

## **Volume 2: Chapter 12 – Ornithology**



## VOLUME 2, CHAPTER 12: ORNITHOLOGY

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## 12. ORNITHOLOGY

### 12.1 Introduction

- 12.1.1 This Chapter considers the potential effects of the Proposed Development on ornithology.
- 12.1.2 This Chapter presents ornithological information relevant to the Proposed Development. The assessment constitutes an Ornithological Impact Assessment (OIA) and will include the assessment of the potential effects, the predicted effects and residual effects on protected bird species. It will also consider the effects of relevance to Designated Sites of ornithological interest.
- 12.1.3 The objectives for this Chapter 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.
- 12.1.4 This Chapter should be read in conjunction with **Volume 1, Chapter 3: Project Description** of the EIAR for full details of the Proposed Development.
- 12.1.5 This Chapter should also be read alongside **Volume 2, Chapter 11: Ecology** of the EIAR, which assesses the likely significance of effects in relation to non-ornithological ecological features which would be potentially impacted by the Proposed Development.
- 12.1.6 This Chapter is supported by the following figures which are referenced throughout the text and listed below, with further associated figures included within the appendices and related figures listed in paragraph 12.1.6:
- **Figures 12.1.1 to 12.1.2: The Proposed Development and Ornithology Survey Area;**
  - **Figures 12.2.1 to 12.2.2: Ornithological Designated Sites within 20 km and 5 km;**
  - **Figures 12.3.1 to 12.3.8: Breeding Bird Surveys;**
  - **Figures 12.4.1 to 12.4.5: Flight Activity Surveys;** and
  - **Figures 12.5.1 to 12.5.6: Winter Goose Foraging Surveys.**
- 12.1.7 The following appendices and associated figures are also referred to throughout the Chapter:
- **Appendix 12.1: Ornithology Technical Report;**
  - **Appendix 12.2: Confidential Ornithology Report;**
    - **Figures A12.6.1 to A12.6.6: Confidential Breeding Schedule 1/Annex 1 species with Black Grouse.**
  - **Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA);** and
    - **Figures A12.7.1 to A12.7.5 Bird Flight Diverter Placement.**
- 12.1.8 The OIA was undertaken by 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 who have had extensive experience and training in undertaking ornithological surveys for grid and renewable energy projects. Further details can be found in **Volume 5, Appendix 5.1: The EIA Team.**
- 12.1.9 The following terminology will be referred to throughout this Chapter:
- **Site:** Defined as the area bounded by the Limit of Deviation (LOD) for the proposed OHL and access tracks; refer to **Volume 3, Figures 3.1.1 to 3.1.29: Proposed Development for which Section 37 Consent (*Electricity Act, 1989*) is sought and Volume 3, Figures 3.3.1 to 3.3.29: Overview of the LOD Variations);**

- Proposed Development: The infrastructure including towers, overhead line (OHL) conductors, access tracks, drainage, landscape features, temporary construction compounds and, laydown, equipment and materials storage areas (see **Volume 1, Chapter 3: Project Description**);
- Breeding Bird Survey Area (BBS area): The Site plus at least a 500 m buffer boundary where suitable habitat is present; and
- Study Area: as defined by best practice (detailed in **Volume 5, Appendix 12.1: Ornithology Technical Report** and in **Volume 5, Appendix 3.2: General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs)**, TG-NET-ENV-524 *Ornithology Methods for Transmission Projects*) as the area within which data collection is completed ie up to 20 km from the Site, as shown in **Volume 3, Figures 12.2.1 to 12.2.2: Ornithological Designated Sites within 20 km and 5 km.**

## 12.2 Scope of the Assessment

### Effects Assessed in Full

- 12.2.1 This assessment concentrates on the likely effects of construction and operation of the Proposed Development upon the ornithological receptors identified in the Scoping Report (**Volume 5, Appendix 6.1: Scoping Report**) and informed by review of desk-based information and field survey results, project design and Embedded Mitigation.
- 12.2.2 The EIA Scoping process, including the EIA Scoping Opinion, baseline conditions, relevant guidance and professional judgement have identified the following effects for detailed assessment:
- direct and indirect effects during construction (including displacement/disturbance) on relevant statutory Designated Sites and their qualifying features where potential connectivity has been identified;
  - direct and indirect effects during operation (including collision risk) on relevant statutory Designated Sites and their qualifying features where potential connectivity has been identified;
  - direct and indirect effects during construction via disturbance/displacement of bird species of conservation concern (BoCC) and Schedule 1/Annex 1 species;
  - direct and indirect effects during operation (including collision risk) on Schedule 1 breeding birds;
  - direct effects during operation of a barrier effect on qualifying features of relevant statutory Designated Sites;
  - 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

- 12.2.3 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 12.1: Summary of Consultation of relevance to Ornithology** and **Volume 5, Appendix 12.1: Ornithology Technical Report**). Removal of these potential effects was based on desk-based studies and field survey work undertaken, the professional judgement of the EIA team (**Volume 5, Appendix 5.1: The EIA Team**), experience from other relevant projects and policy guidance, in addition to feedback received from consultees. Upon completion of this detailed consideration of potential effects, the following effects were 'scoped out':
- direct effects during operation of a barrier effect on breeding, roosting and foraging birds (non-SPA goose species only);
  - direct effects during operation of electrocution on breeding, roosting and foraging birds;
  - direct effects during operation of electrocution on qualifying features of relevant statutory Designated Sites; and
  - direct and indirect effects during operation of disturbance on breeding, roosting and foraging birds.
- 12.2.4 Angus Council and Aberdeenshire Council did not raise any comment on the proposed scope of the ornithology assessment within the Scoping Report.

- 12.2.5 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 Study Areas will require consideration within the Ecological and Ornithological Management Plan (EOMP); refer to **Volume 5, Appendix 3.4 Outline Construction Environmental Construction Plan (CEMP)**. This will be prepared by the Principal Contractors pursuant to the terms of contract and to discharge consent conditions, which will include adherence to SSEN Transmission's Bird Species Protection Plan (BSPP<sup>1</sup>) 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

- 12.2.6 The potential for functional connectivity between the Proposed Development and the Designated Sites listed in **Table 12.7: 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 Ramsar sites.
- 12.2.7 The method for assessing likely significant effects on a SPA/Ramsar site is different from that employed for wider-countryside ecological interests. The *Habitats Directive* was initially 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 at the "Habitats Regulations") have replaced the *1994 Regulations* for specific and devolved 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*.
- 12.2.8 The Scottish Ministers are only empowered to grant such necessary statutory consents if it has been determined through the carrying out of a Habitats Regulations Assessment (HRA) that the Proposed Development will not adversely impact upon integrity of a European site<sup>2</sup>.
- 12.2.9 NatureScot's response to Scoping consultation (refer to **Table 12.1: Summary of Consultation of relevance to Ornithology**), which is annexed to the Scottish Ministers Scoping Opinion at page 55 of Annex A, advised that the Proposed Development had potential to result in likely significant effects (LSE) on qualifying features of named SPAs<sup>3</sup>/Ramsar sites prior to any mitigation. The identified sources of potential LSE include collision mortality and the barrier effect of the Proposed Development on qualifying goose species. Therefore, there is a requirement for the competent authority to undertake an Appropriate Assessment. A 'shadow' Appropriate Assessment is provided in **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**, which considers both relevant SPAs/Ramsar sites and Special Areas of Conservation (SACs).

### **12.3 Assessment Methodology**

#### Legislation, Policy and Guidance

##### Legislation

- 12.3.1 Relevant legislation and guidance documents have been reviewed and considered as part of this ornithology assessment. Of particular relevance are:

<sup>1</sup> SSEN Transmission, 2023. Bird Species Protection Plan – TG-NET-ENV-505.

<sup>2</sup> Refer to Section 1.4 of **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal**.

<sup>3</sup> SPAs and Ramsar sites for which potential LSE identified: Loch of Skene SPA/Ramsar; Montrose Basin SPA/Ramsar; Loch of Lintrathen SPA/Ramsar; Loch of Kinnordy SPA/Ramsar; Firth of Tay and Eden Estuary SPA/Ramsar; Fowlsheugh SPA and Outer Firth of Forth and St. Andrews Bay Complex SPA. All Ramsar sites are coincident with the named SPAs and their qualifying interests are the same species as the named SPAs.

- *The Wildlife and Countryside Act 1981 (WCA) (as amended)*<sup>4</sup>;
- *The Conservation of Habitats and Species Regulations 2017 (Amendment) (EU Exit)*<sup>5</sup>;
- *The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019*<sup>6</sup> and
- *The Nature Conservation (Scotland) Act 2004 (as amended)*<sup>7</sup>.

12.3.2 Key elements of relevant legislation are detailed within **Volume 5, Appendix 12.1: Ornithology Technical Report.**

#### Policy

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

- *National Planning Framework 4 (Policy 4, 2023)*<sup>8</sup>;
- *Angus Council Local Development Plan*<sup>9</sup>;
- *Aberdeenshire Local Development Plan*<sup>10</sup>
- *PAN 60: Planning for Natural Heritage* (Scottish Government 2000)<sup>11</sup>;
- *Nature Conservation: Implementation in Scotland of the Habitats and Birds Directives: Scottish Executive Circular 6/1995 as amended* (June 2000)<sup>12</sup>;
- *Tayside Local Biodiversity Action Plan*<sup>13</sup>; and
- *The North East Scotland Biodiversity Partnership Local Biodiversity Action Plan*<sup>14</sup>.

#### Guidance

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

- NatureScot Guidance: Environmental Impact Assessment Handbook (2018)<sup>15</sup>;
- NatureScot Guidance: Assessing connectivity with SPAs (SNH, 2016)<sup>16</sup>;
- NatureScot Guidance: Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds (SNH, 2016)<sup>17</sup>;

<sup>4</sup> UK Government, 1981. *Wildlife and Countryside Act 1981*. [Online] Available at: <https://www.legislation.gov.uk/ukpga/1981/69>.

<sup>5</sup> UK Government, 2019. *The Conservation of Habitats and Species Regulations 2019 ((Amendment) (EU Exit))*. [Online] Available at: <https://www.legislation.gov.uk/ukdsi/2019/9780111176573>.

<sup>6</sup> UK Government, 2019. *The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019*. [Online] Available at: <https://www.legislation.gov.uk/sdsi/2019/9780111041062>

<sup>7</sup> UK Government, 2004. *Nature Conservation (Scotland) Act 2004*. [Online] Available at: <https://www.legislation.gov.uk/asp/2004/6/contents>.

<sup>8</sup> Scottish Government, 2023. *National Planning Framework 4*. [Online] Available at: <https://www.gov.scot/publications/national-planning-framework-4/>.

<sup>9</sup> Angus Council, 2016. *Angus Local Development Plan*. [Online] Available at: [https://www.angus.gov.uk/directories/document\\_category/development\\_plan](https://www.angus.gov.uk/directories/document_category/development_plan).

<sup>10</sup> Aberdeenshire Council, 2023. *Aberdeenshire Local Development Plan*. [Online] Available at: [https://www.angus.gov.uk/sites/default/files/Tayside%20Local%20Biodiversity%20Action%20Plan%202016\\_2026.pdf](https://www.angus.gov.uk/sites/default/files/Tayside%20Local%20Biodiversity%20Action%20Plan%202016_2026.pdf).

<sup>11</sup> Scottish Government, 2000. *Planning Advice Note 60: Natural Heritage*. [Online] Available at: <https://www.gov.scot/publications/pan-60-natural-heritage/>.

<sup>12</sup> 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)*.

<sup>13</sup> 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](https://www.angus.gov.uk/sites/default/files/Tayside%20Local%20Biodiversity%20Action%20Plan%202016_2026.pdf).

<sup>14</sup> North East Biodiversity Partnership, n.d. *Important Local Species*. [Online] Available at: <https://www.nesbiodiversity.org.uk/biodiversity-information-for-developers/important-local-species/>.

<sup>15</sup> 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.

<sup>16</sup> NatureScot, 2016. *Assessing Connectivity with Special Protection Areas*. [Online] Available at: <https://www.nature.scot/doc/assessing-connectivity-special-protection-areas>.

<sup>17</sup> NatureScot, 2016. *Guidance: Assessment and mitigation of impacts of power lines and guyed meteorological masts on bird*. SNH, Battleby.

- NatureScot Guidance: Recommended bird survey methods to inform impact assessment of onshore wind farms (SNH, 2017)<sup>18</sup>;
- NatureScot Guidance: Assessing Significance of Impacts on bird populations from onshore wind farms that do not affect protected areas (NatureScot, 2025)<sup>19</sup>;
- NatureScot SiteLink web pages (online information on Designated Sites)<sup>20</sup>;
- SSEN Transmission specific documentation, including TG-NET-ENV-524 *Ornithology Methods for Transmission Projects*<sup>21</sup> and Bird Species Protection Plan<sup>1</sup> (refer to **Volume 5, Appendix 3.2: General Environmental Management Plans (GEMPS) and Species Protection Plans (SPPs)** and
- Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine 4th edition, CIEEM (CIEEM, 2022)<sup>22</sup>.

12.3.5 Further guidance in relation to survey methods and the interpretation of ornithological and ecological data is referenced in **Volume 5, Appendix 12.1: Ornithology Technical Report**, and **Volume 5, Appendix 3.2: General Environmental Management Plans (GEMPS) and Species Protection Plans (SPPs)**, TG-NET-ENV-524 *Ornithology Methods for Transmission Projects* where appropriate.

## 12.4 Consultation

12.4.1 In undertaking the assessment, consideration has been given to the relevant EIA scoping and pre-consultation responses, as summarised below in **Table 12.1: Summary of Consultation of relevance to Ornithology**. A full summary of consultation is provided in **Volume 1, Chapter 6: Scope and Consultation**, together with the supporting **Appendix 6.3: Consultation Matrix** in **Volume 5** of the EIAR.

**Table 12.1: Summary of Consultation of relevance to Ornithology**

| Consultee  | Date          | Scoping/Other Consultation | Issue Raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | How Issue has been Addressed                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------|---------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NatureScot | 10 April 2023 | Consultation Response      | NatureScot agree with LUC's approach to Vantage Point (VP) surveys.<br>VPs will be focussed at dusk/dawn but day VP surveys will also take place to allow for foraging flights to be recorded. The VP allocation of 18 hours per watch point will be split across the season; with six hours of these watches to include time from 30 minutes before sunrise (ie 'dawn' watch), six hours of the watches to include time to 30 minutes after sunset (ie 'dusk' watches) and the remaining six hours of watches across the rest of the day. Winter VP surveys undertaken from late September to end of March/start of April will | LUC carried out field surveys noting species, number and field/land-use across the Proposed Development. As suggested by NatureScot, focal watches of foraging geese were carried out. When surveyors encountered foraging SPA goose species, the birds were recorded and watched across a time period to demonstrate flight activity.<br>Flight activity (including flight heights) of these foraging birds was recorded to complement the VP watches. |

<sup>18</sup> NatureScot, 2016. *Guidance: Recommended bird survey methods to inform impact assessment of onshore wind farms*. SNH, Battleby.

<sup>19</sup> NatureScot Guidance, 2025. *Assessing Significance of Impacts on bird populations from onshore wind farms that do not affect protected areas*. [Online] Available at: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-standing-advice-and-guidance-documents>.

<sup>20</sup> 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>.

<sup>21</sup> SSEN Transmission, 2021. *Ornithology Methods for Transmission Projects* – TG-NET-ENV-524.

<sup>22</sup> 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  | Date              | Scoping/Other Consultation     | Issue Raised                                                                                                                                                                                                                                                                                                                                                                   | How Issue has been Addressed                                                                                                                                                                                                                                                                                                                        |
|------------|-------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                   |                                | provide sufficient coverage of flight activity associated with the SPA wintering goose roosts. Priority should be given to VPs within c. 10 km of the SPAs.                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                     |
| NatureScot | 31 May 2023       | Consultation Response          | All proposed routes are within the connectivity distance for foraging geese (15 – 20 km) that could be associated with SPAs and Ramsar sites designated for their non-breeding goose interests. Ongoing surveys will enable an assessment of the impact on geese and inform the Habitats Regulations Appraisal (HRA) process.                                                  | Level and type of survey agreed with NatureScot to fulfil requirement for HRA screening and assessment –refer to <b>Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)</b> .                                                                                                                                                      |
| NatureScot | 06 March 2024     | Consultation Response          | Designated Sites: NatureScot likely to object if effects will be adverse and cannot be mitigated satisfactorily.<br>A site-specific plan for each affected area spanning the lifetime of infrastructure should be produced.<br>Sections D and E: Fowlsheugh SPA connectivity noted.                                                                                            | Line diverter type to be installed as per recommendations on high-risk spans, with maintenance across OHL lifespan - refer to <b>Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)</b> .                                                                                                                                         |
| NatureScot | 30 April 2024     | Consultation Response          | EIA should include full assessment on impact to Schedule 1 birds in Natural Heritage Zones (NHZ), including breeding raptor surveys. Pre-construction survey required if construction would take place during breeding season. Active nests of Schedule 1 birds within 500 m will restrict works. Check with Scottish Forestry/North East Scotland Raptor Study Group (NERSG). | Assessment has included impacts on regional NHZ populations, including Schedule 1/Annex 1 species. Additional raptor surveys to inform assessment.<br>Programme of mitigation, including pre-construction survey and establishment of buffer zones to prevent disturbance, are detailed in the BSPP – refer to <b>Section 12.13</b> in this chapter |
| NatureScot | 06 June 2024      | Collision Risk Modelling (CRM) | NatureScot content with proposed approach to CRM. Welcome the consideration of the post-construction Beauy-Denny 400 kV OHL monitoring. Welcome the fieldwork carried out thus far. Generally, do not ask for OHL CRM given difficulties calculating it and don't advise on CRM methods. Best approach - line marking in any high-risk areas.                                  | Line marking has been included within the design of the Proposed Development as Embedded Mitigation where required and is detailed in <b>Section 12.13</b> in this chapter.                                                                                                                                                                         |
| NatureScot | 10 September 2024 | Scoping Opinion Response       | NatureScot agree with topics scoped in/out. Refer Applicant to standing advice and guidance documents. OHL may have impact on protected areas but working with SSEN Transmission to try to avoid Significant adverse effects.                                                                                                                                                  | This has been noted.<br>Relevant NatureScot guidance and advice has been adhered to throughout the ornithology assessment.                                                                                                                                                                                                                          |
| NatureScot | 21 November 2024  | Consultation Response          | Noted that previous feedback at the routing stage is still relevant.                                                                                                                                                                                                                                                                                                           | Fowlsheugh SPA has been scoped out of the assessment stage.                                                                                                                                                                                                                                                                                         |

| Consultee  | Date             | Scoping/Other Consultation | Issue Raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | How Issue has been Addressed                                                                                                                                                                                                                                                                                                                                          |
|------------|------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                  |                            | <p><u>Section A</u></p> <p>Firth of Tay and Eden Estuary SPA. Collision risk issues and associated mitigation required. Not likely to be significant loss of foraging habitat.</p> <p>Outer Firth of Forth and St Andrew's Complex SPA. Unlikely to be connectivity. Recommend bird diverters where OHL crosses waterways.</p> <p>Loch of Kinnordy SPA, Sites of Special Scientific Interest (SSSI), Ramsar. Within connectivity distance of Proposed Development. Concentration of goose foraging west of Forfar between A94 and B957. Identified as potential for collision risk. Not Significant loss of foraging habitat.</p> <p>Loch of Lintrathen SPA, SSSI, Ramsar. Same as Loch of Kinnordy. Also, Whooper swans (<i>Cygnus cygnus</i>) with a similar foraging area as geese.</p> <p><u>Section B</u></p> <p>Montrose Basin SSSI, SPA and Ramsar (including Duns Dish SSSI). Potential connectivity for Pink-footed (<i>Anser brachyrhynchus</i>) and Greylag (<i>Anser anser</i>) Geese. Geese surveys to establish feeding concentrations. Installation of bird diverters required.</p> <p><u>Section D</u></p> <p>Fowlsheugh SPA. Not likely to have an effect on features.</p> <p><u>Section F</u></p> <p>Loch of Skene SPA, SSSI and Ramsar. Potential connectivity. Line marking should be used in high-risk areas.</p> <p>Schedule 1 Birds. Note some woodland areas have potential to support breeding raptors. Pre-construction breeding raptor surveys should be carried out. If nesting is identified, OHL and works should be buffered and undertaken outwith the breeding season.</p> | <p>Commitment to mitigation through installation of bird diverters to the OHL in high-risk areas and over watercourses. Loss of foraging habitat scoped out of assessment.</p> <p>Pre-construction raptor surveys to be carried out by appropriately skilled Environmental Clerk of Works (ECoWs)/ornithologists (refer to <b>Section 12.13</b> in this chapter).</p> |
| NatureScot | 23 December 2024 | Ecology and Ornithology    | NatureScot requested that additional items were scoped into the EIAR including:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Further discussion with NatureScot to identify whether it would be proportionate to scope in                                                                                                                                                                                                                                                                          |

