 11 observations from Lincolnshire Node, 33 observations from Weston Marsh onshore ECC South of the A52 and 92 observations from Weston Marsh onshore ECC North of the A52, with a peak flock count of five individuals. Records were mainly from wetland habitats.

22.7.120 Little egret is not included in the Disturbance Toolkit and on a precautionary basis it is assumed that they could be disturbed at a distance of 300-400m from construction works. Disturbance, in the absence of mitigation, has the potential to limit foraging and displace birds to potential sub-optimal foraging and roosting locations and therefore has the potential to impact survival of little egret within the vicinity. Records of little egret during the winter bird surveys were concentrated at wetland features. Works will be set back from the larger watercourses and waterbodies and crossings will avoid direct impacts through the use of trenchless techniques.

22.7.121 The embedded mitigation measures would also apply to non-breeding little egret, including avoiding impact piling other than at the OnSS; screening of certain works; and suspending works during periods of freezing weather.

22.7.122 For impact assessment, with the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on little egret due to disturbance, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

RSPB Frampton Marsh

22.7.123 The Frampton Marsh reserve boundary is approximately 10m to the south of the PEIR boundary at the closest point, as shown in Figure 3.4.4 of Volume 2, Appendix 22.2: Confidential Desk Study. The southern half of the Reserve overlaps with The Wash SPA and Ramsar. The closest point is between an access road for the Project and the access road to Frampton Marsh Reserve. The distance from the PEIR boundary to the nearest open ground /wetland within the Reserve is approximately 150m and there is approximately 275m between the onshore ECC and the nearest open ground /wetland within the Reserve. There is a mature linear strip of woodland along the access road to the Reserve, which provides a visual screen to the open wetland habitats within the Reserve, particularly to the north and west. There is an existing access track along the north-eastern boundary of the Reserve. The reserve is important for wintering wildfowl, migrating waders and breeding waders, but does not have listed features, as is the case for certain statutory sites for example. Priority

non-breeding waterbird species have been assessed individually in the previous sub-sections and concluded no significant effects are likely, to be confirmed in the ES. Breeding bird surveys are on-going and impact assessment for those will be presented within the ES. Taking account of the embedded mitigation in Table 22.11, the separation distances and existing vegetation screening and access tracks, it is unlikely there would be a significant effect on the features of the Reserve, however that will be assessed in greater detail in the ES on the basis of greater design detail and further survey data and analyses.

RSPB Freiston Shore

22.7.124 RSPB Freiston Shore is located 1.46km to the south of WM9 segment of the PEIR boundary at the closest point, as shown in Figure 3.4.4 of Volume 2, Appendix 22.2: Confidential Desk Study. The majority of the reserve overlaps with The Wash SPA, Ramsar and SSSI. The reserve does not have specific listed features but is described as “a tidal saltmarsh which also encompasses the habitats of saline lagoons and wet grassland”. “Freiston Shore has one of the UK's largest 'managed realignment' projects, in which the RSPB has worked with the Environment Agency to convert 66 hectares of coastal farmland into tidal saltmarsh” (RSPB, 2023b). The reserve is located beyond the distance at which birds within the reserve could be disturbed by works within the PEIR Boundary and therefore there would be no significant effect on RSPB Freiston Shore as a result of construction disturbance.

Other designated sites with ornithological features

22.7.125 As described in Section 22.4, there are a further four LWS's and six LWT reserves with notified ornithological features in the citations within 2km of the PEIR Boundary. The Project has committed to avoid designated sites through the use of trenchless techniques. Where priority wintering waterbirds have been recorded within the survey area on a frequent basis or there have been notable concentrations of such species, they have been assessed individually in the previous sub-sections and concluded no significant effects are likely, to be confirmed in the ES. Passerine species, which are referenced within citations for some of these designated sites, have been scoped out of the assessment of impacts on non-breeding birds (see Section 22.4). With the mitigation in place, disturbance will be minimised, and it is **unlikely there would be a significant effect** on these additional species due to disturbance, however that will be confirmed in the ES on the basis of greater design detail (including stand-off distances to the reserves) and further survey data and analyses.

Additional protected and priority breeding bird species

22.7.126 Breeding bird surveys are on-going in 2023 and the results and impact assessment will be presented within the ES. Impacts on breeding birds are therefore not assessed further within the PEIR.

