Volume 2: Chapter 9 – Ornithology

VOLUME 2, CHAPTER 9: ORNITHOLOGY

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Figure 9.4: Winter Goose Foraging Surveys.

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Appendix 9.1: Ornithology Technical Report.

9. ORNITHOLOGY

9.1 Introduction

9.1.1 This Chapter considers the potential effects of the Proposed Development on ornithology.

9.1.2 This Chapter presents ornithological information relevant to the Proposed Development. The assessment constitutes an Ornithological Impact Assessment (OIA) and includes potential effects on protected bird species, including those associated with relevant Designated Sites of ornithological interest.

9.1.3 This Chapter's objectives with regards to the Proposed Development are as follows:

- to describe the ornithological baseline (including desk-based studies and field surveys);
- to describe how consultation has informed the scope of the assessment;
- to describe the assessment methodology and significance criteria used in assessing effects on ornithological features;
- to describe the mitigation measures proposed to address potential significant effects (if required); and
- to assess the residual effects remaining, following implementation of mitigation.

9.1.4 This Chapter should be read in conjunction with **Volume 2, Chapter 3: Project Description** of the Environmental Impact Assessment Report (EIAR), for full details of the Proposed Development.

9.1.5 This Chapter is supported by the following figures which are referenced throughout the text and listed below:

- **Figure 9.1: The Proposed Development and Ornithology Survey Area;**
- **Figure 9.2: Ornithological Designated Sites within 20 km and 5 km;**
- **Figure 9.3: Flight Activity Surveys;** and
- **Figure 9.4: Winter Goose Foraging Surveys.**

9.1.6 The following appendix is also referred to throughout the Chapter:

- **Volume 4, Appendix 9.1: Ornithology Technical Report.**

9.1.7 The OIA has been undertaken by Land Use Consultants (LUC). This OIA was prepared and overseen by experienced ornithological consultants with appropriate memberships of the Chartered Institute of Ecology and Environmental Management (CIEEM), and experience of impact assessments in the context of wind farm, grid and mixed-use developments with respect to ornithology. Field surveys and data collection were undertaken by ornithologists with extensive experience and training in undertaking ornithological surveys for grid and renewable energy projects. Further details can be found in **Volume 2, Chapter 5: EIA Process and Methodology**.

9.1.8 The following terminology will be referred to throughout this Chapter:

- **Site**: Defined as the Proposed Development plus Limit of Deviation (LOD) of up to 200 m; refer to **Volume 3**, **Figure 3.1: Proposed Development for which Section 37 Consent and Deemed Planning Permission is sought.**
- **Proposed Development**: The infrastructure including the access tracks, temporary diversions of the OHL and their temporary towers and temporary construction compounds (see **Volume 2, Chapter 3: Project Description**);
- **Breeding Bird Survey Area (BBS Area):** The Site plus a 250 m buffer;
- **Flight Activity Area**: Survey area to 10 km distance from SPAs/Ramsar sites which coincide with the Proposed Development (collectively with the BBS Area designated the **Survey Area**); and
- **Study Area**: as defined by best practice (detailed in **Volume 4, Appendix 9.1: Ornithology Technical Report**) up to 20 km from the Site, as shown in **Volume 3, Figure 9.2: Ornithological Designated Sites within 20 km and 5 km**.

9.2 Scope of the Assessment

Effects Assessed in Full

9.2.1 This OIA concentrates on the likely effects of construction and operation of the Proposed Development upon the ornithological receptors identified in the Scoping Report (**Volume 4, Appendix 6.1: Scoping Report**) and is informed by review of desk-based information and field surveys, project design and Embedded Mitigation.

9.2.2 The Environmental Impact Assessment (EIA) Scoping process, baseline conditions and professional judgement have identified the following effects for detailed assessment:

- Direct and indirect effects during construction on non-passerine, Red-listed species of Birds of Conservation Concern (BoCC[1]), through habitat loss, fragmentation and disturbance during breeding and roosting, due to construction activities via lighting, noise, pollution or visual disturbance effects;
- Direct and indirect effects during operation (including collision risk) on relevant statutory Designated Sites and their qualifying features, where potential connectivity has been identified;
- Cumulative effects during construction on ornithological receptors, where assessment has not ruled out potential impacts from the Proposed Development; and
- Cumulative effects during operation on ornithological receptors, where assessment has not ruled out potential impacts from the Proposed Development.

Effects Scoped Out

9.2.3 Potential effects have been 'scoped out' of detailed assessment, as proposed in the EIA Scoping Report, and subsequently confirmed by Scottish Ministers in the Scoping Opinion (following consultation with statutory consultees including NatureScot; refer to **Table 9.1: Summary of Consultation of relevance to Ornithology** and **Volume 4, Appendix 9.1: Ornithology Technical Report**). Exclusion of these potential effects has been based on desk-based studies and field survey work undertaken, professional judgement of the EIA team (**Volume 4, Appendix 5.1: The EIA Team**), experience from other relevant projects and policy guidance, in addition to feedback received from consultees:

- Direct and indirect effects on all bird species during operation through habitat loss and fragmentation, displacement from foraging areas, and disturbance during breeding and roosting;
- Direct and indirect effects during construction upon Schedule 1/Annex 1 bird species through habitat loss and fragmentation, displacement from foraging areas, and disturbance during breeding and roosting, due to construction activities via lighting, noise, pollution or visual disturbance;
- Direct and indirect effects during construction upon relevant statutory Designated Sites and their qualifying features through habitat loss and fragmentation, displacement from foraging areas, and disturbance during breeding and roosting, due to construction activities via lighting, noise, pollution or visual disturbance;
- Direct and indirect effects during construction on passerines through habitat loss and fragmentation, displacement from foraging areas, and disturbance during breeding and roosting, due to construction activities via lighting, noise, pollution or visual disturbance.
- Direct effects during operation of a barrier effect on all breeding, roosting and foraging birds; and
- Direct effects during operation of electrocution on all breeding, roosting and foraging birds.

9.2.4 It is important to note, however, that whilst effects are scoped out because there is no potential for a Significant effect in EIA terms, the need to ensure compliance with nature conservation legislation remains. The presence and potential presence of all bird species within the Proposed Development will require consideration within the Ecological and Ornithological Management Plan (EOMP). This will be prepared by the Principal Contractors pursuant

[1] Stanbury, A.J. Burns, F., Aebischer, N.J., Baker, H., Balmer, D., Brown, A.F., Dunn, T., Lindley, P., Murphy, M., Noble, D.G., Owens, R. & Quinn, L., 2024. *The status of the UK's breeding seabirds: an addendum to the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain.* [Online] *British Trust for Ornithology*. Available at: https://www.bto.org/our-science/publications/peer-reviewed-papers/status-uk%E2%80%99s-breeding-seabirds-addendum-fifth-birds.

to the terms of contract and to discharge consent conditions, which will include adherence to SSEN Transmission's Bird Species Protection Plan (BSPP[2]), and appropriate measures that may be necessary to ensure legislative compliance. As such, once operational, operations and maintenance activities associated with the Proposed Development will conform with SSEN Transmission's Species Protection Plans (SPPs) and General Environmental Management Plans (GEMPs), as a requirement of SSEN Transmission teams or contractors engaged to deliver maintenance.

Habitats Regulations Appraisal Screening

9.2.5 The potential for functional connectivity between the Proposed Development and the Designated Sites listed in **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development** has been considered. As such, the relevant steps of the Habitats Regulations have been considered in relation to Special Protection Areas (SPAs) and the coincident Ramsar sites. Updated policy on the protection of Ramsar Sites came into force on 9 July 2025[3] such that all listed Ramsar Sites in Scotland should be treated as if they were European sites for the purposes of land use change and decision making. As such, this updated policy position is '*a material consideration in the determination of relevant planning and consenting applications in relation to development which impacts on Ramsar sites*'[4].

9.2.6 The method for assessing Likely Significant Effects (LSE) on an SPA and/or Ramsar site is different from that employed for wider-countryside ecological interests. The *Habitats Directive* is transposed into domestic legislation by the *Conservation (Natural Habitats, &c.) Regulations 1994* (as amended in Scotland and known as the 1994 Regulations). The Conservation of Habitats and Species Regulations 2017 (known as and subsequently referred to herein as the "Habitats Regulations") have replaced the 1994 Regulations for specific activities on land in Scotland. These provisions apply in respect of decisions by the Scottish Ministers to grant statutory Consent for development authorised under Section 37 of the Electricity Act 1989, which includes not only the necessary Section 37 Consent but also deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997. The Habitats Regulations include a number of stages to be taken by the competent authority[5] before granting consent (these are referred to here as a Habitats Regulations Appraisal (HRA)). A HRA is required if there is a likely significant effect (in the Habitats Regulations sense) to a SPA or Ramsar site.

9.2.7 NatureScot's response to Scoping consultation (refer to **Table 9.1: Summary of Consultation of relevance to Ornithology**) advised that the Proposed Development, although located on land with potential connectivity to SPAs and Ramsar sites, requires less new OHL than the existing amount requiring removal and all occurring in the same vicinity, with SPA/Ramsar birds habituated to the presence of OHLs. As such, NatureScot supports a conclusion of no likely significant effect of the Proposed Development (during construction and operation) on SPAs. This conclusion can also be applied to the coincident Ramsar sites (refer to **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**), where, in all cases, the qualifying features (noted as interest features) for which potential functional connectivity has been identified are the same species, from the same populations as those for the coincident SPAs (namely goose species).

9.3 Assessment Methodology

Legislation, Policy and Guidance

Legislation

9.3.1 Relevant legislation and guidance documents have been reviewed and considered as part of this OIA. Of particular relevance are:

[2] SSEN Transmission, 2023. *Bird Species Protection Plan* – TG-NET-ENV-505.
[3] NatureScot, 2023. *The habitats directive and habitats regulations*. [Online] Available at: http://nature.scot/professional-advice/protected-areas-and-species/protected-species/legal-framework/habitats-directive-and-habitats-regulations
[4] Scottish Government. 2025. Wetlands – protecting Ramsar sites: updated Scottish Government policy. [Online} Available at: Wetlands - protecting Ramsar sites: updated Scottish Government policy - gov.scot
[5] A competent authority "includes any Minister, government department, public or statutory undertaker, public body of any description, or person holding a public office (from NatureScot online: https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra)

- *The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations)*[6];
- *The European Council Directive on the Conservation of Wild Birds 2009/147/EC (the Birds Directive)*[7];
- *The Conservation of Habitats and Species Regulations 2017*[8];
- *The Wildlife and Countryside Act 1981 (WCA) (as amended)*[9];
- *The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019*[10]; and
- *The Nature Conservation (Scotland) Act 2004 (as amended*[11]).

9.3.2 Key elements of relevant legislation are detailed within **Volume 4, Appendix 9.1: Ornithology Technical Report.**

Policy

9.3.3 The following policies of relevance to the assessment have been considered:

- *National Planning Framework 4* (Policy 4, 2023)[12];
- *Angus Council Local Development Plan*[13];
- *PAN 60: Planning for Natural Heritage (Scottish Government 2000)*[14];
- *Nature Conservation: Implementation in Scotland of the Habitats and Birds Directives: Scottish Executive Circular 6/1995 as amended (June 2000)*[15]; and
- *Tayside Local Biodiversity Action Plan*[16].

Guidance

9.3.4 This assessment is carried out in accordance with the principles contained within the following documents:

- NatureScot Guidance: Environmental Impact Assessment Handbook (2018)[17];
- NatureScot Guidance: Assessing connectivity with SPAs (SNH, 2016)[18];
- NatureScot Guidance: Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds (SNH, 2016)[19];

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[6]UK Government, 2017. *Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017* [Online} Available at: https://www.legislation.gov.uk/ssi/2017/101/contents

[7] UK Government, 2009. *Directive 2009/147/EC of the European Parliament and of the Council*. [Online] Available at: https://www.legislation.gov.uk/eudr/2009/147/contents.

[8] UK Government, 2017. *The Conservation of Habitats and Species Regulations 2017*. [Online] Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents

[9] UK Government, 1981. *Wildlife and Countryside Act 1981*. [Online] Available at: https://www.legislation.gov.uk/ukpga/1981/69.

[10] *The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019*. [Online] Available at: https://www.legislation.gov.uk/sdsi/2019/9780111041062

[11] UK Government, 2004. Nature Conservation (Scotland) Act 2004. [Online] Available at: https://www.legislation.gov.uk/asp/2004/6/contents.

[12] Scottish Government, 2023. National Planning Framework 4. [Online] Available at: https://www.gov.scot/publications/national-planning-framework-4/.

[13] Angus Council, 2016. Angus Local Development Plan. [Online] Available at: https://www.angus.gov.uk/directories/document_category/development_plan.

[14] Scottish Government, 2000. Planning Advice Note 60: Natural Heritage. [Online] Available at: https://www.gov.scot/publications/pan-60-natural-heritage/.

[15] Scottish Government, 2000. *Nature Conservation: Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds (The Habitats Directives).*

[16] Tayside Biodiversity Partnership, 2016. Tayside Local Biodiversity Action Plan, 2nd Edition 2016 – 2026 Incorporating the local authority areas of Angus and Perth & Kinross. [Online] Available at: https://www.angus.gov.uk/sites/default/files/Tayside%20Local%20Biodiversity%20Action%20Plan%202016_2026.pdf.

[17] NatureScot, 2018. Environmental Impact Assessment Handbook- Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland. SNH. Battleby.

[18] NatureScot, 2016. Assessing Connectivity with Special Protection Areas. [Online] Available at: https://www.nature.scot/doc/assessing-connectivity-special-protection-areas.

[19] NatureScot, 2016. Guidance: Assessment and mitigation of impacts of power lines and guyed meteorological masts on bird. SNH, Battleby. [Online] Available at: https://www.nature.scot/doc/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds.