| Consultee                      | Date             | Scoping/Other Consultation                  | Issue Raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | How Issue has been Addressed                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------|------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                  |                                             | Electrocution on designated features/Schedule 1 birds and BoCC.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | the items requested for inclusion in the EIAR (see below table row for further detail).                                                                                                                                                                                                                                                                                                               |
| NatureScot                     | 28 January 2025  | Ornithology response to electrocution query | <p>SSEN Transmission proposed that impact of electrocution is scoped out as the configuration of the conductors and towers on the Proposed Development means that electrocution of birds perching or in flight is not possible, since the gaps between the conductors and the perch points would be greater than any bird wingspan (including larger raptors such as Red Kite (<i>Milvus milvus</i>) and Osprey (<i>Pandion haliaetus</i>)).</p> <p>Following discussions, it was confirmed that the minimal risk of electrocution by the Proposed Development to birds does not provide a pathway to a Significant effect for any bird species.</p> | NatureScot response noted, with electrocution to be scoped out of assessment.                                                                                                                                                                                                                                                                                                                         |
| Aberdeenshire Council          | 17 July 2023     | Consultation response                       | <p>Aberdeenshire Council state that the scope of ornithological surveys seems to be acceptable.</p> <p>Given the high level of constraint for ornithology, a consultation with RSPB should be undertaken.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                        | Consultation with Royal Society for the Protection of Birds (RSPB) was undertaken.                                                                                                                                                                                                                                                                                                                    |
| Culter Community Council       | 25 July 2023     | Consultation response                       | Concerns raised around bird population (many birds fly north-south not east-west as stated in (Red Amber Green) RAG assessment).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | VP surveys from 2023-2024 inclusive, covered area of interest.                                                                                                                                                                                                                                                                                                                                        |
| Echt & Skene Community Council | 21 November 2024 | Consultation response                       | The Loch of Skene attracts large numbers of wildfowl and common gulls in Autumn and Winter, including Greylag Geese and Pink-footed Geese.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | VP surveys from 2023-2024 inclusive, covered area of interest.                                                                                                                                                                                                                                                                                                                                        |
| Forfar Community Council       | 15 November 2024 | Consultation response                       | <p>Comment on routes within Section:</p> <p>- 2A and 2B are both landscape areas for migrating birds including raptors.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | VP surveys from 2023-2024 inclusive, covered area of interest.                                                                                                                                                                                                                                                                                                                                        |
| Tealing Community Council      | 20 November 2024 | Consultation response                       | Environmental surveys have not picked up the protected species Sparrowhawk ( <i>Accipiter nisus</i> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>BBS and other breeding bird surveys were carried out in 2023 and 2024. Within this assessment Sparrowhawk is not a Target Species, so is not considered in detail. Non-Target Species (refer to <b>Table 12.8: Target Species</b>) were not reported as part of the baseline. Sparrowhawk and all nesting birds in Scotland are protected (WCA). A BSPP would address the requirement for pre-</p> |

| Consultee | Date         | Scoping/Other Consultation | Issue Raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | How Issue has been Addressed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|--------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | construction monitoring surveys to be carried out for all nesting bird species.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| RSPB      | 14 June 2023 | Consultation response      | <p>RSPB provided comment on route choices within Sections.</p> <p>Section C: Woodlands to the northwest of this section are known to support large numbers of roosting Red Kite, a specially protected Schedule 1 species. Section C would place the overhead lines approximately 7 km northwest of the Montrose Basin SPA/Ramsar/SSSI.</p> <p>Qualifying goose species have foraging sites located away from the roost at Montrose Basin. VP surveys should be carried out to inform the EIA process and predict collision risk with the overhead lines.</p> <p>Section E: Concerns about the proximity of the Preferred Corridor (2b) and route to Loch of Skene.</p> <p>Preferred Route E1 contains at least two known Red Kite nest sites.</p> <p>Section F: Aberdeenshire Red Kite nests and roosts in Deeside will need to be established through surveys, immediately before construction work begins.</p> <p>Two years of field surveys (VP, breeding bird and wintering bird) should be undertaken, especially in any sensitive locations.</p> <p>RSPB Scotland, the Tayside Raptor Study Group, and the NESRSG should be contacted for relevant bird records.</p> <p>NatureScot guidance<sup>17</sup> should be followed as overhead wires associated with power lines present risks of collision, electrocution and displacement to birds. Construction and maintenance also present disturbance risks and these should be discussed in any assessment.</p> | <p>VP surveys were carried out in Section C for migratory wildfowl.</p> <p>Red Kite nest and roost surveys will be carried out prior to commencement of construction, as detailed in the BSPP (refer to <b>Section 12.13</b> in this chapter).</p> <p>Field surveys across at least 12 months were carried out in agreement with NatureScot and in line with NatureScot guidance<sup>17</sup> (requirement of one year's survey).</p> <p>Construction and operational effects of the Proposed Development with potential for impacts on sensitive ornithological receptors are identified and discussed within this assessment.</p> |

## 12.5 Desk Based Research and Data Sources

12.5.1 A desk study was undertaken to identify known ornithological features within the Study Area as described below in

12.5.2 **Table 12.2: Study Area Descriptions of relevance to Desk-Based Studies.** Searches were made for those species and Designated Sites agreed through consultation, as detailed below.

12.5.3 The following data sources were utilised to inform the assessment:

- The NatureScot SiteLink website<sup>23</sup> to identify designated nature conservation sites with ornithological interest that may have connectivity to the Proposed Development (up to 20 km for sites of international importance and where the qualifying feature(s) core foraging range extends to this distance and 2 km for sites of national importance; refer to
- **Table 12.2: Study Area Descriptions of relevance to Desk-Based Studies);**
- National Biodiversity Network (NBN)<sup>24</sup>;
- RSPB - bird records within 2 km of the Proposed Development including Schedule 1 and Annex 1 bird species, together with breeding waders and Black Grouse;
- Data on Schedule 1 and Annex 1 raptors was requested from the local Raptor Study Groups; and
- British Trust for Ornithology (BTO) - BTO publication<sup>25</sup> 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<sup>26</sup> was also referenced.

12.5.4 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.

#### Study Areas

12.5.5 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 5, Appendix 12.1: Ornithology Technical Report**). The Study Areas comprise the Proposed Development plus relevant buffers of up to 20 km radius, as shown in **Volume 3, Figures 12.1.1 to 12.1.2 The Proposed Development and Ornithology Survey Area** and **Volume 3, Figures 12.2.1 to 12.2.2: Ornithological Designated Sites within 20 km and 5 km** and defined below in

12.5.6 **Table 12.2: Study Area Descriptions of relevance to Desk-Based Studies.**

**Table 12.2: Study Area Descriptions of relevance to Desk-Based Studies**

| Ornithological Feature                 | Designation Type                                                                                                                                | Buffer from the Proposed Development |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Statutory Designated Sites             | <ul style="list-style-type: none"> <li>• SPAs</li> <li>• Ramsar Sites</li> </ul>                                                                | 20 km                                |
|                                        | <ul style="list-style-type: none"> <li>• SSSIs</li> </ul>                                                                                       | 5 km                                 |
| Non-Statutory Designated Sites         | <ul style="list-style-type: none"> <li>• Royal Society for the Protection of Birds (RSPB) and Scottish Wildlife Trust (SWT) Reserves</li> </ul> | 2 km                                 |
| Existing records of Schedule 1 species | <ul style="list-style-type: none"> <li>• All Schedule 1 species' records from the preceding 10 years.</li> </ul>                                | 5 km                                 |
| Breeding birds                         | <ul style="list-style-type: none"> <li>• All BoCC Red and Amber-listed species</li> </ul>                                                       | 2 km                                 |

<sup>23</sup> NatureScot n.d. *SiteLink* [Online] Available at: <https://sitelink.nature.scot/home>.

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

<sup>25</sup> 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.

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

12.5.7 Further information relating to the desk study method is provided in **Volume 5, Appendix 12.1: Ornithology Technical Report**.

## 12.6 Field Survey

12.6.1 The survey areas varied according to the type of survey, as defined by best practice<sup>18</sup> and as agreed during consultation with NatureScot<sup>27</sup>, and as detailed in **Volume 5, Appendix 12.1: Ornithology Technical Report**.

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

- Breeding bird surveys (BBS) focussing on breeding waders (three visits in May and June 2023 inclusive and three visits in April to June 2024, inclusive);
- Black Grouse (*Lyrurus tetrix*) surveys (two visits in suitable habitat in April and May 2024, inclusive);
- Schedule 1/Annex 1 raptors (three visits in May to July 2023 inclusive and a further three visits between March and August 2024 inclusive);
- Flight Activity surveys (six visits between September 2023 to March 2024 inclusive, from VPs within 10 km of identified SPAs); and
- Winter Goose Foraging Surveys (six visits from January to March 2023 inclusive and further visits between September 2023 to March 2024 during Flight Activity surveys).

12.6.3 Field surveys were undertaken in line with NatureScot guidance with respect to the assessment of impacts of OHLs and guyed meteorological masts on birds<sup>28</sup> and guidance provided in the Applicant's document TG-NET-ENV-524 Ornithology Methods for Transmission Projects.

12.6.4 Flight activity surveys were carried out in order to determine presence, numbers and flight activity (direction, flight height) of SPA-qualifying goose species in relation to the Proposed Development. Methods were determined following consultation with NatureScot (refer to **Table 12.1: Summary of Consultation of relevance to Ornithology**) and in line with NatureScot's guidance for surveys and assessment of birds and powerlines<sup>17</sup>. Vantage Points (VPs) were placed along the length of the Proposed Development to provide coverage of qualifying species' flight activity up to 10 km from the SPAs where the qualifying component included wildfowl species. The direction and height of flights were recorded. 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 5, Appendix 12.1: Ornithology Technical Report**. Flight activity surveys were used to inform Embedded Mitigation (line-marking) across spans considered to be of high collision risk.

12.6.5 All ornithological surveys undertaken for the Proposed Development followed good practice guidelines for all ornithological features surveyed<sup>18, 29</sup>.

### Survey Areas

12.6.6 The ornithology survey areas were defined as follows (also refer to **Volume 3, Figures 12.1.1 to 12.1.2: The Proposed Development and Ornithology Survey Area**):

- BBS area - suitable open-ground habitats up to at least 500 m from the Proposed Development, where suitable habitat was present<sup>30</sup>;
- Raptor survey area - suitable habitats up to 2 km from the Proposed Development;
- Black grouse survey area - suitable habitats up to 1 km of the Proposed Development;

<sup>27</sup> As noted in **Table 12.1: Summary of Consultation of relevance to Ornithology**.

<sup>28</sup> 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>.

<sup>29</sup> Gilbert, G., Gibbons, D.W. & Evans, J., 1998. *Bird Monitoring Methods*. RSPB, Sandy.

<sup>30</sup> Habitat suitability was defined using BTO-modelled data as outlined in **Volume 5, Appendix 12.1 Ornithology Technical Report** (refer to <https://www.bto.org/our-work/science/publications/reports/research-reports/sensitivity-mapping-breeding-waders-britain-towards>).

- Flight Activity survey (FA) area - airspace to 2 km from the Proposed Development and within 10 km of SPAs with qualifying features showing potential connectivity (refer to **Table 12.2: Study Area Descriptions of relevance to Desk-Based Studies**); and
- Foraging geese – suitable habitats within 2 km of the Proposed Development.

12.6.7 Ornithology field surveys were undertaken in appropriate weather conditions. Details of the survey methodologies and results are provided in **Volume 5, Appendix 12.1: Ornithology Technical Report**.

## 12.7 Assessing Significance

12.7.1 The methodology employed for assessing the significance of likely effects is in accordance with impact assessment procedures detailed by CIEEM<sup>22</sup> and NatureScot<sup>20</sup> and takes account of Scottish Government guidance on the implementation of *The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019*.

12.7.2 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.

12.7.3 The assessment considers whether the predicted construction and operational effects of the Proposed Development scoped into the assessment are significant on the ornithological features identified during desk and field-based studies (refer to **Section 12.2**). In summary, effects on bird populations with connectivity to the Proposed Development can arise from:

- Direct roosting and nesting habitat loss;
- indirect habitat loss, arising from disturbance and displacement; and
- collision mortality.

12.7.4 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, 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 (its sensitivity);
- 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

12.7.5 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 12.3: Nature Conservation Importance (Sensitivity) of bird receptors**.

**Table 12.3: Nature Conservation Importance (Sensitivity) of bird receptors**

| NCI Sensitivity | Definition                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High</b>     | Species listed in Annex 1 of the <i>EU Birds Directive</i> .<br><br>Breeding species listed on Schedule 1 of the <i>Wildlife and Countryside Act, 1981 (as amended)</i> .                                                                                                                                                                                                                                                  |
| <b>Moderate</b> | Species on the BOCC 'Red' list (Stanbury <i>et al.</i> , 2024 <sup>31</sup> ). 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.<br><br>Species present in regionally important numbers (>1 % regional population). |
| <b>Low</b>      | All other species not covered above.                                                                                                                                                                                                                                                                                                                                                                                       |

#### Criteria for Assessing Magnitude of Change

- 12.7.6 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 (as outlined below in **Table 12.4: Spatial Magnitude of Effect**) and four levels of temporal magnitude (as outlined below in **Table 12.5: Temporal Magnitude of Effect**).
- 12.7.7 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 from elsewhere.
- 12.7.8 Where such information exists from monitoring studies or other research, data on the responses of individual birds and bird populations to electricity transmission developments and other similar developments are considered.
- 12.7.9 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.

**Table 12.4: Spatial Magnitude of Effect**

| Magnitude        | Definition                                                                                                                                                                                                      |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Very High</b> | 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.<br><br>Guide: >80% of regional population affected. |
| <b>High</b>      | Major reduction in the status or productivity of a bird population due to mortality or displacement or disturbance.<br><br>Guide: 21-80% of regional population affected.                                       |
| <b>Moderate</b>  | Partial reduction in the status or productivity of a bird population due to mortality or displacement or disturbance.<br><br>Guide: 6-20% of regional population affected.                                      |
| <b>Low</b>       | Small but discernible reduction in the status or productivity of a bird population due to mortality or displacement or disturbance.                                                                             |

<sup>31</sup> 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>.

| Magnitude         | Definition                                                                                                                                                                                                                                             |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | Guide: 1-5% of the regional population affected.                                                                                                                                                                                                       |
| <b>Negligible</b> | 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.<br><br>Guide: <1% of regional population affected. |

**Table 12.5: Temporal Magnitude of Effect**

| Magnitude          | Definition                                                                                                                                                                                                                                                                                                   |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Permanent</b>   | Effects continuing 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. |
| <b>Long-term</b>   | Approximately 15-30 years.                                                                                                                                                                                                                                                                                   |
| <b>Medium-term</b> | Approximately 5-15 years.                                                                                                                                                                                                                                                                                    |
| <b>Short-term</b>  | Up to approximately five years.                                                                                                                                                                                                                                                                              |
| <b>Negligible</b>  | Less than one year.                                                                                                                                                                                                                                                                                          |

12.7.10 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<sup>19</sup> 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 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.

12.7.11 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. Favourable conservation status in this context is defined as a bird population that is thriving and has a good chance of continuing to thrive within its natural range and is not facing imminent threats that could lead to its decline or extinction. This includes, therefore, a population size that is large enough to ensure the species' long-term survival together with suitable habitats and resources to support their life-cycle.

#### Criteria for Assessing Significance

12.7.12 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 SSSI), then effects are judged against whether the Proposed Development could significantly affect the site 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)<sup>32</sup>. For wintering and migratory bird populations (non-breeding), national populations form the appropriate spatial unit.

<sup>32</sup> SNH, 2002. *Natural Heritage Zones: A national assessment of Scotland's landscapes*. Battleby, SNH.

- 12.7.13 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 significance of the likely effect on the conservation status of each potentially affected species within the region.
- 12.7.14 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 12.6: Significance Criteria**. Detectable changes, ie those of 'Major' or '**Moderate**' significance, in the conservation status of regional bird populations of NCI are considered to be Significant effects for the purposes of this Chapter in the EIAR. 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 12.6: Significance Criteria**

| Significance of effect | Description                                                                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Major</b>           | A detectable change to regional populations of <b>High</b> or <b>Moderate</b> NCI, resulting in total population loss or severe impacts to their conservation status. <b>Significant effect.</b> |
| <b>Moderate</b>        | A detectable change to regional populations of <b>High</b> or <b>Moderate</b> NCI, resulting in population losses that are likely to impact their conservation status. <b>Significant effect</b> |
| <b>Minor</b>           | Small or barely detectable changes to regional populations of <b>High</b> or <b>Moderate</b> NCI, that are unlikely to impact their conservation status. <b>Not Significant effect.</b>          |
| <b>Negligible</b>      | No or barely discernible changes to regional populations of <b>High</b> or <b>Moderate</b> NCI, with no impact on their conservation status. <b>Not Significant effect.</b>                      |

## 12.8 Assessment Assumptions and Limitations

### Assessment Assumptions

- 12.8.1 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 (and as agreed with NatureScot – refer to **Table 12.1: Summary of Consultation of relevance to Ornithology**), with the collection of survey data across at least 12 months<sup>33</sup> 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).

### Assessment Limitations

- 12.8.2 It is considered that there is sufficient baseline information to enable an informed decision to be taken in relation to the identification and assessment of likely Significant effects on ornithology of the Proposed Development. No assessment limitations are present.

### Limits of Deviation

- 12.8.3 Movement of the Proposed Development due to potential future micro-siting and the positioning, for example, angle towers 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 the Site. 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

<sup>33</sup> NatureScot (SHN), 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>.

marked, irrespective of flight activity (refer to **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**). No Designated Sites with 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.

## 12.9 Baseline Conditions

- 12.9.1 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 desk study data and field surveys combined. The Study Area used for breeding wader field surveys is referred to as the BBS Area; this comprised the Site plus a 500 m buffer (as shown on **Volume 3, Figures 12.3.1 to 12.3.8: Breeding Bird Surveys**). Surveys for other Target Species were carried out up to 2 km from the Site in line with good practice guidelines<sup>18</sup>. Further information including flight activity and foraging records is presented in **Volume 5, Appendix 12.1: Ornithology Technical Report**.
- 12.9.2 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, Figures 12.1.1 to 12.1.2: The Proposed Development and Ornithology Survey Area**).
- 12.9.3 Baseline bird populations are reported with reference to a series of buffers up to 20 km from the Proposed Development, which comprise the Study Area for ornithology (refer to **Table 12.2: Study Area Descriptions of relevance to Desk-Based Studies**). 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<sup>16</sup>.

### Designated Sites

- 12.9.4 **Volume 5, Appendix 12.1: 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, Figures 12.2.1 to 12.2.2 Ornithological Designated Sites within 20 km and 5 km**). Special Areas of Conservation (SACs), which are designated for their ecological interests, are detailed in **Volume 2, Chapter 11: Ecology**. Similarly, SSSIs for which only non-avian ecological interests qualify, are listed within **Volume 2, Chapter 11: Ecology**, while those designated only for geological qualifying interests are detailed in **Volume 2, Chapter 13: Hydrology, Hydrogeology, Geology and Soils**.
- 12.9.5 **Table 12.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development** detailed 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 1, Chapter 3: Project Description**). These Statutory Designated Sites show potential connectivity with the Proposed Development, due to the core foraging ranges of the named qualifying features.

