

# **BERWICK BANK WIND FARM ONSHORE ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

## Chapter 8: Ornithology

### Document Status

Version	Purpose of Document	Authored by	Reviewed by	Approved by	Review Date
0.1	Internal draft	A Taylor	M Forup	S Tullie	18.03.2022
0.2	Internal draft	A Taylor	M Forup	S Tullie	22.03.2022
0.3	Internal draft	A Taylor	M Forup	S Tullie	23.03.2022
0.4	Internal draft	A Taylor	M Forup	S Tullie	12.08.2022
0.5	Fifth Draft	A Taylor	M Forup	S Tullie	23/10/22
0.6	Sixth Draft	A Taylor	M Forup	S Tullie	3/11/22
0.7	Seventh Draft	A Taylor	M Forup	S Tullie	17/02/2023

### Approval for Issue

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17 February 2023

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## 8. ORNITHOLOGY

### 8.1. INTRODUCTION

1. This chapter presents the assessment of the likely significant effects of the Berwick Bank Wind Farm onshore transmission works (OnTW) (the Proposed Development) on ornithology. Specifically, the chapter considers the potential impacts of the Proposed Development which lies landward of Mean Low Water Springs (MLWS) during the construction, operation and maintenance, and decommissioning phases.
2. The potential effects of the offshore components of the Project (Berwick Bank Wind Farm and associated offshore transmission infrastructure) on intertidal ornithology have been assessed in the offshore EIA Report - Volume 2, Chapter 11, Offshore and Intertidal Ornithology. The Offshore EIA Report is available online at the Berwick Bank Wind Farm website; [www.berwickbank.com](http://www.berwickbank.com).
3. This assessment is informed by the following chapters:
  - Chapter 5: Proposed Development Description; and
  - Chapter 7: Ecology.
4. This chapter summarises information contained within:
  - Volume 4, Appendix 7.1: Preliminary Ecological Appraisal (PEA) including Desk Study;
  - Volume 4, Appendix 8.1: Breeding Bird Survey (BBS);
  - Volume 4, Appendix 8.2: Wintering Bird Survey (WBS); and
  - Standalone Document: Report to Inform Appropriate Assessment (RIAA).

### 8.2. PURPOSE OF THIS CHAPTER

5. This chapter:
  - Presents the existing environmental baseline established from desk studies, site-specific surveys and consultation with stakeholders;
  - Identifies any assumptions and limitations encountered in compiling the environmental information;
  - Presents the potential environmental impacts on onshore and intertidal ornithology arising from the Proposed Development, and reaches a conclusion on the likely significant effects on ornithology based on the information gathered and the analysis and assessments undertaken; and
  - Highlights any necessary monitoring and/or mitigation measures recommended to prevent, minimise, reduce or offset the likely significant adverse environmental effects of the Proposed Development on ornithology.

### 8.3. STUDY AREA

6. Appropriate study areas for each specific survey were derived from best practice guidance in areas with available access and were agreed with NatureScot (See Table 8.2) in advance of surveys. The surveys completed are as follows:
  - Breeding bird survey (BBS study area): the red line boundary as June 2020 (slightly larger than the scoping boundary) plus accessible areas up to 500 m;
  - Wintering bird survey (WBS study area): the red line boundary as October 2020 (slightly larger than the scoping boundary) plus accessible areas up to 250 m;
  - Ornithology desk study (ornithology desk study area): the red line boundary and up to 20 km for nature designations and 5 km for species of conservation concern;

- Intertidal ornithology survey (Intertidal study area) extends approximately 6 km along the coast to cover the two proposed landfall locations that were covered during the surveys and includes nearshore surveys which extend up to 1.5 km seaward from Mean High Water Springs (MHWS).
7. The BBS study area, WBS study area and ornithology desk study areas are shown in Volume 2, Figure 8.1. and 8.2. The Intertidal study area is shown in Offshore EIA – Volume 2, Chapter 11, Offshore and Intertidal Ornithology.
  8. The planning application boundary for the Application extends to MLWS. The infrastructure to be located between MHWS and MLWS consists of cables to be installed via trenchless technology (e.g. HDD). Impacts associated with this infrastructure have been assessed in the Offshore EIA Report (Volume 2, Chapter 11, Offshore and Intertidal Ornithology), although given the commitment to use trenchless technology no likely significant effects have been predicted.
  9. The potential effects of the onshore infrastructure located above MHWS on the intertidal area have been assessed in this chapter.
  10. The first above ground works are located approximately 100 m inland at the landfall location at Skateraw. Given the inland location of the start of proposed onshore works and using a predicted impact on birds due to works being at its maximum 500 m, only registrations from the intertidal ornithology surveys within 500 m of MHWS are considered relevant to this chapter. All results from over 500 m of the MHWS or recorded around the southern proposed landfall are excluded.

## 8.4. POLICY AND LEGISLATIVE CONTEXT

11. A summary of the policy provisions relevant to ornithology are provided in Table 8.1 below. A detailed look at all the planning and legislative policy is detailed in Volume 1, Chapter 3 and a summary of the legislative provisions relevant to ornithology are provided in Table 8.2 below.

**Table 8.1: Summary of Relevant Policy and Guidance**

Summary of Relevant Policy Framework	How and Where Considered in the Onshore EIA Report
National Planning Framework 4 (NPF4) Policy 1 (Tackling the climate and nature crisis); Policy 3 (Biodiversity); Policy 4 (Natural Places); Policy 6 (Forestry, woodland and trees); Policy 8 (Green belts); Policy 11 (Energy); and Policy 20 (Blue and green infrastructure).	Considered throughout the assessment.
East Lothian Council (ELC) Local Development Plan (LDP) (ELC, 2018).	The recommendations of ELC LDP are considered throughout this chapter.
Scottish National Marine Plan	Information on intertidal ornithology aligns with the offshore EIA report to ensure that any issues arising in the coastal interface are considered in the context of both marine and terrestrial processes.

**Table 8.2: Summary of Legislation Relevant to Ornithology**

Summary of Relevant Legislative Framework	How and Where Considered in the Onshore EIA Report
Council Directive 2009/147/EC on the conservation of wild birds (i.e. the “Birds Directive”), transposed into Scots law by The Conservation (Natural Habitats &c.) Regulations 1994 (as amended);	Considered throughout the assessment.
The Ramsar Convention on Wetlands (adopted in 1971 and in force from 1975);	Considered throughout the assessment.
The Conservation (Natural Habitats &c.) Regulations 1994 (as amended);	Considered throughout the assessment.

Summary of Relevant Legislative Framework	How and Where Considered in the Onshore EIA Report
The Wildlife and Countryside Act (WCA) 1981 (as amended);	Considered throughout the assessment.
The Wildlife and Natural Environment (Scotland) Act 2011 (as amended);	Considered throughout the assessment.
The Nature Conservation (Scotland) Act 2004 (as amended);	Considered throughout the assessment.
The Scottish Biodiversity Strategy, with Scottish priority species and habitats listed on the Scottish Biodiversity List (SBL), is also pertinent and is based on the former UK Biodiversity Action Plan (UK BAP), and regional biodiversity targets defined through the East Lothian Local Biodiversity Action Plan (LBAP) (East Lothian Council, 2018);	Considered throughout the assessment.
Stanbury et al. (2021), Birds of Conservation Concern (BoCC) 5: the Population Status of Birds in the United Kingdom, Channel Islands and the Isle of Man.	Considered throughout the assessment.

## 8.5. CONSULTATION

12. A summary of the key issues raised during consultation activities undertaken to date specific to ornithology is presented in Table 8.3 below, together with how these issues have been considered in the production of this ornithology chapter. Further detail is presented within Volume 1, Chapter 2 of the Onshore EIA Report and the Pre-Application Consultation (PAC) Report.

**Table 8.3: Summary of Key Consultation Undertaken for the Proposed Development Relevant to Ornithology**

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
October 2020	ELC Scoping Response	The proposal has the potential to affect Barns Ness SSSI (although there is a low risk) and Local Biodiversity sites; there may also be protected species present and there is connectivity with some European sites.	All nature designations related to ornithological interests are given full consideration in Section 8.7 within this assessment. Any designated sites for ecological rather than specifically ornithological considerations which is the case for Barns Ness SSSI and protected species are covered in Volume 1, Chapter 7.
October 2020	ELC Scoping Response	Other than where noted below, the scope and methodology in the Scoping Report for biodiversity is acceptable. The scope and methodology for ecological and ornithological survey set out in the Scoping Report is acceptable. The Scoping Report considers sites designated for nature conservation including SSSI and European sites, as well as the Scottish Wildlife Trust's Thornton Glen Reserve.	All nature designations related to ornithological interests are given full consideration in Section 8.7 within this assessment. Any designated sites for ecological rather than specifically ornithological considerations which is the case for Barns Ness SSSI are covered in Volume 1, Chapter 7.
October 2020	ELC Scoping Response	European Sites and interaction with HRA  Information to support Habitat Regulation Appraisal has not been considered. NatureScot advise that this proposal could affect the European sites listed below. Further information	All European nature designations related to ornithological interests are given full consideration within this assessment and are also considered as part of the

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		<p>about these sites, and the special features they are designated to protect, can be found on the NatureScot Sitelink website (<a href="http://gateway.snh.gov.uk/sitelink/index.jsp">http://gateway.snh.gov.uk/sitelink/index.jsp</a>)</p> <p>Firth of Forth Special Protection Area (SPA), St Abb's Head to Fast Castle SPA, Outer Firth of Forth and St Andrews Bay Complex proposed (pSPA)</p> <p>The status of these sites means that the requirements of the Conservation (Natural Habitats, &amp;c.) Regulations 1994 as amended (the "Habitats Regulations") or, for reserved matters the Conservation of Habitats and Species Regulations 2010 as amended apply. Consequently, the competent authority (East Lothian Council) is required to consider the effect of the proposal on these sites before it can be consented. See NatureScot's guidance note Legislative Requirements for European Sites for a summary of requirements.</p> <p>The above sites may also be notified as Sites of Special Scientific Interest (SSSI) and/ or Ramsar sites. However, any issues raised in relation to these designations are fully addressed as part of the following consideration of the respective European sites.</p>	<p>Report to Inform Appropriate Assessment (RIAA; see Standalone Document).</p> <p>The ornithology chapter is informed by the breeding bird survey (Volume 4, Appendix 8.1) and wintering bird survey (Volume 4, Appendix 8.2) – both of which were also used to inform the RIAA. All qualifying species of all SPAs are considered as part of this assessment.</p>
March 2020	NatureScot	<p>Our general position in relation to Covid-19 related constraints on site surveys is that each proposal is to be considered individually and on a risk-based approach. Please see <a href="https://www.nature.scot/coronavirus/planning-development-services">https://www.nature.scot/coronavirus/planning-development-services</a>. We note your proposed suite of site surveys, including additional measures aimed at compensating for lost time (e.g. use of experienced surveyors, identifying follow-up work, pre-construction surveys, use of buffers). We specifically note your question on bird surveys and advise:</p> <ul style="list-style-type: none"> <li>• the proposed route avoids nationally-designated sites (except for the stretch at Barns Ness Coast SSSI which we have discussed separately), and will traverse farmland for the most part;</li> <li>• therefore we anticipate a low level of risk to particularly sensitive bird receptors and so under covid-19 related restrictions this site survey programme is acceptable.</li> </ul> <p>This advice is based on your assumed end to lockdown in mid-June. If this happens significantly quicker or slower than anticipated then do get back in touch if you require updated advice.</p>	<p>Comments noted. Detail of survey timings are provided in Table 8.5.</p> <p>For issue relating to Barns Ness SSSI see Volume 1, Chapter 7.</p>



Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
September 7 2021	NatureScot	<p>Berwick Bank onshore infrastructure HRA screening :-</p> <p>We offer the following comments:</p> <p>Surveys – the scope and coverage of survey work that has been carried out is broadly proportionate to the level of risk to bird receptors.</p> <p>We support the scoping in of the species identified in your report:</p> <ul style="list-style-type: none"> <li>• Firth of Forth SPA – pink-footed goose</li> <li>• Outer Firth of Forth and St Andrews Bay Complex – eider, herring gull (breeding and non-breeding), black-headed gull, common gull</li> </ul> <p>However, we recommend that the following receptors are screened into assessment, as they were recorded during your surveys, and the development site is within connectivity distance for the species:</p> <ul style="list-style-type: none"> <li>• Firth of Forth SPA – golden plover</li> <li>• St Abb’s Head to Fast Castle SPA – herring gull</li> <li>• Forth Islands SPA – herring gull (Bass Rock is just within 20 km buffer distance from the development site)</li> </ul>	<p>All points regarding bird receptors of the protected sites are noted and each of these species are included in the assessment.</p>

## 8.6. METHODOLOGY TO INFORM BASELINE

13. This section identifies the key ornithology and nature conservation issues which have been considered as part of the Ornithological Impact Assessment, describes the methods used to establish baseline conditions.

### 8.6.1. DESIGN ITERATION

14. The following assessment is based on the final onshore cable route, which has undergone various iterations over an extended process that has taken into account a variety of potential constraints. Ultimately, the final design (Volume 2, Figure 5.1) is one that has taken into consideration all of these constraints and where reasonably practicable aimed to lessen the potential for any impacts to be experienced by any single receptor across the variety of disciplines that have all provided input into the Proposed Development’s final layout (further details on design iteration are provided in Volume 1, Chapter 4).

### 8.6.2. ORNITHOLOGICAL DESK STUDY

15. International ornithology-related designations, i.e., SPAs and Ramsar sites, were identified within 20 km of the onshore site boundary and national designations with bird interest features, including SSSIs, National Parks, and National Nature Reserves (NNRs), as well as statutory local designations i.e. Local Nature Reserves (LNRs), were identified within 5 km of the onshore site boundary. Non-statutory designations with bird interest

features, such as Local Wildlife Sites (LWSs) and Sites of Interest for Nature Conservation (SINCs) were identified within 2 km of the onshore site boundary.

16. A request for external data was also undertaken that included obtaining data from The Wildlife Information Centre (TWIC). Specific details are presented as part of Volume 4, Appendix 7.1 as well as further consideration in Volume 4, Appendix 8.1 and 8.2. This data was used to confirm the historical presence of any legally protected or otherwise notable species (i.e. Schedule 1, Annex 1, Birds of Conservation Concern (BoCC) Red and Amber listed and Scottish Priority List (SPL) species, either nationally or within the East Lothian Local Biodiversity Action Plan (LBAP)) ranging to within 5km of the onshore site boundary and in line with the current CIEEM guidelines (CIEEM, 2019).
17. These are summarised in Table 8.4 below.

**Table 8.4: Summary of Key Desktop Studies & Datasets**

Title	Source	Year	Author
SPA Dataset	<a href="https://sitelink.nature.scot/map">https://sitelink.nature.scot/map</a>	2021	NatureScot
SSSI Dataset	<a href="https://sitelink.nature.scot/map">https://sitelink.nature.scot/map</a>	2021	NatureScot
Local Ornithology Records	TWIC	2021	TWIC

### 8.6.3. SITE-SPECIFIC SURVEYS

18. To inform the ornithology chapter, site-specific surveys were undertaken, as agreed with NatureScot (See Table 8.3). A summary of the surveys undertaken to inform the ornithological assessment of effects are outlined in Table 8.5 below.

**Table 8.5: Summary of Site-Specific Survey Data**

Title	Extent of Survey	Overview of Survey	Survey Contractor	Date	Reference to Further Information
Breeding Bird Survey	Site boundary as of June 2020 plus 500 m survey buffer	<p>Three visits to establish the breeding bird assemblage. The surveys followed a modified Common Bird Census (CBS) methodology as outlined in Bibby <i>et al</i> (2000), Gilbert <i>et al</i> (2011). Survey timings were truncated due to Covid-19 lockdown restrictions.</p> <p>Full details of survey timings and methodology outlined in Volume 4, Appendix 8.1.</p>	ITP Energised	June-July 2020	Volume 4, Appendix 8.1 / Volume 2: Figure 8.1.
Wintering Bird Survey	Site boundary as of October 2020 plus 250 m survey buffer	<p>Four visits to establish the presence of migratory and wintering bird assemblage and followed methodologies outlined by Gilbert <i>et al</i> (2011).</p> <p>Full details of survey timings and methodology outlined in Volume 4, Appendix 8.2.</p>	ITP Energised	October 2020 - February 2021	Volume 4, Appendix 8.2 / Volume 2: Figure 8.1.