- NatureScot Guidance: Recommended bird survey methods to inform impact assessment of onshore wind farms (SNH, 2017)[20];
- NatureScot Guidance: Assessing Significance of Impacts on bird populations from onshore wind farms that do not affect protected areas (NatureScot, 2025)[21];
- NatureScot SiteLink web pages (online information on Designated Sites)[22];
- SSEN Transmission specific documentation, Bird Species Protection Plan[2]; and
- Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine 4th edition, CIEEM (CIEEM, 2022)[23].

9.4 Consultation

9.4.1 In undertaking the assessment, consideration has been given to the relevant EIA scoping and pre-consultation responses, as summarised below in **Table 9.1: Summary of Consultation of relevance to Ornithology.** A full summary of consultation is provided in **Volume 2, Chapter 6: Scope and Consultation**.

Table 9.1: Summary of Consultation of relevance to Ornithology

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
NatureScot (06 November 2024)	Response to screening report for the Proposed Development	NatureScot noted that '*although the tie-ins will be located on land with potential connectivity to the SPAs referred to in the Screening Report, containing habitats that could be used by the SPA species, the Proposed Development requires less new OHL than will be removed and all occurring in the same vicinity. ie the tie-ins do not introduce OHL to an area where previously there are none, so SPA birds will be habituated to the presence of OHLs*'. NatureScot notes that relevant design and generic mitigation will be implemented in the form of CEMPs, GEMPs and SPPs, ensuring construction disturbance is minimised to wildlife that may be present. If specific mitigation in the form of bird diverters is identified, this will also help to reduce risk of operational effects to ornithological receptors. Based on the information available, NatureScot would support a conclusion of no likely significant effect on SPAs for the tie-ins.	Assessment will conclude no Likely Significant Effect (LSE) to SPA qualifying features, following implementation of embedded mitigation (bird diverters) where necessary.
Energy Consents Unit (ECU) (13 November 2024)	Response to screening report for the Proposed Development	The ECU noted that the Proposed Development has connectivity with SPAs in terms of their qualifying species foraging and flight activity in the area. The ECU noted that there would be expected disturbance and displacement of these species throughout the construction and operational phase and that there is a likely risk of OHL collision from Pink-footed geese and herring gull, given their recorded flight activity in the area during the operational phase. The Applicant states it is considering methods of line marking mitigation	An EIAR has been prepared with reference to ECU comments. As such, the assessment takes into account the collision risk of SPA species in the operational phase of the Proposed Development. Within the EIAR there is a

[20] NatureScot, 2016. Guidance: Recommended bird survey methods to inform impact assessment of onshore wind farms. SNH, Battleby. [Online] Available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms

[21] NatureScot Guidance, 2025. Assessing Significance of Impacts on bird populations from onshore wind farms that do not affect protected areas.[Online] Available at: Guidance note - Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas | NatureScot

[22] NatureScot, n.d. Planning and Development: Standing Advice and Guidance Documents. [Online] Available at: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-standing-advice-and-guidance-documents.

[23] CIEEM, 2022. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2. [Online] Available at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		as best practice. The Proposed Development may have a Likely Significant Effect (LSE) on the qualifying features of the SPAs. There are no known Schedule 1 species nesting within the Zone of Influence of the Proposed Development. The Applicant has committed to a BSPP being prepared to safeguard any breeding birds which may be present. With the implementation of SPPs and GEMPs alongside the on-site ECoW and the limited amount of expected habitat loss, the ECU suggest that it is unlikely that there shall be any significant effects on other protected bird species. The ECU recognised that there is potential for in isolation and cumulative impacts on ornithological receptors with other development proposals and that these are likely to be Significant. as such, an Environmental Impact Assessment report is required.	mitigation commitment requiring adherence to BSPP and GEMPs for construction of the Proposed Development. Given NatureScot's comments (22 April 2025), construction phase disturbance and displacement effects were scoped out from this assessment.
NatureScot (22 April 2025)	Scoping response	NatureScot agrees with the topics and issues proposed to be scoped in and out of the EIAR.	Assessment has been written in accordance with ornithology topics identified in the scoping report.
ECU (28 May 2025)	Scoping response	The ECU recommends that decisions of bird surveys should be made following discussion with NatureScot.	The survey methodologies used in the assessment follow appropriate guidance and NatureScot agree with the extent and type of surveys carried out.
Angus Council (14 May 2025)	Scoping response	Angus Council understands that NatureScot will comment on statutory protected areas and birds. Insofar as it relates to matters within the remit of Angus Council, the environment team is content with the proposed approach to assessing the Likely Significant Effects on ornithology, and the survey approach regarding qualifying features of Designated Sites and other protected bird species within the Study Area. The ornithological receptors identified, and mitigation measures are considered appropriate.	Assessment has been written in accordance with ornithology topics identified in the scoping report as per NatureScot comments (22 April 2025).

9.5 Desk Based Research and Data Sources

9.5.1 A desk study was undertaken to identify known ornithological features within the relevant Study Areas, as described below in **Table 9.2: Study Area Descriptions of Relevance to Desk-Based Studies.** Searches were made for bird species and Designated Sites agreed through consultation.

9.5.2 The following data sources have informed the assessment:

- The NatureScot SiteLink website (https://sitelink.nature.scot/home) to identify designated nature conservation sites that may have connectivity to the Proposed Development (up to 20 km for sites of international importance and where the qualifying feature(s) core range extends to this distance and 2 km for sites of national importance; refer to **Table 9.2: Study Area Descriptions of Relevance to Desk-Based Studies**);
- National Biodiversity Network (NBN)[24];
- Royal Society for the Protection of Birds (RSPB) - bird records within 2 km of the Proposed Development including Schedule 1 and Annex 1 bird species, together with breeding waders and forest grouse;

[24] National Biodiversity Network, 2024. NBN Atlas. [Online] Available at: https://data.nbn.org.uk/.

- Data on Schedule 1 and Annex 1 raptors was requested from the local Raptor Study Group; and
- British Trust for Ornithology (BTO) - BTO publication[25] together with the associated publicly available dataset, showing the 'sensitivity' of 1 km squares of wader habitat, was used to determine potential breeding wader receptors. Publicly available Wetland Bird Survey (WeBS) data[26] was also referenced.

9.5.3 Other published and unpublished literature was consulted, to assist in the interpretation and determination of species behaviour and population sizes. These resources are referenced in the chapter where used.

9.5.4 Further information relating to the desk study method is provided in **Volume 4, Appendix 9.1 Ornithology Technical Report**.

Study Area

9.5.5 The Study Areas adopted in the assessment and reported in this chapter vary by desk and field survey, and by ornithological feature, as defined by best practice (detailed in **Volume 4, Appendix 9.1: Ornithology Technical Report**). The Study Area is defined as an area of search of up 20 km radius centred on the Proposed Development and within which ornithology desk-based studies have been undertaken, as detailed below in **Table 9.2: Study Area Descriptions of Relevance to Desk-Based Studies.**

Table 9.2: Study Area Descriptions of Relevance to Desk-Based Studies

Ornithological Feature	Designation Type	Buffer from the Site
Statutory Designated Sites (Qualifying features)	• SPAs; and • Ramsar Sites	20 km
	• Sites of Special Scientific Interest (SSSI).	2 km
Non-statutory Designated Sites	• RSPB Reserves	5 km
Existing records of Schedule 1 species	• All Schedule 1 species' records from the preceding 10 years.	5 km
Breeding birds	• All BoCC Red and Amber-listed species records	2 km

9.6 Field Survey

9.6.1 The survey areas varied according to the type of survey, as defined by best practice[20] and as agreed during consultation with NatureScot[27] detailed in **Volume 4, Appendix 9.1: Ornithology Technical Report**.

9.6.2 The following field surveys were carried out to inform the assessment:

- Breeding bird surveys (BBS) were undertaken in 2023 (three visits in May and June 2023 inclusive) and in 2024 (three visits in April to June 2024, inclusive);
- Flight Activity Surveys were carried out across six visits between September 2023 to March 2024 inclusive; and
- Winter Goose Foraging Surveys were carried out across six visits from January to March 2023 inclusive and further visits between September 2023 to March 2024 during Flight Activity Surveys.

[25] O'Connell, P., Wilson, M., Wetherhill, A. & Calladine, J., 2021. *Sensitivity mapping for breeding waders in Britain: towards producing zonal maps to guide wader conservation, forest expansion and other land-use changes. Report with specific data for Northumberland and north-east Cumbria*. [Online] British Trust for Ornithology, p. 80. Available at: https://www.bto.org/our-science/publications/research-reports/sensitivity-mapping-breeding-waders-britain-towards. A report to the Forestry Commission, England BTO Research Report 740.

[26] British Trust for Ornithology, n.d., Wetland Bird Survey Data. [Online] Available at: https://www.bto.org/our-science/projects/wetland-bird-survey/data.

[27] As noted in **Table 9.1: Summary of Consultation of relevance to Ornithology**

9.6.3 Field surveys were undertaken in line with NatureScot guidance with respect to OHLs and guyed meteorological masts on birds[28] and guidance provided in the Applicant's document TG-NET-ENV-524 *Ornithology Methods for Transmission Projects*[29].

9.6.4 Flight Activity Surveys were carried out to determine presence, numbers and flight activity (direction, flight height) of SPA and Ramsar-qualifying goose species in relation to the Proposed Development. Methods employed were in line with NatureScot guidance for surveys and assessment of birds and powerlines[28]. A single Vantage Point (VP) was used to provide coverage of SPA/Ramsar qualifying species' flight activity. The direction and height of flights were recorded as required by the method. In order to characterise the flights, flight height bands were used to reflect the collision risk area posed by the Proposed Development (considered in the range 10-75 m above ground level (agl)). Summary data are presented in **Volume 4, Appendix 9.1 Ornithology Technical Report**. Flight Activity Surveys were used to inform the requirement for Embedded Mitigation (line-marking), where spans were of high collision risk.

9.6.5 Ornithology field surveys were undertaken in appropriate weather conditions. Detail of survey methodology and results are provided in **Volume 4, Appendix 9.1 Ornithology Technical Report**.

Survey Areas

9.6.6 The ornithology survey areas were defined as follows (also refer to **Volume 3**, **Figure 9.1: The Proposed Development and Ornithology Survey Area**):

- BBS Area - suitable open-ground habitats up to at least 250 m from the Site, where suitable habitat was present[30];
- Flight Activity Survey (FA) area - airspace to 2 km from the Site and within 10 km of SPAs/Ramsars with qualifying features showing potential connectivity (refer to **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**); and
- Winter Goose Foraging Surveys – suitable habitats within 2 km of the Site.

9.7 Assessing Significance

9.7.1 The methodology employed for assessing the significance of effects is in accordance with impact assessment procedures detailed by CIEEM[23] and NatureScot[22] and takes account of Scottish Government guidance on the implementation of the Habitats and Birds Directives[15](Scottish Government, 2000).

9.7.2 Effects are assessed with reference to the baseline ornithological community at the Site, assuming key populations making up the bird community are not significantly adversely affected by any existing influences on distribution, abundance and flight behaviour.

9.7.3 The assessment considers whether the construction and operation of the Proposed Development may lead to any of the effects identified in Effects Assessed in Full (refer to Section **9.2 Scope of the Assessment**). In summary, effects on bird populations can arise from:

- Direct habitat loss;
- Habitat modification;
- Indirect habitat loss, arising from disturbance and displacement; and
- Collision mortality.

9.7.4 An effect is defined as a change in a bird population arising from the Proposed Development. The assessment considers the direction of change (beneficial or adverse), its magnitude in terms of spatial and temporal influences,

[28] NatureScot, 2016. Guidance – Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. [Online] Available at:https://www.nature.scot/doc/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds.
[29] SSEN Transmission, 2021. *Ornithology Methods for Transmission Projects* – TG-NET-ENV-524.
[30] Habitat suitability was defined using BTO-modelled data as outlined in Volume 4, Appendix 12.1 Ornithology Technical Report (refer to https://www.bto.org/our-science/publications/research-reports/sensitivity-mapping-breeding-waders-britain-towards)

and the likelihood of this effect occurring. The significance of identified effects is assessed by considering three factors:

- The Nature Conservation Importance (NCI) of the affected species;
- The magnitude of the likely effect; and
- The likely outcome of the effect on the conservation status of the species' population.

Criteria for Assessing Sensitivity of Receptors

9.7.5 The NCI of bird species (ornithological receptors) considers the sensitivity of bird populations with reference to their legal status and known recent trends in number, distribution and threat status. NCI is defined according to the definitions set out below in **Table 9.3: Nature Conservation Importance (Sensitivity) of Bird Receptors**.

Table 9.3: Nature Conservation Importance (Sensitivity) of Bird Receptors

NCI Sensitivity	Definition
High	Species listed in Annex 1 of the EU birds Directive. Breeding species listed on Schedule 1 of the *Wildlife and Countryside Act, 1981* (as amended). Breeding qualifying features (species) of SPAs/Ramsar sites with connectivity to the Proposed Development.
Moderate	Species on the BoCC 'Red' list (Stanbury et al., 2024[31]). Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the Proposed Development. Species present in regionally important numbers (>1 % regional population).
Low	All other species not covered above.

Criteria for Assessing Magnitude of change

9.7.6 The magnitude of change has been assessed following consideration of the spatial and temporal elements of the resulting changes. There are five levels of spatial magnitude (refer to **Table 9.4: Spatial Magnitude of Effect)** and four levels of temporal magnitude (refer to **Table 9.5: Temporal Magnitude of Effect**) detailed in the tables below.

9.7.7 Magnitude will consider the likely susceptibility of populations to an effect, taking account of how a species' ecology may influence the response of the population, including their ranging behaviour, seasonality in occurrence or behaviour, reliance on specific habitats, behavioural sensitivity to disturbance effects at different times of the year, and their ability to recover from adverse effects (eg by birds being recruited into the population from elsewhere).

9.7.8 Where such information exists from monitoring studies or other research, data on the responses of individual birds and bird populations to substation developments and other similar developments are considered.

9.7.9 The predicted magnitude of an effect can be influenced by when it occurs. For example, operations undertaken in daylight hours may have little temporal overlap with the occupancy of birds' night-time roosts; and seasonality in a bird population's sensitivity or occupancy of a site may mean that effects are unlikely during certain periods of the year.