**Table 12.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**

| Designated Site Name                                  | Qualifying Features with potential connectivity to Proposed Development                                                        | Distance from Proposed Development at its Closest | Connectivity with Proposed Development                                                                                                                             |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Section A</b>                                      |                                                                                                                                |                                                   |                                                                                                                                                                    |
| <b>Firth of Tay and Eden Estuary SPA &amp; Ramsar</b> | <ul style="list-style-type: none"> <li>Greylag Goose (non-breeding); and</li> <li>Pink-footed Geese (non-breeding).</li> </ul> | 7.5 km (south of Section A)                       | Potential connectivity with Greylag and Pink-footed Geese as Section A lies within core foraging range (20 km).                                                    |
| <b>Outer Firth of Forth and St. Andrews Bay SPA</b>   | <ul style="list-style-type: none"> <li>Herring Gull (<i>Larus argentatus</i>; breeding &amp; non-breeding); and</li> </ul>     | 7.5 km (southeast of Section A)                   | Outer Firth of Forth and St. Andrews Bay SPA is designated for breeding seabirds including Herring Gull that may forage inland (mean distance 10.5 km from nesting |

| Designated Site Name                            | Qualifying Features with potential connectivity to Proposed Development                                                                                                             | Distance from Proposed Development at its Closest | Connectivity with Proposed Development                                                                                        |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
|                                                 | <ul style="list-style-type: none"> <li>Red-breasted Merganser (<i>Mergus serrator</i>) (non-breeding).</li> </ul>                                                                   |                                                   | site <sup>51</sup> ). Therefore, there is potential for connectivity with Section A of the Proposed Development and the SPA.  |
| <b>Loch of Lintrathen SPA, Ramsar and SSSI</b>  | <ul style="list-style-type: none"> <li>Greylag Goose (non-breeding).</li> </ul>                                                                                                     | 13.3 km (west of Section B)                       | Potential connectivity with Greylag Geese as Section A lies within core foraging range (20 km).                               |
| <b>Loch of Kinnordy SPA, Ramsar and SSSI</b>    | <ul style="list-style-type: none"> <li>Greylag Goose (non-breeding); and</li> <li>Pink-footed Goose (non-breeding).</li> </ul>                                                      | 6.4 km (west of Section B)                        | Potential connectivity with Greylag and Pink-footed Geese as Section A lies within core foraging range (20 km).               |
| <b>Section B</b>                                |                                                                                                                                                                                     |                                                   |                                                                                                                               |
| <b>Loch of Lintrathen SPA, Ramsar and SSSI</b>  | <ul style="list-style-type: none"> <li>As above</li> </ul>                                                                                                                          | 12.5 km (west of Section B)                       | Potential connectivity with Greylag Geese as Section B lies within core foraging range (20 km).                               |
| <b>Loch of Kinnordy SPA, Ramsar and SSSI</b>    | <ul style="list-style-type: none"> <li>As above</li> </ul>                                                                                                                          | 5.6 km (west of Section B)                        | Potential connectivity with Greylag and Pink-footed Geese as Section B lies within core foraging range (20 km).               |
| <b>Section C</b>                                |                                                                                                                                                                                     |                                                   |                                                                                                                               |
| <b>Montrose Basin SPA, Ramsar and SSSI</b>      | SPA/Ramsar: <ul style="list-style-type: none"> <li>Greylag Goose (non-breeding); and</li> <li>Pink-footed Goose (non-breeding).</li> </ul>                                          | 6.7 km (east of Section C)                        | Potential connectivity with Greylag and Pink-footed Geese as Section C lies within core foraging range (20 km).               |
| <b>Section D</b>                                |                                                                                                                                                                                     |                                                   |                                                                                                                               |
| <b>Montrose Basin SPA, Ramsar SSSI, and LNR</b> | As above                                                                                                                                                                            | 12.5 km (south of Section D)                      | Potential connectivity with Greylag and Pink-footed Geese as Section D lies within core foraging range (20 km).               |
| <b>Fowlsheugh SPA and SSSI</b>                  | SPA: <ul style="list-style-type: none"> <li>Herring Gull (breeding)</li> </ul>                                                                                                      | 8.8 km (east of Section D)                        | Potential connectivity with Herring Gull as Section D lies within core foraging range (foraging Herring Gull <sup>51</sup> ). |
| <b>Section E</b>                                |                                                                                                                                                                                     |                                                   |                                                                                                                               |
| <b>Fowlsheugh SPA and SSSI</b>                  | As above                                                                                                                                                                            | 8.9 km (east of Section E)                        | Potential connectivity with Herring Gull as Section E lies within core foraging range (foraging Herring Gull <sup>51</sup> ). |
| <b>Section F</b>                                |                                                                                                                                                                                     |                                                   |                                                                                                                               |
| <b>Loch of Skene SPA, Ramsar and SSSI</b>       | SPA/Ramsar: <ul style="list-style-type: none"> <li>Greylag Goose (non-breeding)</li> </ul> SSSI: <ul style="list-style-type: none"> <li>Pink-footed Goose (non-breeding)</li> </ul> | 3.1 km (east of Section F)                        | Potential connectivity with Greylag and Pink-footed Geese, as Section F lies within 20 km of Loch of Skene SPA.               |

12.9.6 Where there is potential connectivity between the Proposed Development and qualifying features of Designated Sites listed above in **Table 12.7: 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 (**Table 12.1: Summary of Consultation of relevance to Ornithology**).

- 12.9.7 There are no non-statutory designations, eg nature reserves, for ornithological interest within 2 km of the Proposed Development.
- 12.9.8 Summary findings to establish a baseline of qualifying features for the identified Designated Sites in **Table 12.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development** are provided below, with details of recorded activity presented in relation to the Sections of the Proposed Development. The baseline and assessment with regards to the Designated Sites are fully detailed within the Habitats Regulations Appraisal, together with the conclusions of that appraisal (**Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**).

#### Target Species

- 12.9.9 NatureScot guidance has identified a list of 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<sup>19</sup>). Since many of these potential effects are relevant to the Proposed Development, this guidance has been adopted here.
- 12.9.10 All species listed within Table A1 and Table A2<sup>19</sup> of the NatureScot guidance that were present within the Study Area for the Proposed Development were recorded and mapped as appropriate. The species listed below in **Table 12.8: Target Species** identifies Schedule 1/Annex 1 bird species and red-listed BoCC described as **High** and **Moderate** NCI species and additionally includes SPA/Ramsar species where potential for connectivity has been identified (refer to **Table 12.3: Nature Conservation Importance (Sensitivity) of bird receptors**).

**Table 12.8: Target Species**

| Target Species                           | Conservation Status<br>Nature Conservation Importance (Sensitivity) |         |            |                                                        |
|------------------------------------------|---------------------------------------------------------------------|---------|------------|--------------------------------------------------------|
|                                          | Schedule 1                                                          | Annex 1 | BoCC       | NCI Sensitivity                                        |
| Whooper swan                             | Yes                                                                 | -       | Amber-list | <b>Moderate</b> NCI                                    |
| Greylag goose                            | -                                                                   | -       | Amber-list | <b>Moderate</b> NCI<br>(SPA/Ramsar qualifying species) |
| Pink-footed Goose                        | -                                                                   | -       | Amber-list | <b>Moderate</b> NCI<br>(SPA/Ramsar qualifying species) |
| Red-breasted Merganser                   | -                                                                   | -       | Amber-list | <b>Moderate</b> NCI<br>(SPA/Ramsar qualifying species) |
| Red Kite                                 | Yes                                                                 | Yes     | Green-list | <b>High</b> NCI                                        |
| Merlin ( <i>Falco columbarius</i> )      | Yes                                                                 | Yes     | Red-list   | <b>High</b> NCI                                        |
| Peregrine ( <i>Falco peregrinus</i> )    | Yes                                                                 | Yes     | Green-list | <b>High</b> NCI                                        |
| Goshawk ( <i>Accipiter gentilis</i> )    | Yes                                                                 | -       | Green-list | <b>High</b> NCI                                        |
| Short-eared Owl ( <i>Asio flammeus</i> ) | -                                                                   | Yes     | Amber-list | <b>High</b> NCI                                        |
| Black Grouse                             | -                                                                   | -       | Red-list   | <b>High</b> NCI                                        |
| Herring Gull                             | -                                                                   | -       | Red-list   | <b>High</b> NCI<br>(SPA qualifying species)            |
| Curlew ( <i>Numenius arquata</i> )       | -                                                                   | -       | Red-list   | <b>High</b> NCI                                        |
| Lapwing ( <i>Vanellus vanellus</i> )     | -                                                                   | -       | Red-list   | <b>High</b> NCI                                        |

| Target Species                               | Conservation Status<br>Nature Conservation Importance (Sensitivity) |         |            |                 |
|----------------------------------------------|---------------------------------------------------------------------|---------|------------|-----------------|
|                                              | Schedule 1                                                          | Annex 1 | BoCC       | NCI Sensitivity |
| Golden Plover ( <i>Pluvialis apricaria</i> ) | -                                                                   | Yes     | Green-list | High NCI        |
| Nightjar ( <i>Caprimulgus europaeus</i> )    | -                                                                   | Yes     | Amber-list | High NCI        |

12.9.11 In addition to the above-listed Target Species, the following species were recorded on two or fewer occasions:

- Mute Swan (*Cygnus olor*); recorded south of Loch of Skene;
- Barnacle Goose (*Branta leucopsis*); two birds foraging in fields in Section C,
- Marsh Harrier (*Circus aeruginosus*), a Schedule 1, Amber-listed BoCC recorded hunting in Section B;
- Hen Harrier (*Circus cyaneus*); Schedule 1 species- an adult male quartering the ground to the west of Brechin; and
- roosting Barn Owl (*Tyto alba*) (Schedule 1).

12.9.12 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<sup>34</sup>. 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<sup>15</sup>. Assessment of ornithological receptors, where required, will be undertaken with reference to regional NHZ populations<sup>37</sup> (refer below to **Table 12.9: National and regional population estimates of Target Species**).

12.9.13 The Proposed Development lies within three NHZs (refer to **Volume 3, Figures 12.1.2 to 12.1.2: The Proposed Development and Ecology Survey Area**):

- NHZ 16 - Eastern Lowlands (Sections A, B, C and D to Tower S4 of the Proposed Development);
- NHZ 12 – North East Glens (Section D from Tower S4; Section E to Tower N70); and
- NHZ 9 – North East Coastal Plain (Section E from Tower N69 and Section F).

12.9.14 Population estimates for breeding bird Target Species and key wintering/migratory Target Species recorded during field surveys are presented below in **Table 12.9: National and regional population estimates of Target Species**.

**Table 12.9: National and regional population estimates of Target Species**

| Species                         | Scottish population <sup>35, 36</sup> | Regional populations <sup>37</sup> (pairs unless otherwise stated) |        |         |                                                                                                                                                                                                                  |
|---------------------------------|---------------------------------------|--------------------------------------------------------------------|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |                                       | NHZ 9                                                              | NHZ 12 | NHZ 16  | Regional NHZ Population estimates                                                                                                                                                                                |
| Whooper Swan                    | 11,000                                | 1,260                                                              | 229    | 1,524   | Estimated peak abundance from WeBS data (refer to Wilson <i>et al.</i> )                                                                                                                                         |
| Pink-footed Goose <sup>19</sup> | 485,509 <sup>38</sup>                 | 77,859                                                             | 12,000 | 162,039 | Regional NHZ estimates based on 2013 data when UK population estimated as 360,000. Not considered a Priority species <sup>19</sup> – reference to SPA populations only within this EIAR and in <b>Volume 5</b> , |

<sup>34</sup> SNH, 2002. *Natural Heritage Zones: A National Assessment of Scotland's Landscapes*. SNH, Battleby.

<sup>35</sup> 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.

<sup>36</sup> Forrester, R.W., Andrews, I.J., McInerney, 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.

<sup>37</sup> 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.

<sup>38</sup> 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 Re-port, Slimbridge. 19pp.

| Species                | Scottish population <sup>35, 36</sup> | Regional populations <sup>37</sup> (pairs unless otherwise stated) |        |        |                                                                                                        |
|------------------------|---------------------------------------|--------------------------------------------------------------------|--------|--------|--------------------------------------------------------------------------------------------------------|
|                        |                                       | NHZ 9                                                              | NHZ 12 | NHZ 16 | Regional NHZ Population estimates                                                                      |
|                        |                                       |                                                                    |        |        | <b>Appendix 12.3: Shadow Habitats Regulations Assessment (HRA).</b>                                    |
| Greylag Goose          | 92,582 <sup>38</sup>                  | No regional estimates available                                    |        |        | No NHZ population estimates available                                                                  |
| Red-breasted Merganser | 11,000 <sup>39</sup>                  | No regional estimates available                                    |        |        | Non-breeding UK population <sup>39</sup>                                                               |
| Red Kite               | 298 pairs                             | 12                                                                 | 7      | 60     | NHZ populations based on 2013 estimate of Scottish population of 253 pairs                             |
| Goshawk                | 283 pairs                             | 14                                                                 | 25     | 14     | NHZ populations based on 2013 estimate of Scottish population of 136 pairs                             |
| Merlin                 | 733 pairs                             | 0                                                                  | 4      | 4      | NHZ populations based on 2008 estimate of Scottish population of 433 pairs                             |
| Peregrine              | 485 pairs                             | 23                                                                 | 13     | 103    | NHZ population based directly on 2014 national surveys                                                 |
| Short-eared Owl        | 1,088 pairs                           | 0                                                                  | 8      | 58     | NHZ populations from 2013 based on 1990 estimates                                                      |
| Herring Gull           | 52,089 pairs                          | 7,136                                                              | 47     | 16,782 | NHZ populations based on estimates from a near-comprehensive national survey around 2000               |
| Black Grouse           | 3,344 lekking males                   | 0                                                                  | 215    | 167    | NHZ populations from 2005 estimates                                                                    |
| Curlew                 | 30,194 pairs                          | 1,037                                                              | 2,815  | 3,253  | NHZ populations based on 2009 estimate of modelled 2005 data                                           |
| Lapwing                | 69,800 pairs                          | 11,850                                                             | 6,690  | 12,340 | NHZ populations estimated from wader sensitivity habitat data <sup>25</sup>                            |
| Golden Plover          | 37,480 pairs                          | 552                                                                | 659    | 902    | NHZ breeding populations from a 2009 habitat model [UK non-breeding population 400,000 <sup>78</sup> ] |
| Nightjar               | 4,600 males UK                        | No regional estimates available                                    |        |        | No NHZ population estimates available. Scottish population as few as 27 males <sup>36</sup>            |

- 12.9.15 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 5, Appendix 12.1: Ornithology Technical Report** and **Volume 6, Appendix 12.2: Confidential Ornithology Report**). All flight activity recorded during non-breeding VP surveys is presented in **Volume 3, Figures 12.4.1 to 12.4.5: Flight Activity Surveys**. Winter Goose Foraging Survey data are presented in **Volume 3, Figures 12.5.1 to 12.5.6: Winter Goose Foraging Surveys**.

#### Designated Sites

- 12.9.16 The Designated Sites where potential connectivity is present, due to core foraging ranges of their qualifying species overlapping with the Proposed Development (**Table 12.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**), are described in detail together with their assessment in **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**. The Target Species Greylag Geese, Pink-footed Geese, Herring Gull and Red-breasted Merganser assessed in that Appendix are described below, in relation to the Target Species identified in Sections A-F of the Proposed Development.

<sup>39</sup> British Trust for Ornithology, n.d. *BirdFacts: Red-breasted Merganser UK population*. [Online] Available at: <https://www.bto.org/understanding-birds/birdfacts/red-breasted-merganser>.

### Target Species

#### *Whooper Swan (non-breeding)*

- 12.9.17 Whooper Swan is a Red-list BoCC species that is also a Schedule 1 breeding bird. The Icelandic breeding population, which winters in the UK, has shown increasing numbers of birds recorded in the UK; at least 11,000 are thought to winter in Scotland<sup>37</sup> (as detailed above in **Table 12.9: National and regional population estimates of Target Species**).

#### *Section A*

- 12.9.18 A single flight of three Whooper Swans was recorded just to the south of Section A on 5 December 2023. 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.

#### *Section B and C*

- 12.9.19 A total of six flights of Whooper Swan were recorded between Towers S165 and S162, at the intersection of Sections B and C. These flights involved 78 individuals with flight paths largely east to west, suggesting use of Loch of Forfar and/or Loch of Kinnordy as roosting waterbodies. Four of the flights crossed the Proposed Development, with only one bird recorded at potential collision height.
- 12.9.20 No Whooper Swans were recorded during the Winter Goose Foraging Surveys in these Sections.

#### *Section D*

- 12.9.21 A single flight of two Whooper Swans was recorded on 14 March 2024 to the west of Tower S89. The flight did not cross the Proposed Development.
- 12.9.22 No Whooper Swans were recorded during the Winter Goose Foraging Surveys in this Section.

#### *Section F*

- 12.9.23 A flight of five Whooper Swans was recorded to the west of the Proposed Development on 9 November 2023. The flight at potential collision height did not intersect the Proposed Development.
- 12.9.24 On 9 November 2023 a flock of ten adult and four juvenile birds was recorded in a wet stubble field within 100 m west of the Proposed Development, south of Landberry Road. Whooper Swans were also recorded out with the Study Area near Kemnay and near the north Deeside Road.
- 12.9.25 Given the limited flight activity recorded during surveys and with limited foraging recorded within the Study Area, it is considered that there is no prospect of Significant effects on the regional/national population of Whooper Swan and the species is not considered further.

#### *Greylag Geese (non-breeding)*

- 12.9.26 The Greylag Goose population comprises a resident Scottish population and a migratory wintering population of birds that breed in Iceland; 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 (Icelandic) Greylag Geese and their activity within the Study Area.
- 12.9.27 In the case of mobile wintering geese and swans, it is considered appropriate to undertake assessment at a much broader scale, namely the entire Scottish population<sup>15</sup>. The Scottish population of wintering (Icelandic) Greylag Geese is 92,582<sup>38</sup> from data acquired in 2020.

#### *Section A*

- 12.9.28 Section A lies within core foraging range (considered as between 15 km and 20 km from a roost site) of the following SPAs for which Greylag Goose is considered a qualifying feature - Tay and Eden Estuary SPA; Loch of Kinnordy SPA and Loch of Lintrathen SPA. Known foraging sites of Greylag Geese from the Tay and Eden Estuary SPA (SPA

citation of 1,200 Greylag Geese<sup>40</sup>) are present 5 km to the southwest of Section A<sup>48</sup>. 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 (1.5 km southwest of the Proposed Development). The birds, recorded on 26 January 2023, were foraging in open fields (likely winter grown arable crop) in a single-species group. A further flock of Greylag Geese was recorded further north and approximately 1.5 km to the west of Section A, Tower S184, near Milton of Ogilvie on the 5 December 2023. A flock of 220 Greylag Geese was present along with over 600 Pink-footed Geese foraging within an arable stubble field. Given the proximity to roost sites, this latter flock is thought to be associated with either the Loch of Lintrathen SPA or the Loch of Kinnordy SPA, the latter of which lies just over 10 km distance from the recorded flock.

- 12.9.29 Icelandic Greylag Goose numbers have declined considerably over the last 30 years in the southeast of Scotland<sup>41</sup> with a shift northwards towards wintering grounds in Orkney and north Scotland<sup>41</sup>: the Loch of Kinnordy SPA roost site appears to have been abandoned over recent years with the SPA citation of 910 individuals<sup>42</sup> now averaging 133 birds (recorded across the last five years' BTO WeBS counts<sup>26</sup>). The Loch of Lintrathen now holds an average of 139 'Icelandic' Greylag Geese at the roost<sup>26</sup> in comparison to the SPA citation of 2,100 individuals<sup>43</sup>. There appears to be considerable interchange between the two roosts<sup>48</sup>.
- 12.9.30 Section A of the Proposed Development appears to be relatively unimportant for Greylag Geese, both during the present surveys and from traditional foraging areas. Birds from both Loch of Lintrathen and Loch of Kinnordy have historically used feeding areas in Strathmore to the south of the lochs, with only limited foraging apparent within 5 km of the Proposed Development<sup>48</sup>.
- 12.9.31 No flight activity of Greylag Geese was recorded across Section A VP watches, with foraging flocks recorded only to the west of the Proposed Development.