Impact 5: Pollution of waterbodies and watercourses used by protected and priority bird species, especially via suspended solids but potentially also via spillage of vehicle fluids from construction machinery

All project elements

22.7.127 Measures to minimise the risk of a pollution event will be contained within the PPEIRP, a draft of which will be provided with the ES. A detailed assessment of this impact is provided within Volume 1, Chapter 24: Hydrology, Hydrogeology and Flood Risk. To summarise, it

concludes that with embedded mitigation measures in place, the impact to water quality as a result of direct spills would be negligible to minor adverse. Further refinement to Project design is required to make an assessment of the impacts on hydrologically connected designated sites, and associated bird features, and that will be provided in the ES.

Impact 6: Air quality impacts on habitats used by protected and priority bird species

All project elements

22.7.128 Impacts in relation to air quality have been assessed in Volume 1, Chapter 19 Onshore Air Quality and are summarised below in respect of ecological features:

- The sensitivity of the study area with respect to ecological impacts in relation to earthworks and construction is considered to be high, and low in relation to trackout activities;
- The risk to ecological features from dust (without appropriate mitigation in place) is high during earthworks and construction and low in relation to trackout activities;
- Potential effects from dust during construction are temporary, short-term and intermittent depending on activity / meteorological conditions; and
- Ecological designations could experience air quality effects, in-combination.

22.7.129 Embedded mitigation measures are included in an Outline Air Quality Management Plan (AQMP) (Document Reference 8.1.2: Outline Air Quality Management Plan), included as part of the overall CoCP that will ensure that residual effects are negligible to minor adverse.

22.7.130 The potential effect resulting from construction phase road traffic emissions will need to be assessed following completion of that element of the air quality assessment. There are defined Nitrogen deposition targets for individual bird species of The Wash and Humber Estuary SPA's, which vary in their sensitivity. **Specific assessment against these targets will be presented in the ES following refinement of the Project design.**

Operation and maintenance

Impact 1: Disturbance of designated sites qualifying features, priority bird species during planned and unplanned maintenance works when the proposed development is operational

All project elements

22.7.131 Once the substation is operational, activities would be limited to regular inspections and occasional maintenance. This would be highly localised within the OnSS with a minimal likelihood of disturbance expected to the adjacent habitats and species. Any such maintenance would be subject to an Environmental Management System (EnMS) which would include specific measures to avoid potential impacts to protected / notable species (precise contents dependent upon ongoing survey results). The EnMS would also include measures to minimise the risk of a pollution event. Following the implementation of an agreed EnMS, no significant adverse effects are anticipated for any important ornithological features as a result of regular maintenance at the OnSS.

22.7.132 Details in respect of sound levels generated by the operation of the OnSS will be included

within the ES. There are no statutory or non-statutory designated sites with ornithological features within any of the OnSS zones and at this stage it is considered unlikely that operational noise will significantly affect important ornithological features, although this will need to be confirmed following completion of ongoing survey and provision of noise data for the substation. Should mitigation be necessary, that will be detailed in the ES.

22.7.133 Planned maintenance of the onshore ECC is likely to involve an annual visit by a small team. Maintenance would be subject to an EnMS which would include specific measures to avoid potential impacts to protected /notable bird species.

22.7.134 Taking account of the embedded mitigation measures, **no significant effect** on the local conservation status of any priority bird species is predicted.

Decommissioning

Impact 1: Impacts likely to be similar to construction, but more limited in geographical extent and timescale and there would be no permanent habitat loss

All project elements

22.7.135 At the time of writing the approach to decommissioning is not well defined, however for onshore elements, it is expected that the cable would be left in-situ to avoid adverse effects on the environment and communities.

22.7.136 Mitigation for any impacts, likely to be limited to potential disturbance to birds, would be in-line with that described for the construction phase impacts. A Decommissioning Plan will be developed providing further details on the decommissioning of the Project in accordance with the Outline Decommissioning Plan to be submitted with the DCO application. Further assessment of potential impacts to birds will be provided in the ES, once further details are available, but with most infrastructure expected to be left in situ and following the implementation of embedded mitigation measures, **no significant adverse effects** on birds are anticipated.

22.8 Cumulative Effects Assessment

22.8.1 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a proposed development results in individually insignificant impacts that, when considered cumulatively with impact of other proposed or permitted plans and projects, can result in significant effects.

22.8.2 Projects and plans were selected as relevant to the assessment of cumulative impacts to Onshore Ecology and Ornithology based upon an initial screening exercise undertaken in November 2022 on a long list. This has informed the production of Volume 1, Appendix 5.2 Onshore Cumulative Impact Assessment. Each project, plan or activity was considered and scoped in or out on the basis of effect-feature pathway, data confidence and the temporal and spatial scales involved as presented. Where no hydrological or ecological connection exists, the project or plan is located more than 1km from any part of the onshore ECC, or 5km from the centre of the OnSS search area, or the plan or project has been considered for planning after mid-March 2023, these have been scoped out. Projects or plans which are considered to have potential for cumulative effects on Onshore Ornithology are presented

in Table 22.14 below.