[31] Stanbury, A.J. Burns, F., Aebischer, N.J., Baker, H., Balmer, D., Brown, A.F., Dunn, T., Lindley, P., Murphy, M., Noble, D.G., Owens, R. & Quinn, L., 2024. *The status of the UK's breeding seabirds: an addendum to the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain.* [Online] *British Trust for Ornithology*. Available at: https://www.bto.org/our-science/publications/peer-reviewed-papers/status-uk%E2%80%99s-breeding-seabirds-addendum-fifth-birds.

Table 9.4: Spatial Magnitude of Effect

Magnitude	Definition
Very high	Total/near total loss of a bird population due to mortality or displacement. Total/near total 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 or displacement or disturbance. Guide: 21-80 % of regional population affected.
Moderate	Partial reduction in the status or productivity of a bird population due to mortality or 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 or displacement or disturbance. Guide: 1-5 % of the regional population affected.
Negligible	Very slight reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the “no change” situation. Guide: <1 % of regional population affected.

Table 9.5: Temporal Magnitude of Effect

Magnitude	Definition
Permanent	Effects continuing indefinitely, extending beyond the average span of a human generation (approximately 25-30 years). If there is a high certainty of substantial improvement after this period, for example following project decommissioning or the establishment of high-value habitat, effects could be classified as long-term.
Long-term	Approximately 15-30 years.
Medium-term	Approximately 5-15 years.
Short-term	Up to approximately 5 years.
Negligible	Less than 1 year.

9.7.10 Where the available data allows, the conservation status of each potentially affected species population is considered at the appropriate spatial scale. NatureScot advise that effects on a species’ national conservation status are considered, by formulating a judgement on how predicted effects on regional populations may influence a species’ conservation status at the national level[21]. For this assessment, conservation status is taken to mean the sum of the influences acting on a population which may affect its long-term distribution and abundance. Conservation status is considered to be favourable where:

- A species appears to be maintaining itself on a long-term basis as a viable component of its habitats;
- The natural range of the species is not being reduced, nor is it likely to be reduced for the foreseeable future; and
- There is (and will probably continue to be) sufficient habitat to maintain the species population on a long-term basis.

9.7.11 Effects that will adversely affect the favourable conservation status of a species or prevent its recovery to favourable conservation status in Scotland, will be judged as of concern.

Criteria for Assessing Significance

9.7.12 Where potential effects relate to bird populations that constitute all or part of the qualifying interest of an existing (or proposed) internationally or nationally Designated Site (ie a SPA, Ramsar site or Site of Special Scientific Interest (SSSI)), then effects are judged against whether the Proposed Development could significantly affect the Designated Site's population or its distribution. Where bird populations do not form part of the qualifying interest of a Designated Site, effects are evaluated in relation to 'wider countryside' populations at a regional scale, assuming that robust information exists or can be derived on population size, range and distribution at this scale. For this assessment, 'wider countryside' populations of potentially affected breeding bird species are spatially defined by the Natural Heritage Zone (NHZ) Eastern Lowlands NHZ 16, as determined by NatureScot (SNH 2002)[32]. For wintering and migratory populations (non-breeding), national populations form the appropriate spatial unit.

9.7.13 Following the classification of each species' NCI and consideration of the magnitude of each effect, professional judgement is used to make a reasoned assessment of the likely effect on the conservation status of each potentially affected species within the region.

9.7.14 Each likely effect is evaluated and classified as either **Significant** or **Not Significant**. The significance levels of effect on bird populations are described below in **Table 9.6: Significance Criteria.** Detectable changes, ie those of '**Major**' or '**Moderate**' significance, in the conservation status of regional populations of NCI are considered to be Significant effects for the purposes of this EIA. Non-significant effects are those which are likely to result in barely detectable (**Minor**) or non-detectable (Negligible) changes in the conservation status of regional (and therefore national) bird populations.

Table 9.6: Significance Criteria

Significance of effect	Description
Major	A detectable change to regional populations of **High** or **Moderate** NCI, resulting in total population loss or severe impacts to their conservation status.
Moderate	A detectable change to regional populations of **High** or **Moderate** NCI, resulting in population losses that are likely to impact their conservation status.
Minor	Small or barely detectable changes to regional populations of **High** or **Moderate** NCI, that are unlikely to impact their conservation status.
Negligible	No or barely discernible changes to regional populations of **High** or **Moderate** NCI, with no impact on their conservation status.

9.8 Assessment Assumptions and Limitations

Assessment Assumptions

9.8.1 The following assumptions have been made when undertaking the assessment of effects:

- all field surveys represent a temporal snapshot of the bird assemblages within the Study Area. While field surveys provide an overview of the species present, they cannot be used to determine long-term trends in species and habitat populations or behaviours. Methods adopted during surveys represent current good practice (as agreed with NatureScot – refer to **Table 9.1: Summary of Consultation of relevance to Ornithology** and in **Volume 2, Chapter 6: Scope and Consultation**), with the collection of survey data across at least 12 months[19] together with data from desk studies; however, the data collected cannot be used to confirm the absence of a species;
- it is recognised that bird assemblages and populations may be highly dynamic and can change over short periods of time. To that end, in addition to direct searches for evidence, the suitability of the Study Area to support target bird species, and any historic information derived from desk studies, is considered; and
- construction activities will coincide with both the breeding bird season(s) and non-breeding season(s).

[32] SNH, 2002. Natural Heritage Zones: A national assessment of Scotland's landscapes. Battleby, SNH.

Assessment Limitations

9.8.2 No access was granted to Balkemback Farm or private residential buildings to the north-east of the Site (within the BBS Areas). The grounds were viewed from publicly accessible areas and given the scale of the works required for the Proposed Development, this is not considered to limit the conclusions of the report.

Limits of Deviation

9.8.3 Movement of the OHL due to potential future micrositing and positioning within the LOD is not predicted to change the conclusions of this assessment. Best practice Applied Mitigation will be adhered to throughout construction with implementation of SPPs (notably a BSPP) to safeguard breeding and roosting birds within potential construction effects of the Proposed Development. The Embedded Mitigation (ie the use of bird diverters along spans of high flight activity) incorporates 'adjacent-span marking', whereby those spans neighbouring high-risk ones are also marked, irrespective of flight activity. No Designated Sites or their ornithological features are directly affected by LOD implications. As such, the LOD of up to 200 m with respect to the positioning of angle towers is below that of concern for survey and data validity.

9.9 Baseline Conditions

9.9.1 This section summarises the baseline ornithological interest within and surrounding the Proposed Development, including information on populations of Target Species and Designated Sites which cite ornithological interests. The following describes the baseline conditions with reference to both the desk study data and field surveys combined. Further information is presented in the Appendix, including flight activity and foraging records (refer to **Volume 4, Appendix 9.1: Ornithology Technical Report**).

9.9.2 Baseline field surveys were conducted between February 2023 and August 2024 inclusive, within buffers extending up to 2 km from the Proposed Development (refer to **Volume 3, Figure 9.1: The Proposed Development and Survey Area**).

9.9.3 Baseline bird populations are reported with reference to a series of buffers up to 20 km from the Site, which comprise the Study Area for ornithology (refer to **Table 9.2: Study Area Descriptions of Relevance to Desk-Based Studies** and **Figure 9.1: The Proposed Development and Ornithology Survey Area**). Ornithological interests can be affected at distances of up to 20 km from the Proposed Development, due to some qualifying species of Designated Sites having core foraging ranges extending to this distance from roosting or breeding areas[18].

Designated Sites

9.9.4 **Volume 4, Appendix 9.1: Ornithology Technical Report** details all statutory Designated Sites identified within 20 km of the Proposed Development, and all non-statutory Designated Sites identified within 5 km of the Site, where qualifying features are of ornithological interest (also refer to **Volume 3, Figure 9.2: Ornithological Designated Sites within 20 km and 5 km**).

9.9.5 **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development** below, identifies statutory Designated Sites which lie within the Study Area and in relation to the relevant Section of the Proposed Development (as defined in **Volume 2, Chapter 3: Project Description**). These Statutory Designated Sites show potential for connectivity with the Proposed Development due to the core foraging ranges of the qualifying bird species.

Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development

Site Name	Qualifying Features	Distance from Proposed Development at its closest	Connectivity with Proposed Development
International Designated Sites within 20 km			
Special Protection Areas- SPAs			
Firth of Tay and Eden Estuary SPA	Bar-tailed godwit (*Limosa lapponica*; non-breeding); Common scoter (*Melanitta nigra*; non-breeding); Cormorant (*Phalacrocorax carbo*; non-breeding); Dunlin (*Calidris alpina*; non-breeding); Eider (*Somateria mollissima*: non-breeding); Goldeneye (*Bucephala clangula*; non-breeding); Goosander (*Mergus merganser*; non-breeding); Grey plover (*Pluvialis squatarola*; non-breeding); Greylag goose (*Anser anser*; non-breeding); Icelandic black-tailed godwit (*Limosa limosa islandica*; non-breeding); Little tern (*Sternula albifrons*; breeding); Long-tailed duck (*Clangula hyemalis*; non-breeding); Marsh harrier (*Circus aeruginosa*; breeding); Oystercatcher (*Haematpous ostralegus*; non-breeding); Pink-footed goose (*Anser brachyrhyncus*; non-breeding); Red-breasted merganser (*Mergus serrator*; non-breeding); Redshank (*Tringa totanus*; non-breeding); Sanderling (*Calidris alba*; non-breeding); Shelduck (*Tadorna tadorna*; non-breeding); Velvet scoter (*Melanitta fusca*; non-breeding); and Waterfowl assemblage (non-breeding).	7.5 km south of the Proposed Development	Potential connectivity with Greylag and Pink-footed geese, as the Proposed Development lies within their core foraging range (within 20 km of the SPA).
Outer Firth of Forth and St. Andrews Bay SPA	Arctic tern (*Sterna paradisaea*; breeding); Black-headed gull (*Chroicocephalus ridibundus*; non-breeding); Common gull (*Larus canus*; non-breeding); Common scoter (non-breeding); Common tern (*Sterna hirundo*; breeding); Eider (non-breeding); Gannet (*Morus bassanus*; breeding); Goldeneye (non-breeding); Guillemot (*Uria aalge*; breeding & non-breeding);	7.5 km south of the Proposed Development	Potential for connectivity with qualifying species Herring gull, due to the distance from the Proposed Development to the SPA (gull mean foraging distances of 10.5 km from their breeding sites[33]).

[33] Thaxter, C. B. *et al*., 2019. Avian vulnerability to wind farm collision through the year: Insights from lesser black-backed gulls (*Larus fuscus*) tracked from multiple breeding colonies. Journal of Applied Ecology, 56(11), p.2410-2422. [Online] Available at: https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2664.13488.

Site Name	Qualifying Features	Distance from Proposed Development at its closest	Connectivity with Proposed Development
	Herring gull (*Larus argentatus*; breeding & non-breeding); Black-legged kittiwake (*Rissa tridactyla*; breeding & non-breeding); Little gull (*Hydrocoloeus minutus*; non-breeding); Long-tailed duck (non-breeding); Manx shearwater (*Puffinus puffinus*; breeding); Puffin (*Fratercula arctica*; breeding); Razorbill (*Alca torda*; non-breeding); Red-breasted merganser (non-breeding); Red-throated diver (*Gavia stellata*; non-breeding); Seabird assemblage (breeding and non-breeding); Shag (*Phalacrocorax aristotelis*; breeding & non-breeding); Slavonian grebe (*Podiceps auritus*; non-breeding); Velvet scoter (non-breeding); and Waterfowl assemblage (non-breeding).		
Loch of Kinnordy SPA,	Greylag goose (non-breeding); and Pink-footed goose (non-breeding).	15.5 km northwest of the Proposed Development	Potential for connectivity with Greylag and Pink-footed geese, as the Proposed Development is within their core foraging range from the SPA (20 km).
Loch of Lintrathen SPA,	Greylag goose (non-breeding).	18 km northwest of the Proposed Development	Potential for connectivity with Greylag geese, as the Proposed Development is within their core foraging range (20 km).
RAMSAR sites			
Firth of Tay and Eden Ramsar	<u>Criterion 2</u> Marsh harrier (breeding) Little tern (breeding) <u>Criterion 5</u> Velvet scoter (non-breeding) Cormorant (non-breeding) Shelduck (non-breeding) Eider (non-breeding) Common scoter (non-breeding) Black-tailed godwit *Limosa limosa islandica* (non-breeding) Goldeneye (non-breeding) Red-breasted merganser (non-breeding) Goosander (non-breeding) Oystercatcher (non-breeding) Grey plover (non-breeding) Sanderling (non-breeding) Dunlin (non-breeding) Long-tailed duck (non-breeding)	7.5 km south of the Proposed Development	Potential connectivity with Greylag and Pink-footed geese, as the Proposed Development lies within their core foraging range (within 20 km of the Ramsar site).