## 8.6.4. EVALUATION METHODS FOR ORNITHOLOGICAL FEATURES

### Evaluation Methods for Ornithological Features

19. Table 8.6 lists the criteria used to determine the value of ornithological features in a geographical context.

**Table 8.6: Geographical Evaluation Criteria**

Value	Criteria	Examples of VOR
International	<p>Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of international importance.</p> <p>N.B. For designations, such as a SPA, this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.</p>	<p>All International nature conservation areas:</p> <p>Any SPA; Any proposed SPA (pSPA); and Any Ramsar wetland.</p> <p>Populations of Annex 1 species qualifying as a feature of an SPA, pSPA or Ramsar including birds outside of protected areas when there is considered to be connectivity to the site.</p> <p>A site supporting more than 1% of the EU population of a species.</p>
National (i.e. Scotland)	<p>Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of national importance.</p> <p>N.B. For designations, such as a SSSI or an NNR, this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.</p>	<p>National nature conservation areas:</p> <p>Any SSSI or NNR designated for ornithological feature(s). A site supporting more than 1% of the UK population of a species.</p> <p>Nationally important population / assemblage of a species listed on Schedule 1 of the Wildlife and Countryside Act (WCA).</p>
Council (i.e. East Lothian)	<p>Nature conservation resource, i.e. nature conservation designation, habitat or species, of importance on a county scale.</p>	<p>Statutory and non-statutory nature conservation designations:</p> <ul style="list-style-type: none"> <li>• Any LNR;</li> <li>• Any Wildlife Trust reserve;</li> <li>• Any Local Wildlife Site (LWS); and</li> <li>• A council-scale important population / area of a species listed on the Scottish Biodiversity List (SBL) (Scottish Government, 2013) as requiring conservation action.</li> </ul> <p>A county-scale important population/area listed on the LBAP.</p> <p>A county-scale important population / assemblage of species listed on Schedule 1 of the WCA.</p>
Local (i.e. within 2 km of the onshore site)	<p>Nature conservation resource, e.g. a habitat or species of importance in the context of the local district.</p>	<p>A breeding population listed in a LBAP because of its rarity in the locality.</p> <p>An area supporting 0.05-0.5 % of the UK population of a species.</p> <p>Any council-important scale species included on the BoCC Red List (Eaton <i>et al.</i>, 2015). A council-scale important</p>

Value	Criteria	Examples of VOR
		breeding population of an amber-listed species on the BoCC.
		A council-scale breeding population of a species on the SBL.
		All breeding populations of Schedule 1 species not captured in higher scale categories.
Less than local	Common and widespread species of little/no intrinsic nature conservation value.	All those not listed in the criteria above.

20. Where a feature qualifies under two or more criteria, the higher value is applied to the feature.
21. The Geographical Evaluation Criteria as displayed in Table 8.6 is applied to all features and species identified as part of the baseline with those considered to be of local or higher value considered to be Important Ornithological Features (IOFs) and carried forward for assessment. The full impact assessment methodology is outlined in Section 8.9 below.

## 8.7. BASELINE ENVIRONMENT

### 8.7.1. OVERVIEW OF BASELINE ENVIRONMENT

22. This section of the chapter details the results of the desk study and field surveys conducted along the onshore cable corridor and respective study areas, providing the baseline conditions from which an impact assessment is based. This includes:
  - Designated sites and desk study/external data; and
  - Protected and notable bird species.
23. The full list of all bird species (including common and widespread species not considered as part of the assessment) that were recorded during the desk study and both field surveys are listed along with the species scientific names in the relevant Appendix, i.e., Volume 4, Appendices 7.1, 8.1 and 8.2).

### 8.7.2. DESK STUDY

#### Nature Conservation Designations

24. As shown on Volume 2, Figure 8.2 and detailed in Table 8.7, there are four nature conservation designations of international importance within 20 km of the Proposed Development and no nature conservation designations of national or local importance designated for ornithological reason within 5 km of the Proposed Development. A detailed description of the designated sites is found in Technical Appendices 8.1 and 8.2 and Standalone Document RIAA.

**Table 8.7: Designated Sites**

Site /Designation	Distance from Onshore Site Boundary	Qualifying Feature
Outer Firth of Forth and St Andrews Bay Complex SPA	Immediately adjacent to east	Non-breeding populations: <ul style="list-style-type: none"> <li>• red-throated diver;</li> <li>• Slavonian grebe; and</li> <li>• little gull.</li> </ul>

Site /Designation	Distance from Onshore Site Boundary	Qualifying Feature
		<p>Feeding species from the adjacent breeding colonies</p> <ul style="list-style-type: none"> <li>• common tern; and</li> <li>• Arctic tern.</li> </ul> <p>Migratory waterfowl species:</p> <ul style="list-style-type: none"> <li>• common eider.</li> </ul> <p>Wintering waterfowl</p> <ul style="list-style-type: none"> <li>• long tailed duck;</li> <li>• common scoter;</li> <li>• velvet scoter;</li> <li>• common goldeneye;</li> <li>• and red-breasted merganser.</li> </ul> <p>Migratory species of seabird:</p> <ul style="list-style-type: none"> <li>• (foraging) European shag; and</li> <li>• northern gannet.</li> </ul> <p>Seabirds during the breeding season:</p> <ul style="list-style-type: none"> <li>• Atlantic puffin;</li> <li>• black-legged kittiwake;</li> <li>• Manx shearwater;</li> <li>• common guillemot; and</li> <li>• herring gull.</li> </ul> <p>Seabirds during the non-breeding season:</p> <ul style="list-style-type: none"> <li>• black-headed gull;</li> <li>• common gull; and</li> <li>• herring gull.</li> <li>• common guillemot;</li> <li>• European shag;</li> <li>• black-legged kittiwake; and</li> <li>• razorbill.</li> </ul>
Firth of Forth SPA	5.9 km north-west at nearest point	<p>Wintering populations:</p> <ul style="list-style-type: none"> <li>• red-throated diver;</li> <li>• Slavonian grebe;</li> <li>• golden plover;</li> <li>• and bar-tailed godwit.</li> </ul> <p>Populations in passage period:</p> <ul style="list-style-type: none"> <li>• Sandwich tern.</li> </ul> <p>Wintering migratory species:</p> <ul style="list-style-type: none"> <li>• pink-footed goose;</li> <li>• shelduck;</li> <li>• knot;</li> </ul>

Site /Designation	Distance from Onshore Site Boundary	Qualifying Feature
		<ul style="list-style-type: none"> <li>• redshank; and</li> <li>• turnstone.</li> </ul> <p>Wintering assemblage including the following species:</p> <ul style="list-style-type: none"> <li>• scaup;</li> <li>• Slavonian grebe;</li> <li>• golden plover;</li> <li>• bar-tailed godwit;</li> <li>• pink-footed goose;</li> <li>• shelduck;</li> <li>• knot;</li> <li>• redshank;</li> <li>• turnstone;</li> <li>• great crested grebe;</li> <li>• cormorant;</li> <li>• red-throated diver;</li> <li>• curlew;</li> <li>• eider;</li> <li>• long-tailed duck;</li> <li>• common scoter;</li> <li>• velvet scoter;</li> <li>• goldeneye;</li> <li>• red-breasted merganser;</li> <li>• oystercatcher;</li> <li>• ringed plover;</li> <li>• grey plover; and</li> <li>• dunlin.</li> </ul>
Firth of Forth Ramsar	5.9 km north-west at nearest point	<p>The Firth of Forth Ramsar is designated for:</p> <ul style="list-style-type: none"> <li>• Slavonian grebe;</li> <li>• goldeneye;</li> <li>• bar-tailed godwit;</li> <li>• Sandwich tern;</li> <li>• pink-footed goose;</li> <li>• shelduck;</li> <li>• knot;</li> <li>• redshank; and</li> <li>• turnstone.</li> </ul> <p>As well as a wintering waterfowl assemblage.</p>
St Abb's Head to Fast Castle SPA	6.9km south-east at nearest point	<p>Nationally important populations of the following species:</p> <ul style="list-style-type: none"> <li>• razorbill;</li> <li>• common guillemot;</li> <li>• black-legged kittiwake;</li> <li>• herring gull; and</li> <li>• European shag.</li> </ul>
Forth Islands SPA	18 km north-west at nearest point	Breeding populations::

Site /Designation	Distance from Onshore Site Boundary	Qualifying Feature
		<ul style="list-style-type: none"> <li>Arctic tern;</li> <li>roseate tern;</li> <li>common tern; and</li> <li>Sandwich tern.</li> </ul>
		<p>Migratory species:</p> <ul style="list-style-type: none"> <li>northern gannet;</li> <li>European shag;</li> <li>lesser black-backed gull; and</li> <li>Atlantic puffin.</li> </ul>
		<p>Nationally important populations:</p> <ul style="list-style-type: none"> <li>razorbill;</li> <li>common guillemot;</li> <li>black-legged kittiwake;</li> <li>herring gull; and</li> <li>great cormorant.</li> </ul>

25. In this assessment, the qualifying species are regarded as features of international importance while qualifying species of assemblages are considered features of national importance and together they form the key part of the ornithological assessment below. Due to the possible connectivity of the site and SPA qualifying bird populations, these species are also discussed in the Standalone Document RIAA.

### Species

26. A total of 128 bird species have been recorded within 5 km of the site in the last ten years. Of these, 31 species are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), 23 are listed within Annex 1 of the Birds Directive 2009, and 44 are listed on the Scottish Biodiversity List. Thirty are included on the BoCC Red List and a further 51 species are Amber-Listed.
27. Of the 128 bird species recorded within 5 km of the site, a total of 33 species designated either as designated species or part of an assemblage within the four SPAs outlined above were recorded. Of the 33 species recorded, 31 were recorded at least once within the site in the last ten years (2011-2021). Full details of the SPA qualifying species identified in the desk study are shown in Table 8.8 below and the full list outlined in Volume 4, Appendix 7.1.

**Table 8.8: Desk Study - SPA Qualifying Species**

Species	Records site & 5 km buffer	Count site & 5 km buffer	Records in site	Count in site
<b>Wildfowl and divers</b>				
Eider	120	1,047	9	62
Goldeneye	96	416	2	11
Great crested grebe	5	6	0	0
Long-tailed duck	99	438	1	12
Pink-footed goose	30	6,199	2	530
Red-breasted merganser	95	225	3	10
Red-throated diver	232	1,121	5	12
Scaup	5	16	0	0
Shelduck	88	256	1	3
Slavonian grebe	13	14	1	1



Species	Records site & 5 km buffer	Count site & 5 km buffer	Records in site	Count in site
Velvet scoter	17	40	1	1
Wigeon	77	2,471	1	12
<b>Waders</b>				
Bar-tailed godwit	13	158	3	9
Curlew	166	1,570	11	132
Dunlin	67	1,246	9	107
Golden plover	21	2,014	8	1216
Grey plover	34	97	1	1
Knot				
Lapwing	35	1,398	2	201
Oystercatcher	175	2,773	16	131
Redshank	99	820	11	74
Ringed plover	42	339	11	58
Turnstone	85	1,194	11	96
<b>Seabirds</b>				
Arctic tern	6	17	2	3
Black-headed gull	120	5,449	12	279
Common gull	83	3,391	5	267
Common guillemot	57	387	3	4
Common tern	7	40	0	0
Cormorant	120	594	12	46
Herring gull	240	20,699	13	333
Gannet	106	3,305	11	236
Kittiwake	32	1,455	2	6
Lesser black-backed gull	79	369	3	22
Little gull	16	111	1	1
Manx shearwater	9	24	1	1
Sandwich tern	49	459	5	14
Shag	138	1,398	12	19

### 8.7.3. FIELD SURVEY

28. Specific details relating to field survey methodologies and results are included within each of the relevant Volume 4, Appendices 8.1 and 8.2. The following section summarises the baseline conditions with a summary of relevant results used to inform the assessment of likely ornithological impacts provided below.
29. Details of the numbers, timings, scientific names as well as the locations of breeding and wintering species are presented in full in Volume 4, Appendices 8.1 and 8.2 and shown in Volume 4, Appendix Figure 8.1.4 and Appendix Figures 8.2.3-8.2.5, and Volume 5, Confidential Appendix Figure 8.1.3 and Confidential Appendix Figure 8.2.6. Any species that were not recorded during the breeding bird survey are not considered to be breeding within the site.
30. Details of the locations and numbers of all intertidal survey results can be found in Tables 2-6 and Figures 5.1-5.57 in Offshore EIA – Volume 3, Appendix 11.2: Ornithology Inter-tidal Survey Report.

#### SPA Qualifying Species

##### Pink-footed goose

31. Pink-footed geese were recorded on all four visits of the wintering bird survey, with 51 registrations of a combined total of 4,139 individuals recorded across the four survey visits. Of those 4,139 individuals, 3,146 were recorded during the first survey visit in October 2020 and included two large groups of 1,250 and 640 birds, respectively

(Volume 4, Appendix Figure 8.2.3). A total of 42 individuals were recorded flying over the area during the second of the intertidal surveys in September 2020.

#### Eider

32. Eiders were recorded on one occasion, during the fourth survey visit of the wintering bird survey in February 2021, when a group of 36 birds was noted close to the cable landfall along the coastline (Volume 4, Appendix Figure 8.2.3). Eiders were frequently recorded along the shoreline during the intertidal surveys.

#### Shelduck

33. A single shelduck was recorded twice, during the first and fourth survey visit of the wintering bird survey in February 2021, in a location north-west of Torness Power Station, within the site boundary approximately 100 m east of the landfall (Volume 4, Appendix Figure 8.2.3). Shelduck were recorded regularly in the intertidal zone in small numbers during intertidal surveys.

#### Golden plover

34. Golden plovers were not recorded during the breeding bird surveys but were recorded in all four survey visits of the wintering bird survey. A total of 15 registrations of golden plover, with a combined total of 893 individuals, were made. These included five large flocks of over 100 birds recorded in coastal lowland fields (Volume 4, Appendix Figure 8.2.4). Golden plover were not recorded during intertidal surveys.

#### Redshank

35. Redshanks were commonly recorded along the coastal strip during both the breeding and wintering bird surveys, but no evidence of breeding activity was recorded. All of the records were along the coast on either side of the cable landfall location, with a maximum count of 13 individuals on the fourth visit in February 2021 (Volume 4, Appendix Figure 8.2.4). Redshank were recorded regularly in the intertidal zone in small numbers during intertidal surveys.

#### Turnstone

36. Turnstones were recorded in small numbers along the coastal strip west of Torness Power Station during all four wintering bird survey visits, with a combined total of 20 individuals recorded. Turnstone were not recorded during the breeding bird survey (Volume 4, Appendix Figure 8.2.4). Turnstone were regularly recorded in the intertidal zone during intertidal surveys.

#### Gannet

37. Gannets were only recorded once, with a single bird noted on the coast during the second wintering bird survey visit in December 2020 (Volume 4, Appendix Figure 8.2.5). Gannet were recorded regularly during intertidal surveys with the closest record being over 400 m of the landfall.

#### Sandwich tern

38. A total of three Sandwich terns were recorded offshore along the coast during the first breeding bird survey visit in June 2020. None were recorded onshore. Sandwich tern were occasionally recorded during intertidal surveys the majority of records over 500 m from the landfall.

#### SPA Assemblage Qualifying Species

#### Wigeon

39. The only record of this species was a single bird recorded during the fourth survey visit of the wintering bird survey in February 2021, in a location north-west of Torness Power Station (Volume 4, Appendix Figure 8.2.3). Wigeon were recorded on five occasions within 500 m of the landfall during intertidal surveys.

#### Goldeneye

40. The only records of this species are small numbers (seven birds or less) on four occasions within 500 m of the landfall during intertidal surveys and three records within the site during the desk study.

#### Red-breasted merganser

41. The only records of this species are small numbers (five birds or less) on six occasions within 500 m of the landfall during intertidal surveys and two records within the site during the desk study.

#### Curlew

42. A total of 40 registrations of curlews, totalling 440 individuals, were made during the wintering bird survey, with numbers spread evenly across the four survey visits. Curlews were also regularly recorded during the breeding bird survey along the coastal strip but no evidence of breeding activity was noted (Volume 4, Appendix Figure 8.2.4). Small numbers of curlew were regularly recorded during the intertidal surveys in all 12 months.

#### Dunlin

43. Dunlins were recorded twice, with a group of 2 and a group of 30 recorded along the intertidal area during the first and third survey visits of the wintering bird survey (Volume 4, Appendix Figure 8.2.4). Dunlin were regularly recorded intertidal surveys between August 2020 and June 2021.

#### Grey plover

44. Grey plovers were recorded twice, with a group of 22 and a group of two recorded along the intertidal area during third and fourth survey visit of the wintering bird survey (Volume 4, Appendix Figure 8.2.4). Small numbers of grey plover were recorded during intertidal surveys.