- 22.8.3 For qualifying bird species for internationally designated sites, a detailed assessment of effects in combination with other plans or projects is provided in the RIAA and is not repeated here. The assessment of cumulative effects on birds provided here therefore focuses on other important bird species, including notified species for nationally designated sites.
- 22.8.4 This exercise will be repeated ahead of submission of the ES, and the updated cumulative effects assessment will be described therein. At the time of writing, there is insufficient design detail and baseline information to support a more detailed assessment of cumulative effects.

Table 22.14: Projects considered to have potential for cumulative effects on Onshore Ecology including birds

Reference Number	Description	Distance from Project	Potential contribution to cumulative effects	Explanation
B/20/0488	Outline application for 46 residential dwellings and associated works with all matters reserved for later approval. Planning decision – Favourable with conditions.	850m NW of PEIR Boundary at Church End Lane to The Haven (WM10)	Accidental pollution of watercourses and hydrologically connected habitats, direct /indirect impacts on protected or notable bird species.	Moderate sized housing development. Impacts on hydrological and functional linkages will need to be assessed cumulatively within the ES.
B/20/0489	Proposed residential development of 20 affordable dwellings and associated works. Planning decision – Favourable with conditions.	800m NW of PEIR Boundary at Church End Lane to The Haven (WM10)	Accidental pollution of watercourses and hydrologically connected habitats, direct /indirect impacts on protected or notable bird species.	Moderate sized housing development. Impacts on hydrological and functional linkages will need to be assessed cumulatively within the ES.
B/21/0196	Approval of reserved matters (Access, appearance, landscaping, layout and scale) following outline approval b/16/0465 (Residential development of up to 42 dwellings). Planning decision – Favourable with conditions.	230m N of PEIR Boundary at Crowhall Lane to Church End Lane (WM9)	Permanent and temporary habitat loss, accidental pollution of watercourses and hydrologically connected habitats, direct /indirect impacts on protected or notable bird species.	Moderate sized housing development. Loss of habitats, disturbance and impacts to hydrological and functional linkages will need to be assessed cumulatively within the ES.
B/21/0419	Outline Application with all Matters (Access, Appearance, Landscaping, Layout and Scale) reserved for later approval for a proposed	160m SW of PEIR Boundary at Marsh Road to Fosdyke Bridge (WM12)	Permanent and temporary habitat loss, accidental pollution of watercourses and hydrologically connected habitats, direct /indirect impacts	Cumulative effects are likely to be small and not significant. However, habitat loss, and impacts on hydrological and functional linkages

Reference Number	Description	Distance from Project	Potential contribution to cumulative effects	Explanation
	residential development of 9no. self-build/custom-build homes and 2no. Almshouses (Resubmission of B/20/0295) Decision – not yet determined.		on protected or notable bird species.	will need to be assessed cumulatively within the ES.
B/21/0443	Proposed construction and operation of a solar photovoltaic farm, battery storage and associated infrastructure, including inverters, batteries, substation compound, security cameras, fencing, access tracks and landscaping.	10.93km Northwest of PEIR Boundary at Fosdyke Bridge to Weston Marsh Substation North	Permanent and temporary habitat loss, accidental pollution of watercourses and hydrologically connected habitats, direct /indirect impacts on protected or notable bird species.	Cumulative effects on birds to be assessed.
N/084/01712/22	Detailed particulars relating to the erection of 89no. dwellings, erection of a pumping station, construction of a vehicular access and construction of internal roads (Outline planning permission ref no. N/084/0809/19, granted 13th September 2019). Status – Registered.	220m SSW of PEIR Boundary at Landfall to A52 – Hogsthorpe (WM1)	Permanent and temporary habitat loss, accidental pollution of watercourses and hydrologically connected habitats, direct /indirect impacts on protected or notable bird species.	Housing development near to the PEIR Boundary. Habitat loss and impacts on hydrological and functional linkages will need to be assessed within the ES.