#### Section B

- 12.9.32 No Greylag Geese were recorded foraging within the Section B Study Area of the Proposed Development. Flocks were recorded to the northeast, and over 2 km from the Proposed Development, with small numbers (one or two birds) noted on 1 February 2023 and 22 March 2023 at Stannochy Sand Pit (up to 11 Greylags on the disused quarry lake) and with two birds noted to the north of the A90 foraging in a tilled arable field. Only one flock was recorded within the 2 km Study Area, when two birds were seen loafing on a partially flooded field south of Tower S103 of Section B and Section C. All foraging Greylag Geese were therefore recorded to the east of the Proposed Development in Section B.
- 12.9.33 A single flight only of the species was noted during flight activity surveys: a flight of 21 birds on 11 January 2024 (flight record #288, refer to **Volume 5, Appendix 12.1: Ornithology Technical Report**). The flight line was recorded as intersecting the Proposed Development, with flight activity recorded as being above potential collision height (ie greater than 75 m above ground level (agl)).
- 12.9.34 The south of Section B lies within the core foraging range of birds from the Loch of Lintrathen SPA and Loch of Kinnordy SPA roost sites; with birds here favouring foraging areas to the west of the Proposed Development as noted in Section A. The north of Section B lies within the core foraging range of geese from the Montrose Basin SPA, with Tower S144 located approximately 20 km from that SPA.
- 12.9.35 The recent WeBS counts (2018/19-2022/23) give a mean of 157 Greylag Geese at Montrose basin<sup>26</sup>, significantly fewer than the SPA population citation of 1,080 individuals<sup>44</sup>.
- 12.9.36 The Study Area of Section B, with limited foraging records and only a single flight recorded, does not appear important for the SPA populations of Greylag Geese.

<sup>40</sup> NatureScot, n.d. *Firth of Tay and Eden Estuary SPA*. [Online] Available at: <https://sitelink.nature.scot/site/8501>.

<sup>41</sup> Mitchell, C., Hearn, R. & Stroud, D., 2012. *The merging of populations of Greylag Geese breeding in Britain*. British Birds 105: 498–505.

<sup>42</sup> NatureScot, n.d. *Loch of Kinnordy SPA*. [Online] Available at: <https://sitelink.nature.scot/site/8534>.

<sup>43</sup> NatureScot, n.d. *Loch of Lintrathen SPA*. [Online] Available at: <https://sitelink.nature.scot/site/8535>.

<sup>44</sup> NatureScot, n.d. *Montrose Basin SPA*. [Online] Available at: <https://sitelink.nature.scot/site/8548>.

### Section C

- 12.9.37 A single Greylag Goose was recorded within Section C during surveys. The lone bird was recorded foraging in a large flock of Pink-footed Geese (ca. 3,700 birds) on 9 January 2024, to the southeast of Chapelton of Menmuir and to the west of the Proposed Development.
- 12.9.38 Three flights of Greylag Geese were recorded from VPs that incorporated the 10 km buffer of the Montrose Basin SPA within Section C of the Proposed Development. Of these, only one flock of geese (flight record #76) was noted as flying over the Proposed Development. This flight (on 1 November 2023) was of 12 birds flying at greater than potential collision height over the span between Towers S99 and S100, towards foraging areas to the west. The two flights to the north and to the west of Tower S80 were of four and two birds only; however, both were of flights at potential collision height (pch), suggesting Greylag Goose foraging activity near Edzell Woods, within 2 km of the Proposed Development.

### Section D

- 12.9.39 No Greylag Geese were encountered in Section D, with no foraging or flights recorded. Section D lies over 15 km from the main waterbody at Montrose Basin SPA, with the main traditional foraging areas for the SPA much closer to the basin<sup>48</sup>.

### Section E

- 12.9.40 No Greylag Goose flight activity or foraging was recorded in Section E; however, flight activity surveys carried out southwest of Peterculter did record the species out with the 2 km Study Area. Four flights, including a flock of 110 birds, were recorded during a watch on the 24 October 2023 at this location. All flights were above potential collision height, potentially suggesting movements to or from Loch of Skene SPA roost, to foraging areas in this locality (potentially Red Moss, although this was not confirmed).

### Section F

- 12.9.41 All of Section F of the Proposed Development lies within 10 km of the Loch of Skene SPA. The Loch of Skene SPA citation is of 5,500 non-breeding Greylag Geese<sup>45</sup>. The importance of the loch for Greylag Geese has considerably reduced in recent years, with a mean of 43 birds recorded across the last five years' surveys (WeBS counts, 2018/19-2022/23<sup>26</sup>); although the flight activity to the east of Section E, with 110 birds (see above) recorded in a single flight, suggests that this figure does vary. A total of 23 flights of Greylag Geese were recorded from VPs within 10 km of the Loch of Skene SPA (**Volume 3, Figures 12.5.1 to 12.5.6: Winter Goose Foraging Surveys**). Eighteen of these flights were recorded within the Study Area, with nine flights (totalling 104 birds) recorded as crossing the Proposed Development. This number was recorded across the 132 hours of VP watches, along the 20 km of line within Section F. Of these, three flights, totalling 18 birds, were of birds flying at potential collision height (ie in the range 10 to 75 m agl), with the other six flights above potential collision height.
- 12.9.42 Winter Goose Foraging Surveys recorded Greylag Geese outwith the 2 km Study Area, with small flocks occurring near Kemnay in the presence of Pink-footed Geese, and in fields to the south of the loch itself.
- 12.9.43 Within the Study Area two birds were recorded near Drumhill Wood on 27 February 2024, with a further two birds noted to the southwest of the Loch of Skene, north of Burnside Wood, foraging in a pasture field. Greylags were also recorded at a pond near the Gormack Burn to the south of the B9125, on two visits in early 2024.
- 12.9.44 However, the largest-sized groups were noted near Landerberry, near Marketmuir Wood to the southwest of the loch, with up to 105 Greylag Geese recorded here. Birds present on at least four survey visits were observed foraging on fields with winter sown crop (recorded in January, February and March 2024). These flocks appeared to forage separately from the Pink-footed Geese from Loch of Skene, with birds taking advantage of a distinct group of four fields here, including pasture and arable land.
- 12.9.45 Traditional Greylag Goose foraging areas lie to the north and northwest of the Loch of Skene SPA, with the feeding distribution patchier in these areas because of the greater hectareage of woodland and shelter belts precluding birds'

<sup>45</sup> NatureScot, n.d. *Loch of Skene SPA*. [Online] Available at: <https://sitelink.nature.scot/site/8536>.

use of fields for foraging<sup>46</sup>. The median distance of feeding Greylag Geese from the loch was recorded as 5.8 km<sup>46</sup>, this coincides with the foraging site at Landerberry, an area that appears as the main traditional foraging area to the south/southwest of the loch.

*Summary – Greylag Goose (non-breeding)*

- 12.9.46 In total, 27 flights of Greylag Geese were recorded across the flight activity surveys, comprising 391 birds. Across all Winter Goose Foraging Surveys, Greylag Geese were recorded on 13 separate dates with a total of 499 birds noted (476 within the 2 km Study Area). These numbers represent less than 1 % of the national Greylag Goose population of over 90,000<sup>81</sup>. As such, the species is not considered further in this assessment with regards to the national population (no regional populations are presented for Greylag Goose and it is considered appropriate for assessment of the migratory species that the national population is used<sup>19</sup>). The species is further assessed within the context of the SPAs for which it is a qualifying species, in **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)** with respect to operational effects (collision mortality and barrier effects of the Proposed Development) and construction phase disturbance/displacement from foraging habitat.

*Pink-footed Geese (non-breeding)*

- 12.9.47 The non-breeding flight activity and Winter Goose Foraging Surveys carried out for the Proposed Development were specifically to determine non-breeding goose presence and activity within the Study Area.
- 12.9.48 The UK Pink-footed Goose population is a migratory wintering population, comprising birds that breed in Iceland and is classed as **Moderate** NCI. The population has increased considerably across the last 50 years, to a present-day estimate of over 480,000<sup>38</sup>.

*Section A*

- 12.9.49 Pink-footed Geese were recorded foraging within the Study Area for Section A. A flock of 282 birds was recorded on 11 January 2024, approximately 2 km to the southeast of the Proposed Development, in a field with a 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 here, with flight activity also recorded in this location.
- 12.9.50 Flight activity in this area south of the Sidlaw Hills recorded 12 flights of 3,455 Pink-footed Geese. Of these, five flights and 528 birds were recorded as crossing the Proposed Development, although only a single flight (of 450 birds) was recorded at potential collision height – the flock crossing twice on its flight path. It was noticeable, however, that the flocks of foraging birds present in these fields would often move at low flight heights, across the Fithie Burn to change foraging areas (pers. obs.). The foraging fields near Tealing Substation lie as close as 500 m from the Proposed Development.
- 12.9.51 To the north of the Sidlaw Hills, surveys recorded over 600 Pink footed Geese using stubble fields to the west of the Proposed Development, near Milton of Ogilvie, in early December 2023. Given the proximity to SPAs, these are considered likely as foraging birds from the Loch of Kinnordy SPA; although recently it appears that the species has now largely abandoned that particular roost and has moved to the Loch of Lintrathen SPA. WeBS counts over the last five years average only seven birds roosting at Loch of Kinnordy SPA<sup>42</sup>, in comparison the SPA citation of 3,960<sup>42</sup> individuals, while WeBS counts average 11,909 at Loch of Lintrathen SPA<sup>26</sup>.
- 12.9.52 Flight activity surveys at the north of Section A (from Tower S169 and north) recorded a total of 12 flights. The majority of these flights were observed on 9 November 2023, with over 4,500 birds recorded on this day. Activity declined thereafter, with a single flight of 100 Pink-footed Geese on 18 December 2023 and two flights recorded on 15 February 2024, with 57 birds in total. Of all flights only three, comprising a total of 132 birds, were recorded at potential collision height. Flight activity was notable in this area (also refer to Section C baseline records below), with foraging birds potentially within the Study Area and hidden due to the undulating ground or in fields further to the east

<sup>46</sup> Bell, M.V., 1988. *Feeding behaviour of wintering Pink-footed and Greylag Geese in north-east Scotland*. Wildfowl 39: 43-53.

of the Proposed Development. In addition, movement between roost sites (eg to Montrose Basin SPA) or other lochs such as Forfar Loch and Balgavies Loch, where wildfowl including geese are known to be present<sup>47</sup>, is also likely.

- 12.9.53 No significant traditional foraging sites of Pink-footed Geese are present within 5 km of the Proposed Development in Section A<sup>48</sup> from any of the SPA goose roosts.
- 12.9.54 Seven records of Pink-footed Geese within 5 km of the Proposed Development in the last 10 years were obtained from National Biodiversity Network (NBN) data search.
- 12.9.55 The southern part of the Section A Study Area provides relatively low levels of foraging opportunities for the species. Those foraging sites present, however, do lie within proximity to the Proposed Development.
- 12.9.56 The north of Section A, north of the Sidlaw Hills, lies within the foraging range and potential flight corridor of birds from the Loch of Lintrathen SPA and Loch of Kinnordy SPA; although traditional foraging areas are located at Strathmore to the west of the Proposed Development.
- 12.9.57 Section A of the Proposed Development lies within the core foraging range of SPA qualifying feature Pink footed Goose, of the Firth of Tay and Eden Estuary SPA, Loch of Kinnordy SPA and Loch of Lintrathen SPA. Flight and foraging activity recorded in Section A demonstrated potential for connectivity with the Proposed Development. A Likely Significant Effect could not be ruled out due to the potential for collision mortality impacts on these populations. Therefore, assessment of the impacts of the Proposed Development on the qualifying features of the aforementioned SPAs (including Pink-footed Geese) was carried out and is presented within **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**.

#### *Section B*

- 12.9.58 The southern part of Section B included Pink-footed Goose flight activity and foraging associated with Loch of Kinnordy SPA, as discussed above in Section A.
- 12.9.59 Flight activity in Section B, considered as Loch of Kinnordy SPA birds, included 32 flights across the period 26 October 2023 to 14 March 2024, involving more than 8,200 birds. Of these 18 flights (3,683 Pink footed Geese) were seen to cross the Proposed Development (from Tower S163 north to Tower S149), with five flights (335 birds) at potential collision height.
- 12.9.60 Pink-footed Geese were likely to be foraging in fields near Upper Drumgley farm to the east of the Proposed Development, and although birds were not recorded on the ground, flocks of 650 and 100 birds were thought to have landed on 18 December 2023. A flock of 51 Pink-footed Geese was recorded over 1 km west of the Study Area, with birds foraging in improved grassland north of the former glider site at Drumshade (NO35), on 14 March 2023. In addition, Pink-footed Geese recorded on that day near Tannadice (300 m west of Tower S136 in Section B) may have been birds from Montrose Basin SPA, given the proximity to that roost site. No records of foraging birds to the north of Tannadice were recorded within Section B, however.
- 12.9.61 Flight activity at the north of Section B (from Tower S111 north) was considered to comprise flights to or from the Montrose Basin SPA. Montrose Basin is one of the most important Pink-footed Goose roosts in the UK, with a maximum of 84,400 Pink-footed Geese recorded using the basin as a roost in 2020/21 (WeBS counts<sup>26</sup>; SPA citation is of 21,800<sup>44</sup>).
- 12.9.62 Four flights of Pink-footed Geese were recorded in this area, with geese crossing between Towers S111 and S107. Only one of these flights crossed the Proposed Development (23 birds on 8 February 2024), although a further flight on the same VP watch was also within the LOD (with the plotted flight line less than 20 m distant; 11 birds recorded). Both flights were at potential collision height. The main roost at Montrose Basin SPA is located over 12 km from the Proposed Development's northernmost Tower in Section B (S106).

<sup>47</sup> Scottish Wildlife Trust, n.d. *Balgavies Loch*. [Online] Available at: <https://scottishwildlifetrust.org.uk/reserve/balgavies-loch/>.

<sup>48</sup> 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.

- 12.9.63 Section B of the Proposed Development lies within the core foraging range of Pink footed Goose of both the Loch of Kinnordy SPA and Loch of Lintrathen SPA (the species is not a qualifying feature of this SPA). Flight and foraging activity recorded in Section B demonstrated potential for connectivity with the Proposed Development. A Likely Significant Effect could not be ruled out due to the potential for collision mortality impacts on the Loch of Kinnordy SPA population; therefore, assessment of the impacts of the Proposed Development on the SPA was carried out and is presented within **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**.

#### *Section C*

- 12.9.64 Surveys of Section C of the Proposed Development provided the majority of recorded foraging and flight activity of Pink-footed Geese associated with the Montrose Basin SPA. Flight activity surveys recorded 67 flights totalling 7,267 Pink-footed Geese from the four Vantage Points. Of these, 28 flights (3,170 geese) were recorded over the Proposed Development, with 13 flights (794 birds) recorded at potential collision height. Flight activity was present from Tower S102 in the south to S58 in the north of Section C.
- 12.9.65 Flight activity was centred to the west of Stracathro and south of Edzell Woods, to the west of the Proposed Development. This 'corridor' of activity was matched by foraging sightings here. Birds were recorded using a variety of arable fields, foraging within stubble fields and in rough pasture. Flocks were noted either side of the River North Esk (maximum 450 Pink-footed Geese recorded on 22 March 2023). A further group of 1,200 Pink-footed Geese was seen in rough pasture ground adjacent to the River North Esk and within 200 m of the Proposed Development (to the west of Tower S84), on 1 February 2023.
- 12.9.66 Foraging activity was noted to the north of Burnside of Esleie plantation (northwest of Tower S63). Birds were recorded foraging here notably on 9 January 2024, after the field had been recently tilled (likely revealing tubers/roots from the planted crop). The largest flock recorded landing or taking off from the field was of 275 birds, but smaller groups (< 100) were also present here.
- 12.9.67 The largest flock encountered during surveys was a group of 3,700 birds to the west of the Proposed Development (Tower S95) near Lummington. These birds, noted on 9 January 2024, were recorded on a recently harvested crop field.
- 12.9.68 From Tower S71 north to Tower S62, foraging was again noted within the Study Area. Flocks of up to 1,050 birds were counted foraging within stubble fields in December, within 500 m of the Proposed Development, with several flocks of between 38 and 750 birds also present. The largest group was of 2,400 birds on 9 January 2024, again foraging in stubble fields, within 500 m of the Proposed Development, north of the Dowrie Burn.
- 12.9.69 Foraging of Pink-footed Geese in Section C was recorded largely to the west of the Proposed Development and additionally within a corridor running adjacent to the Proposed Development. As such, Section C is not only an important foraging area for the species, but given the flight activity present (and associated with birds flying locally between foraging sites) this Section is likely to present a relatively higher-risk area for potential connectivity between the Proposed Development and with Pink-footed Geese from the Montrose Basin SPA.
- 12.9.70 Section C of the Proposed Development lies within the core foraging range of SPA qualifying feature Pink footed Goose of the Montrose Basin SPA. Flight and foraging activity recorded in Section C demonstrated potential for connectivity. A Likely Significant Effect could not be ruled out due to the potential for collision mortality impacts on the SPA population. Therefore, assessment of the impacts of the Proposed Development on the SPA was carried out and is presented within **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**.

#### *Section D*

- 12.9.71 No flight activity surveys were carried out in Section D for SPA qualifying goose species, due to the remoteness of relevant SPAs from this section of the Proposed Development: the nearest tower to Montrose Basin SPA lies at over 10 km from the roost and was out with the Study Area for the SPAs. Winter Goose Foraging Surveys were carried out, with only two flocks of Pink-footed Goose recorded. A group of four birds was seen loafing on the banks of an area that had dried-out, located within a winter-sown crop field to the southeast of Tower S51 on 1 February 2023. A group of five birds was recorded on 5 October 2023 in fields within 50 m of the Proposed Development, but again to the southeast of it.

- 12.9.72 With relatively little foraging activity recorded within Section D for the species, it is considered that this Section is unlikely to be of critical importance for the Pink-footed Goose population at Montrose Basin SPA and that concomitant flight activity would also likely be relatively limited here.
- 12.9.73 Goose flight and foraging activity recorded in Section D, although limited, contributes to the assessment of the impacts of the Proposed Development on Montrose Basin SPA (**Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**), since this section of the Proposed Development lies within the core foraging range of the species.

#### *Section E*

- 12.9.74 No foraging or flight activity of Pink-footed Geese was recorded within Section E. Section E lies within largely upland areas with predominant forestry cover, generally unsuitable for foraging geese. Only the northernmost towers lie within 10 km from the Loch of Skene SPA, with some flight activity noted to the east, and out with the Study Area. In this area: a single flight of 170 Pink footed Geese was recorded on 15 November 2023, flying over the South Deeside Road, approximately 2 km from Tower N60.
- 12.9.75 Section E is considered to be a relatively unimportant area for Pink-footed Goose with respect to either flight activity or foraging.

#### *Section F*

- 12.9.76 All of Section F lies within 10 km of the Loch of Skene SPA.
- 12.9.77 Pink footed Goose is part of the SSSI citation only for Loch of Skene. As part of that citation, Pink-footed Goose numbers are noted as being regularly of international importance at the loch<sup>32</sup>. As such, the species was recorded as a Target Species from VPs up to 10 km from the Proposed Development. WeBS surveys recorded a mean of 31,736 Pink-footed Geese using the Loch of Skene between 2018/19 and 2022/23<sup>26</sup>.
- 12.9.78 Over 24,000 Pink-footed Geese were recorded in flight from the VPs covering the Loch of Skene SPA/SSSI, with 162 flights recorded. The majority (estimated at 20,157 geese) were recorded as flying to and from the roost site with flight activity demonstrating potential to intercept the Proposed Development. An estimated 12,800 of these birds (from 44 flights) were recorded as flying at potential collision height.
- 12.9.79 In addition, several Pink-footed Geese foraging sites were recorded during the survey work of early 2023 and over the winter 2023/2024. Pink-footed Geese were recorded as foraging in all areas surrounding Loch Skene. In particular, flocks of birds were recorded to the south of Kemnay, south of the A96 near Blackburn and near Milton of Cullerlie; the latter with flocks of more than 1,000 birds on two occasions. Birds were also recorded foraging adjacent to the B9126 to the north of Loch of Skene and near Baads Moss. The majority of birds recorded were within 10 km of the Loch of Skene; however, flocks were also recorded near Netherley airstrip, located over 13 km south of the loch (**Volume 3, Figures 12.5.1 to 12.5.6: Winter Goose Foraging Surveys**).
- 12.9.80 Goose flight and foraging activity recorded in Section F confirms that this Section of the Proposed Development lies within the core foraging range of the species, with connectivity to Loch Skene SPA. The baseline conditions described here will therefore contribute to the assessment of impacts of the Proposed Development on Loch of Skene SPA (as detailed in **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**).