#### Lapwing

45. Lapwings were recorded occasionally in the breeding bird survey but involved individuals loafing or foraging in coastal field, and no evidence of breeding activity was noted. Occasional large groups, with two comprising over 200 birds, were recorded during the wintering bird surveys, and lapwings were recorded during all four survey visits using coastal farmland field to roost and forage (Volume 4, Appendix Figure 8.2.4). Lapwing were not recorded during intertidal surveys.

#### Oystercatcher

46. Oystercatchers were commonly recorded in the breeding bird survey and wintering bird survey. Although no confirmed breeding activity was recorded, it is considered likely they did breed within the study area. The majority of records were made along the coast on either side of the cable landfall location (Volume 4, Appendix Figure 8.2.4). The intertidal surveys recorded oystercatcher in all surveys with birds recorded during each of the monthly surveys and a maximum of 69 birds recorded in October.

#### Ringed plover

47. Ringed plovers were occasionally recorded during the breeding bird survey but not during the wintering bird survey, and no confirmed breeding activity was recorded within the study area. The records were along the coast either side of the landfall zone (Volume 4, Appendix Figure 8.2.4). The intertidal surveys recorded ringed plover in small number during all intertidal surveys.

#### Black-headed gull

48. Black-headed gulls were widespread and commonly recorded within the study area during both the breeding bird surveys and wintering bird surveys. No records of breeding activity were confirmed during the breeding bird survey (Volume 4, Appendix Figure 8.2.5). The intertidal surveys recorded black-headed gull during each of the monthly surveys.

#### Common gull

49. Common gulls were occasionally recorded during the breeding and wintering bird surveys, with a total of 13 registrations made during the second and third wintering bird survey visits and totalling 43 individuals (Volume 4, Appendix Figure 8.2.5). The intertidal surveys recorded common gull during each of the monthly surveys.

#### Herring gull

50. Herring gulls were widespread and commonly recorded within the study area during both the breeding bird survey and wintering bird survey. No records of breeding activity were confirmed during the breeding bird survey (Volume 4, Appendix Figure 8.2.5). Herring gulls were recorded during all of the intertidal surveys.

#### Lesser black-backed gull

51. Lesser black-backed gulls were widespread and commonly recorded within the study area during the breeding bird survey but no records of breeding activity were confirmed. The species was not recorded in the wintering bird survey. Lesser black-backed gulls were occasionally recorded in low numbers during the intertidal surveys.

### Cormorant

52. Cormorant were only occasionally recorded in winter, with a group of three noted on the coast during the fourth wintering bird survey visit (Volume 4, Appendix Figure 8.2.5). Cormorant were commonly recorded, generally offshore, in small numbers during each of the intertidal surveys.

### Schedule 1 Listed Raptors

#### Peregrine

53. A pair of peregrines were recorded breeding within the study area, the breeding attempt was successful with two fledglings noted. Peregrine was occasionally recorded during both the breeding bird survey and wintering bird survey both perched and hunting (Volume 5, Confidential Appendix Figure 8.1.3 and Confidential Appendix Figure 8.2.6). Peregrine were not recorded during intertidal surveys.

#### Merlin

54. A single record of merlin was noted along the coast during the second wintering bird survey visit (Volume 5, Confidential Appendix Figure 8.2.6). Merlin were not recorded during intertidal surveys.

### Other Species

#### Other Wildfowl

55. A single record of a bean goose was made during the fourth wintering bird survey visit (Volume 5, Confidential Appendix Figure 8.2.6).
56. Greylag geese and mallard were commonly recorded in both the breeding bird survey and wintering bird survey. Although neither species were confirmed as breeding, it is considered likely that both species did breed within the study area and so are considered as breeding for the purposes of assessment.
57. Small numbers of teal and goosander were also recorded in the breeding bird survey but although considered possible they did breed were not confirmed as breeding in the study area. They are considered as breeding for the purposes of assessment.
58. A single record of brent goose and whooper swan were recorded during intertidal surveys.

#### Other Waders

59. Whimbrel were recorded loafing or foraging during the breeding bird survey on the final of the three survey visits and two records were noted during intertidal surveys within 500 m of the landfall. A snipe was recorded during the fourth wintering bird survey visit. Knot, purple sandpiper, and sanderling were recorded occasionally during intertidal surveys.

#### Other Seabirds

60. Great black-backed gulls were recorded in small numbers during both breeding and wintering bird survey while a single record of a loafing immature Mediterranean gull was recorded during the second breeding bird survey visit. Intertidal surveys identified a

number of seabird species in the open water the only species recorded within 500 m of the proposed landfall being kittiwake, guillemot, and razorbill.

#### Breeding Bird Assemblage

61. A total of eight BoCC Red listed, four BoCC Amber listed species and a further fourteen common species were confirmed as breeding with the survey area (Volume 4, Appendix Figure 8.1.4). In addition, and due to the late commencement of the breeding bird survey, a number of the 47 species (See Volume 4: Appendix 8.2) were considered to be likely breeding species and included a further six BoCC Red listed species.
62. The presence of a broad assemblage of BoCC Red and Amber listed species across the onshore site is typical for lowland and farmland habitats in this part of Scotland.

#### Wintering Bird Assemblage (Non-SPA Qualifying)

63. In addition to the species outlined in detail above, a further 25 species of conservation concern were recorded during the four wintering bird survey visits. Of these 25 species, a total of three Schedule 1 listed species were recorded (fieldfare, redwing and snow bunting), 12 were BoCC Red list species, 13 were BoCC Amber list species and 17 are SBL species.
64. The presence of a broad assemblage of species across the onshore site is to be expected and the assemblage are typical species for lowland, farmland and coastal habitats in this part of Scotland.

#### Evaluation of Ornithological Features

65. An evaluation of the baseline ornithological features is presented in Table 8.9 below. Features of local or higher value are considered Important Ornithological Features (IOFs) following CIEEM (2018) and are brought forward to the next stage of the assessment.

**Table 8.9: Summary of Evaluation of Important Ornithological Features (IOF)**

Feature	Evaluation Reasoning	Level of Importance
Outer Firth of Forth and St Andrews Bay Complex SPA	The level of value follows the level of designation. Lies directly east of the site. Designated for a number of breeding, migratory and wintering waterfowl and seabird species as detailed in Table 8.7. The following species recorded on site are assumed to belong to the SPA population:  Eider, wintering;  Black-headed gull, wintering;  Common gull, wintering (assemblage species);  Herring gull, wintering (assemblage species);  Herring gull, breeding (assemblage species);  Eider (wintering);  Goldeneye (wintering); and  Red-breasted merganser (wintering).	International

Feature	Evaluation Reasoning	Level of Importance
	All other SPA features were not recorded during the onshore or in the intertidal area during intertidal surveys and are not considered further.	
Firth of Forth SPA /Ramsar	<p>The level of value follows the level of designation. Lies 6.8 km north-west of the site. Designated for a number of breeding, migratory and wintering waterfowl, wading and seabird species as detailed in Table 8.7. Of the qualifying species recorded on site, two have the potential to move between the SPA and the Proposed Development and are assumed to belong to the SPA population:</p> <p>Pink-footed goose, wintering: known to regularly commute up to 20 km from roosting grounds to forage in fields during the day (SNH, 2016); and</p> <p>Golden plover, wintering: known to regularly commute up to 11 km from roosting grounds to forage in fields during the day (SNH, 2016).</p> <p>All other SPA features the were recorded are not considered to have the potential to move the 6.8 km between the SPA and the Proposed Development (SNH, 2016).</p>	International
St Abb's Castle to Fast Head SPA	<p>The level of value follows the level of designation. Lies directly 6.9 km south-east of the site. Designated for a number of breeding seabird species as detailed in Table 8.7. The following species recorded on site are assumed to belong to the SPA population:</p> <p>Herring gull, breeding (assemblage species).</p> <p>All other SPA features were not recorded and are not considered any further.</p>	International
Forth Islands SPA	<p>The level of value follows the level of designation. Lies directly 18 km north-west of the site. Designated for a number of breeding and migratory seabird species as detailed in Table 8.7. The following species recorded on site are assumed to belong to the SPA population:</p> <p>Herring gull, breeding (assemblage species).</p> <p>All other SPA features were not recorded and are not considered any further.</p>	International
Shelduck (the wider-countryside population)	A BoCC Amber listed species. Recorded twice, both individual records during the wintering bird survey, the records were in the intertidal area close to the proposed landfall.	Less than Local
Redshank (the wider-countryside population)	A BoCC Amber listed species. Small numbers of redshank were recorded during breeding, wintering and intertidal bird surveys.	Less than Local
Turnstone (the wider-countryside population)	A BoCC Amber and SBL species. Small numbers during both breeding, wintering and intertidal bird surveys and desk study.	Less than Local
Gannet (the wider-countryside population)	A BoCC Amber listed species. Single record of gannet was noted during wintering bird surveys.	Less than Local



Feature	Evaluation Reasoning	Level of Importance
Sandwich tern (the wider-countryside population)	An Annex 1, BoCC Amber and SBL listed species. A total of three birds were noted off-shore during the first breeding bird survey in June. The desk study identified a further 49 records within 5 km of the site between 2011-2021 of which five records, totalling 14 individuals, were recorded within the site.	Less than Local
Wigeon (the wider-countryside population)	A BoCC Amber listed species. Single record of wigeon was noted during wintering bird surveys.	Less than Local
Curlew (the wider-countryside population)	A BoCC Red listed and SBL species. Curlew were recorded regularly during breeding, wintering and intertidal bird surveys. The desk study identified a further 166 records within 5 km of the site between 2011-2021 of which eleven records, totalling 132 individuals, were recorded within the site.	Local
Dunlin (the wider-countryside population)	A BoCC Amber listed species. Small numbers recorded on two of the four wintering bird survey visits and one intertidal survey.	Less than Local
Grey plover (the wider-countryside population)	A BoCC Amber listed species. Recorded two of the four wintering bird survey visits.	Less than Local
Lapwing (the wider-countryside population)	A BoCC Red listed and SBL species. Lapwings were recorded regularly during breeding and wintering bird surveys although no definitive evidence of breeding was recorded within the site.	Local
Oystercatcher (the wider-countryside population)	A BoCC Amber listed species. Commonly recorded during both breeding, wintering and intertidal bird surveys, although no definitive evidence of breeding was recorded within the site.	Less than Local
Ringed plover (the wider-countryside population)	A BoCC Red listed species. Small numbers recorded during the breeding and intertidal bird survey but no evidence of breeding was recorded. No records during wintering bird survey.  The impacts on a very small number of this species along the coastal strip with no evidence of breeding is considered to be minimal therefore despite their conservation status the site is considered as less than local importance for ringed plover.	Less than Local
Lesser-black-backed gull (the wider-countryside population)	A BoCC Amber listed species. Commonly recorded during the summer months and first two and intertidal surveys but infrequently during wintering bird surveys and low numbers identified within the site during the desk study.	Less than Local
Peregrine	Peregrine is an Annex 1 and Schedule 1 listed species, and also listed on the SBL and the BoCC Green list. Peregrines were recorded breeding within the survey area and occasionally using the site during breeding and non-breeding season. Peregrine were recorded a further seven times during the desk study with no record since 2013.	Local
Merlin and goshawk	Merlin is an Annex 1 and Schedule 1 listed species, and also listed on the SBL and the BoCC Red list. Only recorded once during wintering bird survey. Seven records of merlin were identified in the desk study but none after 2013.  Goshawk are a Schedule 1 listed species and were not recorded during field surveys. A single record was identified during the desk study from 2015.	Less than Local
Other (non-SPA qualifying species) wildfowl	A bean goose, brent goose and whooper swan were recorded once and mallard, teal, goosander and greylag geese were recorded regularly in small numbers. Whooper swan are Schedule 1 species. All seven species are BoCC Amber listed.	Less than Local



Feature	Evaluation Reasoning	Level of Importance
	Small numbers of mallard, teal, goosander and greylag geese are to be expected in much of coastal Scotland throughout the year. Bean geese, brent geese and whooper swan are scarce or uncommon winter visitors to the UK but a single record is not considered to be unusual.	
Other (non-SPA qualifying species) waders	Small number of snipe and whimbrel were recorded during breeding bird survey visits. Knot, purple sandpiper and sanderling were occasionally recorded during intertidal surveys. Whimbrel is a Schedule 1 BoCC Red and SBL listed species. The other four species are BoCC Amber listed, purple sandpiper are a SBL listed species	Less than Local
	With infrequent records or small numbers all recorded outside the site boundary during surveys and the desk study and despite their conservation status the site is considered as less than local importance for knot, purple sandpiper and sanderling, snipe and whimbrel.	
Other (non-SPA qualifying species) seabirds	Mediterranean gull were recorded during the breeding bird survey and great black-backed gulls during both the breeding and wintering bird surveys. Guillemot, kittiwake and razorbill were recorded on the sea during intertidal surveys. Kittiwake are BoCC Red listed and the other four are BoCC Amber listed.	Less than Local
	With infrequent records / small numbers / records on the open sea the site is considered as less than local importance for Mediterranean gull, great black-backed gull guillemot, kittiwake and razorbill.	
Breeding bird assemblage (exclusive of all species covered above)	A total of eight confirmed (corn bunting, grasshopper warbler, linnets, grey partridge, skylark, song thrush, yellowhammer, yellow wagtail) and six other likely BoCC Red listed species (grey wagtail; lesser redpoll; house sparrow; mistle thrush; starling and tree sparrow) were recorded as breeding, along with a further four BoCC Amber (dunnock, meadow pipit, reed bunting and willow warbler) listed species.	Local
Wintering bird assemblage (exclusive of all species covered above)	A further 25 species of conservation concern were recorded during the four survey visits including three Schedule 1 listed species (fieldfare, redwing and snow bunting), 12 BoCC Red list species (fieldfare, redwing, house sparrow, linnets, lesser redpoll, mistle thrush, grey partridge, skylark, song thrush, tree sparrow and twite), five BoCC Amber list species (bullfinch, dunnock, kestrel, meadow pipit and reed bunting) and of the BoCC Red and Amber species outlined above 16 and siskin are SBL species.	Less than Local
	The majority of these records are away from any proposed works and won't be impacted in any way. The impacts on wintering species is considered to be minimal therefore despite their conservation status the site is considered as less than local importance for wintering bird assemblage.	

#### 8.7.4. FUTURE BASELINE SCENARIO

66. In the event that the onshore site remained undeveloped, aside from slight variations in populations and distribution of the more mobile species, and variations associated with changes to arable cropping and livestock management, it is considered unlikely that there would be any significant change to the baseline conditions within the survey area.

67. The onshore site is likely to currently support species at or near to its carrying capacity. This means that a net increase in species population numbers would not be expected, should the Proposed Development not proceed.
68. A summary of the relevant climate change projections using the UK Climate Change Projections (Met Office, 2022) is as follows:
- Temperatures are projected to increase, particularly in summer;
  - Winter rainfall is projected to increase and summer rainfall is most likely to decrease;
  - Heavy rain days (rainfall greater than 25mm) are projected to increase, particularly in winter;
  - Near surface wind speeds are expected to increase in the second half of the 21st century within winter months experiencing more significant effects of winds; however, the increase is projected to be modest; and
  - There will be an increase in the frequency of winter storms.
69. Other changes over time may occur as a result of climatic change; although these are difficult to predict they may involve some changes in the vegetation assemblage and the resultant change in habitat may be suitable to differing breeding and wintering bird assemblages.

#### 8.7.5. DATA ASSUMPTIONS AND LIMITATIONS

70. Data limitations include:
- The desk study provided by TWIC identified species at varying levels of geographical detail. Many of the records were only listed to the nearest 1 km or 2 km national grid square and could therefore only be mapped to this broad scale. Where this was the case, the records were plotted at the south-west corner of the relevant grid square, and the results described using these plotted locations. This approach provides a constant method of displaying the results but it is acknowledged that this may lead to small inaccuracies as a result, e.g. an offshore record could be plotted along the coast or even a small distance inland. Despite these inaccuracies the dataset is expansive and provides a valuable overview of ornithological records across the site and 5 km survey area and is therefore not considered to be a limitation to this assessment. Furthermore, the approach is conservative because the data comprises a number of marine or coastal records and the method may indicate that more such species are present within or close to the site than is actually the case.
  - Field surveys were delayed due to the Covid-19 pandemic. With the initial lockdown in 2020, and in line with government guidelines, the breeding bird survey commenced later than originally planned. The guidance for lowland breeding bird surveys (Common Bird Census (CBC) – Gilbert *et al.*, 2011) suggests surveys should be spread between April and July, inclusive, whereas the completed survey involved three visits in June and July. The delayed approach was agreed with NatureScot in advance of the first survey visit, and NatureScot agreed that the local breeding bird assemblage was unlikely to be a significant constraint to the proposed works and that the use of an experienced surveyor would provide a comprehensive overview of breeding birds in the survey area. As such the late commencement to surveys is not considered to be significant restriction to the assessment.
  - It should be noted that Version 5 of the BoCC was released in late 2021 but as the surveys pre-dated this they were completed in line with Version 4 classification meaning a small number of species that were on the BoCC green list and have since been reclassified may be under recorded in this assessment.
  - Surveys of the intertidal area in the vicinity of the export cable landfall options were carried out to provide data in relation to potential impacts on estuarine birds in the vicinity. A programme of ‘through the tide’ surveys was designed to capture the numbers and distribution of birds in the intertidal over the full tidal cycle. Surveys were carried out in suitable weather conditions (avoiding times of low visibility and heavy

precipitation) and there were no data gaps due to prolonged adverse weather. The intertidal surveys are considered to fulfil the industry standard requirements with no limitations or data gaps in this respect.