Reference Number	Description	Distance from Project	Potential contribution to cumulative effects	Explanation
Boston Alternative Energy Facility (BAEF)	Energy from waste facility with wharf, gasification plant, turbine plant, lightweight aggregate manufacturing plant, electrical export infrastructure and associated site infrastructure. SoS set new deadline of 06/07/2023 to decide the application.	2.5km north of PEIR Boundary (Weston Marsh North and South of the A52)	Accidental pollution of watercourses and hydrologically connected habitats, direct /indirect impacts on protected or notable bird species.	Key ornithological impact is potential disturbance to waterbirds at The Haven. Hydrological and functional linkages to the Project will need to be assessed within the ES.
S/195/02340/20 - Low Farm Solar Farm	Construction of a temporary 49.9MW solar farm, to include the erection of ground mounted solar panels with transformers to the maximum height of 2.46 metres, a 132KV substation, a DNO control room, a customer substation, GRP communications cabin, erection of security fencing and provision of landscaping and other associated infrastructure. Decision – Approved.	Approximately 260m NW of the PEIR Boundary (Weston Marsh North and South of the A52)	Permanent and temporary habitat loss, accidental pollution of watercourses and hydrologically connected habitats, direct /indirect impacts on protected or priority species.	Solar farm near to the PEIR Boundary. Habitat loss and impacts on hydrological and functional linkages will need to be assessed within the ES.

22.9 Inter-Relationships

22.9.1 Table 22.15 below sets out the inter-relationships between this chapter and others within the PEIR.

Table 22.15: Inter-relationships between the Onshore Ornithology and other chapters within the PEIR

Topic/Chapter	Details
Volume 1, Chapter 19: Onshore Air Quality	This chapter considers air quality impact during construction to sensitive ecological features, including sites designated for their bird populations, as a result of dust and increased road traffic concluding that residual effects are not significant in terms of the EIA Regulations.
Volume 1, Chapter 21: Onshore Ecology	The Onshore Ecology chapter addressed impacts on onshore ecological features (excluding birds) and sites designated for biodiversity. It concludes that there will be no residual significant effects or defers assessment to the ES stage where there is insufficient information available.
Volume 1, Chapter 24: Hydrology, Hydrogeology and Flood Risk	The Hydrology, Hydrogeology and Flood Risk chapter provides a description of the hydrological setting of water courses and water bodies within the survey area, including those used by important bird populations, and assesses impacts upon them. It concludes that there will be no significant residual effects on water quality and flood as a result of the Project.
Volume 1, Chapter 12: Intertidal and offshore ornithology	The Intertidal and Offshore Ornithology chapter addresses impacts on birds in the intertidal and offshore areas (i.e., areas below MHWS).

22.10 Transboundary Effects

22.10.1 In accordance with Natural England’s Scoping response, transboundary effects on migratory bird species in the onshore environment will be considered at the ES stage, once further information is available to assess the impacts.

22.11 Summary of effects

22.11.1 This assessment has considered the potential effects on Ornithology arising from onshore activities associated with the Project. Consideration has been given to potential worst-case effects arising from onshore construction, operational and decommissioning activities based upon available information. Worst case parameters have been adopted to provide as robust an assessment as possible, based on available data collected to date.

22.11.2 Limitations to the assessment at this stage largely relate to the ongoing nature of survey data collection for breeding birds and the early stage nature of the Project’s design. These limitations will be addressed in the ES, following completion of the relevant surveys and more detailed information regarding the Project’s design.

22.11.3 The approach undertaken was based upon the Inspectorate Scoping Opinion (The

Inspectorate, 2022) and subsequent discussions with the Onshore Ecology ETG.

- 22.11.4 A summary of effects on important ornithological features is presented in Table 22.16 which only includes important ornithological features which are likely to be affected by the onshore elements of the Project. Important Ornithological Features excluded from Table 22.16 are not likely to be affected.

Table 22.16: Summary of effects arising from the Project

Description of impact and Effect Feature	Additional measures	mitigation	Residual impact
Construction			
Impact 1: Damage to designated sites with bird qualifying /notified features			
<u>All designated sites with notified bird features</u>	Damage avoided through use of trenchless techniques. Potential indirect effects addressed for Impacts 2-5 below.	Not applicable – all mitigation will be embedded.	No significant effect
Impact 2: Loss and damage of habitat for protected and priority bird species (Qualifying Features of European Sites)			
Avocet (breeding and non-breeding)	Loss of habitat avoided through use of trenchless techniques.	Not applicable – all mitigation will be embedded.	No significant effect
Golden plover (non-breeding)	Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Lapwing (non-breeding)	Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Lapwing (breeding)	Not assessed – further information needed on baseline population and distribution.	To be confirmed in ES	To be confirmed in ES
Curlew (non-breeding)	Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Curlew (breeding)	Not assessed – further information needed on baseline population and distribution.	To be confirmed in ES	To be confirmed in ES
Redshank (non-breeding)	Loss of wetland habitat avoided through use of trenchless techniques. Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Redshank (breeding)	Not assessed – further information needed on baseline population and distribution.	To be confirmed in ES	To be confirmed in ES
Sanderling (non-breeding)	Protection of beach and intertidal areas through use of trenchless techniques.	Not applicable – all mitigation will be embedded.	No significant effect