Site Name	Qualifying Features	Distance from Proposed Development at its closest	Connectivity with Proposed Development
	Criterion 6 Bar-tailed godwit (non-breeding) Redshank (non-breeding) Pink-footed goose (non-breeding) Greylag goose (non-breeding)		
Loch of Kinnordy Ramsar	Criterion 6 Greylag goose (non-breeding); and Pink-footed goose (non-breeding).	15.5 km northwest of the Proposed Development	Potential for connectivity with Greylag and Pink-footed geese, as the Proposed Development is within their core foraging range from the Ramsar site (20 km).
Loch of Lintrathen Ramsar	Criterion 6 Greylag goose (non-breeding).	18 km northwest of the Proposed Development	Potential for connectivity with Greylag geese, as the Proposed Development is within their core foraging range from the Ramsar site (20 km).
Site of Special Scientific Interest - SSSI			
Loch of Kinnordy SSSI	Greylag goose (non-breeding).	15.5 km northwest of the Proposed Development	Potential for connectivity with Greylag geese, as the Proposed Development is within their core foraging range from the Ramsar site (20 km).
Loch of Lintrathen SSSI	Greylag goose (non-breeding).	18 km northwest of the Proposed Development	Potential for connectivity with Greylag geese, as the Proposed Development is within their core foraging range from the Ramsar site (20 km).
National and Local Statutory Sites within 5 km			
There are no national or local statutory sites within 5 km of the Proposed Development with ornithological features – the following Local Nature Reserves (LNRs)/RSPB reserves are underpinned by Designated Sites as follows:			
Inner Tay Estuary LNR	LNR bird resource listed under Firth of Tay and Eden Estuary Ramsar, SPA and Important Bird Area (IBA).	7.5 km south of the Proposed Development	Potential for connectivity with SPA/Ramsar Greylag and Pink-footed geese, as the Proposed Development is within their core foraging range (20 km).
Loch of Kinnordy RSPB Nature Reserve	RSPB bird resource as listed for Loch of Kinnordy SPA, Ramsar, SSSI and IBA.	15.5 km northwest of the Proposed Development	Potential for connectivity with SPA/Ramsar Greylag and Pink-footed geese, as the Proposed Development is within their core foraging range (20 km).
Non-Statutory Sites within 2 km			
There are no non-statutory sites within 2 km of the Proposed Development with ornithological features.			

9.9.6 Where potential for connectivity exists between the Proposed Development and qualifying features of Designated Sites as listed above in **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**, the potential for effects on Designated Sites has been included in the assessment, as agreed with NatureScot (refer to **Table 9.1: Summary of Consultation of relevance to Ornithology)**.

9.9.7 There are no non-statutory designations, eg nature reserves, for ornithological interest with potential connectivity to the Proposed Development.

9.9.8 Summary findings for the identified Designated Sites listed above in **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development** are provided below.

Target Species

9.9.9 NatureScot guidance identifies sensitive bird species whose populations may be adversely affected by disturbance and collision risk associated with the construction and operation of onshore wind farms (Assessing the significance of impacts on bird populations from onshore windfarms that do not affect protected areas, Table A1 and Table A2[21]). Since many of these potential effects are relevant to the Proposed Development, this guidance has been adopted here.

9.9.10 All sensitive bird species observed within the Study Area were recorded and mapped as appropriate[21]. The species listed below in **Table 9.8: Target Species** includes Schedule 1/Annex 1 birds and red-listed BoCC described as High and Moderate NCI species, where recorded within the BBS Area (refer to **Table 9.2: Study Area Descriptions of Relevance to Desk-Based Studies**). In addition, where potential for connectivity to SPA/Ramsar species was identified, the relevant qualifying species were included (refer to **Table 9.3: Nature Conservation Importance (Sensitivity) of Bird Receptors**).

Table 9.8: Target Species

Target Species	Conservation Status Nature Conservation Importance (Sensitivity)			
	Schedule 1	Annex 1	BoCC	NCI Sensitivity
Whooper swan	Yes	Yes	Amber-list	High NCI
Greylag goose	No	No	Amber-list	Moderate NCI (SPA/Ramsar qualifying species)
Pink-footed goose	No	No	Amber-list	Moderate NCI (SPA/Ramsar qualifying species)
Herring gull	No	No	Red-list	High NCI (SPA qualifying species)
Curlew (*Numenius arquata)*	No	No	Red-list	Moderate NCI

9.9.11 Natural Heritage Zones (NHZs) are regions of Scotland identified for their biogeographical differences (landscape, climate, habitats etc) and which show a high level of environmental coherence within each zone[34]. NHZs are generally considered the appropriate default regional scale for assessment of ornithological populations. It should be noted that, in the case of mobile wintering geese and swans, it may be appropriate to undertake assessment at a much broader scale, such as that of the entire Scottish population[17]. The Proposed Development lies within NHZ 16 - Eastern Lowlands; assessment, where required, will be undertaken with reference to this regional NHZ population[35] (refer below to **Table 9.9: National and regional population estimates of Target Species**).

9.9.12 Population estimates for Target Species recorded within the Study Area during field surveys are presented below in **Table 9.9: National and regional population estimates of Target Species**.

[34] SNH (2002) Natural Heritage Zones: A National Assessment of Scotland's Landscapes. SNH, Battleby.
[35] Forrester, R.W., Andrews, I.J., McInerny, C.J., Murray, R.D., McGowan, R.Y., Zonfrillo, B., Betts, M.W., Jardine, D.C. & Grundy, D.S. (eds), 2007. *The Birds of Scotland*. The Scottish Ornithologists' Club, Aberlady.

Table 9.9: National and regional population estimates of Target Species

Species	Scottish population[35,36]	Regional populations[37] (breeding pairs unless otherwise stated)	
		NHZ 16	Source of Regional NHZ Population estimate
Whooper swan	11,000	1,524	Estimated peak abundance from WeBS data[35]
Pink-footed goose[21]	485,509[38]	162,039 individuals	Regional NHZ estimate based on 2013 data when UK population estimated as 360,000. Not considered a Priority species[21] – reference to SPA/Ramsar populations only in assessment.
Greylag goose	92,582[38]	No regional estimates available	No NHZ population estimates available.
Herring gull	52,089 pairs	16,782	NHZ population based on estimates from a near-comprehensive national survey around 2000[39].
Curlew	30,194 pairs	3,253	NHZ population based on 2009 estimate of modelled 2005 data.[40]

9.9.13 The following section describes the baseline conditions for each target species in turn, which has been collated using data from desk studies and field surveys. Further information is presented in Appendices, including flight activity and foraging records (**Volume 4, Appendix 9.1: Ornithology Technical Report**). All flight activity recorded during non-breeding VP surveys is presented in **Volume 3, Figure 9.3: Flight Activity Surveys.** Winter Goose Foraging Survey data are presented in **Volume 3, Figure 9.4: Winter Goose Foraging Surveys**.

Designated Sites

9.9.14 The Designated Sites where potential for connectivity to the Proposed Development is present, due to the core foraging ranges of their qualifying species (Greylag geese, Pink-footed geese and Herring gull) are described below. A summary is provided in **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**.

Firth of Tay and Eden Estuary SPA/Ramsar site

Greylag Geese (non-breeding)

9.9.15 The Greylag goose population comprises a resident Scottish population and a migratory wintering population of birds that breed in Iceland[38]; the Icelandic breeding birds are classed as Moderate NCI. The non-breeding flight activity surveys and Winter Goose Foraging Surveys were specifically undertaken to determine the presence of wintering geese and their activity within the Study Area. From data acquired in 2020, the Scottish population of wintering (Icelandic) Greylag geese is 92,582[38].

9.9.16 The Proposed Development lies within the core Greylag goose foraging range (considered as between 15 km and 20 km from a roost site) of the Firth of Tay and Eden Estuary SPA/Ramsar. Known foraging sites of Greylag geese from the Tay and Eden Estuary SPA/Ramsar (SPA/Ramsar citation of 1,200 Greylag Geese[41)] are present within 5 km southwest of the Proposed Development[42]. Across the Winter Goose Foraging Surveys carried out in 2023 and 2024, only a single flock of 22 birds was recorded foraging within the Study Area (400 m southwest of the Tealing to

[36] Challis, A., Beckmann, B.C., Wilson, M.W., Eaton, M.A., Stevenson, A., Stirling-Aird, P., Thornton, M. & Wilkinson, N.I., 2023. *Scottish Raptor Monitoring Scheme Report 2021 & 2022*. BTO Scotland, Stirling.
[37] 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. P. 72.
[38] Brides, K., K.A. Wood, S.N.V. Auhage, A. Sigfússon & C. Mitchell. 2021. Status and distribution of Icelandic-breeding geese: results of the 2020 international census. Wildfowl & Wetlands Trust Report, Slimbridge. 19pp.
[39] Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T.E. 2004. Seabird Populations of Britain and Ireland, JNCC, Peterborough, ISBN 0 7136 6901 2.
[40] BTO Bird trends: [Online] Available: https://www.bto.org/our-work/science/publications/reports/birdtrends
[41] NatureScot, n.d. Firth of Tay and Eden Estuary SPA. [Online] Available at: https://sitelink.nature.scot/site/8501.
[42] Mitchell, C. 2012. *Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland*. Wildfowl & Wetlands Trust/Scottish Natural Heritage Report, Slimbridge. 108pp.

Westfield OHL). The birds, recorded on 26 January 2023, were foraging in open fields (likely winter grown arable crop) in a single-species group.

9.9.17 Habitats within the Proposed Development appear to be relatively unimportant for Greylag geese, both during the present surveys and from traditional foraging areas.

9.9.18 No flight activity of Greylag geese was recorded across the VP watches, with foraging flocks recorded only to the west of the Proposed Development.

9.9.19 Greylag goose is assessed further with respect to the construction and operational phases of the Proposed Development as a qualifying feature of the Tay and Eden Estuary SPA/Ramsar site only.

Pink-footed Goose (non-breeding)

9.9.20 The UK Pink-footed Goose population is a migratory wintering population comprising birds that breed in Iceland[38] and is classed as Moderate NCI. The UK population has increased considerably across the last 50 years, to a present-day estimate of over 480,000[38] individuals

9.9.21 Pink-footed geese were recorded foraging within the Study Area. A flock of 282 birds was recorded on 11 January 2024, approximately 2 km southeast of the Proposed Development, in a field of winter sown cover crop. The fields to the west of the existing Tealing Substation held flocks on at least three occasions, with foraging birds present in both winters surveyed: on 26 January 2023, 14 March 2023 and again on 19 March 2024. Birds foraged here on wet pasture near the Fithie Burn. The flocks of 235 birds in 2023 and 950 birds in 2024 were recorded foraging under the existing OHLs, with flight activity also recorded in this location. It was noticeable, however, that the flocks of foraging birds present in these fields would often move at low flight heights, at or below potential collision height, across the Fithie Burn to change foraging areas (pers. obs.).

9.9.22 During flight activity surveys, across the non-breeding season of 2023/2024, 12 flights of 3,455 Pink-footed geese were recorded. Of these, five flights and 357 birds were observed crossing the Proposed Development. However, none of the flights recorded as crossing the Proposed Development were at potential collision height (10-75 m agl).

9.9.23 The Proposed Development lies within the core foraging range of the Firth of Tay and Eden Estuary SPA/Ramsar qualifying feature, Pink-footed goose. Pink-footed goose flight and foraging activity recorded within the Study Area demonstrated potential for connectivity with the Proposed Development. Although a Likely Significant Effect was ruled out during the screening process (refer to **Table 9.1: Summary of Consultation of relevance to Ornithology**), the potential for collision mortality impacts to this Target Species remains. As such, provision for Bird Flight Diverters (BFDs) is included within the Proposed Development's Embedded Mitigation design, with reference to the criteria outlined within **Section 9.11.** Pink-footed goose is assessed further with respect to the construction and operational phases of the Proposed Development as a qualifying feature of the Tay and Eden Estuary SPA/Ramsar site only.

Outer Firth of Forth and St. Andrews Bay Complex SPA

Herring Gull

9.9.24 Herring gull is a BoCC Red-list species, with populations occurring in the Study Area associated with Outer Firth of Forth and St. Andrews Bay Complex SPA (refer to **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development)**. Herring gull can forage, on average, up to 10.5 km from breeding sites[43]. The Outer Firth of Forth and St. Andrews Bay Complex SPA supports breeding colonies of Herring gull with potential for connectivity to the Proposed Development, due to the core foraging range of the species. The Outer Firth of Forth and St. Andrews Bay Complex SPA also supports a non-breeding population of the species.

43 Thaxter, C. B., Ross-Smith, Viola H., Bouten, Willem, Clark, Nigel A., Conway, Greg J., Madsen, Elizabeth A., Clewley, Gary D., Barber, Lee J,. Burton, Niall H. K., 2019. Avian vulnerability to wind farm collision through the year: Insights from lesser black-backed gulls (*Larus fuscus*) tracked from multiple breeding colonies. Journal of Applied Ecology 56(11), p. 2410-2422.

9.9.25 The Outer Firth of Forth and St. Andrews Bay Complex SPA was cited as holding 3,044 pairs of breeding Herring gulls from 1980 to 2006 (1.1% of the then GB breeding population) and 12,313 individuals in the non-breeding season (1.7% of the GB population[44]).

9.9.26 Flight activity surveys were carried out across the non-breeding season only (September 2023 to March 2024, inclusive). Herring gull flight activity was recorded sporadically across the non-breeding season, with generally low numbers (maximum count of seven birds within the Study Area) recorded during the winter surveys 2023/2024. A flock of 200 mixed gull species, including approximately 80 Herring gull, was recorded on 19 April 2024, foraging in fields 200 m beyond the west of the Proposed Development. Birds were also recorded during a BBS survey in this area for the proposed substation site at Emmock, near Tealing[45].

9.9.27 Herring gull foraging flocks were recorded only sporadically during surveys with associated low levels of flight activity. Herring gull is assessed further with respect to the construction and operational phases of the Proposed Development as a qualifying feature of the Outer Firth of Forth and St. Andrews Bay Complex SPA only.

Loch of Kinnordy SPA[37] and Loch of Lintrathen SPA[38]

9.9.28 Loch of Kinnordy SPA/Ramsar lies over 15 km northwest of the Proposed Development. The SPA qualifying species with core foraging ranges that coincide with the Proposed Development are Pink-footed and Greylag goose (the latter only, a Ramsar feature). Loch of Lintrathen SPA lies over 18 km northwest of the Proposed Development, supporting the qualifying species Greylag goose.

Greylag Goose

9.9.29 Greylag goose numbers have declined considerably over the last 30 years in the southeast of Scotland[46]: the Loch of Kinnordy SPA/Ramsar roost site appears to have been abandoned over recent years, with the SPA/Ramsar citation of 910 individuals[47] now averaging 133 birds (recorded across the last five years' BTO WeBS counts[26]). The Loch of Lintrathen SPA/Ramsar now holds an average of 139 'Icelandic' Greylag geese at the roost[26], in comparison to the SPA/Ramsar citation of 2,100 individuals[48]. There appears to be considerable interchange of Greylag geese between the two roosts[42].