## 8.8. KEY PARAMETERS FOR ASSESSMENT

### 8.8.1. MAXIMUM DESIGN SCENARIO

71. The maximum design scenario(s) involves a 40-month construction period, the only permanent habitat loss is the construction of the onshore substation and watercourse crossings. Even with a 40-month construction period the works within this time period are temporary and localised within the Proposed Development footprint.
72. The maximum design scenario(s) are shown in Table 5.1 of Volume 1, Chapter 5 which have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different infrastructure layout), to that assessed here, be taken forward in the final design scheme.
73. The Proposed Development includes the following works (Table 5.1 of Volume 1, Chapter 5):
  - a new onshore substation;
  - landfall works;
    - up to eight offshore export cables will come to shore and will be connected to the onshore cables via eight buried transition joint bay – this will fall within agricultural land.
  - onshore cables within a cable corridor between the landfall and the new onshore substation, and between the new onshore substation and the SPEN Branxton substation; and
  - associated ancillary infrastructure.
74. The potential effects that could arise on birds from the maximum design scenario during construction of the Proposed Development are considered to be:

#### Direct physical damage to nests or nesting birds

75. The majority of the works including the construction of the substation and the majority of tracks and cabling works will be completed in agricultural fields used for growing cereal crops which is not optimal breeding habitat for the majority of bird species therefore the majority of works will not cause any damage to nests or nesting birds. Any temporary or permanent removal of hedgerows or trees may result in birds losing nesting habitat but given the immediate reinstatement of habitats any losses will be highly localised and will only occur in the breeding season the works are undertaken in.

#### Disturbance and displacement from foraging, roosting or nesting areas

76. As discussed above the majority of the will be completed in open agricultural fields, much of which is used to grow crops. These areas are unlikely to contain nests but the fields may be used by foraging or roosting birds. Therefore, the presence of construction activities including the movement of plant vehicles and site personnel, noise and visual disturbance created by works have the potential to disturb roosting and wintering birds during both the breeding and winter seasons, but it is more likely to be significant during the winter months when fields are bare and used by groups of birds species such as waders and geese. The impacts of works on these birds are considered to be limited as

there are large areas of similar habitats spreading both north and south of the proposed works and available in the immediate vicinity for any displaced birds to relocate.

Direct temporary or permanent loss of habitat for the construction requirements (such as the substation) and permanent infrastructure

77. As mentioned above the majority of works including the permanent structures created during the construction works will be located in open areas in agricultural fields. The loss of habitat from these works is considered to have minimal impact on bird species with significant and widespread habitats available in the immediate and wider area. Any loss of higher value habitat for birds such as hedgerow will be replaced, meaning any impact will be short term and not significant.

Indirect effects from pollution such as dust / water run off

78. There is a risk of accidental pollution from construction activities. Pollution incidents may impact birds through contamination. This could adversely affect breeding behaviour and success, and in some rare cases be fatal. However, with the implementation of a CEMP, pollution events are likely to be rare and the associated effects would be highly localised and small scale and very unlikely to impact nesting birds.
79. Other indirect impacts include the creation of dust during works which may spread to areas of breeding, foraging and roosting birds. Any such impacts are likely to be highly localised and will quickly disperse across the habitat and is unlikely to cause any significant effects on birds.
80. The same effects described above are considered to occur during operation and decommissioning of the Proposed Development but are considered to be lower.

### 8.8.2. IOFS SCOPED OUT OF THE ASSESSMENT

81. As noted in Section 8.6, under evaluation methods for IOFs, ornithological features of local and higher value are considered IOFs. Due to a range of factors, some of these IOFs can be scoped-out of further consideration if they are not vulnerable to effects from the Proposed Development.

Construction phase

82. Following evaluation of the baseline data, including desk study and field survey data, and considering the primary and tertiary mitigation measures described in Section 8.10, some potential effects on IOFs can be scoped out of the assessment, as described in Table 8.10 below. This is based on professional judgement and experience from other relevant projects in the region.
83. The subsequent assessment of effects will be applied to IOFs considered to be of local, council, national, and international Nature Conservation Value (Table 8.10) that are known to be present within the Study areas (as confirmed through survey results and consultations outlined above).

**Table 8.10: Important Ornithological Features Scoped In or Out of the Assessment**

IOF	Rationale for Scoping In/Out	Scoped In/Out
Outer Firth of Forth and St Andrews Bay Complex SPA	The SPA is designated for a number of breeding, migratory and wintering waterfowl and seabird species. Lies directly east of the site meaning impacts on designating species recorded are considered likely.	In:  Wintering black-headed gull, common gull, herring gull, eider, goldeneye and red-

IOF	Rationale for Scoping In/Out	Scoped In/Out
	<p>Black-headed gull were commonly recorded during the wintering bird surveys. Given the Outer Forth and St Andrews Bay Complex SPA lies directly east of the Site it is considered a possibility that the wintering records (53 registrations of 402 individuals) may belong to the SPA population and for this assessment all wintering black-headed gull registrations are considered to be SPA qualifying birds population and means that the Outer Firth of Forth and St Andrews Bay Complex SPA assemblage wintering population of black-headed gull are scoped into the assessment.</p>	<p>breasted merganser as well as breeding herring gull</p> <p>Out:</p> <p>All other SPA features</p>
	<p>Common gull were infrequently recorded during the wintering bird surveys. Given the Outer Forth SPA lies directly east of the site it is considered a possibility that the wintering records (13 registrations of 43 individuals) may belong to the SPA population and for this assessment all wintering common gull registrations are considered to be SPA qualifying birds and means that the Outer Firth of Forth and St Andrews Bay Complex SPA assemblage wintering population of common gull are scoped into the assessment.</p>	
	<p>Although not confirmed as a breeding species within the study area herring gull were common and widespread throughout all breeding and wintering surveys. Given the Outer Firth of Forth and St Andrews Bay Complex SPA lies directly east of the site it is considered a possibility that herring gull during breeding and non-breeding season are linked to the Outer Firth of Forth and St Andrews Bay Complex SPA breeding and wintering assemblage populations and for this assessment all herring gull registrations are considered to be the Outer Firth of Forth and St Andrews Bay Complex SPA qualifying birds. Outer Firth of Forth and St Andrews Bay Complex SPA assemblage breeding and wintering population of herring gull are scoped into the assessment.</p>	
	<p>Eider were recorded on a single occasion during the wintering bird survey, when a group of 36 were noted close to the proposed landfall. Eider were the most abundant waterfowl species recorded throughout the survey period and survey area during intertidal surveys. Records generally included 1-30 individuals with on record of 69 in February 2021, with multiple records along the shoreline adjacent to the landfall.</p>	
	<p>Goldeneye and red-breasted merganser were not recorded during the BBS or WBS but were recorded during intertidal surveys. Red-breasted mergansers were recorded intermittently during the winter and passage months in relatively low numbers of no more than five (September 2020 and March 2021). Almost all birds were recorded within 500 m of the shore.</p>	
	<p>Goldeneye were recorded intermittently, predominantly during the winter and passage months in relatively low numbers of no more than seven in all survey sectors. The peak count of seven was recorded in February 2021. Almost all birds were recorded within 500 m of the shore, with multiple records along the shoreline adjacent to the landfall.</p>	
	<p>Given the Outer Forth SPA lies directly east of the site it is considered likely that the wintering records during the intertidal survey belong to the SPA population and for this assessment all wintering eider, goldeneye and red-breasted merganser registrations are considered to be SPA qualifying birds and means that the Outer Firth of Forth and St Andrews Bay Complex SPA</p>	



IOF	Rationale for Scoping In/Out	Scoped In/Out
	<p>assemblage wintering population of eider are scoped into the assessment.</p> <p>Arctic tern, common tern, little gull, long-tailed duck, Manx shearwater, shag, Slavonian grebe and velvet scoter were recorded occasionally during the desk study but not during field surveys. A single gannet, records of kittiwake, guillemot and razorbill were recorded offshore while puffin and common scoter were not recorded during surveys and all are considered to be true seabirds meaning that away from their breeding grounds they spend the majority of their time foraging out in the open sea. The lack of records, the low level levels of records in the desk study and the fact that these species are likely to remain off shore and away from the site mean these 14 Outer Firth of Forth and St Andrews Bay Complex SPA listed and assemblage species are scoped out of the assessment.</p>	
<p>Firth of Forth SPA / Ramsar</p>	<p>The SPA is 5.9 km north-west of the site at its nearest. Impacts on birds or habitats within the SPA boundary are considered unlikely given being over 5.9 km from the Proposed Development (see Volume 1, Chapter 7). Impacts are, therefore limited to those affecting populations of qualifying species.</p> <p>Pink-footed geese are known to regularly commute up to 20 km from roosting grounds to forage in fields during the day and given the Firth of Forth SPA is less than 6 km north it is possible that birds of this species, widely recorded during the wintering bird survey, may be part of the SPA population and means that pink-footed goose are scoped into the assessment.</p> <p>Despite having a core range of around 3 km, golden plover unlike the majority of wading birds are known to regularly commute up to 11 km from roosting ground to forage in fields (SNH, 2016), and given the Firth of Forth SPA is less than 6 km north it is considered a possibility that golden plover, widely recorded during the wintering bird survey, may be part of the SPA population and means that golden plover are scoped into the assessment.</p> <p>As discussed above the majority of wading birds are considered to have core ranges of less than 3 km, studied examples include greenshank 2-3 km, curlew 1-2 km and dunlin 3 km (SNH, 2016). Given these likely core ranges it is considered that the following species that were recorded in low numbers during the wintering bird surveys are not part of the SPA population the Firth of Forth SPA population of: curlew, dunlin, grey plover, lapwing, oystercatcher, redshank, ringed plover and turnstone are scoped out of this assessment.</p> <p>Shelduck and wigeon were both recorded on a single occasion with both records offshore. The core ranges of duck species are not covered in the SNH guidance however the nearest comparable species (white-fronted) geese is noted as having a core range of 5- km and given white-fronted geese are a larger and stronger species (SNH, 2016) it is considered likely the core ranges of ducks will be below this thus have a range of less than 5 km. Given the SPA is over 5 km from the site and given these two species are likely to remain offshore in the winter months, impacts from onshore works is likely to be insignificant. With such low registrations and the fact that they are considered unlikely to be from the SPA population, the Firth of Forth SPA population of wigeon and shelduck are scoped out of this assessment.</p>	<p>In:</p> <p>Wintering pink-footed goose and golden plover</p> <p>Out:</p> <p>All other SPA features</p>

IOF	Rationale for Scoping In/Out	Scoped In/Out
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Single records of gannet and cormorant were identified during wintering bird surveys while lesser black-backed were only recorded during the breeding bird surveys and desk study. Given these species are predominantly found offshore combined with low numbers of records and the distance to the SPA, the Firth of Forth SPA population of gannet, cormorant and lesser back-backed gull are scoped out of this assessment.

A total of three Sandwich tern were noted offshore during the first breeding bird survey in June. Sandwich tern is designated as a passage species as part of the Firth of Forth SPA and given such low numbers recorded and the fact they were recorded during the breeding season means the Firth of Forth SPA population of Sandwich tern are scoped out of this assessment.

Goldeneye, great crested grebe, long-tailed duck, red-breasted merganser, red-throated diver, scaup, Slavonian grebe and velvet scoter were all identified during the desk study with five or less records identified for each species within the site. All these species are designated for wintering populations, spend the majority of their time, particularly during the non-breeding season in offshore waters. The species were not recorded during the wintering bird surveys and infrequently during the desk study and given this and the fact that it is likely these species will remain offshore means these eight species are scoped out of this assessment.

Bar-tailed godwits were recorded three times within the site between 2011 and 2021 during the desk study. A total of 13 records of knot were identified during the desk study but only two records totalling three birds were recorded since 2016. Neither species was recorded during the wintering bird survey. As discussed above Bar-tailed godwits and knot are considered unlikely to travel more than 1-2 km between roosting and foraging sites, meaning the individuals recorded during the desk study are unlikely to be part of the SPA population. The Firth of Forth SPA population of bar-tailed godwit and knot are scoped out of this assessment.

St Abb's Head to Fast Castle SPA	<p>The SPA lies 6.9 km south-east and is designated for its breeding seabird assemblage. Impacts on habitats within the SPA are considered unlikely given the distance from the Proposed Development (see Volume 1, Chapter 7).</p> <p>Impacts are, therefore limited to those affecting populations of species qualifying as features of the designated site.</p> <p>Although not confirmed as a breeding species within the study area herring gull were common and widespread throughout all breeding and wintering surveys. The desk study identified a further 240 records within 5 km of the site between 2011-2021 of which 13 records, totalling 333 individuals, were recorded within the site.</p> <p>Large gulls such as herring gull are known to travel long distances from breeding grounds to forage during the day, distance of over 50 km have been recorded (Woodward <i>et al.</i>, 2019), meaning that the presence of herring gull during the breeding season could mean individuals are linked to SPA assemblage population. This means that (despite being highly precautionary and even though they are already being assessed as part of the (much closer) Outer Forth and St Andrews Bay Complex SPA) the St Abb's Castle to Fast</p>	<p>In:</p> <p>Breeding herring gull</p> <p>Out:</p> <p>All other SPA features</p>
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IOF	Rationale for Scoping In/Out	Scoped In/Out
	<p>Head SPA assemblage population of herring gull are scoped into the assessment.</p> <p>The remaining designating species are: razorbill; common guillemot; black-legged kittiwake; and European shag. These four species were not recorded during surveys and are considered to be true seabirds meaning that away from their breeding grounds they spend the majority of their time foraging out in the open sea. Given these species are unlikely to be impacted by the Proposed Development they are scoped out of the assessment.</p>	
<p>Forth Islands SPA</p>	<p>The SPA lies 16 km north-west and is designated for its breeding seabird assemblage. Impacts on habitats within the SPA are considered unlikely given the distance from the Proposed Development (see Volume 1, Chapter 7).</p> <p>Impacts are, therefore limited to those affecting populations of species qualifying as features of the designated site.</p> <p>Although not confirmed as a breeding species within the study area herring gull were common and widespread throughout all breeding and wintering surveys. The desk study identified a further 240 records within 5km of the site between 2011-2021 of which 13 records, totalling 333 individuals, were recorded within the site.</p> <p>Large gulls such as herring gull are known to travel long distances from breeding grounds to forage during the day, distance of over 50 km have been recorded (Woodward <i>et al.</i>, 2019), meaning that the presence of herring gull during the breeding season could mean individuals are linked to SPA assemblage population. This means that (despite being highly precautionary as they are already being assessed as part of the (much closer) Outer Forth and St Andrews Bay Complex and St Abb's Castle to Fast Head SPA's) the Forth Islands SPA assemblage population of herring gull are scoped into the assessment.</p> <p>A total of three Sandwich tern were noted offshore during the first breeding bird survey in June. Sandwich tern is designated as a breeding species. Woodward <i>et al.</i>, (2019) suggest 34 km and given the fact that the nearest colony to the site is the Isle of May approximately 25 km north means it is possible these birds are linked to the Forth Islands SPA. With such a low number of records, which were offshore and the fact that Sandwich terns forage and spend the majority of their time away from breeding grounds out to sea, it is considered unlikely the Proposed Development will have any impact on the SPA population means Sandwich tern is scoped out of the assessment.</p> <p>The remaining designating species are: Breeding Arctic tern, roseate tern and common tern; migratory gannet, shag, lesser black-backed gull and breeding razorbill; guillemot, kittiwake and cormorant. Given the significant distance between the site and this SPA, the fact that these species were either not recorded during surveys or in very low numbers and the fact they spend the majority of their time foraging out in the open sea means the ten species are scoped out of the assessment.</p>	<p>In:</p> <p>Breeding herring gull</p> <p>Out:</p> <p>Sandwich tern and all other SPA features</p>
<p>Curlew (the wider-countryside population)</p>	<p>Curlew were recorded regularly during breeding and wintering bird surveys but no evidence of breeding was recorded. The desk study identified a further 166 records within 5 km of the site between 2011-2021 of which eleven records, totalling 132 individuals, were recorded within the site.</p>	<p>In:</p> <p>Wintering curlew</p>