#### *Summary – Pink-footed Goose (non-breeding)*

- 12.9.81 In total 38 discrete foraging flocks of Pink-footed Geese were observed in the Proposed Development Study Area, with 18,785 birds recorded. Furthermore, 303 flights of Pink-footed Geese were noted with 49,078 birds recorded during flight activity surveys. These figures demonstrate usage of the Study Area by the Scottish Pink-footed Goose population (essentially 4 % and over 10 % of the national population level assessment of 485,509 birds). Although regional populations of Pink-footed Geese are presented in Wilson et al., 2015<sup>37</sup> (largely based on SPA roost populations across the NHZ regions), it is considered that for flocking migratory species such as swans and geese that the national population is used<sup>20</sup> as the basis for assessment. In addition, Pink-footed Goose is not a Priority species as defined in Table A1 or Table A2 of NatureScot guidance with respect to assessing the significance of impacts of onshore developments<sup>19</sup>. As such, the species is further assessed within the context of the SPAs only for which it is a qualifying species, in **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)** with

respect to operational effects (collision mortality and barrier effects of the OHL) and construction phase disturbance/displacement from foraging habitat.

*Red-breasted Merganser (non-breeding)*

- 12.9.82 Red-breasted Merganser (Amber-list BoCC; SPA species) is a qualifying feature of the Outer Firth of Forth and St. Andrews Bay Complex SPA; the species qualifies on account of the SPA supporting an over-wintering population of 431 individuals<sup>49</sup> (GB non-breeding population 11,000<sup>36</sup>). Within the SPA, the species has declined as a breeding species, with a range contraction of over 25% since the 1970's, potentially due to the effect of fishery practices on foraging opportunities<sup>50</sup>. Non-breeding birds will often forage at sea, but close to shore, with movements up rivers and tributaries to forage<sup>39</sup>. As such, birds may be subject to collision risk should OHL spans of the Proposed Development be located across waterways.
- 12.9.83 No Red-breasted Merganser were recorded during surveys. The closest desk study records to the Proposed Development are from Clatto Country Park<sup>24</sup>, located over 4 km from Section A of the Proposed Development. No waterways where red-breasted merganser foraging may be possible and with potential connectivity to the SPA are transected by Section A of the Proposed Development. Refer to **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)** for further assessment of potential for connectivity with the Outer Firth of Forth and St. Andrews Bay Complex SPA.
- 12.9.84 Given that no Red-breasted Merganser were recorded within 2 km of the Proposed Development during field surveys and from desk study records, and with no potential habitat for foraging of the species within Section A (as part of the potential connectivity to the Outer Firth of Forth and St. Andrews Bay Complex SPA), no impact on the national population of Red-breasted Merganser is considered possible and the species is not considered further in this assessment. Operational effects (collision risk) have been considered further with respect to the Outer Firth of Forth and St. Andrews Bay Complex SPA in **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**.

*Herring Gull*

- 12.9.85 Herring Gull is a BoCC Red-list species, with populations within the Study Area associated with Outer Firth of Forth and St. Andrews Bay Complex SPA (in Section A) and Fowlsheugh SPA (in Sections D and E, refer to **Table 12.7: 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<sup>51</sup>. Designated sites Outer Firth of Forth and St. Andrews Bay Complex SPA and Fowlsheugh SPA both support breeding colonies of Herring Gull with potential 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.

*Section A*

- 12.9.86 The Outer Firth of Forth and St. Andrews Bay Complex SPA was cited as holding 3,044 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<sup>49</sup>).
- 12.9.87 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 Section A. Birds were also recorded during a BBS survey in this area for the proposed substation site at Emmock, near Tealing<sup>52</sup>.

<sup>49</sup> NatureScot, n.d. *Outer Firth of Forth and St. Andrews Bay Complex SPA*. [Online] Available at: <https://sitelink.nature.scot/site/10478>.

<sup>50</sup> NatureScot, 2018. *Overview of the Scottish marine Special Protection Area selection process*. SNH. Battleby.

<sup>51</sup> 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.

<sup>52</sup> SSEN - Environmental Impact Assessment Report: Emmock Substation 400 kV.

- 12.9.88 With reference to the proposed substation site at Emmock, NatureScot previously agreed that there would be no adverse impact on foraging Herring Gull and therefore no impact on the site integrity of the Outer Firth of Forth and St. Andrews Bay Complex SPA (given the limited potential for connectivity, refer to **Table 12.1: Summary of Consultation of relevance to Ornithology**). In comparison to the Emmock substation, the land take and associated impacts of the Proposed Development are likely to be of lower magnitude and occur on higher ground within Section A. Herring Gull is also an opportunistic species, with the birds exploiting new foraging resources, for example when arable ground is ploughed<sup>36</sup>, and it is expected that the species may exploit earthworks associated with construction of the Proposed Development for foraging. No breeding Herring Gull are present within 2 km of the Proposed Development<sup>65</sup> with the majority of SPA birds breeding in Fife and beyond the usual foraging distance of the species<sup>51</sup>.

#### Sections D and E

- 12.9.89 The Fowlsheugh SPA was cited as holding 3,190 breeding pairs<sup>53</sup>. Only a small section of the Proposed Development lies within the mean foraging distance of the SPA, with Sections D and E occurring within NHZ 16, with the regional population of Herring Gull comprising 16,782 breeding pairs<sup>37</sup>.
- 12.9.90 Herring Gull were recorded sporadically during the breeding season, with gulls noted foraging in fields to the east of Easter Auquhollie and with very little foraging habitat occurring within 5 km of the Proposed Development. Herring Gull was also recorded as foraging during the breeding season to the west of Drumlithie and near to the Proposed Development, but over 10 km from the SPA. Section E lies predominantly on higher ground, largely covered with plantation forestry, a habitat type that is not used by Herring Gulls, although upland sheep pasture does lie to the east of the Proposed Development which may be exploited. Section D is dominated by arable fields, so may be used by Herring Gulls if ploughing and scarifying is undertaken<sup>54</sup>. However, a recent study in northwest England has demonstrated that breeding Herring Gulls spend the majority of their time foraging close to inter-tidal and near-shore habitats (at least 75 % of the time), with anthropogenic sources of food (including at refuse tips and on agricultural land), relatively less important to breeding birds<sup>55</sup>.
- 12.9.91 Flight activity surveys did not record Herring Gull, and the closest VP to the Fowlsheugh SPA, was 16 km distant, which is beyond the foraging range of the species. However, collision risk to gulls from OHLs is likely to be low in most circumstances, with post-construction monitoring surveys of the Beauldy-Denny 400kV OHL in Perthshire estimating avoidance rates of gull species at over 99.98%<sup>56</sup>. Additionally, wind farm collision risk for gulls is also considered to be low<sup>57</sup>.
- 12.9.92 Herring Gull foraging flocks were recorded only sporadically across the length of the Proposed Development. 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 during construction nor disturbance/displacement effects during foraging are unlikely to impact the species negatively. 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. Gull species have also demonstrated high levels of avoidance at OHLs<sup>57</sup>. Together with these factors, the large distances between the Proposed Development and the two SPA breeding colonies, there is consequently no prospect of a Significant effect on the Herring Gull regional<sup>37</sup> or national<sup>36</sup> populations and the species is not considered further in this assessment. Screening and assessment with

<sup>53</sup> NatureScot, n.d. *Fowlsheugh SPA*. [Online] Available at: <https://sitelink.nature.scot/site/8505>.

<sup>54</sup> O'Hanlon NJ, Thaxter CB, Burton NHK, Grant D, Clark NA, Clewley GD, Conway GJ, Barber LJ, McGill RAR and Nager RG, 2022. *Habitat Selection and Specialisation of Herring Gulls During the Non-breeding Season*. Front. Mar. Sci. 9:816881. doi: 10.3389/fmars.2022.816881.

<sup>55</sup> Clewley, G. D., Barber, L. J., Conway, G. J., Clark, N. A., Donato, B. J., Thaxter, C. B., et al., 2021. *Foraging habitat selection by breeding Herring Gulls (Larus argentatus) from a declining coastal colony in the United Kingdom*. Estuar. Coast. Shelf Sci. 261:107564. doi: 10.1016/j.ecss.2021.107564.

<sup>56</sup> HEL report to SSE and Scottish Power (2016) *Beauldy-Denny 400 kV Overhead Transmission Line: Post construction Bird Monitoring – Final Report*.

<sup>57</sup> 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.

regards to Likely Significant Effect (LSE) on Designated Sites, including those designated for supporting Herring Gull, is presented in **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**.

#### *Red Kite*

12.9.93 Red Kite (Schedule 1/1A, **High** NCI species) was recorded during survey work in 2023 and 2024, in Sections A, B, C, D and F, as described below (more detailed information presented in **Volume 6, Appendix 12.2: Confidential Ornithology Report** and in **Volume 6, Figures A12.6.1 to A12.6.6: Confidential Breeding Schedule 1/Annex 1 species and Black Grouse**).

12.9.94 Red Kite was reintroduced to Scotland from 1989, and releases have been made at sites in Highland region and Aberdeenshire<sup>58</sup>. The species is widely monitored in its core Scottish range by Scottish Raptor Monitoring Scheme contributors. There were an estimated 298 pairs of red kite breeding in Scotland in 2022<sup>59</sup>. There has been a rapid increase in population size from 1992, when the first pair was known to have nested in Scotland. This increase is largely fuelled by the central Scotland population expanding by about 25% per annum<sup>59</sup>, with the north Scotland population largely remaining stable at 35 pairs (and where human persecution is thought to be limiting its increase<sup>59</sup>).

#### *Section A*

12.9.95 Red Kite was recorded during field surveys in 2023 and 2024 in Section A, with one nest confirmed in 2024 that lies within the Study Area of the Proposed Development (further information is presented in **Volume 6, Appendix 12.2: Confidential Ornithology Report**). Desk records from NBN records show the presence of birds from 10 km grid squares NO33, NO34 and NO44 in Section A.

12.9.96 The flight activity surveys recorded Red Kite flights in the north of Section A during the non-breeding season. Flight activity at this time is potentially indicative of a roost site. In addition, flights were also recorded during the breeding season in Section A in May 2023 and in 2024 near to the nesting site.

#### *Section B*

12.9.97 Red Kite was recorded during survey work in 2023 and 2024 in Section B. Two nest sites were confirmed in 2024 within the Study Area. In addition, desk records from the RSPB recorded a further two nests from 2017 (not confirmed in the present surveys); both were located within 2 km of Section B.

12.9.98 Flight activity surveys recorded Red Kites across the non-breeding period (October to March). These flights were often recorded in areas in which there were future nesting attempts (refer to **Volume 6, Appendix 12.2: Confidential Ornithology Report**). Flight activity included some flights at potential collision height, although the majority of recorded flights did not intersect the Proposed Development.

#### *Section C*

12.9.99 Red Kite was recorded during survey work in 2024 in Section C. One nest was confirmed in 2024, located over 500 m from the Proposed Development (record #15; further information presented in **Volume 6, Appendix 12.2: Confidential Ornithology Report**). NBN data also recorded birds within the 10 km grid squares NO56, NO66 and NO67.

12.9.100 A total of 11 flights of Red Kite were recorded in Section C during the flight activity surveys, with five flights intersecting the Proposed Development. All five flights included flight time at potential collision height. Flights were associated with plantation woodland, including areas recently cleared for crop.

#### *Section D*

12.9.101 Red Kite was recorded during survey work in 2024 in Section D: with a potential nest site located within the Study Area. Further information is presented in **Volume 6, Appendix 12.2: Confidential Ornithology Report**. NBN data confirmed Red Kite records within the 10 km grid squares NO67, NO77 and NO78 in Section D.

<sup>58</sup> Scottish Raptor Study Group, n.d. *Red kite*. [Online] Available at: <https://www.scottishraptorstudygroup.org/raptors/red-kite/>.

<sup>59</sup> Sansom, A., Etheridge, B., Smart, J. & Roos, S. 2016. *Population modelling of North Scotland red kites in relation to the cumulative impacts of wildlife crime and wind farm mortality*. Scottish Natural Heritage Commissioned Report No. 904.

- 12.9.102 No Red Kite flight activity was recorded in Section D (including Fetteresso Forest) during BBS or other surveys during the breeding season. No flight activity survey was carried out in Section D in the non-breeding season, since the section lies beyond 10 km of all goose roost SPAs, and therefore no Red Kite flight activity was recorded in this Section.

*Section E*

- 12.9.103 No Red Kite nests were recorded during surveys in 2023 and 2024 within 2 km of Section E; although nests were recorded to the east of the Proposed Development (over 2 km distant) in 2023. In addition, a known roost site (from RSPB records) was confirmed just over 2 km east of Section E in 2023, and out with the Study Area. NBN data also confirmed red kite records within the 10 km grid squares NO78 and NO79.
- 12.9.104 Flight activity survey carried out in this Section recorded a single flight only of Red Kite over 2.8 km to the east of the Proposed Development and out with the Study Area. The flight, on 17 January 2024 was of a single bird over Ashentilly Wood, south of the River Dee; flight activity included flight time at potential collision height. No flights were recorded over Fetteresso or Durris Forests.

*Section F*

- 12.9.105 Section F surveys recorded two nests of Red Kite within the Proposed Development Study Area (records #62-65, and #93/94, with further information presented in **Volume 6, Appendix 12.2: Confidential Ornithology Report**). In addition, the RSPB provided records of another nest (from 2017 surveys), also occurring within the Study Area; surveys in 2024 did not confirm presence here. NBN data included recorded birds within the 10 km grid squares NO79, NJ70 and NJ71<sup>24</sup>.
- 12.9.106 Red Kite flights were recorded from flight activity surveys undertaken across the non-breeding 2023/24 season. Sixteen flights were recorded in Section F, of which only one flight was recorded as overflying the Proposed Development. This flight was recorded as above potential collision height.
- 12.9.107 Red Kite are considered as being of Medium sensitivity to disturbance at their nesting sites<sup>94</sup> (refer to **Section 12.15 Assessment of Likely Significant Effects – Construction**) and are at risk of collision with OHLs, especially when these are located near to the nesting site<sup>116</sup> (refer to **Section 12.16 Assessment of Likely Significant Effects – Operation**).

*Regional populations: NHZ 16 – Eastern Lowlands*

- 12.9.108 Red Kite has been subject to several releases in Scotland over the last 35 years, with releases in central Scotland near Doune from 1996 to 2001<sup>60</sup>. The NHZ 16 population of Red Kite is at least 60 pairs, with numbers having likely increased since the NHZ population was estimated in 2018 (the Tayside and Fife raptor study group regions recorded 99 pairs holding territory in 2022<sup>35</sup>). As such, the regional population is likely in the order of at least 200 birds (120 adults and 80 young), with this number considered likely to be higher (this does not include unmated and sexually immature birds (most breed when they reach two (females) or three (males) years of age)), along with the likelihood that numbers of the species continue to increase.
- 12.9.109 A total of five Red Kite nests are within the NHZ 16 region Study Area for the Proposed Development. In addition, a roost site is also known from within 2 km of the Proposed Development. This represents over 8 % of the breeding NHZ 16 Red Kite population of 60 pairs<sup>37</sup>.
- 12.9.110 The presence of 8% of the regional NHZ 16 regional Red Kite population nesting within the Study Area means there is potential for the Proposed Development to affect the regional population both during construction and operation, and the species is further assessed in detail within this impact assessment, with respect to the regional NHZ 16 population.

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<sup>60</sup> Sansom, A., Etheridge, B., Smart, J. & Roos, S., 2016. *Population modelling of North Scotland Red Kites in relation to the cumulative impacts of wildlife crime and wind farm mortality*. Scottish Natural Heritage Commissioned Report No. 904.

*Regional population: NHZ 12 – North East Glens*

- 12.9.111 The NHZ 12 Red Kite population is estimated at seven pairs<sup>37</sup>, although this is likely to be an underestimate given the likely expansion of the breeding population in this area (following the release of 101 birds on the outskirts of Westhill between 2007 and 2009<sup>58</sup>).
- 12.9.112 No Red Kite were confirmed as nesting during surveys undertaken in 2024 within NHZ 12 and no flight activity or roost locations were recorded in the Study Area. As such, baseline conditions suggest the species has a limited distribution in this area and the potential for effect to red kites occurring within NHZ 12 in the Study Area is considered unlikely. Therefore, there is no possibility of impacts of the Proposed Development on the regional NHZ 12 Red Kite population and this is not considered further.

*Regional population: NHZ 9 – North East Plains*

- 12.9.113 The Red Kite population in NHZ 9 is estimated to be 12 pairs<sup>37</sup>. Given the presence of at least three active nests within the Section F Study Area (25 % of the regional population), there is potential for connectivity with the Proposed Development, with potential for impacts upon the regional population during both the construction and operational phases. Potential effects on Red Kite are therefore considered further within this impact assessment, in relation to the regional NHZ 9 population.

*Goshawk*

- 12.9.114 No Goshawk (Schedule 1, High NCI species) were recorded in Sections A or B during field surveys.

*Section C*

- 12.9.115 Five flights by Goshawk were recorded during flight activity surveys across 2023/24 non-breeding season (all on 19 December 2023), two of these flights intersecting the Proposed Development at potential collision height (refer to **Volume 6, Appendix 12.2: Confidential Ornithology Report** and in **Volume 6, Figures A12.6.1 to A12.6.6: Confidential Breeding Schedule 1/Annex 1 species and Black Grouse**). No nesting sites were confirmed in Section C.

*Section D*

- 12.9.116 No Goshawk flights were recorded during Red Kite roost watches at Fetteresso Forest. A single nesting site lies within the Section D Study Area (refer to FLS records in **Volume 6, Appendix 12.2: Confidential Ornithology Report**).

*Section E*

- 12.9.117 No Goshawk flights were recorded during Red Kite roost watches at Fetteresso Forest. Two historic nesting sites lie within the Section E Study Area (refer to FLS records in **Volume 6, Appendix 12.2: Confidential Ornithology Report**).

*Section F*

- 12.9.118 A single Goshawk flight was recorded during flight activity surveys. The flight, from 24 October 2023, did not intersect the Proposed Development and was recorded above potential collision height. No breeding was recorded during surveys in Section F.
- 12.9.119 Goshawk are considered to be of medium sensitivity to disturbance at their nesting sites<sup>94</sup> (refer to **Section 12.15 Assessment of Likely Significant Effects – Construction**) and can be at risk of collision with OHLs<sup>61</sup> (refer to **Section 12.16 Assessment of Likely Significant Effects – Operation**).

*Regional populations: NHZ 12 – North East Glens*

- 12.9.120 Breeding Goshawk were recorded within the Survey Area, with at least one active nesting pair present in Sections D and E, with a total of three potential historic nesting sites present in those Sections (region NHZ 12 – North East

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<sup>61</sup> Husby, Magne. 2024. *Wind Farms and Power Lines Reduced the Territory Status and Probability of Fledgling Production in the Eurasian Goshawk Accipiter gentilis*. Diversity 16, no. 2: 128. <https://www.mdpi.com/1424-2818/16/2/128>.

Glens; records #45, #46 and #47; further information in **Volume 6, Appendix 12.2: Confidential Ornithology Report**). The Scottish population of Goshawk was estimated at 283 pairs in 2021<sup>34</sup>. The NHZ 12 North East Glens population was estimated to be 25 pairs in 2015<sup>37</sup>, although this is almost certainly considerably higher now, as it was based on a much lower national population estimate of 130 pairs<sup>35</sup>.