Description of impact and Feature	Effect	Additional mitigation measures	Residual impact
Black-tailed godwit (non-breeding)	Only two records, both from The Haven. The Haven protected through use of trenchless techniques.	Not applicable – all mitigation will be embedded.	No significant effect
Dark-bellied brent goose (non-breeding)	Observations were concentrated at The Haven and fields adjacent to The Haven. The Haven itself will be avoided through using trenchless techniques. Short-term, temporary, small extent relative to foraging area, adverse impact.	Not applicable – all mitigation will be embedded.	No significant effect
Pink-footed goose (non-breeding)	Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Gadwall (non-breeding)	Loss of wetland habitat avoided through use of trenchless techniques.	Not applicable – all mitigation will be embedded.	No significant effect
Wigeon (non-breeding)	Loss of wetland habitat avoided through use of trenchless techniques.	Not applicable – all mitigation will be embedded.	No significant effect
Common scoter (non-breeding)	Only recorded offshore and this chapter assesses impacts from onshore works only. No potential loss of habitat for this species from onshore works.	Not applicable – all mitigation will be embedded.	No significant effect
Black-headed gull (non-breeding)	Loss of wetland habitat avoided through use of trenchless techniques. Alternative farmland habitat available nearby. Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Black-headed gull (breeding)	Not assessed – further information needed on baseline population and distribution.	To be confirmed in ES	To be confirmed in ES
Hen harrier (non-breeding)	Only a single record (of two birds) over arable farmland. Alternative farmland habitat available nearby. No significant effect.	Not applicable – all mitigation will be embedded.	No significant effect

Description of impact and Effect Feature	Additional measures	mitigation	Residual impact
Impact 2: Loss and damage of habitat for protected and priority bird species (Additional features of SSSIs and priority bird species)			
Whooper swan (non-breeding)	Alternative farmland habitat available nearby and species has a large foraging range. Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Herring gull (non-breeding)	Loss of wetland habitat avoided through use of trenchless techniques. Alternative farmland habitat available nearby. Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Little egret (non-breeding)	Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Oystercatcher (non-breeding)	Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Impact 2: Loss and damage of habitat for protected and priority bird species (Additional designated sites)			
Additional designated sites with ornithological features	Avoidance of designated sites through the use of trenchless techniques. Priority wintering waterbirds have been assessed individually in the previous sub-sections and concluded no significant effects. Passerine species, which are referenced within citations for some of these designated sites, have been scoped out of the assessment of impacts on non-breeding birds (see Section 22.4).	Not applicable – all mitigation will be embedded.	No significant effect
Impact 2: Loss and damage of habitat for protected and priority bird species (Additional breeding birds)			
Additional protected and priority breeding birds	Not assessed – further information needed on baseline population and distribution.	To be confirmed in ES	To be confirmed in ES
Impact 3 – killing, injury			

Description of impact and Effect Feature	Effect	Additional measures	mitigation Residual impact
All breeding bird species	Embedded mitigation includes that work will be undertaken in accordance with a CMS, which will include measures to protect nesting birds from killing, injury or damage and protection from disturbance for Schedule 1 breeding species.	Not applicable – all mitigation will be embedded.	No significant effect
Impact 4 – disturbance to protected and priority bird species			
Avocet (non-breeding)	A single observation of five avocet at Anderby Marsh in March. Short-term, temporary, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect
Avocet (breeding)	Not assessed – further information needed on baseline population and distribution.	Not applicable – all mitigation will be embedded.	To be confirmed in ES
Golden plover (non-breeding)	Short-term, temporary, localised, adverse.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
Lapwing (non-breeding)	Short-term, temporary, localised, adverse.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Description of impact and Feature	Effect	Additional mitigation measures	Residual impact
Lapwing (breeding)	Not assessed – further information needed on baseline population and distribution.	To be included in the ES	To be confirmed in ES
Curlew and oystercatcher (non-breeding)	Short-term, temporary, localised, adverse.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
Curlew and oystercatcher (breeding)	Not assessed – further information needed on baseline population and distribution.	To be included in the ES	To be confirmed in ES
Redshank (non-breeding)	Short-term, temporary, localised, adverse.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
Redshank (breeding)	Not assessed – further information needed on baseline population and distribution.	To be included in the ES	To be confirmed in ES
Sanderling (non-breeding)	Further information on the scope of works at the beach are required to finalise the assessment of the effect from disturbance to non-breeding sanderling.	Not applicable – all mitigation will be embedded.	To be confirmed in ES
Black-tailed godwit (non-breeding)	Recorded on two occasions at The Haven. Short-term, temporary, localised, adverse, not significant.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be