IOF	Rationale for Scoping In/Out	Scoped In/Out
	Numbers of curlew are declining across the UK and the presence of a moderate number of wintering curlew which are a BoCC Red list species mean that wintering curlew are scoped into the assessment. As it considered unlikely (given the lack of suitable breeding habitat) the Proposed Development will have any impact on breeding curlew they are scoped out of the assessment.	Out:  Breeding curlew
Lapwing (the wider-countryside population)	Lapwings were recorded occasionally during breeding and regularly during wintering bird surveys although no definitive evidence of breeding was recorded within the site. The desk study identified a further 35 records within 5 km of the site between 2011-2021 of which two records, totalling 201 individuals, were recorded within the site.  Numbers of lapwing are declining across the UK as a whole and the presence of moderate number of lapwing predominantly in the winter months which are a BoCC Red list species means that wintering lapwing are scoped into the assessment. As due to lack of suitable breeding habitat it considered unlikely the Proposed Development will have any impact on breeding lapwing they are scoped out of the assessment.	In:  Wintering lapwing  Out:  Breeding lapwing
Peregrine	Peregrine is an Annex 1 and Schedule 1 listed species, and also listed on the SBL and the BoCC Red list. As peregrines were recorded breeding within the survey area and occasionally using the site during breeding and non-breeding season peregrine is scoped into this assessment.	In
Breeding bird assemblage (exclusive of all species covered above)	A total of eight confirmed and six other likely BoCC Red listed species and four BoCC Amber listed species were recorded as breeding throughout the site. It is considered likely that works such as vegetation removal and drilling could impact on these breeding species and therefore the breeding bird assemblage is scoped into the assessment.	In

## 8.9. METHODOLOGY FOR ASSESSMENT OF EFFECTS

### 8.9.1. OVERVIEW

84. The ornithological assessment of effects has followed the methodology set out Volume 1, Chapter 2 of the Onshore EIA Report. Specific to the assessment of ornithology, the following guidance documents have also been considered:
- Guidelines for Ecological Impact Assessment in the UK and Ireland (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018);
  - Guidelines for Environmental Impact Assessment (Institute of Environmental Management and Assessment (IEMA), 2005);
  - Survey Methods for Use in Assessing the Impacts of Onshore Wind Farms on Bird Communities (SNH, 2017);
  - Assessing Connectivity with Special Protection Areas (2016); and
  - Assessing the Cumulative Impact of Onshore Wind Energy Developments (SNH, 2012).

### 8.9.2. IMPACT ASSESSMENT CRITERIA

85. The approach to the Ecological Impact Assessment, including the ornithology impact assessment (EclA) follows the Chartered Institute of Ecology and Environmental Management guidelines (CIEEM, 2018), which prescribe an industry-standard method to define, predict and assess potential ecological effects to a given Proposed Development. Although the CIEEM guidelines do differ slightly from those prescribed in the standard

EIA methodology (as outlined in Volume 1, Chapter 2), this approach is designed specifically for ecological and ornithological impact assessment.

86. Starting with establishing the baseline through a mix of desk study and field survey, key ornithological features (the IOFs) are identified and those requiring assessment established through a reasoned process of valuation and consideration of factors, such as statutory requirements, policy objectives for biodiversity, conservation status of the IOF (species), connectivity and spatial separation from the Proposed Development (refer to Table 8.10). From this stage, these features are assessed for impacts with the assumption of this being in the presence of construction industry-standard or (tertiary) mitigations to ameliorate impacts as far as reasonably practicable. Additional mitigation strategies can then be determined to further reduce any residual impacts that would otherwise be experienced by the IOF and any opportunities for enhancement identified.
87. In summary, the impact assessment process (CIEEM, 2018) involves:
- identifying and characterising impacts and their effects;
  - incorporating measures to avoid and mitigate negative impacts and effects;
  - assessing the significance of any residual effects after mitigation;
  - identifying appropriate compensation measures to offset significant residual effects; and
  - identifying opportunities for ecological enhancement.

#### Ornithological Zone of Influence

88. The Ornithological Zone of Influence (OZOI) is defined as the area within which there may be ornithological features subject to effects from the Proposed Development. Such effects could be direct (e.g. habitat loss resulting from works disturbing or destroying a breeding attempt) or indirect (e.g. prey species being caused to move or leave the area thus leading to a species to move out of the OZOI). The OZOI is determined through:
- Review of the existing baseline conditions based on desk study results, field surveys and information supplied by consultees;
  - Identification of sensitivities of ornithological features, where known;
  - The outline design of the Proposed Development and approach to construction; and
  - Through liaison with other technical specialists involved in the assessment, e.g. hydrologists and noise specialists.

#### Temporal Scope

89. Potential impacts on ornithological features have been assessed in the context of how the predicted baseline conditions within the OZOI might change between the surveys and the start of construction. It is anticipated that construction would take approximately 40 months to complete and would be expected to commence in c.2024.

#### Characterising Ornithological Impacts and Effects

90. In accordance with the CIEEM guidelines, the following definitions are used for the terms 'impact' and 'effect':
- Impact – Actions resulting in changes to an ornithological feature. For example, the construction activities of a development removing a hedgerow; and
  - Effect – Outcome to an ornithological feature from an impact. For example, the effects on a species population from loss of a hedgerow.
91. In accordance with the CIEEM guidelines, when determining impacts on IOFs, reference is made to the following:

- Positive or negative – i.e. whether the impact has a positive or negative effect in terms of nature conservation objectives and policy;
  - Magnitude – i.e. the size of an impact, in quantitative terms where possible;
  - Extent – i.e. the area over which an impact occurs;
  - Duration – i.e. the time for which an impact is expected to last;
  - Timing and frequency – i.e. whether impacts occur during critical life stages or seasons; and
  - Reversibility – i.e. a permanent impact is one that is irreversible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A temporary impact is one from which a spontaneous recovery is possible.
92. Both direct and indirect impacts are considered: Direct ornithological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat occupied by a species during the construction process. Indirect ornithological impacts are attributable to an action but affect ornithological resources through effects on an intermediary ecosystem, process or feature, e.g. fencing of a development site and subsequent lack of grazing may create suitable grassland for ground nesting birds.
93. For the purposes of this assessment, the predicted impacts on an ornithological feature are categorised as ‘no impact’, ‘barely perceptible’, ‘low’, ‘medium’ or ‘high’, based on the definitions in Table 8.11 with temporal impacts in Table 8.12.

**Table 8.11: Levels of Spatial Magnitude of Impact**

Level of impact	Definition
Very high	Total/near total loss of a bird population due to mortality or displacement.
	Total/near loss of productivity in a bird population due to disturbance.  Guide: >80 % of regional population affected.
High	Major reduction in the status or productivity of a bird population due to mortality, displacement or disturbance  Guide: 21-80 % of regional population affected.
Medium	Partial reduction in the status or productivity of a bird population due to mortality, displacement or disturbance  Guide: 6-20 % of regional population affected.
Low	Small but discernible reduction in the status or productivity of a bird population due to mortality, displacement or disturbance  Guide: 1-5 % of regional population affected.
Barely perceptible	Very slight reduction in the status or productivity of a bird population due to mortality, displacement or disturbance. Reduction barely discernible, approximating to the ‘no change’ situation.  Guide: <1 % of regional population affected.

**Table 8.12: Levels of Temporal Magnitude of Impact**

Level of impact	Definition
Immediate	Within approximately 12 months;
Short term	Within approximately 1-5 years
Medium term:	Within approximately 6-15 years
Long term:	Between 15-35 years
Permanent	Over 35 years (impacts broadly spanning longer than the lifetime of the scheme, for the purpose of this assessment over 35 years).

94. In terms of ornithology the sensitivity of a species is key to understanding the potential impacts of works and therefore understand the effects on birds. In considering sensitivity, the key impacts due to disturbance of bird species caused by the works at the Site. The impacts will be different in their scale depends on the conservation importance of the species (Outlined in Table 8.6) as well as the behaviour and activities of that bird. The impacts for example on a breeding bird could lead to a failed breeding attempt and significantly impact on that bird at that time, a loafing or foraging bird may be disturbed but in will simply relocate to another location.
95. NatureScot (2022) has produced a review of disturbance distance on selected both breeding and wintering bird species and will be used as the basis for the sensitivity criteria outlined below. If the bird species being considered in the assessment is not covered by the guidance, a similar species will be used.
96. Sensitivity is considered to be either high, medium or low and shown in Table 8.13.

**Table 8.13: Levels of Sensitivity of the Receptor**

Value (Sensitivity of the Receptor)	Definition
High	Bird species has very limited tolerance of sources of disturbance.  Guide: Schedule 1 / Annex 1 breeding attempt may be impacted by construction works.
Medium	Bird species has very moderate tolerance of sources of disturbance.  Guide: Breeding attempts of other species likely to fail due to disturbance.  Significant numbers of wintering disturbed and have no immediate alternative location to relocate in the local area.
Low	Bird species has high tolerance of sources of disturbance  Guide: Wintering / loafing / foraging birds with clear alternative similar habitat available in the local area.

#### Determining Ornithologically Significant Effects

97. The significance of the effect is then calculated using the following matrix (Table 8.14). There is a degree of blurring between different level of significance which are described for example moderate to minor, in these situations professional judgment of the author is used.

**Table 8.14: Matrix to Determine Significance of the Effect**

Sensitivity	Magnitude			
	Barely perceptible	Low	Medium	High
Low	Negligible	Negligible / Minor	Minor / Moderate	Moderate / Major
Medium	Negligible	Minor	Moderate	Major
High	Negligible	Minor	Moderate	Major

98. For the purposes of this assessment:
  - a level of effect of moderate or more will be considered a 'significant' effect in terms of the EIA Regulations; and
  - a level of effect of minor or less will be considered 'not significant' in terms of the EIA Regulations.

99. A significant effect, in ornithological terms, is defined as an effect (whether adverse or beneficial) on the integrity of a defined site or ecosystem and/or the conservation status of species within a given geographical area, including cumulative and in-combination impacts.
100. In accordance with the CIEEM guidelines, the approach adopted in this chapter aims to determine if the effect of an impact is significant or not based on a discussion of the factors that characterise it, i.e. the ornithological significance of an effect is not dependent on the value of the feature in question. Rather, the value of a feature that will be significantly affected is used to determine the geographical scale at which the effect is significant.
101. In accordance with the current CIEEM guidelines, effects of impacts are assessed in the presence of standard (tertiary) mitigation measures. Additional (secondary) mitigation may be identified where it is required to reduce a significant effect.
102. Any significant effect remaining post-mitigation (the residual effect), together with an assessment of the likelihood of success of the mitigation, will be material considerations to be weighed in the balance in determining the application.
103. In addition to determining the significance of effects on IOFs, this chapter also identifies any legal requirements in relation to ornithology.

## 8.10. PRIMARY & TERTIARY MITIGATION

104. As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on ornithology (see Table 8.15). These include measures which have been incorporated as part of the Proposed Development's design (referred to as 'primary mitigation') and measures which will be implemented regardless of the impact assessment (referred to as 'tertiary mitigation'). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Proposed Development and have therefore been considered in the assessment presented in Section 8.11 below (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These measures are considered standard industry practice for this type of development.
105. Primary mitigation includes the following design measures:
  - The onshore cabling will be installed alongside tracks and/or field margins wherever reasonably practicable to minimise habitat loss and/or disturbance;
  - Proximity to watercourses has been avoided wherever reasonably practicable;
  - Areas considered to be more sensitive in terms of protected habitats were considered during the design process and avoided where reasonably practicable along the entirety of the onshore cable route; and
  - A proposed planting scheme, as part of a Habitat Enhancement and Management Plan (HEMP) will be implemented on the completion of construction at the site. The (HEMP) will be produced for the Site detailing measures to protect existing features for ornithological interests, enhance habitats and increase biodiversity within the Site in line with NPF4 Policy 3 (Biodiversity) and LDP Policy NH5 (Biodiversity and Geodiversity Interests, including Nationally Protected Species). The planting will involve the creation of native grassland, hedgerow and woodland habitats and will be used to screen the margins of the A1 trunk road and surround the onshore substation. The proposed mitigation will provide improved habitats such as hedgerow and trees for a wide range of species such as yellowhammer, tree sparrow and dunnock while newly created grassland may be used to forage and also for ground nesting species such as meadow pipit and skylark.
106. Tertiary mitigation includes the following standard mitigation measures:
  - The Applicant will appoint a suitably qualified Ecological Clerk of Works (ECoW) prior to the commencement of any construction activities taking place. The ECoW will be



present and oversee all construction activities as well as providing toolbox talks to all site personnel with regards to priority species and habitats, as well as undertaking monitoring works.

- Protection of breeding bird nests from damage and/or destruction during the breeding season, in accordance with the Wildlife and Countryside Act 1981 (as amended by the Nature Conservation (Scotland) Act 2004). Wherever reasonably practicable, all vegetation clearance will occur outside the bird breeding season (i.e. between September – mid-March, inclusive), to avoid damage to or destruction of active nests by the proposed works. If work is required after the mid (15<sup>th</sup>) March, the ECoW will search areas of clearance in advance of works and recommend a buffer around active nests as appropriate. This would include any areas of clearance and vegetation removal for access tracks, compounds or onshore substation areas due to the populations of ground nesting birds on and around the site.

107. In order to prevent pollution of watercourses within the site (with particulate matter or other pollutants such as fuel), industry standard practice techniques will be employed. These are outlined in Volume 1, Chapter 11 and the Outline Construction Environmental Management Plan (CEMP) (Volume 4, Appendix 5.1) and will include:

- For water crossings (i.e., those not being negotiated by trenchless technology e.g. HDD): buffer strips around sections of workings adjacent to watercourse crossings and bund and embankment features to be implemented;
- For any temporary tracks, parking areas, compounds and onshore substation areas: camber in track or ground design; drains, e.g. infiltration trenches with check dams; and
- General drainage: no direct discharges of water from works areas to existing drainage channels or surface watercourses; drainage is expected to be directed to infiltration trenches, settlement swales or lagoons.

108. Full details of construction mitigation measures will be provided in a detailed CEMP to be agreed with the Planning Authority, in consultation with NatureScot, post-consent but prior to the construction phase of the Proposed Development commencing.

109. If maintenance activities are necessary during the operational phase that require excavations or the clearance of hedgerows, trees and/or areas of scrub, such works will only take place following adequate breeding bird checks to determine whether any mitigation measures are required.

**Table 8.15: Measure Adopted as Part of the Proposed Development (Primary & Tertiary Mitigation)**

Measures Adopted as Part of the Proposed Development (Primary & Tertiary Mitigation)	Justification
Cabling will be installed alongside tracks and/or field margins wherever reasonably practicable to minimise habitat loss and/or disturbance.	To reduce the impacts on habitats and reduce disturbance to birds.
Proximity to watercourses has been avoided wherever reasonably practicable	To reduce potential pollution events in watercourses.
Areas considered to be more sensitive in terms of protected habitats were considered during the design process and avoided where reasonably practicable along the entirety of the onshore cable route.	To reduce impacts on sensitive habitats.
A proposed planting scheme will be implemented on the completion of construction at the site. The planting will involve the creation of native grassland, hedgerow and woodland habitats.	To reduce the impacts of habitat loss in terms of hedgerow removal and any loss of trees, the planting will provide new and additional breeding, foraging and wintering habitat for bird species.
A CEMP will be prepared and implemented during the construction, operational and maintenance and decommissioning phases of the Proposed Development. The CEMP will include Proposed Development mitigation/monitoring measures and	Measures will be adopted to reduce the potential for release of pollutants from construction, operational and maintenance and decommissioning plant as far as reasonably practicable. These will likely include: designated areas for refuelling where spillages can be

Measures Adopted as Part of the Proposed Development (Primary & Tertiary Mitigation)	Justification
commitments and a Pollution Contingency Plan (PCP) which will include key emergency contact details (e.g. Scottish Environment Protection Agency (SEPA)).	easily contained, storage of chemicals in secure designated areas in line with appropriate regulations and guidelines, double skinning of pipes and tanks containing hazardous substances, and storage of these substances in impenetrable bunds.
A suitably qualified ECoW will be appointed prior to the commencement of any construction activities taking place.	The ECoW will be present and oversee all construction activities as well as providing toolbox talks to all site personnel with regards to priority species and habitats, as well as undertaking monitoring works.
Protection of breeding bird nests.	The ECoW will search for any bird nests ahead of the commencement of works scheduled to take place during the breeding bird season and where appropriate implement working buffers around active nests.