Pink-footed Goose

9.9.30 Similarly to Greylag geese, very few Pink-footed geese have been recorded using the Loch of Kinnordy SPA for roosting in recent years. BTO WeBS[26] counts averaged only seven birds between 2017 and 2022, compared with the SPA citation of 3,960 birds[49].

9.9.31 BTO WeBS[26] survey data from the last five years at Loch of Lintrathen SPA showed an average of 11,909 Pink-footed geese roosting at the Loch.

9.9.32 Given the distance from the Proposed Development, limited site usage by either species and preferred foraging grounds occurring out with any influence of the Proposed Development, it is considered that there is no prospect of Likely Significant Effects on the Loch of Kinnordy SPA populations of Greylag (also a Ramsar feature) and Pink-footed geese, or the Loch of Lintrathen SPA/Ramsar population of Greylag geese.

[44] NatureScot, n.d. Outer Firth of Forth and St. Andrews Bay Complex SPA. [Online] Available at: https://sitelink.nature.scot/site/10478.
[45] SSEN - Environmental Impact Assessment Report: Emmock Substation 400 kV.
[46] Mitchell, C., Hearn, R. & Stroud, D., 2012. The merging of populations of Greylag Geese breeding in Britain. *British Birds* 105: 498–505.
[47] NatureScot, n.d. Loch of Kinnordy SPA. [Online] Available at: https://sitelink.nature.scot/site/8534.
[48] NatureScot, n.d. Loch of Lintrathen SPA. [Online] Available at: https://sitelink.nature.scot/site/8535.
[49] NatureScot, n.d. Loch of Kinnordy SPA. [Online] Available at: https://sitelink.nature.scot/site/8534.

Other Target Species

Whooper Swan (non-breeding)

9.9.33 The Icelandic breeding population of Whooper swan (*Cygnus cygnus*) overwinters in the UK. This population has shown increasing numbers of birds recorded in the UK; at least 11,000 individuals are thought to winter in Scotland[37] (refer to **Table 9.9: National and regional population estimates of Target Species**).

9.9.34 Historical records of Whooper swan show evidence of these birds over 4 km from the Site boundary within the last 10 years.

9.9.35 A single flight of three Whooper Swans was recorded during flight activity surveys, with birds crossing the Proposed development at TW1 to TW2 and TE1 to TE2. The local area does not present likely foraging habitat for the species, given the distance from open water (the nearest large waterbody, Clatto Country Park, lies over 3.5 km to the south from the Proposed Development), with no birds recorded during the Winter Goose Foraging Surveys.

9.9.36 Given the limited flight activity recorded during surveys and with limited foraging habitat recorded within the Study Area, it is considered that there is no prospect of Likely Significant Effects on the regional/national population of Whooper swan from the Proposed Development; therefore, the species is not considered further.

Curlew

9.9.37 Curlew (Red-list BoCC, Moderate NCI species) is a widespread breeding resident in Scotland with a breeding population of approximately 58,800 pairs (16-27 % of the European breeding population)[35]. The wintering population, which also includes immigrants from Fennoscandia, comprises approximately 85,700 birds[35]. This figure also includes 20 % of the East Atlantic Flyway non-breeding population[50] and therefore Curlew is included in the UK Red List of Birds of Conservation Concern[31,] Drivers for the population declines observed in this species in recent years includes degradation of breeding habitat, afforestation of uplands and increases in predation[51].·Curlew are also sensitive to disturbance and can be displaced as a result of development in the vicinity of breeding sites[51].

9.9.38 Two desk records of Curlew are present within 2 km of the Site, on NBN, within the last 10 years[24].

9.9.39 The nearest Curlew were recorded during BBS over 650 m north of the temporary Alyth to Tealing OHL, to the north of Coldstream. Limited flight activity was recorded here and further north on higher ground; territorial 'song' flights and associated activity in this area suggests that three pairs were present within 2 km of the Proposed Development. The Curlew here are present in upland farmland areas, notably where those areas border upland moorland/dry heath eg at Ironside Hill. These are areas that the birds vacate during the non-breeding (winter) months.

9.9.40 No Curlew flights were recorded during the flight activity surveys. Flight activity was recorded in relation to breeding Curlew, however all activity was over 500 m north of the Proposed Development and beyond any construction phase impact.

9.9.41 The regional NHZ 16 Eastern Lowlands population of Curlew is 3,253 pairs[37]. The stronghold of the species in this region lies largely in higher ground to the southwest (eg the Ochils)[25] and on higher ground (200 m above sea level or greater) that lies to the northwest of the Proposed Development within NHZ 12 North East Glens[25].

9.9.42 Construction phase impacts are limited given the paucity of suitable Curlew breeding habitat present within the Site and given the distance between the Proposed Development and the identified breeding areas used by the species. As neither construction nor operational impacts are present, there is no prospect of a Significant effect on the

[50]van Roomen M., Nagy S., Foppen R., Dodman T., Citegetse G. & Ndiaye A. 2015. Status of coastal waterbird populations in the East Atlantic Flyway. With special attention to flyway populations making use of the Wadden Sea. Programme Rich Wadden Sea, Leeuwarden, The Netherlands, Sovon, Nijmegen, The Netherlands, Wetlands International, Wageningen, The Netherlands, BirdLife International, Cambridge, United Kingdom &, Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

[51] Franks, S. E., Douglas, D. J. T., Gillings, S., & Pearce-Higgins, J. W. (2017). Environmental correlates of breeding abundance and population change of Eurasian Curlew Numenius arquata in Britain. Bird Study, 64(3), 393–409. https://doi.org/10.1080/00063657.2017.1359233

regional/national population of Curlew that will occur as a consequence of the Proposed Development and therefore Curlew are not considered further in this assessment.

9.9.43 The BSPP (refer to **Section 9.11 Mitigation and Monitoring**) will be adhered to during Proposed Development construction, to ensure compliance with the legislation protecting breeding birds of all species.

Schedule 1 Raptors

9.9.44 No recent records of Schedule 1 species were obtained for the Study Area, although NBN desk records of wintering Merlin (Falco columbarius) were noted from three locations within 5 km of the Site (the latest record of which was from February 2022).

9.9.45 No Schedule 1 raptor species were recorded across the surveys, but a single Buzzard (*Buteo buteo*) was observed during a vantage point watch. The open farmland with a lack of suitable tree cover and mature trees present in the vicinity of the Site suggests that there is little opportunity for nesting Schedule 1 raptor species that could be present in the local area eg Red kite (*Milvus milvus)* and Osprey (*Pandion haliaetus*).

9.9.46 There is no prospect of Significant effects on any regional Schedule 1 raptor population given the largely agricultural habitat present across the Site and given that no Schedule 1 species were recorded during field surveys (with limited records noted from the Desk Study), and therefore they are not considered further in this assessment.

Other species

9.9.47 In addition to the Target Species noted above, BoCC Red and Amber-list passerine and wader species were recorded from the NBN data search as being present within 2 km of the Site (refer to **Volume 4, Appendix 9.1 Ornithology Technical Report** for NBN records and territories from survey).

Oystercatcher

9.9.48 Two nesting Oystercatchers (*Haematopus ostralegus;* BoCC Amber listed species – **Low** NCI) were recorded in May 2023 within the Site (refer to **Volume 4, Appendix 9.1 Ornithology Technical Report**). No breeding was recorded in 2024, likely due to different field use/crop planting of the area. The species readily takes advantage of certain field types, including spring-sown crops, for nesting, with the local area providing significant, alternative areas of suitable habitat. The Site does consist of habitat that is classed as suitable for breeding oystercatcher, as defined by the BTO's modelling data, with the Site habitat largely agricultural fields (largely made up of wheat/barely and other crops).

9.9.49 The construction or operation of the Proposed Development is unlikely to have potential for significant adverse effects on Oystercatcher, with over 84,000 pairs nesting in Scotland. There is no regional population estimate, however, the species' stronghold is the east of Scotland, together with the Western Isles[35]. Oystercatcher is not considered further in this assessment given that there is no prospect of the Proposed Development having a Significant effect on the national population of the species.

Passerines

9.9.50 A range of species associated with the farmland habitats present (low-lying pasture and arable land with burn-side vegetation) was recorded during the BBS of 2023 and 2024, including BoCC red-list (Moderate NCI) species such as Skylark *Alauda arvensis*, Tree sparrow *Passer montanus* and Yellowhammer *Emberiza citrinella*. In addition, amber-listed species Reed bunting *Emberiza schoeniclus*, Dunnock *Prunella vulgaris* and Wren *Troglodytes troglodytes* were also recorded in breeding territories (refer to **Volume 4, Appendix 9.1 Ornithology Technical Report**).

9.9.51 Construction effects on passerines are considered low for OHL developments, unless being particularly rare or vulnerable at the national level[52], notably where the OHL replaces an existing line. The works associated with the Proposed Development will be temporary and will take place in habitats of limited value, many of which are already subject to routine disturbance through agricultural activities. Further, some species may be able to exploit new opportunities for foraging and nesting that are created by altered habitats created during construction. Following the

[52] Hötker, H., Thomsen, K.-M. & H. Jeromin. 2006. Impacts on biodiversity of exploitation of renewable energy sources: the example of birds and bats - facts, gaps in knowledge, demands for further research, and ornithological guidelinesf or the development of renewable energy exploitation. Michael-Otto-Institut im NABU, Bergenhusen.

implementation of appropriate measures such as pre-works nesting bird checks and works' exclusion zones (both as per the BSPP; refer to **Section 9.11 Mitigation and Monitoring**), all impacts on species of low Nature Conservation Importance (NCI) and on all passerine species are considered to be not significant and are therefore scoped out of further assessment.

Future Baseline in the Absence of the Proposed Development

9.9.52 Ornithological features are rarely static in their extent, distribution and condition. Habitats and their associated bird species' populations are dynamic and so the prediction of future baseline is complex.

9.9.53 The Site is largely managed farmland which, in the absence of the Proposed Development, is anticipated to remain relatively unchanged. The hedgerows could become longer and denser with a following change in bird species' use when managed or could be lost completely because of farm management practices.

9.9.54 Settlement is likely to continue to locally change the nature of the Study Area, particularly given the Site's proximity to the city of Dundee, creating pressure for new housing. A number of small settlements are located in close proximity to each other, with potential future expansion of settlements, even if small in scale, likely to increase the presence of settlement in the east of the Study Area. Changes in farming and land management practices, driven by policy regimes or climate change, may affect the appearance of the agricultural landscape, for example the further proliferation of polytunnels within open fields.

9.9.55 Provided the existing land-management of the area continues largely as at present, changes in the bird population during the medium to long-term are likely to be typical of those associated with areas of enclosed farmland (arable and pasture) in which bird population changes are largely influenced by crop type grown, timing of crops and the extent to which fallow land is present, together with associated hedge management. Despite the potential for some changes to baseline conditions, constituent habitats and species present (including the range and distribution of SPA/Ramsar qualifying species) within the Study Area are considered likely to stay similar to the existing baseline over the lifetime of the Proposed Development. Therefore, potential effects from the Proposed Development are predicted to remain similar to those reported in this assessment.

9.10 Implications of Climate Change for Baseline Conditions

9.10.1 The UK Climate Change Projections 2018 (UKCP18[53]) predicts changes in key climate characteristics on the east coast of Scotland up to the 2070s. In summary these key changes include:

- 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 25 mm) are projected to increase, particularly in Winter;
- near surface wind speeds are expected to increase in the second half of the 21st century, with winter months experiencing more Significant effects of winds (however, the increase in wind speeds is projected to be modest); and
- increase in frequency of winter storms over the UK.

9.10.2 Extreme weather events and changes in average temperature and precipitation can affect bird habitats and the phenology, survival and productivity of animals, including the timing of bird nesting, roosting and migration during the operational phase of the Proposed Development.

9.10.3 The UK Climate Change Projections 2018 (UKCP18) suggest that by the 2070s summer and winter temperatures are likely to be elevated compared to the current baseline, with winter rainfall increased and summer rainfall decreased. The predicted effects of climate change have potential to affect the future ornithological community in the vicinity of the Site.

9.10.4 Qualitative predictions of avian population change (notably wildfowl) in the UK in relation to climate change have been attempted: the BTO in 2004 noted that *the number of wintering …geese might be predicted to fall as (they) will*

[53] Met Office (2018) UK Climate Projections (UKCP). [Online] Available at: https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index.

have to move shorter distances south to avoid harsh winter conditions of the highest latitudes. The UK Icelandic-breeding Pink-footed goose population has, however, risen substantially in the last 20 years to over 450,000 wintering birds, driven by factors in the breeding and winter grounds, including increased productivity and food availability associated with higher temperatures[54].

9.10.5 Thus, the predicted temperature and precipitation changes across the East of Scotland may result in changes to bird distribution and bird behaviour in the longer-term; however, there is uncertainty as to the direction of change. Nevertheless, the baseline bird community as described, including the wintering wildfowl population, is considered to provide a valid description of the ornithological assemblage over the lifespan of the Proposed Development, with some species' groups eg wintering goose populations, likely to remain stable or even increase with the predicted increase in winter temperatures.

9.10.6 As such, in-combination climate change effects are scoped out of the assessment, since there is no prospect of these resulting in Significant effects on ornithological receptors.

9.11 Mitigation and Monitoring

9.11.1 There are no Significant effects predicted with respect to the qualifying species of Designated Sites that show potential connectivity with the Proposed Development or any Schedule 1 species. However, although no additional mitigation measures are proposed with respect to reducing the predicted (non-significant) effects on these species, the application of the Embedded and Applied Mitigation described below is considered good environmental management practice and should be adhered to during construction and operation.

Embedded Mitigation

9.11.2 Topic specific embedded mitigation (mitigation achieved through design) is outlined below. A comprehensive schedule of embedded mitigation is provided below in **Table 9.10: Embedded Mitigation (line marking)**).