- 12.9.121 Goshawk are vulnerable to disturbance during the breeding season. In addition, clearance of woodland as part of the Proposed Development could result in the accidental destruction of potential nesting habitat, with potential for the regional (NHZ 12) population to be significantly impacted by the Proposed Development. As such, the species is considered further within this impact assessment, with respect to the regional population of Goshawk.

*Peregrine falcon*

- 12.9.122 A desk record of a Peregrine (Schedule 1, High NCI species) nest site located in Section D within the 2 km Study Area, was provided by a landowner in December 2024 (further information is presented in **Volume 6, Appendix 12.2: Confidential Ornithology Report** and in **Volume 6, Figures A12.6.1 to A12.6.6 Confidential Breeding Schedule 1/Annex 1 species and Black Grouse**). Flight activity across the Study Area was limited with two flights only recorded during flight activity surveys across the non-breeding season. No birds were recorded during the breeding season surveys.

*Section B*

- 12.9.123 Flight activity was recorded on 25 February 2024 when a male Peregrine was seen to leave a stand of trees to the east of tower S162 in Section B where it had been perched and flew off, at below potential collision height, while being mobbed by a flock of crows (*Corvus* sp.). The bird had been perched up for some 20 minutes prior to the flight.

*Section D*

- 12.9.124 No Peregrine flight activity was recorded during surveys in Section D of the Proposed Development. A landowner informed SSEN Transmission in December 2024 of the presence of a Peregrine nest site within a former quarry south of Glenbervie. The nest site, within the Study Area, had not been recorded from desk or field surveys, but appears typical of the species<sup>36</sup> (cliff-like crags appear to be present) and as such, the nesting site is assumed as having been occupied in 2023 and/or 2024. The home territory is likely to provide a range of prey species, with woodland, open farmland and rivers all present.

*Section E*

- 12.9.125 A bird was seen over 3 km to the east of the Proposed Development in Section E (east of tower N60), on the 17 January 2024. The short hunting flight of less than 15 seconds was observed over the River Dee. No birds were recorded in the Study Area.
- 12.9.126 Peregrine are considered as being of Medium sensitivity to disturbance at their nesting sites<sup>98</sup> and are at potential risk of collision with OHLs. The nesting site within the Study Area of Section D lies beyond the disturbance distance for Peregrine (500 – 750 m<sup>94</sup>).

*Regional population: NHZ 16 Eastern Lowlands*

- 12.9.127 The NHZ 16 Eastern Lowlands regional population of peregrine is 103 pairs<sup>37</sup>. Less than 1 % of the regional population lies within the Proposed Development's Study Area, with limited flight activity recorded. Peregrine is a scarce but widespread breeding resident species in Scotland. The Scottish breeding population is approximately 485 pairs<sup>37</sup> with 2,000-2,500 individuals present in winter<sup>36</sup>.
- 12.9.128 Core foraging range of Peregrine is 2 km<sup>105</sup>. The nest site lies over 1.2 km from the Proposed Development at its closest point with the species also described as of low collision risk with powerlines<sup>91</sup>. The risk of collision mortality is therefore considered minimal. No disturbance issues are predicted from the construction of the Proposed Development, with NatureScot requiring a protection buffer of up to 750 m from the nest site to ensure compliance<sup>94</sup>. Indeed, Peregrine will often use man-made structures to hunt from and nest on<sup>62</sup>. As such it is not considered that there is the possibility of Significant impacts of the Proposed Development (during construction or operation) on the

<sup>62</sup> Dixon, N. 2000. *A new era for Peregrines - buildings, bridges and pylons as nest sites*. BTO News 229: 10-11.

regional population of Peregrine and the species is not considered further within this EIAR. The BSPP (refer to **Section 12.13**) will be adhered to, ensuring compliance with the legislation protecting breeding birds.

#### *Merlin*

- 12.9.129 Merlin (Schedule 1, High NCI species) was recorded nesting in Section A Study Area of the Proposed Development in 2023, only with concomitant flight activity recorded on 31 May 2023; no nesting was recorded in 2024 (further information is presented in **Volume 6, Appendix 12.2: Confidential Ornithology Report**; and in **Volume 6, Figures A12.6.1 to A12.6.6 Confidential Breeding Schedule 1/Annex 1 species and Black Grouse**). No other breeding attempts were recorded for the species across the Proposed Development, with little suitable breeding habitat (upland heath or moorland) present out with the area at Craignell, to the south of Durris Forest in Section D (between towers N86 and N82).
- 12.9.130 Two flights were recorded during flight activity surveys: a flight within 2 km of Section A on 9 January 2024 and a flight adjacent to Section C on 17 January 2024. Both flights were below collision height.
- 12.9.131 Merlin is a scarce resident breeding species in Scotland with a breeding population of 733 pairs<sup>63</sup>. The species favours upland sites with deep heather for nesting<sup>36</sup>, of which some is present within Section A. In winter the Scottish population consists of at least 3,000 birds, with individuals favouring open country including farmland and coastal areas for foraging at this time<sup>63</sup>.
- 12.9.132 Merlin are considered as being of Medium sensitivity to disturbance at their nesting sites<sup>94</sup> (refer to **Section 12.15 Assessment of Likely Significant Effects – Construction**) and are at a potential risk of collision with OHLs (refer to **Section 12.16 Assessment of Likely Significant Effects – Operation**).

#### *Regional population: NHZ 16 – Eastern Lowlands*

- 12.9.133 The NHZ 16 regional population of Merlin is estimated as four pairs<sup>37</sup>. A pair of Merlin were recorded breeding within the Study Area in Section A which lies within NHZ 16. The presence of Merlin here means that there is the potential for construction impacts of the Proposed Development, with temporary loss of foraging habitat and disturbance/displacement from the nesting site. In addition, flight activity will likely be high close to the nesting site as food is brought to the young. The presence of Merlin using foraging and nesting habitats within the Study Area for Section A potentially represents 25 % of the NHZ regional population in NHZ 16, with potential to be affected by the Proposed Development (both in construction and operation). Therefore, potential for Significant effects on the regional population cannot be ruled out and the species is considered further in this assessment with respect to construction (where there is potential for disturbance and/or displacement effects) and operational (collision mortality) phases.

#### *Short-eared Owl*

- 12.9.134 A single pair of Short-eared Owl (Annex 1, High NCI species) was recorded as breeding within Section A in an area of upland heath near Ironside Hill, within 500 m of the Proposed Development (further information is presented in **Volume 6, Appendix 12.2: Ornithology Confidential Report** and in **Volume 6, Figures A12.6.1 to A12.6.6 Confidential Breeding Schedule 1/Annex 1 species and Black Grouse**). Adult birds were recorded here on 31 May 2023 and 10 June 2023, with birds recorded alarming in flight, suggesting that the nest had been successful (no nest was found, and no obviously fledged young were noted; however continued presence and activity of adults during daylight surveys suggested nesting nearby). No flight activity was recorded in the flight activity surveys, however.
- 12.9.135 No Short-eared Owls were recorded across other Sections during field surveys.
- 12.9.136 Short-eared Owl is a resident breeder in Scotland although many move from the breeding areas to separate wintering sites<sup>36</sup>. In Scotland it is described as a restricted resident breeder with strongholds in the uplands of the south, central and eastern areas and with Scotland holding more than 75 % of the UK's breeding Short-eared Owl

<sup>63</sup> Warkentin, I.G. and Oliphant, L. 2009. *Habitat use and foraging behaviour of urban Merlins in winter*. Journal of Zoology, 221: 539-563.

population<sup>64</sup>. Numbers fluctuate significantly between years, dependent on the population of prey species (notably vole species *Microtus* sp<sup>64</sup>).

*Regional population: NHZ 16 – Eastern Lowlands*

12.9.137 The NHZ 16 population, in which Section A lies, is estimated as 58 pairs (of a Scotland wide estimate of approximately 1,088 pairs)<sup>37</sup>. Breeding territories of Short-eared Owl of between 16 – 120 hectares are reported within this NHZ, where smaller territories support high numbers of voles<sup>64</sup>. These breeding birds will disperse from breeding territories for the winter, at which time they will be joined by a significant number of continental birds, such that the UK wintering population has been estimated at between 5,000-50,000 birds<sup>65</sup>.

12.9.138 Breeding Short-eared Owl are present within Section A with the possibility that construction of the Proposed Development would result in the potential for the loss of foraging and nesting habitat during the construction phase. There is also the possibility that collision mortality may impact the species at the regional population level, given that the presence of a single pair within the Study Area represents more than 1% of the NHZ 16 regional population. As such, Short-eared Owl is considered further in this assessment with regards to construction and operational phase impacts, with specific reference to the regional population in NHZ 16.

*Nightjar*

12.9.139 In Scotland, Nightjar is an Annex 1, BoCC Amber-listed bird species (High NCI species). Nightjar migrates to the UK in early summer (April-May) from sub-Saharan Africa, returning there in early Autumn migrating south from September onwards<sup>36</sup>. Relatively few Nightjar are present in Scotland – estimates from Forrester *et al.*, (2007<sup>36</sup>) suggested as few as 27 males were present in the early 2000's (ca 4,600 estimated singing males present in the UK) - with the majority of birds occurring in the southwest, within Dumfries and Galloway.

12.9.140 The regional population has since seen a recent increase in range and number, with data provided by Aberdeenshire Council on 13 February 2025 describing the presence of at least two nesting attempts within the Study Area of the Proposed Development, occurring within forestry habitats in Section D/E (refer to **Volume 6, Appendix 12.2: Confidential Ornithology Report**; and **Volume 6, Figures A12.6.1 to A12.6.6 Confidential Breeding Schedule 1/Annex 1 species and Black Grouse**). Additionally, a recently published paper<sup>66</sup> records Nightjar in northeast Scotland from 2014, including nesting attempts in 2023 and 2024. The species nests within commercial forestry clear-fell areas, of which Sections D, E and F contain this suitable habitat.

12.9.141 There is no published regional population number for Nightjar in North-East Glens Natural Heritage Zone (NHZ 12), with the species at the very northerly limit of its distribution in the UK.

12.9.142 The presence of breeding Nightjar within the Study Area of the Proposed Development means that there is the possibility of construction phase impacts. Both foraging and nesting habitat loss together with the possibility of disturbance/displacement from nesting sites due to construction activities are possible. In addition, collision mortality risk is also present during the operational phase of the Proposed Development. Therefore, Nightjar are considered further in this assessment with regards to population level effects of construction and operation. Since there is no regional population estimate, it can be extrapolated that two breeding pairs represents over 5 % of the early 21st Century Scottish population<sup>66</sup>.

*Black Grouse*

12.9.143 Surveys recorded a male and female Black Grouse (BoCC Red-list, **Moderate** NCI species) within 500 m of the Proposed Development in Section A in 2023. The birds were recorded foraging within an area of birch and willow trees near to upland moorland. Species-specific surveys were carried out in April and May 2024. A single lekking male was recorded within 500 m of the Proposed Development in Section A (further information presented in **Volume 6, Appendix 12.2: Confidential Ornithology Report**; and presented in **Volume 6, Figures A12.6.1 to A12.6.6 Confidential Breeding Schedule 1/Annex 1 species and Black Grouse**). The male was recorded in an area of

<sup>64</sup> Village, A., 1987. Numbers, territory size and turnover of Short-eared Owls *Asio flammeus* in relation to vole abundance. *Ornis Scandinavica* 18: 198-204.

<sup>65</sup> British Trust for Ornithology, n.d. BTO Atlases. [Online] Available at: <https://app.bto.org/mapstore/StoreServlet>.

<sup>66</sup> Knox, Alan, 2024. *Nightjar in North-East Scotland: a species at the edge of its range*. 44. 312-328.

open grassland within the mosaic of upland heath present here. In addition, two birds were also recorded in flight approximately 1.2 km from the Proposed Development to the north of Kincaldrum Hill on two occasions on 10 May 2024.

12.9.144 NBN desk records also show presence of black grouse within the following 10 km grid squares:

- Section A: NO33 and NO34;
- Section B: NO45, NO46 and NO56;
- Section C: NO67 and NO56 (woodland beyond Fettercairn and Auchenblae);
- Section D: NO67 and NO78, notably in Drumochty Forest and also at the west of Fetteresso Forest, with the nearest records 5 km distant from the Proposed Development;
- Section E: NO78 and NO79 (Hill of Fare, over 5 km to the west of the Proposed Development); and
- Section F: NO79, NJ70 and NJ71.

12.9.145 The lek recorded during field survey work lies within 10 km grid square NO34. The birds recorded near Kincaldrum Hill were located within NO44 where NBN has not previously recorded the species; suggesting that Black Grouse may be expanding distribution to this area.

12.9.146 Black Grouse is a widespread resident occurring in suitable moorland and woodland habitats, with the Scottish and UK populations suffering a serious decline and range contraction in recent years<sup>66</sup>. Conservation action has had some local success in halting or reversing the decline<sup>67</sup> with the presence of birds in 10 km square NO44 potentially pointing to local successes. The number of lekking males in Scotland is estimated to be between 3,550-5,750 birds, with the winter population thought to be 7,500-19,000 individuals, representing 71% of the UK population<sup>66</sup>. The rapid population declines (more than 50% of the UK breeding population in the last 25 years) has led Black Grouse to be included on the UK Red List of Birds of Conservation Concern<sup>31</sup> and listed as a Scottish Biodiversity List species<sup>68</sup>.

*Regional population: NHZ 16 Eastern Lowlands.*

12.9.147 The NHZ 16 Eastern Lowlands population comprises 167 lekking males<sup>37</sup>. As such, the lekking male in Section A birds represent less than 1 % of the NHZ 16 regional population.

12.9.148 Black Grouse are known to collide with deer fences<sup>69</sup> and collisions with high-tension power lines have been estimated to kill significant numbers of Black Grouse in some parts of their European range, including an estimate of over 25,000 collisions annually in Norway, across 95,000 km of OHL (11-420 kV OHLs<sup>70</sup>). However, flight activity was not recorded close to the Proposed Development; therefore, collision risk to the regional population is considered very low. A single lekking bird only was recorded during field surveys. The bird was recorded lekking approximately 500 m west of the Proposed Development and within potential disturbance distance. It is not considered that the disturbance impact of the Proposed Development would be Significant on the regional population. It appears likely, however, that the bird was exploiting lekking habitat beyond any traditional lekking sites, with other open habitats present within the mosaic of upland managed moorland nearby. Loss of lekking habitat for the temporary length of construction works is unlikely to affect more than one bird for the duration of construction. Therefore, given that only a single lek with one male Black Grouse was recorded within the Study Area (Section A (NHZ 16) only) and that breeding/lekking habitat for the species is relatively limited along the extent of the Proposed Development, impacts during the construction and operational phases have no potential to lead to significant effects on the regional population, and Black Grouse are not considered further in this assessment.

<sup>67</sup> Moorland Association. 2025. *Conserving Black Grouse: A comprehensive guide*. [Online] Available at: <https://www.moorlandassociation.org/post/conserving-black-grouse-a-comprehensive-guide>.

<sup>68</sup> NatureScot, 2025 *Scottish Biodiversity List*. [Online] Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list>.

<sup>69</sup> Petty, S.J., 1994. *Assessment of fence collisions by grouse species in Scotland*. Research Information note 264. The Forestry Commission.

<sup>70</sup> Bevinger, K., 1995. *Estimates and population consequences of tetraonid mortality caused by collisions with high tension power lines in Norway*. J. Applied Ecology, 32, 4, 745-753.

- 12.9.149 The BSPP (refer to **Section 12.13**) will be adhered to in order to ensure compliance with the legislation protecting breeding birds.

*Curlew*

- 12.9.150 Curlew (Red-list BoCC, **Moderate** NCI species) is a widespread breeding resident in Scotland with a breeding population of approximately 58,800 pairs<sup>36</sup> (16-27 % of the European breeding population). The wintering population, which also includes immigrants from Fennoscandia, is approximately 85,700 birds<sup>36</sup>. This figure also includes 20 % of the East Atlantic Flyway non-breeding population and therefore Curlew is included in the UK Red List of Birds of Conservation Concern<sup>31</sup>. The UK Curlew population has declined dramatically over the last 50 years<sup>31</sup>, with drivers for this population decline including degradation of breeding habitat, afforestation of uplands and increases in predation<sup>71</sup>. Curlew are sensitive to disturbance and can be displaced as a result of development near breeding sites<sup>76</sup>.
- 12.9.151 Wader surveys were geographically targeted by using BTO sensitivity mapping for Curlew<sup>25</sup>. The sensitivity mapping predicts densities of Curlew, expressed on a scale of 1 to 5, with 5 predicting the highest density. Areas within 500 m of the Proposed Development where BTO-modelled habitat sensitivity was level 2 or above for Curlew were surveyed<sup>25</sup>. Population densities of between less than one pair per km<sup>2</sup> to 2.9 pairs per km<sup>2</sup> have been described for habitats similar to those found along the BBS areas (eg rough grazing<sup>72</sup>). The BBS areas included BTO modelled areas from level 2 (median of 0 individuals per km<sup>2</sup>), level 3 (0.7 individuals), level 4 (2.0 Curlew) and level 5 (2.8 Curlew)<sup>25</sup>. Survey data are presented in **Volume 3, Figures 12.3.1 to 12.3.8: Breeding Bird Surveys**. Across the extent of the Proposed Development, less than 20 km of suitable Curlew breeding habitat is present. This reflects the topography of ground present, with the majority below 200 m above sea level, with the species preferring higher altitude<sup>73</sup>.

*Section A*

- 12.9.152 Within Section A, approximately 9 km of the Proposed Development was surveyed in 2023. Section A runs for approximately 14.5 km, with 5.5 km considered as the least suitable habitat for breeding Curlew. A total of eight Curlew territories were recorded within the 9 km Study Area (approximately 0.9 pairs per km). Although no control squares were used in the BBS surveys, it is likely that Curlew are present breeding out with the surveyed areas at much lower densities, given that the BTO-modelled data shows those areas as not suitable for the species (ie the areas are likely to be on lower, more intensively-farmed land), and certainly at less than 0.9 pairs per km.
- 12.9.153 Curlew in Section A 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 months, with flight activity surveys during the non-breeding season recording only a single flight, on 14 March 2024, of a bird returning to its territory in this area.

*Section B*

- 12.9.154 Curlew was recorded during breeding bird surveys in 2023 and from NBN desk records (birds present in 10 km grid squares NO45, NO46 and NO56 within Section B).
- 12.9.155 Limited high-quality Curlew breeding habitat is present across Section B in the Study Area; however, surveys were undertaken between towers S163 and S161, where suitable habitat is present. At least two pairs of Curlew were present during 2023 surveys, with potential nesting within 500 m of the Proposed Development and a density of 1.3 pairs per km of the Proposed Development (for Section B). Section B runs for 21.5 km of the Proposed Development. As such, 20 km of the Proposed Development in Section B is considered unlikely to support breeding Curlew; this Section is largely arable farmland with occasional pockets of deciduous and mixed woodland and has been modelled

<sup>71</sup> 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>.

<sup>72</sup> Galbraith, H., Furness, R.W. & Fuller, R.J, 1984. *Habitats and distribution of waders breeding on Scottish agricultural land*. Scottish Birds 13: 98–107.

<sup>73</sup> British Trust for Ornithology, n.d. *BirdFacts: Curlew*. [Online] Available at: <https://www.bto.org/learn/about-birds/birdfacts/curlew>.

as being unsuitable breeding habitat for the species<sup>25</sup>. The two pairs recorded were at the south of Section B in wetter, rush pasture areas near to Dean Water.

#### *Section C*

- 12.9.156 No BBS was carried out in Section C since BTO sensitivity data show no parts of Section C as being of good quality habitat for breeding Curlew: much of Section C is below 200 m agl and comprises pasture and agricultural land. Desk records of breeding Curlew were available for 10 km grid squares NO56, NO66 and NO67 occurring within Section C; however, breeding habitat for Curlew was present to the west of the Study Area only; for example, at Eslie Moss, located within 1 km of the Proposed Development.
- 12.9.157 A single flight of two birds was recorded on 14 March 2014 within the Section C; the birds were recorded as crossing the Proposed Development at potential collision height.