### 8.10.1. HABITATS REGULATIONS APPRAISAL (HRA)

- 110. Given the Proposed Development's proximity to the four SPAs and a Ramsar site, a HRA will be required to assess the effects of the Proposed Development that the integrity of the National Site Network (formerly 'Natura sites'). Consideration is needed of whether the Proposed Development is likely to have a significant effect on a site forming part of the National Site Network and the potential for adverse effects on the integrity of the designated site.
- 111. A standalone Report to inform Appropriate Assessment (RIAA) has therefore been prepared to support the planning application for the Proposed Development. This document sets out where the Stages of the HRA process are mirrored to help inform the competent authority. These are as follows: Stage 1: screening for Likely Significant Effects (LSE), and Stage 2: Appropriate Assessment (AA) where it is assessed whether there are to be adverse impacts on the integrity of a National Site Network site.

## 8.11. ASSESSMENT OF SIGNIFICANCE

- 112. The potential impacts arising from the construction, operational and maintenance and decommissioning phases of the Proposed Development and an assessment of the likely significance of the effects of the Proposed Development on ornithological receptors caused by each identified impact is given below.

### DISPLACEMENT AND HABITAT LOSS OF OUTER FIRTH OF FORTH AND ST ANDREWS BAY COMPLEX SPA QUALIFYING SPECIES - GULLS

- 113. Disturbance and habitat loss during construction may lead to displacement of qualifying gull species of the Outer Firth of Forth and St Andrews Bay Complex SPA.

Construction phase

Magnitude of impact

*Wintering black-headed gull*

- 114. Black-headed gull is a designating feature of the winter assemblage of the Outer Firth of Forth and St Andrews Bay Complex SPA and a total of 26,835 individuals are cited as part of the designation (NatureScot, 2020). Black-headed gull were commonly recorded during the wintering bird surveys.



115. Black-headed gull is a widespread species within Scotland throughout all of the year, with an estimated 43,200 breeding pairs and a wintering population of 155,000. Away from breeding grounds black-headed gulls forage on a wide range of habitats including beaches, estuaries, grassland and freshly tilled ground and are mainly found on agricultural land in the winter (Forester *et al.*, 2012).
116. The majority of the Proposed Development comprises of arable or heavily grazed fields which along with the coastal strip are used by black-headed gulls to forage and roost. A total of 53 registrations totalling 402 individuals (Volume 4, Appendix 8.2 and Appendix Figure 8.2.5) were recorded during the four wintering bird survey visits and it is considered a possibility that these individuals are part of the SPA assemblage population. Black-headed gulls were commonly recorded along the coast during breeding bird surveys and were frequently recorded in the site and wider survey area in the desk study.
117. Given a total of 402 individuals across the four survey visits, this averages 101 (100.5) individuals, corresponding to 0.38% of the Outer Firth of Forth and St Andrews Bay Complex SPA designated population which is not considered to be material.
118. Given their regular presence throughout the year it is considered likely that black-headed gulls will be subjected to issues of disturbance during construction, this impact is considered to be direct. Black-headed gulls are a highly adaptable species often seen following tractors to forage in freshly tilled areas meaning any impacts from disturbance during construction are considered to be very limited. It is considered that disturbance will not impact breeding activity and the fact that similar habitats suitable for this species are present and widespread within the surrounding area, both to the north and south of the Proposed Development, means that construction impacts are assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

*Wintering common gull*

119. Common gull is a designating feature of the winter assemblage of the Outer Firth of Forth and St Andrews Bay Complex SPA and a total of 14,637 individuals cited as part of the designation (NatureScot, 2020). Common gull were recorded in low numbers during the wintering bird surveys.
120. Common gull is a widespread species within Scotland all year with an estimated 48,100 breeding pairs and a wintering population of 79,700. As with black-headed gulls, wintering common gulls are mainly found on agricultural land in the winter (Forester *et al.*, 2012).
121. The majority of the Proposed Development comprises of arable or heavily grazed fields which along with the coastal strip are used by common gull to forage and roost. A total of 13 registrations totalling 43 individuals were recorded during the four wintering bird survey visits and it is assumed that these individuals are part of the SPA assemblage population.
122. Give a total of 43 individuals across the four survey visits, this averages 10.75 individuals which comprises 0.08% of the Outer Firth of Forth and St Andrews Bay Complex SPA designated population which is not considered to be material.
123. Given their presence in coastal fields during the winter months it is considered a possibility that common gulls will be subjected to disturbance during construction. As with black-headed gulls and given the adaptability of gull species to human activity, the fact that suitable agricultural habitat is abundant and widespread within the surrounding area both to the north and south of the Proposed Development means it is considered that construction impacts on common gull are assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

*Breeding and Wintering Herring gull*

124. Herring gull is a designated species as part of a breeding assemblage Outer Firth of Forth and St Andrews Bay Complex SPA (3,044 individuals; NatureScot, 2020) and also as part

of the wintering assemblage (12,313 individuals; NatureScot, 2020). Herring gulls were common and widespread through the site and were recorded offshore, along the coast and in fields inland during both the breeding bird and wintering bird surveys. Birds were noted as foraging and loafing but no evidence of breeding was recorded. Given their presence along the coast and in coastal fields all year it is considered possible that herring gulls will be subject to disturbance during construction.

125. Woodward *et al.* (2019) indicates a breeding season foraging range of 59 km for herring gull. This suggests that the birds foraging or loafing within the site both during the breeding and non-breeding season could belong to the Outer Firth of Forth and St Andrews Bay Complex SPA.
126. Herring gull is one of the most adaptable species to human activity and birds are regularly found close to people both in urban and rural environments, living on inhabited buildings and following farm machinery in order to forage in freshly tilled land. Despite regular presence on site, the adaptability of herring gulls means that they are unlikely to be significantly disturbed, with adverse impacts being limited to a temporary loss of foraging and loafing habitat during construction. It is also possible that activities such as soil stripping may provide temporary beneficial effects though foraging opportunities, e.g. freshly exposed soil providing a source of invertebrates, such as worms.
127. Any loss of habitat is not considered significant because suitable agricultural habitats are abundant and widespread within the surrounding area both to the north and south of the Proposed Development. The fact that there are significant areas of similar habitat available for any displaced birds to relocate to as well as the fact the disturbance of the fields may in fact provide foraging opportunities for gulls mean it is considered that construction impacts on herring gull assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

#### Sensitivity of the receptor

128. As per Table 8.9, the qualifying assemblage species of the Outer Firth of Forth and St Andrews Bay Complex SPA are of International importance. Breeding herring gull were not recorded during breeding bird surveys and therefore birds within the Site during both the breeding and winter season will relate to bird either foraging or loafing. Wintering black-headed gulls are also considered foraging or loafing individuals. As discussed above, gulls are highly adaptable species and away from breeding grounds are highly unlikely to be subject to any significant disturbance due to construction works. With alternative habitat available for roosting and foraging gulls in the local area of the Site means breeding / wintering herring gull and wintering black headed gull are considered to be of low sensitivity.

#### Significance of the effect

129. As outlined above the magnitude of the impact on The Outer Firth of Forth and St Andrews Bay Complex SPA wintering black-headed gull, wintering common gull and breeding and wintering herring gull, as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be low. The effect (see Table 8.14) therefore is considered to be **negligible** and not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

130. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

## DISPLACEMENT AND HABITAT LOSS OF OUTER FIRTH OF FORTH AND ST ANDREWS BAY COMPLEX SPA QUALIFYING SPECIES - WILDFOWL

131. Disturbance and habitat loss during construction may lead to displacement of qualifying wildfowl species (eider, goldeneye and red-breasted merganser) of the Outer Firth of Forth and St Andrews Bay Complex SPA.

### Construction phase

*Wintering wildfowl (eider, goldeneye and red-breasted merganser)*

### Magnitude of impact

132. The works will be based over 100 m inland or under the seabed and will not result any habitat loss for these three wildfowl species.

#### *Eider*

133. The Firth of Forth Outer and St Andrews Bay Complex SPA is designated for an average of 21,546 wintering individual eider (NatureScot, 2020). A maximum of 36 individuals was recorded during WBS visits and a maximum of 69 individuals was recorded in February 2021 during intertidal surveys. The peak counts recorded during intertidal surveys total 151 individuals between September 2020 and March 2021 (taking highest value in Section A or B – See: Offshore EIA – Volume 3, Appendix 11.2: Ornithology Inter-tidal Survey Report. Table 2) which equates to an average peak count of 22 birds, although not all the intertidal records were recorded within 500 m of the landfall.

134. Including all of the peak count records creating a worse scenario of 21 individuals that may be disturbed during construction activities this accounts for 0.1 % of the SPA population. Wintering eider will predominantly spend their time on the water and offshore meaning works at the landfall over 100 m inland will have little or no impact on birds on the open sea, with birds if they are disturbed swimming to an area of open sea they feel comfortable in.

135. With only a worst case scenario of 0.1% of the SPA population that maybe impacted, the fact that there are significant areas of similar habitat available for any displaced birds to relocate mean it is considered that construction impacts on eider, goldeneye and red-breasted merganser assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

#### *Goldeneye*

136. The Firth of Forth Outer and St Andrews Bay Complex SPA is designated for an average of 589 wintering individual goldeneye (NatureScot, 2020). Goldeneye were not recorded during WBS visits although a maximum of seven individuals was recorded in February 2021 during intertidal surveys. The peak counts recorded during intertidal surveys total 20 individuals between September 2020 and March 2021 (taking highest value in Section A or B – See: Offshore EIA – Volume 3, Appendix 11.2: Ornithology Inter-tidal Survey Report. Table 2) which equates to an average peak count of 3 birds, although not all the intertidal records were recorded within 500 m of the landfall.

137. Including all of the peak count records creating a worst-case scenario of 3 individuals that may be disturbed during construction activities this accounts for 0.51 % of the SPA population. Wintering goldeneye will predominantly spend their time on the water and offshore meaning works at the landfall which is over 100 m from the sea will have little significant impact on birds on the open sea, with birds if they are disturbed swimming or flying to an area of open sea they feel comfortable in.

138. With a worst-case scenario of 0.51% of the SPA population that maybe impacted, the fact that there are significant areas of similar habitat available for any displaced birds to

relocate mean it is considered that construction impacts on goldeneye assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

#### *Red-breasted merganser*

139. The Firth of Forth Outer and St Andrews Bay Complex SPA is designated for an average of 431 wintering red-breasted merganser (NatureScot, 2020). Red-breasted merganser were not recorded during WBS visits although a maximum of five individuals was recorded in February 2021 during intertidal surveys. The peak counts recorded during intertidal surveys total 23 individuals (taking highest value in Section A or B – See: Offshore EIA – Volume 3, Appendix 11.2: Ornithology Inter-tidal Survey Report. Table 2) between September 2020 and March 2021 which equates to an average peak count of 3.3 birds, although not all the intertidal records were recorded within 500 m of the landfall.
140. Including all of the peak count records creating a worst-case scenario of three individuals that may be disturbed during construction activities this accounts for 0.76 % of the SPA population. Wintering red-breasted merganser will predominantly spend their time on the water and offshore meaning works at the landfall which is over 100 m from the sea will have little significant impact on birds on the open sea, with birds if they are disturbed swimming or flying to an area of open sea they feel comfortable in.
141. With a worst-case scenario of just 0.76% of the SPA population that maybe impacted, the fact that there are significant areas of similar habitat available for any displaced birds to relocate mean it is considered that construction impacts on red-breasted merganser assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

#### Sensitivity of the receptor

142. As per Table 8.9, the qualifying assemblage species of the Outer Firth of Forth and St Andrews Bay Complex SPA are of International importance. Wintering eider and goldeneye are considered to have a disturbance distance of 200-500 m and 150-800 m respectively (NatureScot, 2022) and while red-breasted merganser are not considered within the NatureScot guidance a similar figure to these two can be assumed. Even taking a higher figure of between 500 m - 800 m, it is considered that if eider, goldeneye or red-breasted merganser are disturbed by construction works that there is significant alternate habitat north and south up the coastline and east out into the open sea from the proposed works for birds to immediately relocate either swimming or flying meaning despite their international importance both species are considered to be of low sensitivity.

#### Significance of the effect

143. As outlined above the magnitude of the impact on The Outer Firth of Forth and St Andrews Bay Complex SPA wintering eider, goldeneye, or red-breasted merganser, as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be low. The effect (see Table 8.14) therefore is considered to **negligible** and not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

144. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

## **DISTURBANCE AND HABITAT LOSS TO FIRTH OF FORTH SPA AND RAMSAR QUALIFYING SPECIES**

145. Disturbance and habitat loss during construction may lead to displacement of wintering foraging and roosting (SPA) pink-footed goose and golden plover.

### Construction phase

#### Magnitude of impact

##### *Wintering pink-footed goose*

146. Pink-footed geese were frequently recorded during wintering bird surveys and a further two records were identified in the site by the desk study. A total of 51 registrations for pink-footed geese were recorded in the WBS study area totalling 4,139 individuals. The majority of these records (31 registrations totalling 3,146 individuals) were recorded on the first visit in October, with much lower counts (total of 20 registrations, 993 individuals across the three subsequent visits in November to February).
147. High numbers of pink-footed geese are typical for the east of Scotland in October as large numbers of pink-footed geese arrive in the area from breeding grounds in the Arctic before relocating to wintering grounds elsewhere in the UK. Wilson *et al.* (2015) outline this high seasonal turnover of birds in Scotland, stating that many birds spend the winter in England, only passing through Scotland in transit. Scotland therefore holds more pink-footed geese in the autumn than it does for most of the winter.
148. The Firth of Forth SPA is designated for an average figure of 10,852 individuals (JNCC, 2018) meaning the average count in the WBS study area during surveys (1035) would comprise 9.5% of the designated population.
149. The count for Eastern Lowlands (NHZ16) which cover the site have a peak of up to 162,039 birds in October, declining to substantially lower levels by January, and remaining relatively stable until departure in March-May (Wilson *et al.*, 2015). A total of 993 individuals across the final three visits is likely to provide a more accurate figure of over-wintering birds in the WBS study area, giving a total average of 331 birds.
150. Pink-footed geese is a designated feature of the Firth of Forth SPA/Ramsar which lies almost 6 km to the north-west of the site and will travel distances of up to 25 km from roost sites to forage in fields during the day (SNH, 2018) and it is assumed that birds recorded using the WBS study area during the wintering bird survey may belong to the SPA population.
151. The Firth of Forth SPA is designated for an average figure of 10,852 individuals (JNCC, 2018) meaning the average count in the WBS study area during surveys (1035) would comprise 9.5% of the designated population. This is considered to be a highly precautionary figure given the fact the majority of the geese in the region likely relocate elsewhere in the UK and are likely not part of the SPA population, using the result from in the WBS study area between November 2020 and February 2021 (331) would comprise a more realistic 3.1% of the designated population.
152. Pink-footed geese are susceptible to disturbance from human activity and will react to dog walkers, vehicles and are likely to be impacted by construction activities although over the winter birds are often found foraging close to roads as the birds become normalised to vehicular activity. Pink-footed geese will forage on improved grassland fields, newly planted crops or cut grain fields where the grain remains undamaged in post harvesting. The habitats within the site and surrounding area along the coast of East Lothian provide optimal habitat for pink-footed geese, and even if all the present pink-footed geese were disturbed by works at the site, there is widespread and abundant foraging habitat available to the geese both north and south of the site.



153. Given the potential for disturbance foraging pink-footed geese during the construction period, the impact on wintering pink-footed geese construction impacts are assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

*Wintering golden plover*

154. A total of 15 records were recorded during the wintering bird survey, totalling 893 individuals. Smit and Visser (1993) undertook a study of disturbance distance on roosting birds including curlew, shelduck, oystercatcher and dunlin in a number of situations, such as dog walkers, agricultural machinery and light aircraft. They concluded that most species remained undisturbed at 300 m although some species, such as curlew, may take flight at longer distances occasionally up to 530 m. Taking a precautionary disturbance zone of 500 m from all proposed works at the site a total of eight registrations were recorded during the surveys. Of the eight records, two large groups of 160 and 130 individuals were recorded and a total of 418 across the four survey visits.
155. Golden plover is a common species on the coastline around Scotland in the winter months, with an estimated winter population of 25,000-35,000 (Forrester *et al.*, 2015). Golden plover is a designated feature of the Firth of Forth SPA for its wintering population (2,949 individuals, JNCC (2018)). The SPA lies 5.9 km north-west of the site at its nearest point. Golden plovers are known to travel both during the day and at night away between feeding grounds and roost sites often in open fields and, although they are considered to have a core range of 3 km, they do have a maximum range of up to 11 km (SNH, 2016).
156. Given the presence of 418 individuals within the potential disturbance distance of works across four visits, this leads to an average of 104.5 birds within the zone of influence. A total of 105 individuals comprises 3.5% of Firth of Forth SPA designated population.
157. Due to their regular presence over the winter months it is considered likely that golden plover will be subjected to disturbance during construction although the impacts of the disturbance are likely to be limited given similar habitats are abundant and widespread within the surrounding area both to the north and south of the Proposed Development.
158. Given the potential for disturbance to roosting and foraging golden plover during the construction period, given the widespread similar habitats and the impact on wintering golden plover are assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

Sensitivity of the receptor

159. As per Table 8.9, the qualifying species (pink-footed goose and golden plover) of the Firth of Forth SPA and Ramsar are of International importance.
160. Wintering pink-footed goose and golden plover are considered to have a disturbance distance of 200-600 m and 200-500 m respectively (NatureScot, 2022). Even taking the higher figure of 600 m and 500 m, it is considered that if pink-footed geese or golden plover that are disturbed by construction works that there is significant alternate habitat north and south of the proposed works for birds to immediately relocate meaning despite their international importance both species are considered to be of low sensitivity.