9.11.3 The design evolution for the Proposed Development has included changes which result in a reduced likelihood of adverse, Significant effects on the receiving environment and sensitive receptors. The mitigation by design, referred to as 'Embedded Mitigation' in this report, which is of relevance to the ornithological assessment, comprises the following:

- **O1**: Avoidance of Designated Sites and areas of high bird use through the routeing and alignment processes; and
- **O2**: Installation of line markers (also known as flight diverters) on the OHL to reduce collision risk for SPA/Ramsar-qualifying species and other bird species potentially at risk of collision, including at 'hot-spots' identified from VP surveys. Line marking was installed in the following instance:
  - where flight activity across any OHL span has been judged to be substantial, potentially leading to adverse impacts on regional populations of at-risk species, namely those Target Species recorded as flying at collision risk height and where flight lines intersect the Proposed Development (adjacent OHL spans also to be marked).

9.11.4 For the Proposed Development, line-marking is to be carried out with respect to flight activity of SPA/Ramsar-qualifying species Pink-footed goose, the only SPA/Ramsar species that was recorded during flight activity surveys and for which the level of flight activity (numbers of birds and/or number of flights) was considered substantial enough to require mitigation for collision risk. Key areas for line marker deployment have been identified using the above criterion and is summarised below in **Table 9.10: Embedded Mitigation (line marking)**.

Line Marking

9.11.5 Enhancing the visibility of lines involves marking the lines with devices known as flight diverters. Line marking, when effectively deployed and maintained, has been shown to reduce bird collisions with OHLs. Research shows that it can

[54] Burton, N.H.K., Daunt, F., Kober, K., Humphreys, E.M. and Frost, T.M., 2023. Impacts of Climate Change on Seabirds and Waterbirds in the UK and Ireland. MCCIP Science Review 2023, 26pp.

reduce bird collisions by 50-94%[55], with birds showing an increase in behavioural avoidance at marked lines compared to unmarked lines[55]. For example, it is known that the use of flight diverters reduces collision mortality in Mute Swans (*Cygnus olor*) in the UK, a species with poor manoeuvrability and high wing load[56].

9.11.6 VP watches focussed on these susceptible species groups: waterfowl and larger raptors. Where flight activity was recorded (see **Volume 3, Figure 9.3: Flight Activity Surveys**) as being considered as 'high-risk' of collision within the Proposed Development, line marking (with the use of flight diverters) has been embedded within the design to reduce risk of collisions (refer to **Table 9.10: Embedded Mitigation (line marking)**).

9.11.7 The most suitable line marker model and optimal spacing design has been determined following consultation with NatureScot. In line with recommendations in Martin (2022)[57], the following line marker design and deployment characteristics have been sought and implemented to maximise detectability by birds whose flight paths may intersect the Proposed Development. The line marker design should promote:

- as large a surface area as possible of the diverter to enable sight from as great a distance as possible;
- repeat chromatic patterns to generate a high degree of internal contrast so that markers are detectable regardless of landscape background conditions (rather than relying upon the markers contrasting with the landscape background);
- movement or flicker (ie an oscillating or rotating device), which will allow markers to be detected more readily than static markers;
- small intervals of deployment along the spans of the OHL (depending on bird diverter type, placement is recommended from between 3 m to 10 m intervals); and
- high durability of markers to minimise wear and tear.

9.11.8 Implementation of line marking along the identified spans of the Proposed Development is also expected to reduce collision risk to other bird species.

9.11.9 In line with NatureScot guidance[19], the condition of line markers will be monitored at regular intervals, with maintenance protocols in place to ensure they remain functional and in the correct position throughout the lifetime of the Proposed Development.

9.11.10 In order to fulfil the above criteria for a bird flight diverter (BFD), it is proposed that the BFDs is installed, specifically where the requirement for line marking mitigation has been identified for the Proposed Development.

9.11.11 Line marking will be carried out in the OHL spans (on the Optical Ground Wire (OPGW) and/or the conductors) between the towers listed below in **Table 9.10: Embedded Mitigation (line marking)** as outlined above in Embedded Mitigation plan **O2**.

Table 9.10: Embedded Mitigation (line marking)

North Tower	South Tower	Easting	Northing	Rationale
Alyth – Tealing OHL Diversion				
AT7	AT8	338366	737989	Adjacent span
AT8	AT9	338636	737910	Flight activity (high-risk)
Westfield – Tealing OHL Diversion				
WT10	WT11	338781	737417	Flight activity (high-risk)
TW179 (existing pylon)	WT9	338118	737325	Flight activity (high-risk)

[55] Bernandino, J., Bevanger, K., Barrientos, R., Dwyer, J.F., Margques, A.T., Martins, R.C., Shaw, J.M., Silva, J.P. and Moreira, F. (2018) Bird collisions with power lines: State of the art and priority areas for research. Biological Conservation, 222, 1-13. doi.org/10.1016/j.biocon.2018.02.029.
[56] Frost D. (2008) The use of 'flight diverters' reduces mute swan *Cygnus olor* collision with power lines at Abberton Reservoir, Essex, England. Conservation Evidence, 5, 83-91
[57] Martin G.R., 2022. Vision-Based Design and Deployment Criteria for Power Line Bird Diverters. Birds 2022, 3, 410–422. https://doi.org/10.3390/birds3040028.

North Tower	South Tower	Easting	Northing	Rationale
Tie-back - West TT				
TW1	TW2	338894	737516	Flight activity (high-risk)
TW2	TW3	339209	737448	Flight activity (high-risk)/Adjacent span
Tie-back – East TT				
TE1	TE2	737566	339120	Flight activity (high-risk)
TE3	TE4	339606	737292	Flight activity (high-risk)/Adjacent span

Applied Mitigation

9.11.12 In addition to the Embedded Mitigation, inherent in the design of the Proposed Development, the Applicant is committed to implementation of Applied Mitigation, which comprises a suite of SSEN Transmission standard management plans and contractor authored documentation. These plans detail general and site-specific measures for implementation pre- and during construction, to avoid or mitigate adverse effects (refer to **Volume 2, Chapter 13: Schedule of Environmental Mitigation**). The Applied Mitigation considered relevant to ornithology is summarised below in **Table 9.11: Applied Mitigation** and is included within the relevant GEMPs and SPPs produced by the Applicant (refer to **Volume 2, Chapter 13: Schedule of Environmental Mitigation**). Measures within the GEMPs and SPPs will be secured as conditions of the Principal Contract between the Applicant and the Principal Contractors. These mitigation commitments will be relevant to all bird species encountered during construction. Furthermore, the Principal Contractors would be required to prepare additional plans, as a requirement of the Principal Contract, which will include an Ecological and Ornithological Management Plan (EOMP; refer to **Volume 4, Appendix 3.4 Outline Construction Environmental Management Plan (CEMP)**). These plans will also entail ornithological monitoring as detailed below in **Table 9.12: Ornithological Monitoring**.

9.11.13 Other mitigation may be required to reduce potential for impact to ornithological receptors; in exceptional cases this may include dissuasion techniques such as habitat management (including strimming of vegetation to reduce nesting habitat), installation of bird scarers and removal of disused bird nests. The need for such measures would be determined on a case-by-case basis by an ECoW, and in consultation with NatureScot. Such additional mitigation measures would be executed in accordance with procedures to be detailed as part of the EOMP.

Table 9.11: Applied Mitigation

Mitigation Measure	Project Stage/Timing	Responsibility
O3: Bird Species Protection Plan (BSPP) The Applicant's BSPP TG-NET-ENV-505, will be implemented to ensure compliance with legislation for the protection of birds. As part of the BSPP, pre-construction surveys and data collection is an essential requirement. General Applied Mitigation is outlined within the BSPP which follows a hierarchical approach, including programming work outwith the breeding bird season (as defined by NatureScot[58]) and establishing appropriate protection zones (which are defined in the BSPP) for specially protected or sensitive species. The BSPP will be applied to the Site and to the protection zones for species present as identified by pre-construction surveys. Implementation of the BSPP would be overseen by a suitably experienced ECoW, with further detail on the definition of this role and implementation included as part of an outline Construction Environment Management Plan (see **O4** below).	Prior to and during construction	Principal Contractor
O4: Construction Environmental Management Plan (CEMP)	Prior to and during construction	Principal Contractor

[58] NatureScot, 2021. *Bird breeding season dates in Scotland*. [Online] Available at: https://www.nature.scot/doc/bird-breeding-season-dates-scotland.

Mitigation Measure	Project Stage/Timing	Responsibility
Preparation and implementation of the CEMP: this will incorporate an Ecological and Ornithological Management Plan (EOMP) pursuant to the contractual requirements of the Principal Contractors.		
O5: Biodiversity Net Gain (BNG) The Applicant will implement on-site and off-site BNG measures, as defined in the standalone **Biodiversity Net Gain Assessment Report**, which is submitted with the application for Section 37 Consent and deemed planning permission. BNG measures will deliver no less than a 10% net gain in biodiversity units, which will include measures designed to provide habitat for ornithological species	Prior to and during construction	Principal Contractor

Further Survey Requirements and Monitoring

9.11.14 The BSPP will require pre-commencement surveys to determine nesting sites of specially protected or sensitive breeding birds occurring within potential disturbance distances of construction works. Survey buffer distances will differ according to species' disturbance sensitivities[59], with specific survey methods dependent on Target Species, affected habitat and the likely stage of the breeding cycle.

9.11.15 Nest monitoring may be required for nests identified during the construction phase (refer to **Table 9.12: Ornithological Monitoring)**. Relevant requirements will be detailed in the BSPP (refer to **Table 9.11: Applied Mitigation**).

Compensation/Enhancement

9.11.16 Enhancement will be delivered through BNG (**O5**). This will include habitat restoration and enhancement that will benefit local and regional bird populations, such as off-site compensatory tree and hedgerow planting. Restoration and compensation measures will be applied to habitats impacted by construction of the Proposed Development, in accordance with the principles outlined in **Volume 4, Appendix 3.3: Outline Site Restoration Plan,** which will also benefit birds**.**

Table 9.12: Ornithological Monitoring

Monitoring Measure	Project Stage/Timing	Responsibility
Nesting Bird Checks Pre-commencement nesting bird checks will be carried out in suitable habitat and where signs of breeding birds are identified during surveys undertaken prior to any felling or vegetation clearance within the breeding season (April to August inclusive). Checks of the relevant works areas for nesting birds (all species) would be completed up to 48 hours prior to commencement of works in any suitable nesting habitats.	Prior to and during construction (April to August inclusive)	Principal Contractors (via ECoW)
Ornithological Monitoring Where an active bird nest has been identified, the BSPP will be applied with protection zones (buffers) implemented according to the nesting species. Monitoring by a suitably experienced ECoW shall be carried out throughout the nesting period until the nest is known to have failed or the young have fledged; in either case the nest would no longer be considered active, and the protection zone may be removed with works allowed to commence.	Prior to and during construction (April to August inclusive)	Principal Contractors (via ECoW)

9.12 Assessment of Likely Significant Effects - Construction

9.12.1 The assessment of effects is based on the Proposed Development description (as outlined in **Volume 2, Chapter 3: Project Description**) and the Embedded and Applied Mitigation measures described above in **Section 9.11. Embedded Mitigation measures (line marking)** are considered as part of the project design and the described

[59] NatureScot, 2022. Disturbance Distance in selected Scottish Bird Species. [Online] Available at: https://www.nature.scot/doc/disturbance-distances-selected-scottish-bird-species-naturescot-guidance

effects assume that these measures, together with Applied Mitigation during construction, have been applied in the manner described. Unless otherwise stated, predicted effects are considered to be adverse (negative) in nature.

Predicted Construction Effects

Assumptions Relating to Habitat Loss and Modification

9.12.2 The extent of habitat loss and/or modification associated with both tower and track construction and operation are limited and will not lead to substantial loss and/or modification of important bird habitat. In addition, the removal of towers as part of the Proposed Development will lead to a small increase of available habitat in the longer term. Also, much of this area is likely to be restored with habitats returned to an original condition/maintained as appropriate.

Assumptions Relating to Displacement/Disturbance

9.12.3 Disturbance associated with the construction phase of the Proposed Development, although temporary, has the potential to cause Significant effects to nesting birds, if undertaken during the breeding season (generally April to August inclusive). All breeding bird species are protected against disturbance under the *Wildlife and Countryside Act (as amended) 1981*. Birds listed on Schedule 1 of the WCA are also subject to special protections to prevent reckless disturbance to breeding sites. Should nesting attempts be identified during pre-construction surveys or nest checks (refer to **Table 9.11: Applied Mitigation**), suitable buffers should be employed around nests to safeguard breeding birds. As such, working out with the breeding season is recommended, where practicable.

9.12.4 The construction phase of the Proposed Development will lead to temporarily increased levels of noise and visual disturbance due to the presence of vehicles, site machinery and site personnel. Activities associated with construction will include access track construction, the formation of landscape and drainage structures, the creation of hard standing together with cabling and tie-in works. All these elements will introduce additional levels of noise, lighting and visual disturbance within the local area (extending to the Site boundary and beyond, depending on light and noise levels involved).

9.12.5 Disturbance can lead to indirect habitat loss, as it has the potential to displace birds from key foraging habitats or important sites including nesting or roosting areas. Disturbance may directly affect bird behaviour (eg disrupting foraging activity or forcing the bird to fly away from the source of disturbance). This change in behaviour may mean that birds are disturbed from their initial activity and/or are displaced from their initial chosen location. The effect of disturbance and displacement on birds may change their energy intake/expenditure, alter their breeding success and ultimately impact their survival; some of these changes include, but are not limited to, the following:

- changes to breeding location, timing of breeding, breeding strategy and success;
- changes to foraging location, time spent foraging, food source, energy intake and daily energy budgets;
- changes to roosting location and time spent at rest; and
- changes to migration routes, stop-over locations and seasonal energy expenditure.

Designated sites

9.12.6 Greylag goose, Pink-footed goose and Herring gull have been identified as utilising the Study Area for foraging during surveys.

Firth of Tay and Eden Estuary SPA/Ramsar

9.12.7 A single flock of 22 Greylag geese was recorded foraging within the Study Area (400 m southwest of the Tealing to Westfield OHL). The birds were foraging in open fields (likely winter grown arable crop) in a single-species group.