Description of impact and Effect Feature	Effect	Additional measures	mitigation Residual impact
			confirmed in the ES on the basis of greater design detail and further survey data and analyses.
Dark-bellied brent goose (non-breeding)	Observations were concentrated at The Haven and fields adjacent to The Haven. Short-term, temporary, localised, adverse.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
Pink-footed goose and whooper swan (non-breeding)	Short-term, temporary, adverse.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
Gadwall (non-breeding)	Short-term, temporary, localised, adverse.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Description of impact and Effect Feature	Effect	Additional mitigation measures	Residual impact
Gadwall (breeding)	Not assessed – further information needed on baseline population and distribution.	Not applicable – all mitigation will be embedded.	To be confirmed in ES
Wigeon (non-breeding)	Short-term, temporary, adverse.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.
Common scoter (non-breeding)	Not significant from onshore works.	Not applicable	No significant effect.
Black-headed gull and herring gull (non-breeding)	Low sensitivity to disturbance. Short-term, temporary, localised, adverse, not significant.	Not applicable – all mitigation will be embedded.	No significant effect.
Black-headed gull (breeding)	Not assessed – further information needed on baseline population and distribution.	To be included in the ES	To be confirmed in ES
Hen harrier (non-breeding)	Only a single record (of two birds) over arable farmland. Alternative farmland habitat available nearby. No significant effect.	Not applicable – all mitigation will be embedded.	No significant effect.
Little egret (non-breeding)	With the mitigation in place, disturbance will be minimised.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Description of impact and Effect Feature	Effect	Additional measures	mitigation Residual impact
RSPB Frampton Marsh	Disturbance to birds within the reserve as a result of construction activities.	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses. Impacts on breeding birds to be confirmed in the ES.
RSPB Freiston Shore	Disturbance to birds within the reserve as a result of construction activities. Reserve is located beyond the distance at which birds could be disturbed.	Not applicable – all mitigation will be embedded.	No significant effect.
Additional protected and priority breeding birds	Not assessed – further information needed on baseline population and distribution.	To be included in the ES	To be confirmed in ES
Additional designated sites with ornithological features	Avoidance of designated sites through the use of trenchless techniques. Priority wintering waterbirds have been assessed individually in the previous sub-sections and concluded no significant effects are likely, to be confirmed in the ES. Passerine species, which are referenced within citations for some of these designated sites, have been scoped out of the assessment of impacts on non-breeding birds (see Section 22.4).	Not applicable – all mitigation will be embedded.	Unlikely there would be a significant effect, however that will be confirmed in the ES on the basis of greater design detail and further survey data and analyses.

Impact 5 – Pollution of waterbodies and watercourses used by protected and priority bird species

Description of impact and Effect Feature		Additional mitigation measures	Residual impact
All IOFs	Measures to minimise the risk of a pollution event will be contained within the PPEIRP. A detailed assessment of this impact is provided within the Volume 1 Chapter 24: Hydrology, Hydrogeology and Flood Risk.	Not Applicable – all mitigation will be embedded	To be confirmed in ES
Impact 6 – Air quality impacts on habitats used by protected and priority bird species			
All IOFs	<p>A detailed assessment of this impact is provided within Volume 1, Chapter 19: Onshore Air Quality. Embedded mitigation measures are included in document 8.1.2 Outline AQMP, within the CoCP.</p> <p>Specific assessment against nitrogen deposition targets will be presented in the ES following refinement of the Project design.</p>	Not Applicable – all mitigation will be embedded	To be confirmed in ES
Operation and Maintenance –			
Impact 1: Disturbance of designated sites qualifying features, priority bird species during planned and unplanned maintenance works when the proposed development is operational			
All IOFs	Once the OnSS is operational, activities would be limited to regular inspections and occasional maintenance. This would be highly localised within the substation, with a minimal likelihood of disturbance expected to the adjacent areas. Planned maintenance of the onshore ECC is likely to involve an annual visit by a small team.	Not Applicable – all mitigation will be embedded	No significant effects predicted
Decommissioning			
All IOFs	<p>Impacts likely to be similar to construction, but more limited in geographical extent and timescale, cables would be left in situ and there would be no permanent habitat loss.</p> <p>Short term, localised, temporary, adverse effect.</p>	Not Applicable – all mitigation will be embedded	No significant effect