Significance of the effect

161. As outlined above the magnitude of the impact on the Firth of Forth SPA wintering pink-footed goose and wintering golden plover populations as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be low. The effect (see Table 8.14) therefore is considered to be **negligible** and not significant in the context of the EIA regulations.

### Secondary mitigation and residual effect

162. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

### **DISPLACEMENT AND HABITAT LOSS TO ST ABB'S CASTLE TO FAST HEAD SPA: BREEDING HERRING GULL**

163. Disturbance and habitat loss during construction may lead to displacement of qualifying species of the SPA.

#### Construction Phase

#### Magnitude of impact

##### *Breeding herring gull*

164. Herring gull is a designated species as part of a breeding assemblage St Abb's Head to Fast Castle SPA (1,160 pairs, NatureScot (2020)). Herring gulls were common and widespread through the site and were recorded offshore, along the coast and in fields inland during both the breeding bird and wintering bird surveys. Birds were noted as foraging and loafing but no evidence of breeding was recorded. Given their presence along the coast and in coastal fields all year it is considered possible that breeding herring gull will be subject to disturbance during construction.
165. Woodward *et al.* (2019) indicate that a breeding season foraging range of 59 km for herring gull. This suggests that the birds foraging or loafing within the site both during the breeding and non-breeding season could belong to St Abb's Head to Fast Castle SPA. With a total of 710 individuals recorded across three visits this equates to an average of 237 birds (236.67) per visit which equals 10.2 % of the assemblage St Abb's Head to Fast Castle population. It should be noted this value is highly precautionary given it includes all birds recorded during the survey and also presumes all birds recorded were in fact from the assemblage St Abb's Head to Fast Castle SPA rather than from the closer Outer Firth of Forth and St Andrews Bay Complex SPA.
166. Herring gull is one of the most adaptable species to human activity and birds are regularly found close to people both in urban and rural environments, living on inhabited buildings and following farm machinery in order to forage in freshly tilled land. Despite regular presence on site, the adaptability of herring gulls means that they are unlikely to be significantly disturbed, with adverse impacts being limited to a temporary loss of foraging and loafing habitat during construction, this impact is considered to be direct. It is also possible that activities such as soil stripping may provide temporary beneficial effects though foraging opportunities, e.g. freshly exposed soil providing a source of invertebrates, such as worms.
167. Any loss of habitat is not considered significant because suitable agricultural habitats for this species are abundant and widespread within the surrounding area both to the north and south of the proposed works. In terms of disturbance, it is highly precautionary to conclude that all the birds recorded belong to the St Abb's Head to Fast Castle SPA population, and because there are significant areas of similar habitat available for any displaced birds to relocate to, as well as the fact that disturbance of the fields may provide foraging opportunities for gulls, construction impacts on herring gull are concluded are assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.



#### Sensitivity of the receptor

168. As per Table 8.9, the qualifying assemblage species of the St Abb's Head to Fast Castle SPA are of International importance. Breeding herring gull were not recorded during breeding bird surveys and therefore birds within the Site during both the breeding season will relate to bird either foraging or loafing. As discussed above, gulls are highly adaptable species and away from breeding grounds are highly unlikely to be subject to any significant disturbance due to construction works. With alternative habitat available for roosting and foraging gulls in the local area of the Site means breeding herring gull are considered to be of low sensitivity.

#### Significance of the effect

169. As outlined above the magnitude of the impact on the St Abb's Head to Fast Castle SPA herring gull population as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be low. The effect (see Table 8.14) therefore is therefore considered to **negligible** and not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

170. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

### **DISPLACEMENT AND HABITAT LOSS TO FORTH ISLANDS SPA: BREEDING HERRING GULL**

171. Disturbance and habitat loss during construction may lead to displacement of qualifying species of the Forth Islands SPA.

#### Construction Phase

#### Magnitude of impact

##### *Breeding herring gull*

172. Herring gull is a designated species as part of a breeding assemblage of the Forth Islands SPA (6,600 pairs, NatureScot (2020)). Herring gulls were common and widespread through the site and were recorded offshore, along the coast and in fields inland during both the breeding bird and wintering bird surveys. A total of 142 registrations of herring gull were recorded onshore during the breeding bird survey and totalled 710 individuals across the three visits. Birds were noted as foraging and loafing but no evidence of breeding was recorded. Given their presence along the coast and in coastal fields all year it is considered possible that herring gulls will be subject to disturbance during construction.
173. Woodward *et al.* (2019) indicate that a breeding season foraging range of 59 km for herring gull. This suggests that the birds foraging or loafing within the site during the breeding season could belong to the Forth Islands SPA. With a total of 710 individuals recorded across three visits this equates to an average of 237 birds per visit which equals just 1.8% of the Forth Island SPA population. It should be noted this value is highly precautionary given it includes all birds recorded during the survey and also presumes all birds recorded were in fact from the Forth Islands SPA rather than from the closer Outer Firth of Forth and St Andrews Bay Complex SPA.
174. Herring gull is one of the most adaptable species to human activity and birds are regularly found close to people both in urban and rural environments, living on inhabited buildings and following farm machinery in order to forage in freshly tilled land. Despite regular

presence on site, the adaptability of herring gulls means that they are unlikely to be significantly disturbed, with adverse impacts being limited to a temporary loss of foraging and loafing habitat during construction, this impact is considered to be direct. It is also possible that activities such as soil stripping may provide temporary beneficial effects though foraging opportunities, e.g. freshly exposed soil providing a source of invertebrates, such as worms.

175. Any loss of habitat is not considered significant because suitable habitats for this species are abundant and widespread within the surrounding area both to the north and south of the proposed works. In terms of disturbance, the fact that an average of only 1.8% of the Forth Islands SPA total designated herring gull population were recorded, combined with there being significant areas of suitable habitat available for any displaced birds to relocate to, as well as the fact the disturbance of the fields may in fact provide foraging opportunities for gulls, it is considered that construction impacts on herring gull are assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

#### Sensitivity of the receptor

176. As per Table 8.9, the qualifying assemblage species of the Forth Islands SPA are of International importance. Breeding herring gull were not recorded during breeding bird surveys and therefore birds within the Site during both the breeding season will relate to bird either foraging or loafing. As discussed above, gulls are highly adaptable species and away from breeding grounds are highly unlikely to be subject to any significant disturbance due to construction works. With alternative habitat available for roosting and foraging gulls in the local area of the Site means breeding herring gull are considered to be of low sensitivity.

#### Significance of the effect

177. As outlined above the magnitude of the impact on the Forth Islands SPA herring gull population as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be low. The effect (see Table 8.14) therefore is considered to be **negligible** and not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

178. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

### **DISPLACEMENT AND HABITAT LOSS OF WINTERING CURLEW**

179. Disturbance and habitat loss during construction may lead to displacement of roosting or foraging wintering curlew.

#### Construction Phase

#### Magnitude of impact

180. Curlew were frequently recorded during wintering bird surveys. Groups of up to 112 curlew were recorded roosting and foraging in fields with a total of 40 registrations totalling a combined 440 individuals recorded over the four wintering bird survey visits. Curlew is a common species around the coastline of Scotland in winter months: Forrester *et al.* (2012) estimate an approximate 85,700 wintering curlew in Scotland of which an estimated 3,182

birds are present in the Lothians region. Curlew generally forage along the coast and will fly to roost in open fields in winter when feeding grounds are covered by the incoming tide, generally preferring roosting on fields with a short sward, enabling a clear line of sight for potential predators.

181. Smit and Visser (1993) undertook a study of disturbance distance on roosting birds including curlew, shelduck, oystercatcher and dunlin in a number of situations, such as dog walkers, agricultural machinery and light aircraft. They concluded that most species remained undisturbed at 300 m although some species, such as curlew, may take flight at longer distances occasionally up to 530 m. In their review of disturbances distance, NatureScot (2022) outline a disturbance distance of wintering curlew of between 200-650 m.
182. Taking a disturbance zone of 500 m from all proposed works at the site, this would include a total of 19 registrations including 182 individuals across the four survey visits. Given this is across four visits it means that an average of 46 (45.5) curlew on average may be disturbed by the Proposed Development. This equates to 1.45% and 0.05% of wintering Lothians and Scottish curlew populations.
183. Given their regular presence over the winter months it is considered likely that curlew will be subjected to disturbance during construction, this impact is considered to be direct, although with only 1.45% of the Lothians and 0.05% of the Scottish wintering population present the impacts of the disturbance are likely to be limited and impacts reduced further given similar habitats are present and widespread within the surrounding area both to the north and south of the Proposed Development.
184. Given the potential for disturbance to roosting curlew during the construction period are concluded are assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

#### Sensitivity of the receptor

185. As per Table 8.9, wintering curlew are of Local importance. As discussed above, wintering curlew are subject to disturbance at between 200-650 m (NatureScot, 2022). Given significant alternate habitat north and south of the Site, wintering curlew are assessed as being of low sensitivity.

#### Significance of the effect

186. As outlined above the magnitude of the impact on the local and Scottish wintering curlew population as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be low. The effect (see Table 8.14) therefore is therefore considered to **barely perceptible** and not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

187. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

### **DISPLACEMENT AND HABITAT LOSS OF WINTERING LAPWING**

188. Roosting or foraging lapwing may be displaced from the site during construction due to disturbance or direct habitat loss.

## Construction Phase

### Magnitude of impact

189. Lapwing were frequently recorded during the wintering bird surveys. However, no evidence of breeding activity was confirmed in the breeding bird walkover surveys.
190. Groups of up to 220 lapwing were recorded roosting and foraging in fields with a total of 11 registrations of a combined 659 individuals recorded over the four wintering bird survey visits. Lapwing roost and forage on open fields in winter, generally preferring either arable or grassland fields which provide the suitable invertebrates for foraging and roosting on fields with a short sward, enabling a clear line of sight for potential predators. Lapwing is a common species around the coastline of Scotland in winter months: Forrester *et al.* (2012) estimate an approximate 65,000 – 69,000 wintering lapwings in Scotland of which an estimated 2,101 in the Lothians region. Taking an average of 165 individuals across the four wintering bird survey visits this comprises 7.8% of the Lothians winter count and 0.25% of the Scottish wintering population.
191. Smit and Visser (1993) undertook a study of disturbance distance on roosting birds including curlew, shelduck, oystercatcher and dunlin in a number of situations, such as dog walkers, agricultural machinery and light aircraft. They concluded that most species remained undisturbed at 300 m although some species, such as curlew, may take flight at longer distances occasionally up to 530 m. Taking a precautionary disturbance zone for a similar species (curlew) of 500 m from all proposed works at the site, this would include a total of two registrations including 234 individuals across the four survey visits. Given this is across four visits it means that an average of 58.5 lapwings on average may be disturbed by the Proposed Development, this impact is considered to be direct. This equates to 2.81% and 0.09% of wintering Lothians and Scottish lapwing populations, respectively, and is not considered to be material.
192. Potential disturbance during construction may result in displacement from the areas of land clearance and an area adjacent to it, as discussed above this can be up to 500m. Any impacts of the disturbance to roosting birds are likely to be limited because similar habitats are abundant and widespread within the surrounding area both to the north and south of the Proposed Development. Given the potential for disturbance to roosting lapwing during the construction period are concluded are assessed to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

### Sensitivity of the receptor

193. As per Table 8.9, wintering lapwing are of Local importance. As discussed above, wintering lapwing are subject to disturbance at between 200-650 m using curlew as a similar species (NatureScot, 2022). Given significant alternate habitat north and south of the Site, wintering lapwing are assessed as being of low sensitivity.

### Significance of the effect

194. As outlined above the magnitude of the impact on the local and Scottish wintering lapwing population as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be low. The effect (see Table 8.14) therefore is therefore considered to **barely perceptible** and not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

195. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

### **DISPLACEMENT AND DISTURBANCE OF PEREGRINE**

196. Breeding or foraging peregrine may be displaced from the site during construction due to disturbance or direct habitat loss.

#### Construction Phase

#### Magnitude of impact

197. Breeding surveys in 2020 identified an active nest site located over 1 km from the nearest proposed works (See Volume 5, Confidential Appendix Figure 8.1.3). In order to confirm the presence/ absence of breeding peregrine prior to construction commencing, surveys will be conducted in each breeding season during construction (See Section 8.10). Should the nest site be active, no site works will be allowed within 500-750 m of the breeding location, which is the recommended no-disturbance buffer for heavy construction activities for peregrine (NatureScot, 2022) and if required an agreed working buffer will be confirmed by NatureScot. There is not considered to be any suitable breeding habitat within 1 km of the site works and peregrines are generally site faithful (Hardey *et al.*, 2013).
198. Peregrines were registered occasionally during the desk based and field surveys with birds using the site to hunt and to commute to hunting grounds elsewhere in the local area. Peregrine will generally hunt within 2 km of their nest locations during the breeding season but extend up to 6 km depending on prey availability (Hardey *et al.*, 2013).
199. Peregrines are highly adaptable and will hunt in almost all habitats for prey including highly urbanised habitats with pigeon species the preferred prey. With a wide range of hunting habitats in the local area, the loss of, or disturbance to, hunting habitat during the construction phase is unlikely to have any impact on foraging peregrine. Given the limited impact on foraging and breeding peregrine during the construction period, the impact on peregrine are concluded to be of short-term duration, reversible and will affect the receptor directly. The magnitude is therefore considered to be barely perceptible.

#### Sensitivity of the receptor

200. As per Table 8.9, wintering peregrine are of Local importance. As a schedule 1 species, breeding peregrine are assessed to be of high sensitivity.

#### Significance of the effect

201. As outlined above the magnitude of the impact on the local and Scottish breeding or foraging peregrine population as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be high. The effect (see Table 8.14) therefore is considered to be **negligible** and not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

202. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

## **DISTURBANCE AND HABITAT LOSS TO BREEDING BIRD ASSEMBLAGE**

203. Both the permanent and temporary removal of habitats, hedgerow and grassland, some of which are suitable breeding habitats for BoCC red listed species (such as yellowhammer, song thrush and skylark) as well as general works during construction and may lead to some disturbance of breeding birds due to noise disturbance during the works.

### Construction Phase

#### Magnitude of impact

204. A total of 26 species were recorded as displaying breeding behaviour during the breeding bird survey in addition to peregrine discussed above (none of which are listed under Annex 1 of the Birds Directive) or Schedule 1 of the WCA, the highest level of protection for breeding birds in the UK. Of the 26 species recorded, eight of the recorded species are BoCC Red listed species and a further four are Amber listed species; of these 12, ten are also SBL species.
205. The Proposed Development requires the temporary removal of habitats, hedgerow and grassland, some of which are suitable breeding habitats for BoCC Red and Amber listed species (such as yellowhammer, song thrush and skylark) and may also lead to some disturbance of breeding birds due to noise disturbance during the works. The area of habitat needing to be removed (permanent habitat loss 12.95 ha, temporary habitat loss 45.57 ha – see Volume 1, Chapter 7, Section 7.11) is only a small percentage of these habitats within the site (2.8%, 9.7% respectively) and insignificant within the wider area and as the cable installation progresses along the onshore cable route the habitats will be reinstated as construction progresses.
206. Any temporary or permanent loss of hedgerow and grassland habitat will reduce the available nesting and foraging habitat for breeding birds and cause temporary disturbance in the short term with reinstatement meaning these habits are restored less than five years.
207. There will be a small section of permanent habitat loss for the sub-station, totalling 12 ha almost entirely consisting of arable or improved grassland which is sub-optimal breeding habitat for birds with low densities of ground nesting species utilising improved grassland to nest. In terms of the wider area this permanent habitat loss is insignificant and this combined with the commitment to create new and enhance habitats around the area of the onshore substation means the impacts will be significantly reduced.
208. In addition the commitment to reinstate and enhance habitats along the onshore cable route with an aim to improve overall habitat condition (see Section 89-94 above) by promoting conditions for better foraging resource, shelter and nesting habitat for both the breeding bird assemblage.
209. Given the commitment to reinstate and enhance habitats, the effects on breeding birds are considered to be highly localised (given the staged approach to progressing construction), short-term temporal and reversible. The magnitude is therefore considered to be barely perceptible.