9.12.8 Habitats within the Site appear to be relatively unimportant for Greylag geese, both during the present surveys and from traditional foraging areas.

9.12.9 The qualifying feature, Pink-footed geese was also recorded foraging within the Study Area with fields to the west of the existing Tealing Substation holding flocks on at least three occasions across the two winter's surveys (with 950 birds noted in March 2024).

9.12.10 The Study Area is not a traditionally well-used foraging area for Pink-footed geese, with Mitchell (2012) identifying farmland on the north shore or towards the Sidlaw Hills to the Wolfhill/Pitcur area as the more used traditional

foraging sites with birds occasionally using the Rhynd peninsula as well. The presence of foraging Pink-footed geese recorded in the present surveys does show that the species can and does exploit the Study Area, however.

9.12.11 Geese feed on farmland, preferring cereal stubbles, sugar beet tops, winter and spring cereals as well as grassland and dug potato fields[35]. As such, birds are attracted to specific fields at certain times of year where optimal foraging of preferred crops is present. Construction works for the Proposed Development will take place over the short-term (less than 5 years) in which time the number of pylons and extent of OHL will be reduced compared to the present configuration. As such, there is the potential for additional foraging to be present with removal of pylon bases. Given the extent of potential foraging habitat present within 20 km of the Firth of Tay and Eden Estuary SPA/Ramsar site, the short-term temporal effect of the construction works and with traditional foraging sites beyond any potential effects of disturbance/displacement of foraging (ie a spatially Negligible magnitude of effect on less than 1% of the population's foraging), it is considered that there would be an effect of **Negligible** magnitude that is **Not Significant** on the Firth of Tay and Eden Estuary SPA/Ramsar qualifying features as a result of construction of the Proposed Development.

Outer Firth of Forth and St. Andrews Bay Complex SPA

9.12.12 Herring gull foraging flocks were recorded only sporadically during surveys. A flock of 200 mixed gull species, including approximately 80 Herring gull, was recorded on 19 April 2024, foraging in fields 200 m beyond the west of the Proposed Development. Birds were also recorded during a BBS survey in this area for the proposed substation site at Emmock, near Tealing[60].

9.12.13 Herring gull is an opportunistic species, with the birds exploiting new foraging resources, for example when arable ground is ploughed[35], and it is expected that the species may exploit earthworks associated with construction of the Proposed Development for foraging. The species can make use of a wide range of habitats and will take advantage of human activities including farming and construction works where new foraging opportunities arise. As such, neither foraging habitat loss nor disturbance/displacement effects during Proposed Development construction are likely to adversely impact the species. No breeding colonies lie within 5 km of any works associated with the Proposed Development and there is no possibility of disturbance of the species at its main nesting sites. Taken together these factors, mean that there is no prospect of a Likely Significant Effect on the SPA Herring gull population. In EIA terms, construction impacts of the Proposed Development are considered as being **Negligible** and **Not Significant** with respect to Herring gull.

Other Target Species

9.12.14 No other target species were recorded as using the Study Area for foraging or breeding; Whooper swan was recorded in flight only, and Curlew recorded over 500m to the north of the LOD. As such, construction impacts of the Proposed Development are considered as being **Negligible** and **Not Significant** with respect to Target Species.

Passerines

9.12.15 With the potential for construction works to be carried out during the breeding season, it is possible that some breeding bird territories may be temporarily lost during the construction phase of the Proposed Development, due to indirect habitat loss (displacement), an effect that will be short-term in temporal magnitude and localised to the Site and considered as being **Negligible** and **Not Significant** with respect to regional populations of those species.

Additional Mitigation

9.12.16 No additional mitigation is required given that no Significant effects are predicted on any ornithological feature due to the construction of the Proposed Development.

Residual Construction Effects

9.12.17 With implementation of the BSPP it is predicted that there will be **Negligible** residual effects from the construction phase of the Proposed Development on the regional (NHZ 16) population of all ornithological features. Residual effects from construction to ornithological receptors are therefore **Not Significant**.

[60] SSEN - Environmental Impact Assessment Report: Emmock Substation 400 kV.

9.13 Assessment of Likely Significant Effects - Operation

9.13.1 This section presents the assessment of effects of the operational phase of the Proposed Development. The only impact pathway taken forward for assessment is the potential for collision mortality on relevant ornithological features identified during baseline studies. The qualifying features of SPAs/Ramsar sites (refer to **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**) for which collision risk has been identified as a potential impact, are assessed with reference to potential impacts to the SPA/Ramsar populations. Impacts scoped out of further assessment of the operational phase are barrier effects, electrocution, foraging habitat loss and disturbance, for reasons noted below.

Collision Risk

9.13.2 Exposure to collision risk is a function of the flight behaviour and flight function of birds. For example, certain flight-based behaviours (courtship, hunting) may distract birds from the presence of OHLs. Also, exposure to risk will be increased in those birds that make repeated flights across OHLs when flying between feeding/nesting/roosting areas. Birds that flock will also show increased collision rates: species groups such as waterfowl and wading birds are more vulnerable to collisions than are solitary species; flying in large flocks reduces room to manoeuvre and reduces visibility of birds within the flock.

9.13.3 Susceptibility to collisions is also a function of wing size and wing loading; birds with low manoeuvrability (eg some waterfowl such as swans and larger geese) are among the species most likely to collide with OHLs[56]. In general, birds with high wing loading and low aspect ratios (ie birds classified as poor fliers) are more likely to collide with OHLs than other, more manoeuvrable species[61].

9.13.4 In addition, species with a narrow visual field of sight are also at higher collision risk, not having the visual acuity to see the wires in the frontal plane. The frontal vision of many birds is often poor and primed towards detecting movement, with lateral vision more important for detecting static objects. This is the case for many waterfowl species, including geese and swans, making this group more susceptible to OHL collisions[61].

9.13.5 Embedded Mitigation has been incorporated into the design of the Proposed Development to reduce risk to these sensitive species, including goose species that form the qualifying features of the SPAs/Ramsars outlined in **Table 9.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**.

Issues Scoped Out

9.13.6 The following high-level issues have been scoped out of the detailed OIA at the scoping stage (and as agreed with NatureScot refer to **Table 9.1: Summary of Consultation**), as they are not predicted to result in Significant adverse effects from operation of the Proposed Development:

- barrier effects (with the exception of the SPA/Ramsar qualifying species Pink-footed geese);
- electrocution; and
- foraging habitat loss.

Barrier Effects

9.13.7 A barrier effect occurs where the vertical configuration of conductors and towers creates an actual or perceived barrier which bird species may not cross, or at the very least would need to habituate to enable crossing[62]. Given the presence of a number of existing OHLs (at 132 kV and 275 kV) in the vicinity of the Proposed Development, it is considered unlikely that birds recognise these structures as barriers to flight (even with line marking this is not necessarily the case). The infrastructure of the Proposed Development is at elevated height compared to the existing OHLs, for example 132 kV OHL are likely to provide a barrier of up to approximately 30 m agl for the tallest towers

[61] Avian-Power Line Collision, 2024. *Relevant German studies and guidelines on wire marker effectiveness and evaluation of bird susceptibility to power line collision*. Annex 1 document.

[62] Humphreys, E.M., Cook, A.S.C.P., and Burton, N.H.K 2015. Collision, Displacement and Barrier Effect Concept Note. BTO Research Report No. 669.

and OPGW[63]; whilst the Proposed Development towers are up to 63 m (refer to **Volume 2, Chapter 3: Project Description**), although the OPGW would generally be slightly lower than the towers. Nevertheless, the effect of this impact remains of **Negligible** Significance, given that most flight heights of foraging and commuting birds are at a greater height than the Proposed Development[64]. The potential for operational barrier effects is therefore scoped out of detailed assessment.

Electrocution

9.13.8 Bird electrocution on OHLs is possible, either where a bird can touch a conductor while it is perched on an earthed tower, touch a conductor and the earth wire simultaneously or touch two conductor wires simultaneously. The configuration of the conductors and towers of the Proposed Development means that none of these scenarios are possible, as the gaps between the conductors and the perch points would be greater than any bird wingspan. This effect has therefore been scoped out of detailed assessment, as agreed with NatureScot (refer to **Table 9.1: Summary of Consultation of relevance to Ornithology**).

Foraging habitat loss

9.13.9 Direct and permanent loss of foraging habitat due to the presence of the Proposed Development will not result in adverse effects on SPA/Ramsar qualifying species. The foraging habitat of wildfowl and Herring gull is open ground, including agricultural fields which are widespread in the local environment. Therefore, the scale of habitat losses relative to the availability of alternative foraging habitat in the surrounding environment will be minimal, with no prospect of leading to significant effects. As such, foraging habitat loss has been scoped out of effects on Designated Sites and other target species in agreement with NatureScot (refer to **Table 9.1: Summary of Consultation of relevance to Ornithology**).

Disturbance

9.13.10 When operational, the Proposed Development would require only occasional site visits either on foot or in vehicles for maintenance activities. While the Proposed Development may also result in some disturbance arising from noise and visual disturbance associated with the OHL and towers, the magnitude of these potential impacts is considered too low and localised to cause a Significant effect on regional bird populations and is therefore scoped out of detailed assessment.

Predicted Operational Effects

Designated Sites

Firth of Tay and Eden Estuary SPA/Ramsar

9.13.11 Flight activity of the qualifying species Pink-footed goose was recorded during flight activity surveys with 12 flights of 3,455 Pink-footed geese recorded. Of these, five flights and 357 birds were observed crossing the Proposed Development. However, none of the flights recorded as crossing the Proposed Development were at potential collision height (10-75 m agl).

9.13.12 Pink-footed goose flight activity recorded within the Study Area demonstrates the potential for connectivity with the Proposed Development from the Firth of Tay and Eden Estuary SPA/Ramsar site. A Likely Significant Effect was ruled out during the screening process (refer to **Table 9.1: Summary of Consultation of relevance to Ornithology**), given the reduction in overall OHL length following removal of parts of 132 kV OHL. However, the potential for collision mortality impacts to this Target Species remains. As such, Bird Flight Diverters (BFDs) have been included within the Proposed Development's Embedded Mitigation design, with reference to the criteria outlined within **Section 9.11.** With the implementation of Embedded Mitigation through the installation of BFDs at those identified 'hot-spot' spans (refer to **Table 9.12 Embedded Mitigation (line-marking)**) no Likely Significant Effects on the qualifying features of the Firth of Tay and Eden Estuary with potential for connectivity with the Proposed

[63] Telcontor.net, 2025. Technical Information on British high-voltage power lines. [Online] Available at: https://telcontar.net/Power/pylons/power_lines

[64] Patterson, I.J., 2015. Goose flight activity in relation to distance from SPAs in Scotland, including an analysis of flight height distribution. Scottish Natural Heritage Commissioned Report No. 735.

Development are predicted. In EIA terms, it is therefore concluded that there will be **Negligible** effect on the Firth of Tay and Eden Estuary SPA/Ramsar site (Negligible spatial magnitude across the long-term) during the operational phase of the Proposed Development, and this is **Not Significant**.

Outer Firth of Forth and St. Andrews Bay Complex SPA

9.13.13 Herring gull flight activity was sporadic only across the non-breeding season, with generally low numbers (maximum count of seven birds within the Study Area) recorded during the Winter Goose Foraging Surveys of 2023/2024. As such, the Study Area does not represent an important foraging site for the species. Further gull species have also been demonstrated to show high levels of avoidance at OHLs[65].

9.13.14 BFDs will be installed as part of the Embedded Mitigation design of the Proposed Development. Taken together these factors mean that there is no prospect of a Likely Significant Effect on the Herring gull Outer Firth of Forth and St. Andrews Bay Complex SPA population. In EIA terms, it is therefore concluded that there will be **Negligible** effect on the Outer Firth of Forth and St. Andrews Bay Complex SPA (Negligible spatial magnitude across the long-term) during the operational phase of the Proposed Development, and this is **Not Significant**.

Other Target species

9.13.15 Whooper swan was recorded in flight on one occasion only, when three birds were seen on 5 December 2023 to cross the Site at potential collision height. No other flights of Target Species were recorded. As such, the Proposed Development will be present in an area of limited importance for flight activity for Target Species.

9.13.16 With the implementation of Embedded Mitigation through the installation of BFDs (refer to **Table 9.12 Embedded Mitigation (line-marking)**) no impact of the presence of the Proposed Development OHL on any Target Species is predicted). In EIA terms, it is therefore concluded that there will be **Negligible** effect on Target Species (Negligible spatial magnitude across the long-term) during the operational phase of the Proposed Development, and this is **Not Significant**.

9.14 Assessment of Residual Significant Effects - Operation

Additional Mitigation

9.14.1 No additional mitigation is proposed since no Significant effects arising from operation of the Proposed Development are predicted.

Residual Operational Effects

9.14.2 As no Additional Mitigation is proposed, the residual operational effects are the same as those identified above in **Section 9.13** and are predicted as being **Negligible** and **Not Significant** for all bird species assessed.

9.15 Assessment of Likely Significant Effects - Decommissioning

9.15.1 The decommissioning phase has the potential to result in similar effects to those arising from construction of the Proposed Development in addition to the dismantling of OHL towers.

9.15.2 Functional habitat developed across the Proposed Development's lifetime as part of any habitat management plan should be maintained to provide continuation of a stable nesting/foraging resource. As for the construction phase, habitat disturbance and damage from decommissioning stage activities should be kept to a minimum. Decommissioning will also be associated with increased human presence on-site, leading to potential disturbance to breeding birds. As such, implementation of a suitably revised BSPP would be required, to ensure compliance with legislation and best practice. It is therefore considered unlikely that the predicted significance of residual ornithological effects from decommissioning of the Proposed Development would be greater than those assessed for the construction phase.