Description of impact and Effect Feature		Additional measures	mitigation Residual impact
Cumulative			
Impacts 2-6 for all IOFs	To be confirmed in the ES	To be confirmed in the ES	To be confirmed in the ES

22.12 References

- Austin, G.E., Calbrade, N.A., Birtles, G.A., Peck, K., Wotton, S.R., Shaw, J.M., Balmer, D.E. and Frost, T.M. 2023. Waterbirds in the UK 2021/22: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO, RSPB, JNCC and NatureScot. British Trust for Ornithology, Thetford. Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2021/22 © copyright and database right 2023. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, with fieldwork conducted by volunteers and previous support from WWT.
- Arroyo, B., Leckie, F., Amar, A., Mccluskie, A & Redpath, S. (2014). Ranging behaviour of Hen Harriers breeding in Special Protection Areas in Scotland. *Bird Study*. 61.
- Bird Survey & Assessment Steering Group. (2022). Bird Survey Guidelines for assessing ecological impacts, v.1.0.0. <https://birdsurveyguidelines.org> [Accessed: March 2023]
- Bowland Ecology, 2021. Identification of Functionally Linked Land supporting SPA waterbirds in the North West of England. NERC361. Natural England.
- BTO (2023) Bird Facts: profiles of birds occurring in the United Kingdom. BTO, Thetford (<https://www.bto.org/birdfacts> [Accessed: April 2023]).
- Chartered Institute of Ecology and Environmental Management, (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester. Version 1.2, Updated April 2022.
- CIRIA (2001) Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors CIRIA (C532).
- CIRIA (2015) SuDS Manual (C753).
- Cutts, N., Phelps, A. and Burdon, D. (2009). Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA. Institute of Estuarine and Coastal Studies, University of Hull.
- Cutts, N., Hemingway, K. & Spencer, J. (2013). Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects. University of Hull.
- Dierschke, V., Furness, R.W. & Garthe, S. (2016), Seabirds and offshore wind farms in European waters: Avoidance and attraction, *Biological Conservation*, 202, 59-68.
- Drewitt, A.L., Whitehead, S. and Cohen, S. 2023. Guidelines for the Selection of Biological SSSIs. Part 2: Detailed Guidelines for Habitats and Species Groups. Chapter 17: Birds (Version 1.2). Joint Nature Conservation Committee, Peterborough.
- Eaton & the Rare Breeding Birds Panel. 2021. Rare breeding birds in the UK in 2019. *Brit. Birds* 114: 646–704.
- Eglinton, S. & Perrow, M.R. (2014). Literature review of tern *Sterna sp.* foraging ecology. Report to JNCC, under Contract ref. C13-0204-0686.
- Enners, L., Chagas, A.L, Ismar, S., Schwemmer, P., & Garthe, S. (2019). Foraging patterns and diet composition of breeding Pied Avocets (*Recurvirostra avosetta*) in the German Wadden Sea. *Estuarine, Coastal and Shelf Science*. 229.

Environment Agency Website. Catchment Data Explorer Anderby Main Drain | Catchment Data Explorer | Catchment Data Explorer [Accessed: November 2022].

Frost, T.M., Calbrade, N.A., Birtles, G.A., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. 2021. Waterbirds in the UK 2019/20: The Wetland Bird Survey. BTO/RSPB/JNCC. Thetford. Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2019/20 © copyright and database right 2021. (Online) <https://app.bto.org/webs-reporting/numbers.jsp> [accessed: April 2023].

Gilbert, G. & Tyler, G. & Smith, K. (2005). Behaviour, home-range size and habitat use by male Great Bittern *Botaurus stellaris* in Britain. Ibis. 147. 533 - 543. 1.

Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods: A Manual of Techniques for Key UK Species. RSPB, Sandy.

Gillings, S. & Fuller, R.J. 1999. Winter ecology of golden plovers and lapwings: A review and consideration of extensive survey methods. BTO Research Report No. 224.

GLNP, 2013. Local Wildlife Site Guidelines for Greater Lincolnshire, 3rd Edition.

Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B., Thompson, D. and Scottish Natural Heritage (2013) Raptors: A field guide for surveys and monitoring, (3rd edition). The Stationery Office, Edinburgh.

Institute of Environmental Assessment, (1995) Guidelines for Baseline Ecological Assessment.

JNCC. 1999. The Birds Directive Selection Guidelines for Special Protection Areas. Joint Nature Conservation Committee, Peterborough.