#### Sensitivity of the receptor

210. As per Table 8.9, breeding bird assemblage are of Local importance. If works are undertaken during the breeding season means potential disturbance to the breeding bird assemblage is considered to be of medium sensitivity.



#### Significance of the effect

211. As outlined above the magnitude of the impact on the breeding bird assemblage population as a result of construction is deemed to be barely perceptible and the sensitivity is considered to be medium. The effect (see Table 8.14) is therefore considered to be **negligible** and not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

212. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

### 8.11.1. PROPOSED MONITORING

213. No ornithology monitoring to test the predictions made within the assessment of likely significant effects on ornithology is considered necessary.

## 8.12. CUMULATIVE EFFECTS ASSESSMENT

### 8.12.1. METHODOLOGY

214. The Cumulative Effects Assessment (CEA) takes into account the effects associated with the Proposed Development together with other relevant plans, projects and activities. Cumulative effects are therefore the combined effect of the Proposed Development in combination with the effects from a number of different projects, on the same receptor or resource. Please see Volume 1, Chapter 2 of the Onshore EIA Report for detail on CEA methodology.
215. A total of three projects and plans have been selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see Volume 4, Appendix 2.4). Each project or plan has been considered on a case by case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

#### Developments Scoped Out of Assessment

216. Crystal Rig IV wind farm (Planning application ref: 18/00004/SGC) lies 7.9 km south-west of the site in upland areas, comprising a combination of moorland and forestry habitats. With the site being upland areas with significantly different habitats from the lowland farmland within and surrounding the site, they also support different breeding and wintering bird assemblages. The results of the ornithology surveys at Crystal Rig IV wind farm showed little overlap with surveys at the Proposed Development due to the differing habitats, with only low numbers of herring gull in the winter months being the only overlap, curlew were recorded as a breeding species but not recorded in the non-breeding season (Fred Olsen Renewables, 2018). The fact that there is no significant overlap in habitats and hence species mean that the two locations have different breeding and wintering bird assemblages and the significant distance between the two wind farms and the Proposed Development mean this site is scoped out of the cumulative assessment.

#### Developments Scoped Into Assessment

217. A planning application for a cable route and sub-station which overlaps the site (SPEN Eastern Link Project, 22/00852/PPM & 22/00002/SGC) is in ongoing dialogue and



breeding bird and wintering bird surveys were completed in 2021. The cable route and proposed sub-station location overlapped with the site which was covered by surveys for the Proposed Development. A similar range of species were recorded during the bird surveys and the EIA report scoped out all designated sites and species bar wintering curlew, breeding peregrine falcon and breeding herring gull. The predicted impacts on all three receptors were concluded to be minor and not significant during construction, operation and cumulative.

218. Another similar scheme is a (currently withdrawn) application for the construction of a 400 kilovolt (kV) gas insulated switchgear (GIS) substation and associated works (SPEN Branxton Grid Substation, 21/01569/PM). This works area which would overlap the current site but the planning application has not been submitted to date. The withdrawn EIA predicts no significant effects on birds species with basic mitigation outlined to fully off-set both the breeding bird and wintering bird assemblages including herring gull, peregrine and curlew (SP Energy Networks, 2021).
219. The specific projects scoped into the CEA for ornithology, are outlined in Table 8.16.

#### Offshore Proposed Developments

##### 220. Berwick Bank Offshore

- up to 307 wind turbines (each comprising a tower section, nacelle and three rotor blades) and associated support structures and foundations;
- up to ten Offshore Substation Platforms (OSPs) and associated support structures and foundations;
- estimated scour protection area of up to 2,280 m<sup>2</sup> per wind turbine and 11,146 m<sup>2</sup> per OSP;
- a network of inter-array cabling linking the individual wind turbines to each other and to the OSPs plus inter-connections between OSPs (approximately 1,225 km of inter-array cabling and 94 km of interconnector cabling); and
- up to eight offshore export cables connecting the OSPs to Skateraw Landfall. It is possible that either High Voltage Alternating Current (HVAC) or High Voltage Direct Current (HVDC) cables will be used at the Proposed Development. The options currently considered include:
  - up to eight HVAC offshore export cables; or
  - up to four HVDC offshore export cables.
- Construction to likely start 2025 with an eight years build programme.

**Table 8.16: List of Other Projects Considered Within the CEA for Ornithology**

Project/Plan	Application Ref	Description	Status	Location	Construction Timescale
<b>Tier 1</b>					
Berwick Bank Offshore Infrastructure	N/A	Offshore infrastructure and associated works of the Berwick Bank Project	Application	Offshore	2025-2033
<b>Tier 2</b>					
SPEN Eastern Link Project – Converter Station, Cable Route & Overhead Line	22/00852/PPM & 22/00002/SGC	New 525kV electricity converter station underground cables and associated works  Planning permission in principle for a converter station and associated development including a landfall at Thorntonloch and connecting buried cabling, all in association with the Scottish Power Eastern Link 1 project, for a new subsea High Voltage Direct Current (HVDC) link  Also includes S37 application (22/00002/SGC) to install and keep a new 265m section of 400 kV overhead line east of the proposed Branxton Grid substation	Application	Land Adjacent To Dunbar Landfill Site Oxwell Mains Dunbar East Lothian EH42 1SW	2024-2027
SPEN Branxton Grid Substation	21/01569/PM	Construction of a 400 kilovolt (kV) gas insulated switchgear (GIS) substation and associated works	Application (Application Withdrawn but expected to be submitted again in near future)	Fields To The South Of Thornton Bridge Sealing End Compound Branxton	2023-2026
Crystal Rig IV Wind Farm	18/00004/SGC	Construction and operation of crystal rig wind farm (phase iv) – 11 turbines	Consented	5 km north of Cranshaw village	Unknown. Worst case assume to be overlapping.

### 8.12.2. MAXIMUM DESIGN SCENARIO

221. The maximum design scenarios assessed here based on the details in Table 8.16 above are those having the potential to result in the greatest effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the details provided in Volume 1, Chapter 5 of the Onshore EIA Report as well as the information available on other projects and plans, to inform a 'maximum design scenario'. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope, to that assessed here, be taken forward in the final design scheme.
222. The impacts of the maximum design scenario are outlined in Section 8.8 above and the same impacts considered into cumulative effects assessment.

### 8.12.3. CUMULATIVE EFFECTS ASSESSMENT

223. The potential cumulative impacts arising from the construction, operational and maintenance phases of the Proposed Development and an assessment of the likely significance of the effects of the Proposed Development on ornithological receptors caused by each identified impact is given below.
224. The predicted impacts on all receptors during construction due to disturbance and habitat loss or displacement due to habitat loss during operation of the Proposed Development are predicted to be barely perceptible and not significant. The predicted impacts during operation are predicted to be less than during construction and also not significant for all receptors. The predicted impacts on all IOFs for the three schemes included in the cumulative assessment are also predicted to be not significant.

## DISTURBANCE OR HABITAT LOSS: ALL SPECIES

### Construction & Operational Phase

225. Cumulative impacts on roosting or foraging bird species during construction and operation activities due to disturbance or direct habitat loss.

#### Magnitude of impact

226. No significant impacts were predicted for any species at the scoped in cumulative projects displayed in Table 8.16. The assessment above predicted there would be no significant impacts on any species during construction and operation of the Proposed Development.
227. It is considered that the cumulative construction and operational are assessed to be of short-term duration, reversible and will affect the receptors directly. The magnitude is therefore considered to be barely perceptible.

#### Sensitivity of the receptor

228. Sensitivity of all species is as set out in Table 8.9.

#### Significance of the effect

229. The cumulative effect on all species as a result of construction and operation is considered to be **negligible** and therefore not significant in the context of the EIA regulations.

#### Secondary mitigation and residual effect

230. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

#### 8.12.4. PROPOSED MONITORING

231. No monitoring to test the predictions made within the assessment of likely significant effects on ornithology is considered necessary.

### **8.13. INTER-RELATED EFFECTS**

232. A description of the likely inter-related effects arising from the Proposed Development on ornithology is provided in Volume 4, Appendix 15.2 of the Onshore EIA Report.

### **8.14. SUMMARY OF IMPACTS, MITIGATION MEASURES, LIKELY SIGNIFICANT EFFECTS AND MONITORING**

233. Information on onshore ornithology within the onshore ornithology Survey area was collected through a desktop review and site surveys including breeding bird surveys and wintering bird surveys and consultation on the scope and area of survey with NatureScot. Table 8.17 presents a summary of the potential impacts, mitigation measures and the conclusion of likely significant effects in EIA terms in respect to onshore ornithology. The impacts assessed include: habitat loss, disturbance and displacement. Overall, it is concluded that there will be no likely significant effects arising from the Proposed Development during the construction, operation and maintenance or decommissioning phases.
234. Table 8.18 presents a summary of the potential cumulative impacts, mitigation measures and the conclusion of likely significant effects on onshore ornithology in EIA terms. The cumulative effects assessed include: habitat loss, disturbance and displacement. Overall, it is concluded that there will be no likely significant cumulative effects from the Proposed Development alongside other projects/plans.

**Table 8.17: Summary of Likely Significant Environmental Effects, Mitigation and Monitoring**

Description of Impact	Phase			Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
	C	O	D						
Firth of Forth SPA and Ramsar	✓			Barely Perceptible	n/a	Negligible	None	-	None
Outer Firth of Forth and St Andrews Bay Complex SPA	✓			Barely Perceptible	n/a	Negligible	None	-	None
St Abb's Castle to Fast Head SPA	✓			Barely Perceptible	n/a	Negligible	None	-	None
Forth Islands SPA	✓			Barely Perceptible	n/a	Negligible	None	-	None
Wintering Pink-footed goose (Firth of Forth SPA qualifying)	✓			Barely Perceptible	Low	Negligible	None	-	None
Wintering Golden plover (Firth of Forth SPA qualifying)	✓			Barely Perceptible	High	Negligible	None	-	None
Wintering ( <i>the wider-countryside population</i> ) Curlew	✓			Barely Perceptible	Low	Negligible	None	-	None
Wintering ( <i>the wider-countryside population</i> ) Lapwing	✓			Barely Perceptible	Low	Negligible	None	-	None
Wintering Black-headed gull (Outer Forth SPA qualifying)	✓			Barely Perceptible	Low	Negligible	None	-	None
Wintering Common gull (Outer Forth SPA qualifying)	✓			Barely Perceptible	Low	Negligible	None	-	None
Breeding and Wintering Herring gull (Outer Forth / Forth islands / St Abb's Castle to Fast Head SPA qualifying)	✓			Barely Perceptible	Low	Negligible	None	-	None
Wintering Eider (Outer Forth SPA qualifying)	✓			Barely Perceptible	Low	Negligible	None	-	None
Wintering Goldeneye (Outer Forth SPA qualifying)	✓			Barely Perceptible	Low	Negligible	None	-	None
Wintering Red-breasted merganser (Outer Forth SPA qualifying)	✓			Barely Perceptible	Low	Negligible	None	-	None
Peregrine	✓			Barely Perceptible	High	Negligible	None	-	None
Breeding bird assemblage	✓			Barely Perceptible	Medium	Negligible	None	-	None
Breeding bird assemblage		✓		Barely Perceptible	Medium	Negligible	None	-	None
All other species		✓		No impact	Various as above	Negligible	None	-	None

**Table 8.18: Summary of Likely Significant Cumulative Environment Effects, Mitigation and Monitoring**

Description of Impact	Phase			Cumulative Impact Assessment Tier	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
	C	O	D							
Impacts on all species	✓	✓		Tier 2	Barely Perceptible	Various	Negligible	-	Negligible	None

## 8.15. REFERENCES

### Literature

Bibby C.J., Burgess N.D., Hill D.A. and Mustoe S.H. (2000). Bird Census Techniques, 2nd Edition. Academic Press, London.

CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1, updated September 2019. Chartered Institute of Ecology and Environmental Management, Winchester. Available online at: <https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/>.

East Lothian Council (2017). East Lothian Biodiversity Report. Available at: [https://www.eastlothian.gov.uk/downloads/file/23321/biodiversity\\_report\\_2017](https://www.eastlothian.gov.uk/downloads/file/23321/biodiversity_report_2017)

East Lothian Biodiversity Partnership (2008). East Lothian Biodiversity Action Plan 2008-13. August 2008.

Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746. Available at: [britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf](http://britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf).

Forester, R.W., Andrews, I.J., McInerney, C.J., Murray, R.D., McGowan, R.Y., Zonfrilla, B., Betts, M.W., Jardine, D.C. & Grundy, D.S. (EDS) 2012. The Digital Birds of Scotland. the Scottish Ornithologists Club, Aberlady.

Fred Olsen Renewables (2018). Environmental Impact assessment Report. Chapter 7: Ornithology.

Gilbert G, Gibbons DW & Evans J (2011). Bird monitoring methods, a manual of techniques for key UK species. RSPB, Sandy, Bedfordshire UK.

Hardey, J., Crick, H., Riley, H., Etheridge, B., and Thompson, D. (2013) Raptors: A field guide to surveys and monitoring. The Stationery Office; 3rd revised edition.

JNCC (2018) SPA Description - Firth of Forth. Available online at <http://jncc.defra.gov.uk/default.aspx?page=1979>.

MAGIC: Nature on the Map (2020). Interactive Map. Accessed April 2021. Available online at: <https://magic.defra.gov.uk/magicmap.aspx>.

Merkel F.R., Mosbech A. & Riget F. (2009). Common Eider *Somateria mollissima* feeding activity and the influence of human disturbances. *Ardea*, 97(1): 99–107.

Met Office (2022). Effects of climate change: Available at: <https://www.metoffice.gov.uk/weather/climate-change/effects-of-climate-change>.

NatureScot (2020). SiteLink Map Search. Available online at: <https://sitelink.nature.scot/map>

NatureScot & JNCC (2021). Outer Firth of Forth and St Andrews Bay Complex Special Protection Area (SPA): Draft Conservation Objectives. Joint publication: NatureScot & JNCC, Nov. 2021. Available online at: <https://sitelink.nature.scot/site/10478>

NatureScot (2022). Disturbance Distances in selected Scottish Bird species. Available online at: <https://www.nature.scot/doc/disturbance-distances-selected-scottish-bird-species-naturescot-guidance>

National Biodiversity Network (NBN) Atlas (2022). NBN Atlas. Available online at: <https://nbnatlas.org/>. [Accessed April 2021].

Ruddock & Whitfield (2007). A review of disturbance distances in selected bird species.



Scottish Government (2000). Planning for Natural Heritage: Planning Advice Note 60. Available online at: <https://www2.gov.scot/Publications/2000/08/pan60-root/pan60> (accessed February 2022).

Scottish Government (2023). National Planning Framework 4. Available online at: <https://www.gov.scot/publications/national-planning-framework-4/> (accessed February 2023).

Smit, C. J. & Visser, G. J. M. 1993. Effects of disturbance on shorebirds a: summary from existing knowledge from the Dutch Wadden Sea and Delta area. Wader Study Group Bull. 68: 6-19.

SNH (2016). Assessing Connectivity with Special Protection Areas (SPAs). Scottish Natural heritage. Available online at: <https://www.nature.scot/assessing-connectivity-special-protection-areas>

SNH (2017). Recommended Bird Survey Methods to inform Impact Assessment of Onshore Wind Farms. SNH Guidance Note Series

SP Energy Networks (2021). Eastern Link 1 Northern point of Construction substation Environmental Impact Assessment Report. December 2021.

Thaxter CB, Lascelles B, Sugar K, Cook ASCP, Roos S, Bolton M, Langston RHW & Burton NHK (2012). Seabird foraging ranges as a preliminary tool for identifying candidate Marine protected Areas. Biological Conservation 156: 53-61.

Wilson, M. W., Austin, G. E., Gillings S. and Wernham, C. V. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned report number SWBSG\_1504. pp72. Available from: [www.swbsg.org](http://www.swbsg.org)

Woodward I, Thaxter CB, Owen E & Cook ASCP (2019). Desk-based revision of seabird foraging ranges used for HRA screening. Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate. BTO Research Report No. 724, 139pp.