9.15.3 Due to the uncertainty around the long-term future conditions for the Proposed Development, including timescales for decommissioning (if required at all), exact methods that will be employed at the time and the likelihood of effects

[65] Furness, R.W. 2019. Avoidance rates of herring gull, great black-backed gull and common gull for use in the assessment of terrestrial wind farms in Scotland. Scottish Natural Heritage Research Report No. 1019.

being similar or of lesser magnitude than those predicted during construction, a detailed assessment has not been undertaken of the effects associated with decommissioning of the Proposed Development.

9.15.4 On the basis that the construction phase has been considered to have **Negligible** effects on all bird species described, decommissioning is also predicted to have **Negligible** effects on ornithology. Therefore, effects arising from decommissioning are predicted to be **Not Significant** for all ornithological receptors.

9.16 Assessment of Likely Cumulative Effects

Introduction

9.16.1 Predicted adverse effects on birds arising from the construction and operation of the Proposed Development have the potential to contribute to cumulative effects upon wider regional populations, in this case populations within region NHZ 16. 'In-isolation' effects, ie those arising from the Proposed Development alone, should be considered alongside predicted effects from other plans or projects in the region. NatureScot guidance[66] on assessing cumulative effects has been followed, which recommends using an additive approach to some predicted effects from projects and plans in the region, arising from displacement, collision risk and barrier effects. Assessment of cumulative effects is normally restricted to effects that are at least Minor in isolation, ie where detectable changes to species populations are predicted and that have the potential to be Significant in combination. There are no predicted significant effects of **Minor** or greater from the Proposed Development, given that the Embedded Mitigation in the form of line marking is considered to significantly reduce any collision mortality impacts. Nevertheless, cumulative assessment has been undertaken on Target Species which demonstrated some reliance on or use of habitats and airspace within and surrounding the Proposed Development. In this case, the assessment was limited to consideration of Pink-footed geese (with respect to the Firth of Tay and Eden Estuary SPA/Ramsar site), where potential effects from the Proposed Development may be exacerbated cumulatively, with regards to influencing the species' conservation status.

Findings of the Cumulative Assessment

9.16.2 The potential for significant cumulative environmental effects of the Proposed Development has been considered with reference to two groups of reasonably foreseeable developments. The assessments are presented in the following tables:

- **Table 9.13: Cumulative assessment for Intra (Associated) Developments** provides a cumulative assessment of the Proposed Development with the Intra (Associated) Developments defined in **Volume 2, Chapter 11: Cumulative Effects**. This consists of the substation proposal at Emmock which would be directly connected with the proposed OHL. The findings of the cumulative assessment for the Intra Development are summarised in paragraphs 9.16.9 to 9.16.11 below.
- **Table 9.14: Cumulative assessment for Inter Developments** provides a cumulative assessment of the Proposed Development and Intra (Associated) Developments with other reasonably foreseeable SSEN Transmission and third-party developments (collectively, referred to as Inter Developments) as defined in **Volume 2, Chapter 11: Cumulative Effects** and paragraph 9.16.12 below.

9.16.3 A brief commentary is then provided on the predicted cumulative effects of the Proposed Development in combination with the Intra and Inter projects considered in the assessment.

9.16.4 NatureScot guidance[67] on assessing cumulative effects of wind farms on birds has been considered, which recommends using an additive approach to sum predicted effects from relevant projects and plans arising from displacement, collision risk and barrier effects. Assessment of cumulative effects is normally restricted to effects that are at least **Minor** in isolation, *ie* where detectable changes to species populations are predicted and quantified and hence have the potential to be **Significant** in combination.

[66] NatureScot (2025). Assessing the cumulative impacts of onshore wind farms on birds. https://www.nature.scot/doc/guidance-assessing-cumulative-impacts-onshore-wind-farms-birds

[67] NatureScot, 2025. *Assessing the cumulative impacts of onshore wind farms on birds.* [Online] Available at: https://www.nature.scot/doc/guidance-assessing-cumulative-impacts-onshore-wind-farms-birds.

9.16.5 With the presence of Embedded mitigation within the Proposed Development design (namely BFDs) no effects above **Negligible** were recorded for any Target Species, including SPA/Ramsar-qualifying species. Nevertheless, cumulative assessment has been undertaken on Target Species that have undergone detailed assessment, *ie* sensitive species of **High** and **Moderate** NCI, which demonstrated substantial reliance on or use of habitats and airspace within and surrounding the Proposed Development. In this case, the assessment was limited to consideration of SPA/Ramsar-qualifying species Pink-footed goose, where some potential for **Significant** effects from the Proposed Development were identified (although considered **Negligible** in the case of all these species), that may be exacerbated cumulatively (additively) with regard to influencing a species' conservation status.

9.16.6 Projects chosen for inclusion to determine in-combination effects for the identified SPAs/Ramsars were confined to wind farms and to OHL developments. These project types are considered as having the potential to have similar impacts on these European sites as those identified for the Proposed Development ie they were considered to have similar potential effects as the Proposed Development and at a spatial capacity to have the potential to do so.

9.16.7 The spatial scale for the ornithology cumulative assessment incudes projects within 10 km of the Proposed Development, which differs from that stated in **Chapter 5: EIA Process and Methodology**. This scale is considered appropriate as it will include projects that potentially overlap with the home ranges of the species being assessed; assessing at the full NHZ scale is not considered necessary due to the low magnitude of predicted effect. Projects within 10 km of the Proposed Development that are considered to be most important for ornithological features are presented below in **Table 9.13: Cumulative assessment for Intra (Associated) Developments** and **Table 9.14: Cumulative assessment for Inter Developments**..

9.16.8 The schemes are presented in relation to NHZ 16 and with reference to the presence of Target Species, including Pink-footed geese.

Summary of Predicted Effects for Emmock Substation

9.16.9 All effects of the Emmock substation on the breeding bird assemblage, are considered to be of minor impact magnitude and it is considered that disturbance impacts, and habitat loss would not significantly affect the conservation status of those species identified within the Study Area in the longer-term. As such, the impact of construction is not likely to be significant with regards to the regional population of the Target Species. No impacts from the operation of Emmock substation is predicted for ornithological receptors.

Emmock Substation

Residual Construction Effects

9.16.10 There are no predicted Significant effects arising from the construction of the Emmock substation on the ornithological resource, with residual construction effects predicted as being **Negligible** and **Not Significant** for all bird species.

Residual Operational Effects

9.16.11 No Additional Mitigation is proposed as there are no Significant effects arising from the operation of the Emmock substation on the ornithological resource, with residual operational phase effects predicted as being **Negligible** and **Not Significant** for all bird species.

Residual Cumulative Effects

No significant residual cumulative effects were identified for any of the Target Species across the transmission developments within 10 km of the Proposed Development, for which data and/or reports were available (refer to **Table 9.13: Cumulative assessment for Intra (Associated) Developments** and **Table 9.14: Cumulative assessment for Inter Developments)**. In addition, given that predicted construction and operational effects 'in isolation' of the Proposed Development (for all ornithological receptors) were considered to be **Negligible,** with the inclusion of Embedded Mitigation and with the BSPP in place, there is limited prospect for the Proposed Development to contribute to additive adverse effects across the region, such that the conservation status of wider populations of these species will be affected. Hence, for all species, the cumulative effects of the Proposed Development, in combination with other plans or projects in the NHZ, are predicted to be **Negligible** and **Not Significant** in terms of the EIA Regulations.

Table 9.13: Cumulative assessment for Intra (Associated) Developments

Development	Location	Description	Status	Residual Significant Effects	Cumulative Assessment	Additional Mitigation	Target Species recorded
Emmock 400 kV substation	Proposed Development connects to this substation	Proposed Construction and Operation of a 400 kV AC Substation	In planning	No significant residual effects identified	No likely significant cumulative effects	None	SPA species Herring gull and SPA/Ramsar, Pink-footed goose and Greylag goose recorded and reported again in this chapter.
Intra developments							
Kintore to Tealing 400 kV OHL	Proposed Development lies within 100 m of the Kintore to Tealing 400 kV OHL	Proposed construction of a new 400 kV OHL between Kintore, Aberdeenshire and Emmock (Tealing), Angus	In planning	No significant residual effects identified with implementation of Embedded Mitigation (BFDs) within OHL design	No likely significant cumulative effects	None	SPA species Herring gull and SPA/Ramsar, Pink-footed goose and Greylag goose recorded and reported again in this chapter.

Table 9.14: Cumulative assessment for Inter Developments

Development	Location	Description	Status	Residual Significant Effects	Cumulative Assessment	Additional Mitigation	Target Species recorded
17 Acres Battery Energy Storage System (BESS)	Adjacent to the Proposed Development	Construction and operation of a Battery Energy Storage System with installed capacity of up to 100MW, and associated ancillary works and development' at a site of approximately 3 hectares, at Balnuith, Tealing, near Dundee	Application submitted	NatureScot consider that the construction of a BESS at this location is unlikely to disturb or displace geese and will have no likely significant effect on the Firth of Tay and Eden Estuary SPA/Ramsar, Outer Firth of Forth and St Andrews Bay Complex SPA or Loch of Kinnordy SPA/Ramsar	No likely significant cumulative effects	None	No sightings of SPA/Ramsar species noted in relation to BESS site.
Ark Hill Wind Farm	Approximately 2.8 km northwest of Proposed Development	The existing Ark Hill Wind Farm was consented in February 2009 under 03/00831/FUL consisting of 8 turbines and associated infrastructure to the north of extension	Operational	No information	No information	No information	Short-eared Owl recorded breeding (Not recorded within tie-in Site boundary); No SPA/Ramsar species recorded

Development	Location	Description	Status	Residual Significant Effects	Cumulative Assessment	Additional Mitigation	Target Species recorded
Ark Hill Wind Farm Extension/Phase 2	Approximately 2.8 km northwest of Proposed Development	Extension to Ark Hill Wind Farm consisting of the erection of 4 wind turbines, & formation of access tracks	Application submitted	No significant residual effects identified	No likely significant cumulative effects	None	SPA/Ramsar species recorded only occasionally with no foraging geese noted
Alyth to Tealing (YT1/YT2) 275 kV OHL Upgrade (to 400 kV)	Immediate proximity to Emmock Substation and Proposed Development	OHL upgrade works to the capability of the line from 275kV to 400kV. Tie-in sections only.	Application for Section 37 Consent; submission in 2024	Known Osprey nest at Alyth Substation. No impacts identified that were considered likely to result in a residual effect of greater than Negligible effects. No significant residual effects identified	No likely significant cumulative effects	None	No sightings of SPA/Ramsar species noted in relation to development
Balnuith Battery Energy Storage System (BESS)	Adjacent to the Proposed Development	The construction and operation of a battery energy storage facility for the storage of up to a 249 MW of electricity together with associated infrastructure, substation, security fencing, CCTV, security lighting and landscaping, at Balnuith Farm, Tealing, near Dundee	Application for Section 36 Consent; submission in 2024	NatureScot consider that any loss of possible foraging habitat will not impact the geese numbers or their ability to feed and advise that there is no likely significant effect on the Firth of Tay and Eden Estuary SPA/Ramsar and that an appropriate assessment is not required.	No significant effects identified through Screening Request, no likely significant cumulative effects	None	No information
Fithie Energy Park	Adjacent to the Proposed Development	Construction and operation of a battery energy storage system (BESS) of up to 1400MW and associated infrastructure at Land west of Tealing Substation, Strathmartine, Dundee	Screening opinion sought	Tbc	No likely significant cumulative effects	None	N/A – ornithological surveys are underway
Frawney Wind Farm	RLB 2.8 km to the northeast of Proposed Development	Five turbine wind farm	Approved	No significant residual effects	No likely significant cumulative effects	None	Goshawk nesting out with Frawney Wind Farm Site; No SPA/Ramsar species recorded
Govals Wind Farm	RLB 4.7 km to the northeast of the	Six turbine wind farm	Approved	No information	No information	No information	No information

Development	Location	Description	Status	Residual Significant Effects	Cumulative Assessment	Additional Mitigation	Target Species recorded
	Proposed Development						
Tealing to Westfield (TW1/TW2) 275 kV OHL Upgrade (to 400kV)	Immediate proximity to Emmock Substation and Proposed Development	Upgrade of approximately 38 km of OHL.	Application for Section 37 Consent; submission in 2024	No significant residual effects identified	No likely significant cumulative effects	Not Applicable	No

9.17 Summary of Total Intra and Inter Cumulative Effects

9.17.1 No significant residual cumulative effects were identified for any of the Target Species across the intra and inter cumulative developments within 10 km of the Proposed Development, for which data and/or reports were available. In addition, given that predicted construction and operational effects 'in isolation' for the Proposed Development (for all ornithological receptors) were considered to be **Negligible**, with the inclusion of Embedded and Applied Mitigation, there is limited prospect for the Proposed Development to contribute to additive adverse effects across the region, such that the conservation status of wider populations of these species would be affected. Hence, for all species, the cumulative effects of the Proposed Development, in combination with other projects within 10 km, are predicted to be **Negligible** and **Not Significant** in terms of the EIA Regulations.

9.18 Summary of Significant Effects

9.18.1 **Table 9.15: Summary of Significant Effects** below, summarises the predicted residual effects of the Proposed Development on ornithology, prior to and following application of additional mitigation.

Table 9.15: Summary of Significant Effects

Predicted Effects on regional populations	Significance Prior to Additional Mitigation	Mitigation	Significance of Residual Effects Following Additional Mitigation
Construction – habitat loss/fragmentation and disturbance/displacement			
Designated Sites	Not Significant	No additional mitigation required	Not Significant
All ornithological features	Not Significant	No additional mitigation required	Not Significant
Operation: collision mortality			
Designated Sites	Not Significant	No additional mitigation required	Not Significant
All ornithological features	Not Significant	No additional mitigation required	Not Significant
Cumulative (construction and operation)			
Designated Sites	Not Significant	No additional mitigation required	Not Significant
All ornithological features	Not Significant	No additional mitigation required	Not Significant

Summary

9.18.2 It is concluded that the Proposed Development will not result in likely significant effects either by itself or cumulatively on any identified ornithological receptors. This conclusion relies on the mitigation described in this chapter to avoid or minimise risk and on the other developments which formed part of the cumulative assessment also doing the same.