Lincolnshire Wildlife Trust webpage, 2023. <https://www.lincstrust.org.uk/nature-reserves>. [Accessed: May 2023]

McKay, H. V., Milsom, T. P., Feare, C. J., Ennis, D. C., O'Connell, D. P. & Haskell, D. J. (2001). Selection of forage species and the creation of alternative feeding areas for Dark-bellied Brent Geese *Branta bernicla bernicla* in southern UK coastal areas. Agriculture, Ecosystems and Environment 84: 99-113.

Natural England Standing Advice available at <https://www.gov.uk/guidance/>

Natural England Designated Sites View (Online). <https://designatedsites.naturalengland.org.uk/> [accessed: April 2023].

Natural England GL41: general licence to kill or take certain species of wild birds to preserve public health or safety. Published 01 January 2021. [Accessed: June 2021].

Outer Dowsing Ltd. (2022a) Outer Dowsing Offshore Wind Farm Environmental Impact Assessment Scoping Report.

Outer Dowsing Ltd. (2022b) Outer Dowsing Offshore Wind Farm Habitats Regulations Assessment Screening Report.

Owens, N.W. (1977). Responses of wintering Brent Geese to human disturbance. Wildfowl 28:5-11.

Parsons, M., Lawson, J., Lewis, M., Lawrence, R. & Kuepfer, A. 2015. Quantifying foraging areas of little tern around its breeding colony SPA during chick rearing. JNCC report No. 548.

Rowell, H.E. & Robinson, J.A. (2004). Feeding areas for Dark-bellied Brent Geese around Special Protection Areas (SPAs) in the UK. WWT Research Report, March 2004. Wildfowl & Wetlands Trust, Slimbridge.

RSPB (date unknown) Land management for bitterns. <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/advice/conservation-land-management-advice/bitterns/> [Accessed: April 2023].

RSPB webpage (a). Frampton Marsh. Available at: <https://www.rspb.org.uk/reserves-and-events/reserves-a-z/frampton-marsh/> [Accessed: May 2023]

RSPB webpage (b). Freiston Shore. Available at: <https://www.rspb.org.uk/reserves-and-events/reserves-a-z/freiston-shore/> [Accessed: May 2023]

Scottish Natural Heritage, 2016. Assessing connectivity with Special Protection Areas (SPAs). Guidance. Version 3.

Schwemmer, P. Mendal, B., Sonntag, N., Dierschke, V. and Garthe, S. 2011. Effects of ship traffic on seabirds in offshore waters: implications for marine conservation and spatial planning. *Ecological Applications* 21: 1851-1860.

Shawyer, C. R. (2011) Barn Owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting. IEEM, Winchester.

Sheldon, R., Bolton, M., Gillings, S. & Wilson, A. 2004. Conservation management of lapwing on lowland arable farmland in the UK. *Ibis* Vol 146, Issue s2, 41-49.

Solent Waders and Brent Goose Strategy. 2010. Hampshire and Isle of Wight Wildlife Trust.

Stanbury, A.J., Eaton, M.A., Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A., Lindley, P., McCulloch, N., Noble, D.G. & Win, I. (2021) The Status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* Volume 114.

Stroud, D.A., Chambers, D., Cook, S., Buxton, N., Fraser, B., Clement, P., Lewis, P., McLean, I., Baker, H. and Whitehead, S. (Eds). 2001. The UK SPA Network: its Scope and Content. Volumes 1-3. Joint Nature Conservation Committee, Peterborough.

Summers, R.W. & Critchley, C.N.R. (1990). Use of grassland and field selection by brent geese *Branta bernicla*. *Journal of Applied Ecology* 27: 834-846.

Underhill-Day, J.C. 1990. The status and breeding biology of marsh harrier *Circus aeruginosus* and Montagu's harrier *Circus pygargus* in Britain since 1990. PhD thesis. RSPB and ITE.

Wallis, K., Hill, D., Wade, M., Cooper, M., Frost, D., Thompson, S. 2019. The effect of construction activity on internationally important waterfowl species. *Biological Conservation*, Vol 232 Pages 208-216.

Woodward, I.D., Frost, T.M., Hammond, M.J., and Austin, G.E. (2019). Wetland Bird Survey Alerts 2016/2017: Changes in numbers of wintering waterbirds in the Constituent Countries of the United Kingdom, Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and Areas of Special Scientific interest (ASSIs). BTO Research Report 721. BTO, Thetford. www.bto.org/webs-reporting-alerts [Accessed: April 2023].

Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D.A. & Noble, D. (2020). Population estimates of birds in Great Britain and the United Kingdom. *British Birds* 113: 69–104.