#### *Section D*

- 12.9.158 Survey was carried out in 2024 along 2 km of Section D for breeding birds. BTO sensitivity data shows only 500 m of Section D as being of good quality habitat for Curlew (across the 19 km for which the Proposed Development lies). Desk records of breeding Curlew were available for 10 km squares NO67, NO77 and NO78 occurring within Section D. It is estimated that two pairs of Curlew were present in 2024 during surveys in Section D, recorded in areas of good habitat near Droop Hill north of tower S17 in BBS area 15.

#### *Section E*

- 12.9.159 Survey was carried out in 2024 along 2 km of Section E for breeding birds. As for Section D, only a very small proportion of Section E lies within good quality habitat for the species. Desk records of breeding Curlew were available for the 10 km grid squares NO78 and NO79 within Section E. No Curlew were recorded as breeding within 2 km of the Section E: surveys in 2023 recorded Curlew breeding within good quality habitat to the east of the Proposed Development.
- 12.9.160 Section E is approximately 12 km in length, much of which (7 km) lies within forested areas including Fetteresso Forest and Durris Forrest (ie unsuitable for nesting Curlew). Due to the unsuitability of habitats in this Section, no Curlew are considered breeding within Section E.

#### *Section F*

- 12.9.161 Approximately 5 km of Section F (20 km total length) of the Proposed Development lies within suitable breeding habitat for Curlew. This area lies approximately between towers N30 and N53 where meadow and rough pasture grazing is present. No Curlew were recorded as breeding within 1 km of Section F during surveys and no flight activity was recorded during the non-breeding flight activity surveys. Desk records were present from 10 km grid squares NO 79, NJ 70 and NJ71, within which Section F is located.

#### *Regional population: NHZ 16 – Eastern Lowlands*

- 12.9.162 Sections A, B, C and the majority of Section D lie within NHZ 16 Eastern Lowlands, where the regional population of Curlew is 3,253 pairs<sup>37</sup>. The stronghold of the species in this region lies largely in higher ground to the southwest (eg the Ochils)<sup>25</sup>. In addition, areas to the south of Section A, including areas where BBS was carried out, provides a small area of better-quality habitat. Higher ground (200 m above sea level or greater) that lies to the west of the Proposed Development supports a higher density of the species, although much is within NHZ 12 North East Glens<sup>25</sup>.
- 12.9.163 The Curlew population that lies within the Study Area is estimated as 12 pairs across 70 km of the Proposed Development, or considerably less than 1 % of the regional NHZ 16 population. Potential for disturbance during nesting and temporary habitat loss does exist during the construction phase. In addition, collision mortality may be a risk during the operational life of the Proposed Development. However, both construction and operational impacts are limited given the paucity of habitat present, and with less than 1 % of the NHZ 16 regional population within the Study Area. Therefore, it is not considered likely that a Significant effect of the Proposed Development is possible in this region and therefore Curlew are not considered further in this assessment.

*Regional population: NHZ 12– North East Glens*

- 12.9.164 Less than 10 km of the Proposed Development lies within NHZ 12, with the regional Curlew population estimated here as 2,815 pairs<sup>37</sup>. No breeding Curlew were recorded in NHZ 12 (from Towers S4 to N71), with much of the ground covered in forestry and unsuitable for the species, at this eastern most part of the described region. As such, no substantial population (>1% of the NHZ population) is present here and is likely to be present in the foreseeable future, and therefore there is no potential for Significant effects of the Proposed Development. Curlew is not considered further in the assessment in this region.

*Regional population: NHZ 9 – North East Coastal Plain*

- 12.9.165 The NHZ 9 regional population of Curlew is estimated as 1,037 pairs. No breeding Curlew were recorded during surveys, with limited habitat suitability present within the Study Area. The regional NHZ 9 population appears more concentrated to the north and east of the Proposed Development (refer to **Volume 3, Figures 12.3.1 to 12.3.8: Breeding Bird Surveys**). No Curlew were recorded during field surveys undertaken in suitable habitat. As such, no potential impacts are predicted from construction or operational phases of the Proposed Development and Curlew from the NHZ 9 regional population are not considered further in this assessment.
- 12.9.166 In summary, all habitat that had been modelled as suitable breeding habit for Curlew by the BTO and which coincided with the Proposed Development was surveyed. Across all the extent of the Proposed Development only 12 pairs of Curlew were recorded breeding, all within NHZ 16 -Eastern Lowlands. With the limited numbers of breeding birds present, there is no potential for Significant effects from the Proposed Development on the regional Curlew populations within NHZ 16, NHZ 12 and NHZ 9. The BSPP (refer to **Section 12.13**) will be adhered to during Proposed Development construction, to ensure legislative compliance for the protection of breeding birds.

*Lapwing*

- 12.9.167 Wader surveys were targeted using BTO sensitivity mapping<sup>25</sup> with regard to Curlew (as outlined above). Those surveyed areas also coincided with 1 km<sup>2</sup> squares classed as good quality Lapwing breeding habitat<sup>25</sup>. Predicted abundance of Lapwing are provided on a level of 1 to 5, with 1 supporting the lowest density of breeding Lapwing and 5 with the highest density/abundance. Modelled data for waders recorded abundance linked to variables such as the presence of potential predators (foxes *Vulpes vulpes* and Corvids), habitat, slope and climate<sup>25</sup>. For Lapwing, the five levels or strata modelled, recorded breeding densities from level 1 (no presence) to level 5 (up to 7.1 individuals per km<sup>2</sup>) in the period 2015-2018. Those areas described as good quality Lapwing breeding habitat have been estimated as holding one pair per km<sup>2</sup>. Survey data are presented in **Volume 3, Figures 12.3.1-12.3.8: Breeding Bird Surveys**.
- 12.9.168 In Scotland, Lapwings primarily breed in lowland areas, favouring spring-sown crops, bare or sparsely vegetated fallow fields and unimproved pastures, with a preference for areas near wetlands with short vegetation<sup>74</sup>. These habitat types are recognised within the modelled data<sup>25</sup>. Lapwing numbers have declined considerably, with population declines related to increased predation, habitat loss and degradation due to changes in farming practices (eg drainage and use of fertilisers)<sup>75</sup>. Lapwings appear to be relatively unaffected by infrastructure developments where suitable habitat remains, however<sup>76</sup>. The Scottish population is believed to be 68,900 pairs<sup>36</sup>.

*Section A*

- 12.9.169 The BTO wader sensitivity map<sup>25</sup> shows at least 11 km of the 14.5 km of Section A is located within good quality Lapwing breeding habitat. Surveys were undertaken in 2023 and 2024 in areas marked as suitable breeding habitat for Curlew, all of which coincided with higher-sensitivity Lapwing areas, between Towers S204 and S174, and

<sup>74</sup> British Trust for Ornithology, n.d. *BirdFacts: Lapwing*. [Online] Available at: <https://www.bto.org/learn/about-birds/birdfacts/lapwing>.

<sup>75</sup> Fuller, R. & Ausden, M., 2008. *Birds and habitat change in Britain. Part 1: a review of losses and gains in the twentieth century*. British Birds 101: 644–675.

<sup>76</sup> Pearce-Higgins, J.W., Stephen, L., Douse, A. & Langston, R.H.W. 2012. *Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis*. Journal of Applied Ecology, 49, 386-394.

between S171 and S164. Lapwing were recorded breeding only to the north of Section A, from Tower S164 north. This is potentially due to the range retraction of the species over the last 50 years<sup>77</sup>. No Lapwing flights were recorded during flight activity surveys in Section A during the non-breeding season. Desk records of breeding Lapwing were available for 10 km grid squares NO33, NO34 and NO44, within which Section A lies.

#### Section B

- 12.9.170 BBS was carried out in 2023 along 2 km of Section B where suitable breeding Curlew habitat is present<sup>24</sup>. The BTO-modelled sensitivity data also records less than 7 km of Section B as suitable habitat for Lapwing across 21.5 km of this Section of the Proposed Development. Lapwing were recorded breeding within the Study Area, only between Towers S164 and S162. This breeding record from 2023 comprised two pairs, both within 500 m of the Proposed Development: one pair using a Spring sown crop to nest in, the other pair in a wetter, rough pasture field north of Dean Water. Desk records of breeding Lapwing were also available for 10 km squares NO45 and NO56, within Section B.
- 12.9.171 Flight activity surveys recorded a single flight in the non-breeding season, comprising 22 Lapwing on 11 January 2024.

#### Section C

- 12.9.172 No wader-specific survey was carried out in Section C, as no habitat with suitability for Curlew was present in this Section (refer to **Volume 5, Appendix 12.1: Ornithology Technical Report**). BTO sensitivity data models less than 3 km of Section C as suitable breeding habitat for Lapwing (across the 17 km of Proposed Development in this section). Desk records of breeding Lapwing were available for the 10 km grid squares NO56, NO66 and NO67, squares within which Section C lies.
- 12.9.173 The breeding distribution for Lapwing in this Section indicates that the higher quality habitat for the species lies to the west of the Proposed Development<sup>25</sup> in Section C. The species preference for higher ground and ground away from intensively farmed arable land, is considered the leading factor for Lapwing distribution away from Section C.
- 12.9.174 Three Lapwing flights were recorded during flight activity surveys in the non-breeding season. Of these, only one flight of two birds crossed the Proposed Development (at below potential collision height) to the north of Tower S82, on 26 January 2024. A small flock of six birds was recorded to the east of Tower S100, on 1 November 2023.
- 12.9.175 As noted above, the presence of breeding Lapwing within the Section C Study Area of the Proposed Development is very limited, with only 3 km of ground providing suitable breeding habitat. No BBS was carried out in this area; however, given the low suitability and limited flight activity recorded during surveys, neither construction effects (disturbance/displacement from breeding or foraging grounds) or operational collision risk presented by the Proposed Development, are considered likely to be Significant with regards to the regional population of the species (this is discussed with reference to NHZ regional populations below).

#### Section D

- 12.9.176 Breeding Bird Surveys were carried out in 2024, along 2 km of Section D. for breeding birds. The BBS areas were identified with reference to habitat suitability for Curlew and, as such, only 500 m of Section D was modelled as good quality breeding habitat. Approximately 6.5 km of the Proposed Development lies within suitable Lapwing breeding habitat, along the total of 19 km of the Proposed Development in Section D. Within Section D, two pairs of Lapwing were recorded in the area surveyed (recorded nesting between Tower S20 and Tower S16), with neither present within 500 m of the Proposed Development. Desk records of breeding Lapwing were available for the relevant 10 km grid squares NO67, NO77 and NO78, all occurring within Section D.
- 12.9.177 The extent of Lapwing breeding habitat within Section D is relatively limited, with only two pairs recorded during surveys.

<sup>77</sup> British Trust for Ornithology, n.d. *BirdFacts: Lapwing population data*. [Online] Available at: <https://www.bto.org/understanding-birds/birdfacts/lapwing>.

### *Section E*

- 12.9.178 Lapwing are known to occur within Section E with desk records in 10 km squares NO78 and NO79. Survey was carried out in 2024 along 2 km of ground that aligns with suitability for breeding birds. No Lapwing were recorded in the Section E area surveyed (between tower positions N89 and N84).

### *Section F*

- 12.9.179 Lapwing are known from desk records in the 10 km grid squares at NO78, NO79, NJ70 and NJ71, within which Section F lies. Approximately 7.5 km of the 20 km of Section F has suitable Lapwing breeding habitat. Of this, 5 km was surveyed for breeding birds in 2024.
- 12.9.180 Survey was carried out in 2024 along 4 km of Section F: at least three pairs of Lapwing were recorded (between Towers N51 and N40). These pairs were observed within pasture fields and within several fields used for sheep and horse grazing. A single flight of 25 Lapwing was recorded during the non-breeding flight activity surveys on 25 October 2023. The birds were recorded flying above potential collision height, to the west of the Proposed Development (to the west of Tower N45).

### *Regional population: NHZ 16 – Eastern Lowlands*

- 12.9.181 No regional NHZ population of Lapwing is available for NHZ 16 (or any other NHZ region). The Scottish population was estimated at between 69,800 pairs and 91,200 pairs in 1998<sup>36</sup>. BTO breeding distribution data records the highest breeding densities of the species generally to the west of the Proposed Development, occurring on hillier land often used for cattle and sheep grazing<sup>25</sup>. Using the BTO sensitivity model, approximately 18% of the Scottish population is present within the NHZ 16 region ie between 12,340 and 16,120 pairs.
- 12.9.182 Four pairs of Lapwing were recorded in NHZ 16 during surveys. Approximately 28 km of the Proposed Development lies within good quality Lapwing breeding habitat in this region. The breeding density of Lapwing is described as approximately one pair per km<sup>2</sup> from the field surveys carried out in the current study, and as such it is considered that at most, 120 pairs of Lapwing would be present within 500 m of the Proposed Development across its extent within NHZ 16. This is less than 1% of the regional Lapwing population. This number of birds is considered unlikely, however, given that surveys were carried out where BTO-modelled data noted good breeding habitats which did not record the species. With relatively few breeding birds likely to be present within the Study Area, construction impacts such as disturbance and/or displacement from nesting grounds during construction of the Proposed Development will not impact the regional population of Lapwing. Similarly, with relatively few flights recorded during surveys, operational collision mortality is unlikely to be high. As such, there is no potential for a Significant effect of the proposed Development on the NHZ 16 regional population of breeding Lapwing.

### *Regional population: NHZ 12 – North East Glens*

- 12.9.183 No Lapwing were recorded as breeding within the NHZ 12 region. The majority of habitat present in this NHZ Study Area of the Proposed Development is afforested ground and therefore is unsuitable for Lapwing (as predicted by BTO data). No potential for construction effects are present during the breeding season (eg nesting habitat loss or disturbance/displacement) and no operational impacts of collision are predicted, given no flight activity present. As such, there is no potential for a Significant effect of the proposed Development on the NHZ 12 regional population of breeding Lapwing.

### *Regional population: NHZ 9 – North East Coastal Plain*

- 12.9.184 Three pairs of Lapwing were recorded across surveys within NHZ 9, with birds noted at a population density of approximately one pair per km<sup>2</sup>. Taking this figure
- 12.9.185 across the extent of the Proposed Development within NHZ 9, which runs for approximately 24 km in this region, at most 24 pairs of Lapwing would be present within 500 m of the Proposed Development. The regional population has been estimated as being approximately 11,850 pairs of Lapwing, and as such 24 pairs represents significantly less than 1 % of the regional NHZ 9 population.
- 12.9.186 Field surveys did not record Lapwing breeding in all areas where suitable habitats were present; therefore, the number of breeding pairs within the Study Area is likely to be considerably fewer than the estimated 24 pairs. With

relatively few breeding birds likely to be present within the Study Area, construction impacts of the Proposed Development such as disturbance and/or displacement from nesting grounds will not impact the regional population of Lapwing. Similarly, with relatively few flights recorded during surveys, operational collision mortality is unlikely to be high. As such, there is no potential for a Significant effect of the proposed Development on the NHZ 9 regional population of breeding Lapwing.

- 12.9.187 In summary, there is no potential for Significant effects from the Proposed Development on the regional Lapwing populations and the species is not considered further in this assessment. The BSPP (refer to **Section 12.13**) will be adhered to throughout construction of the Proposed Development, to ensure legal compliance for the protection of breeding birds.

#### *Golden Plover*

- 12.9.188 Golden Plover (*Pluvialis apricaria*) (Red-list BoCC, High NCI species) was recorded in flight only during non-breeding flight activity surveys (refer to **Volume 3, Figures 12.4.1 to 12.4.5: Flight Activity Surveys**).
- 12.9.189 No foraging or flight activity of Golden Plover was present in Sections A, B, D or E during surveys.

#### *Section C*

- 12.9.190 Flocks of Golden Plover were recorded in Section C: a flock of seven individuals on 16 November 2023 was recorded in flight crossing south of Tower position S91 (at potential collision height). These birds were thought to be commuting between foraging fields (arable, stubble fields). A larger flock of 80 Golden Plover was observed in flight (at least 150 m agl) to the north of Tower location S87, on 18 December 2023. Furthermore, 85 birds were recorded in flight to the west of Tower S68 on 19 December 2023, after being flushed from a loafing area on stubble by an aerial predator.

#### *Section F*

- 12.9.191 Six Golden Plover flights were recorded in Section F. On 1 December 2023, a flock of 42 birds was observed flying low (below potential collision height) over fields to the west of Tower N42. It is considered likely that the birds were foraging in nearby stubble fields nearby given their flight height. Two flights were recorded to the west of Tower N29: a flight of 45 birds was flushed after foraging in rough pasture on 8 November 2023, with 17 birds recorded in the same area on 24 October 2023. Further north, to the east of Tower N19, a group of 13 birds was observed flying at height, while two flights of 30 and 75 birds were recorded over Tower N15 (above potential collision height) on 8 November 2023.

#### *Regional/National population*

- 12.9.192 It is considered that the Golden Plover recorded during surveys were from the migratory northerly population (ie they are part of the Icelandic and UK winter/passage population of 400,000 individuals<sup>78</sup>), due to the time of year that they were observed (Winter, non-breeding season) and their general flocking behaviour in open farmland foraging habitats. No suitable breeding habitat exists for the species within the Study Area<sup>25</sup>, with nesting golden plover preferring upland areas of moorland and blanket bogs in the mountains to the west of the Proposed Development<sup>36</sup>. All birds were recorded out with the breeding season and only a single recorded flight of the species interacted with the Proposed Development; therefore, no potential for nesting disturbance or habitat loss is present. Foraging habitat loss is likely to be minimal across the Proposed Development, with the species taking advantage of agricultural practices that will continue throughout the construction and operation of the Proposed Development. As such, together with the limited flight activity recorded during surveys (fewer than 400 birds recorded across all surveys ie less than 0.1 % of the national wintering population), there is no prospect of a significant effect on this population, and Golden Plover are not considered further in this assessment.

<sup>78</sup> Gillings, S. and Fuller, R.J., 2009. *How many Eurasian Golden Plovers Pluvialis apricaria and Northern Lapwings Vanellus vanellus winter in Great Britain?* Results from a large-scale survey in 2006/07. Wader Study Group Bulletin, 116.

### Summary data

- 12.9.193 The baseline for all Target Species described above and additionally those which comprise qualifying features of Designated Sites (refer to **Table 12.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**) are summarised below in **Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations**. This includes an overview of effect pathway on regional populations from the Proposed Development, with the requirement for inclusion in the impact assessment, and with reference to the spatial magnitude of effect.

**Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations**

| Species                   | Field & Desk Study   |                             | Regional Population          | Relevance  | Effect Pathway                                  |                                    | Effect                                                                                                                                                       |
|---------------------------|----------------------|-----------------------------|------------------------------|------------|-------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | Recorded Activity    | Breeding Population (pairs) |                              |            | Construction                                    | Operation                          | Assessment                                                                                                                                                   |
| NHZ 16 – Eastern Lowlands |                      |                             |                              |            |                                                 |                                    |                                                                                                                                                              |
| Whooper Swan              | Flight only          | No                          | National population 11,000   | Negligible | N/A                                             | N/A                                | Scoped out of further assessment                                                                                                                             |
| Greylag Goose             | Flights and foraging | No                          | National population 92,582   | Negligible | N/A                                             | Collision risk with respect to SPA | Impacts considered within the context of the SPA qualifying population (refer to <b>Vol. 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)</b> ) |
| Pink-footed Goose         | Flights and foraging | No                          | National population: 485,509 | Negligible | N/A                                             | Collision risk with respect to SPA | Impacts considered within the context of the SPA qualifying population (refer to <b>Vol. 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)</b> ) |
| Herring Gull              | Flights and foraging | No                          | 16,782 pairs                 | Negligible | N/A                                             | N/A                                | Impacts considered within the context of the SPA qualifying population (refer to <b>Vol. 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)</b> ) |
| Red Kite                  | Breeding             | Five pairs                  | 60 pairs                     | 8.3%       | habitat loss/ modification; nesting disturbance | Collision risk                     | Scoped into assessment with potential for disturbance/ displacement effects, loss of foraging habitat during construction and collision mortality            |
| Merlin                    | Breeding (Section A) | One pair                    | Four pairs                   | 25%        | habitat loss/ modification; nesting disturbance | Collision risk                     | Scoped into assessment with potential for disturbance/ displacement effects, loss of foraging habitat during construction and collision mortality            |
| Short-eared Owl           | Breeding (Section A) | One pair                    | 58 pairs                     | 1.7%       | habitat loss/ modification;                     | Collision risk                     | Scoped into assessment with potential for                                                                                                                    |

| Species                          | Field & Desk Study   |                             | Regional Population                      | Relevance                       | Effect Pathway                                  |                                    | Effect                                                                                                                                                       |
|----------------------------------|----------------------|-----------------------------|------------------------------------------|---------------------------------|-------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | Recorded Activity    | Breeding Population (pairs) |                                          |                                 | Construction                                    | Operation                          | Assessment                                                                                                                                                   |
|                                  |                      |                             |                                          |                                 | nesting disturbance                             |                                    | disturbance/ displacement effects, loss of foraging habitat during construction and collision mortality                                                      |
| Black Grouse                     | Breeding (Section A) | One pair                    | 167 lekking males                        | < 1 % Negligible                | Negligible                                      | Negligible                         | Scoped out of further assessment                                                                                                                             |
| Curlew                           | Breeding             | 12 pairs                    | 3,253 pairs                              | < 1 % Negligible                | Negligible                                      | Negligible                         | Scoped out of further assessment                                                                                                                             |
| Lapwing                          | Breeding             | Four pairs                  | Est. 12,340 pairs                        | < 1 % Negligible                | Negligible                                      | Negligible                         | Scoped out of further assessment                                                                                                                             |
| Golden Plover                    | Flights only         | No                          | National population 400,000              | < 1 % Negligible                | Negligible                                      | Negligible                         | Scoped out of further assessment                                                                                                                             |
| NHZ 12 – North East Glens        |                      |                             |                                          |                                 |                                                 |                                    |                                                                                                                                                              |
| Red Kite                         | Flights only         | No                          | Seven pairs                              | < 1 % Negligible                | Negligible                                      | Negligible                         | Scoped out of further assessment                                                                                                                             |
| Goshawk                          | Breeding             | Up to three pairs           | 25 pairs                                 | 12 %                            | habitat loss/ modification; nesting disturbance | Collision risk                     | Scoped into assessment with potential for disturbance/ displacement effects, loss of foraging habitat during construction and collision mortality            |
| Nightjar                         | Breeding             | Two pairs                   | No regional estimate - 27 churring males | ca. 10 % of National population | habitat loss/ modification; nesting disturbance | Collision risk                     | Scoped into assessment with potential for disturbance/ displacement effects, loss of foraging habitat during construction and collision mortality            |
| NHZ 9 – North East Coastal Plain |                      |                             |                                          |                                 |                                                 |                                    |                                                                                                                                                              |
| Whooper Swan                     | Flights and foraging | No                          | National population 11,000               | < 1 % Negligible                | N/A                                             | Negligible                         | Scoped out of further assessment                                                                                                                             |
| Greylag Goose                    | Flights and foraging | No                          | National population 92,582               | Negligible                      | N/A                                             | Collision risk with respect to SPA | Impacts considered within the context of the SPA qualifying population (refer to <b>Vol. 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)</b> ) |
| Pink-footed Goose                | Flights and foraging | No                          | National population: 485,509             | Negligible                      | N/A                                             | Collision risk with respect to SPA | Impacts considered within the context of the SPA qualifying population (refer to <b>Vol. 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)</b> ) |
| Red Kite                         | Breeding             | Three pairs                 | 12 pairs                                 | 25%                             | habitat loss/ modification;                     | Collision risk                     | Scoped into assessment with                                                                                                                                  |

| Species       | Field & Desk Study |                             | Regional Population         | Relevance        | Effect Pathway      |           | Effect                                                                                                               |
|---------------|--------------------|-----------------------------|-----------------------------|------------------|---------------------|-----------|----------------------------------------------------------------------------------------------------------------------|
|               | Recorded Activity  | Breeding Population (pairs) |                             |                  | Construction        | Operation | Assessment                                                                                                           |
|               |                    |                             |                             |                  | nesting disturbance |           | potential for disturbance/displacement effects, loss of foraging habitat during construction and collision mortality |
| Curlew        | Breeding           | Not recorded                | 1,037 pairs                 | < 1 % Negligible | N/A                 | N/A       | Scoped out of further assessment                                                                                     |
| Lapwing       | Breeding           | Three pairs                 | 11,850 pairs                | < 1 % Negligible | N/A                 | N/A       | Scoped out of further assessment                                                                                     |
| Golden Plover | Flights only       | No                          | National population 400,000 | < 1 % Negligible | N/A                 | N/A       | Scoped out of further assessment                                                                                     |

#### *Future Baseline in the Absence of the Proposed Development*

- 12.9.194 Ornithological features are rarely static in their extent, distribution and condition<sup>79</sup>. Habitats and their associated species' populations are dynamic and so the prediction of future baseline is complex. In the absence of the Proposed Development and bearing in mind potential changes associated with climate change (see below), the ornithology community will most likely remain broadly similar to that described here, over the period corresponding with the Proposed Development's lifespan. Changes in the size and range of local populations over this timeframe are considered likely to reflect wider trends in regional populations.
- 12.9.195 Land within the Site principally consists of managed farmland which, in the absence of the Proposed Development, is anticipated to remain relatively unchanged, with cropping patterns unlikely to change significantly across the Proposed Development's lifetime. However, 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. Areas of commercial forestry are present in the Study Area, especially in Aberdeenshire, and plantation forestry is expected, beyond the extent felled for infrastructure, to retain the felling cycle associated with a commercial crop. This habitat will continue to support bird species exploiting the crop at different stages, for both foraging and nesting. Other woodland areas are likely to be maintained using standard management practices, providing different habitat niches as they develop. Settlement is likely to continue to locally change the nature of the Site, with the likelihood of population growth resulting in construction of new housing in the wider area.
- 12.9.196 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), commercial plantation forest, open heath and waterbodies. Despite the potential for some changes to baseline conditions, constituent habitats and species present within the Study Area are considered as likely to stay similar to the existing baseline (as presented above in **Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations** over the lifetime of the Proposed Development, including the range and distribution of Target Species, and as such, potential effects from the Proposed Development are predicted to remain similar to those reported in this assessment.

## **12.10 Implications of Climate Change for Baseline Conditions**

- 12.10.1 The UK Climate Change Projections 2018 (UKCP18<sup>80</sup>) predicts changes in key climate characteristics on the east coast of Scotland up to the 2070s. In summary these key changes include:

<sup>79</sup> Sara Fraixedas, S., Lindén, A., Piha, M., Cabeza, M., Gregory, R. and Lehikoinen, A., 2020. *A state-of-the-art review on birds as indicators of biodiversity: Advances, challenges, and future directions*, Ecological Indicators, 118.

<sup>80</sup> Met Office, 2018. *UK Climate Projections (UKCP)*. [Online] Available at: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>.

- 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.

- 12.10.2 Extreme weather events and changes in average temperature and precipitation can affect bird habitats and the phenology, survival and productivity of animals. This may affect the timing of bird nesting, roosting and migration throughout the operational phase of the Proposed Development. Therefore, the predicted effects of climate change have the potential to affect the future ornithological community in the vicinity of the Proposed Development.
- 12.10.3 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 have to move shorter distances south to avoid harsh winter conditions of the highest latitudes’<sup>81</sup>. 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<sup>82</sup>.
- 12.10.4 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.
- 12.10.5 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.

## 12.11 Mitigation and Monitoring

### Embedded Mitigation

- 12.11.1 Topic specific Embedded Mitigation (mitigation achieved through design) is outlined below. A comprehensive schedule of Embedded Mitigation is provided in **Volume 2, Chapter 17: Schedule of Mitigation**.
- 12.11.2 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 EIA 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 Bird Flight Diversers - BFDs) on the OHL as appropriate<sup>83</sup> to reduce collision risk for SPA-qualifying species and other bird species potentially at risk of collision, including at ‘hot-spots’ identified from VP surveys. Line marking will therefore be installed in the following instances:

<sup>81</sup> 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.

<sup>82</sup> 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.

<sup>83</sup> NatureScot, 2016. *Guideline – 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>.

- within 5 km of all SPAs that support qualifying species classed as being at relatively high risk of collision (ie waterfowl) across the Proposed Development;
- where flight activity across any OHL span is judged to be substantial<sup>84</sup>, potentially leading to adverse impacts on regional populations of at-risk species<sup>85</sup>, 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);
- within 500 m of identified Schedule 1 raptor species' nests; and
- where the OHL spans a waterway (principally to mitigate risk to Red-breasted Merganser)<sup>86</sup>.

12.11.3 Key areas for line marker deployment have been identified per Section (refer to **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**) and are summarised below in **Table 12.11: North and south Towers defining spans with Embedded Mitigation (line marking)**.

#### *Line Marking*

- 12.11.4 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; with research showing that it can reduce bird collisions by 50-94%, with birds showing an increase in behavioural avoidance at marked lines compared to unmarked lines<sup>87</sup>. 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<sup>88</sup>.
- 12.11.5 VP watches focussed on these susceptible species groups: waterfowl and larger raptors. Where flight activity was recorded 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 12.11: North and south Towers defining spans with Embedded Mitigation (line marking)** and **Volume 3, Figure 12.7.1 to 12.7.5: Bird Flight Diverter Placement**).
- 12.11.6 The most suitable line marker model and optimal spacing design has been determined following consultation with NatureScot. In line with recommendations in Martin (2022)<sup>89</sup>, 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.

<sup>84</sup> Substantial is defined per SPA-watched area as those flights above the 2<sup>nd</sup> quartile of the flight activity data set. Refer to **Volume 5, Appendix 12.1: Ornithology Technical Report**.

<sup>85</sup> Including Schedule 1 species, qualifying features of a SPA within connectivity distance & species from other sensitive regional populations with substantial flight activity levels.

<sup>86</sup> Sporer, M.K., Dwyer, J.F., Gerber, B.D., Harness, R.E. and Pandey, A.K., 2013. *Marking power lines to reduce avian collisions near the Audubon National Wildlife Refuge, North Dakota*. Wildlife Society Bulletin, 37, 796-804.

<sup>87</sup> Bernardino, 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. [Online] Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0006320717317925?via%3Dihub> (<https://doi.org/10.1016/j.biocon.2018.02.029>).

<sup>88</sup> 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.

<sup>89</sup> Martin G.R., 2022. *Vision-Based Design and Deployment Criteria for Power Line Bird Diverters*. Birds 2022, 3, 410–422. [Online] Available at: <https://doi.org/10.3390/birds3040028>.

- 12.11.7 Improvements have been made in BFD design in recent years to incorporate these features<sup>90</sup> with BFDs such as Hawk Eye™ now available. Implementation of line marking along the identified spans of the Proposed Development is also expected to reduce collision risk to other bird species.
- 12.11.8 In line with NatureScot guidance<sup>17</sup>, 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.
- 12.11.9 BFDs will be installed on the OHL (the Optical Ground Wire (OPGW) and/or the conductors). The OPGW, at the top of the OHL configuration, is generally the thinnest of the wires and lies above the conductors and is considered the main cause of bird collision<sup>91</sup>.
- 12.11.10 Line marking will be carried out in the OHL spans between the towers listed below in **Table 12.11: North and south Towers defining spans with Embedded Mitigation (line marking)** (as outlined above in O2; also refer to **Volume 3, Figures A12.7.1 to A12.7.5: OHL Bird flight diverter placement**).

**Table 12.11: North and south Towers defining spans with Embedded Mitigation (line marking)**

| North Tower | South Tower    | Easting    | Northing   | Rationale                   |
|-------------|----------------|------------|------------|-----------------------------|
| Section A   |                |            |            |                             |
| S206        | Gantry2-Emmock | 338946.046 | 737815.807 | Adjacent span               |
| S205        | S206           | 338826.569 | 737957.747 | Flight activity (high-risk) |
| S204        | S205           | 338567.259 | 738030.06  | Flight activity (high-risk) |
| S203        | S204           | 338208.537 | 738128.918 | Adjacent span               |
| S201        | S202           | 338030.765 | 738612.975 | Adjacent span               |
| S200        | S201           | 338216.321 | 738896.452 | Flight activity (high-risk) |
| S199        | S200           | 338387.905 | 739154.636 | Flight activity (high-risk) |
| S198        | S199           | 338603.769 | 739479.447 | Flight activity (high-risk) |
| S197        | S198           | 338819.633 | 739804.259 | Adjacent span               |
| S179        | S180           | 340262.827 | 744816.75  | Flight activity             |
| S178        | S179           | 340202.541 | 745069.664 | Flight activity             |
| S177        | S178           | 340144.574 | 745312.851 | Flight activity             |
| S176        | S177           | 340075.825 | 745611.637 | Flight activity             |
| S175        | S176           | 340213.938 | 745802.73  | Flight activity             |
| S169        | S170           | 341050.878 | 747720.142 | Adjacent span               |
| S168        | S169           | 341041.279 | 748009.984 | Flight activity (high-risk) |
| S167        | S168           | 341028.7   | 748389.775 | Adjacent span               |
| S166        | S167           | 341017.114 | 748739.583 | Flight activity (high-risk) |
| S165        | S166           | 341006.19  | 749069.403 | Flight activity (high-risk) |
| S164        | S165           | 340991.957 | 749499.167 | Flight activity (high-risk) |

<sup>90</sup> Ferrer, M., Morandini, V., Baumbusch, R., Muriel, R., De Lucas, M. and Calabuig, C., 2020. *Efficacy of different types of "bird flight diverter" in reducing bird mortality due to collision with transmission power lines*. Global Ecology & Conservation, 23, e01130.

<sup>91</sup> EirGrid, 2016. *EirGrid Evidence Based Environmental Studies Study 5: Birds – Literature review and evidence based field study on the effects of high voltage transmission lines on birds*.

| North Tower | South Tower | Easting    | Northing   | Rationale                   |
|-------------|-------------|------------|------------|-----------------------------|
| Section B   |             |            |            |                             |
| S163        | S164        | 340979.047 | 749888.953 | Flight activity (high-risk) |
| S162        | S163        | 340964.813 | 750318.718 | Flight activity (high-risk) |
| S161        | S162        | 340953.424 | 750734.372 | Flight activity (high-risk) |
| S160        | S161        | 341284.229 | 751009.092 | Flight activity (high-risk) |
| S159        | S160        | 341608.817 | 751275.631 | Flight activity (high-risk) |
| S158        | S159        | 341952.812 | 751561.381 | Flight activity (high-risk) |
| S157        | S158        | 342067.059 | 751951.232 | Flight activity (high-risk) |
| S156        | S157        | 342323.548 | 752271.096 | Adjacent span               |
| S154        | S155        | 342846.276 | 752964.989 | Adjacent span               |
| S153        | S154        | 343088.507 | 753308.099 | Flight activity (high-risk) |
| S152        | S153        | 343325.211 | 753643.382 | Flight activity (high-risk) |
| S151        | S152        | 343556.819 | 753878.449 | Flight activity (high-risk) |
| S150        | S151        | 343830.539 | 754156.257 | Flight activity (high-risk) |
| S149        | S150        | 344124.002 | 754454.102 | Flight activity (high-risk) |
| S148        | S149        | 344280.712 | 754767.06  | Adjacent span               |
| S142        | S143        | 345109.9   | 756860.585 | River South Esk             |
| S130        | S131        | 347697.009 | 760423.272 | Noran Water                 |
| S111        | S112        | 353959     | 762115     | Flight activity             |
| S110        | S111        | 354251.831 | 762216.734 | Flight activity             |
| S109        | S110        | 354563.554 | 762325.032 | Flight activity             |
| Section C   |             |            |            |                             |
| S105        | S106        | 355961.587 | 762810.731 | Cruick Water                |
| S99         | S100        | 357824.379 | 763914.027 | Cruick Water                |
| S95         | S96         | 358872.845 | 765041.759 | Adjacent span               |
| S94         | S95         | 359062.806 | 765347.561 | Flight activity (high-risk) |
| S93         | S94         | 359226.383 | 765610.891 | Flight activity (high-risk) |
| S92         | S93         | 359433.316 | 765944.016 | Flight activity (high-risk) |
| S91         | S92         | 359736.53  | 766191.301 | Flight activity (high-risk) |
| S90         | S91         | 360094.691 | 766218.627 | Flight activity (high-risk) |
| S89         | S90         | 360503.712 | 766246.946 | Flight activity (high-risk) |
| S88         | S89         | 360822.948 | 766269.048 | Flight activity (high-risk) |
| S87         | S88         | 361142.184 | 766291.15  | Flight activity (high-risk) |
| S86         | S87         | 361551.209 | 766319.469 | Flight activity (high-risk) |
| S85         | S86         | 361958.591 | 766350.089 | Flight activity (high-risk) |

| North Tower | South Tower | Easting    | Northing   | Rationale                              |
|-------------|-------------|------------|------------|----------------------------------------|
| S84         | S85         | 362134.111 | 766580.94  | Adjacent span                          |
| S82         | S83         | 362660.405 | 767035.18  | Adjacent span                          |
| S81         | S82         | 362955.33  | 767214.189 | Flight activity (high-risk)            |
| S80         | S81         | 363181.867 | 767351.689 | Flight activity (high-risk)            |
| S79         | S80         | 363429.775 | 767502.16  | Adjacent span                          |
| S68         | S69         | 365597.931 | 770319.167 | Flight activity (high-risk)            |
| S67         | S68         | 365738.163 | 770661.373 | Flight activity (high-risk)            |
| S64         | S65         | 366460.241 | 771416.767 | Adjacent span                          |
| S63         | S64         | 366653.495 | 771618.938 | Flight activity (high-risk)            |
| S62         | S63         | 366928.938 | 771850.745 | Flight activity (high-risk)            |
| S61         | S62         | 367125.676 | 772019.643 | Flight activity (high-risk)            |
| S60         | S61         | 367210.828 | 772275.106 | Flight activity (high-risk)            |
| S59         | S60         | 367282.592 | 772491.768 | Flight activity (high-risk)            |
| S58         | S59         | 367673.298 | 772572.663 | Flight activity (high-risk)            |
| S57         | S58         | 367967.328 | 772632.216 | Adjacent span                          |
| Section D   |             |            |            |                                        |
| S22         | S23         | 375615.979 | 781047.538 | Bervie Water                           |
| S17         | S18         | 376337.357 | 782323.79  | Flight activity                        |
| S16         | S17         | 376612.419 | 782640.34  | Flight activity                        |
| S15         | S16         | 376777.549 | 782828.041 | Flight activity                        |
| S11         | S12         | 377910.5   | 783660.42  | Carron Water                           |
| Section E   |             |            |            |                                        |
| N61         | N62         | 376788.233 | 796905.461 | River Dee                              |
| Section F   |             |            |            |                                        |
| N53         | N54         | 377382     | 799298     | Flight activity                        |
| N52         | N53         | 377373.688 | 799647.192 | Flight activity                        |
| N51         | N52         | 377365.487 | 799991.74  | Flight activity                        |
| N48         | N49         | 377208.806 | 801031.5   | Adjacent span                          |
| N47         | N48         | 377217.172 | 801366.382 | SPA (5 km)                             |
| N46         | N47         | 377223.81  | 801632.097 | SPA (5 km)                             |
| N45         | N46         | 377230.97  | 801918.707 | SPA (5 km)                             |
| N44         | N45         | 377242.699 | 802388.178 | SPA (5 km)                             |
| N43         | N44         | 377248.752 | 802728.189 | Flight activity (high-risk)/SPA (5 km) |
| N42         | N43         | 376999.312 | 802985.702 | Flight activity (high-risk)/SPA (5 km) |
| N41         | N42         | 376727.582 | 803262.433 | Flight activity (high-risk)/SPA (5 km) |

| North Tower | South Tower | Easting    | Northing   | Rationale                              |
|-------------|-------------|------------|------------|----------------------------------------|
| N40         | N41         | 376446.056 | 803549.141 | Flight activity (high-risk)/SPA (5 km) |
| N39         | N40         | 376280.473 | 803895.7   | Flight activity (high-risk)/SPA (5 km) |
| N38         | N39         | 376182.148 | 804095.825 | Flight activity (high-risk)/SPA (5 km) |
| N37         | N38         | 375914.724 | 804189.57  | Flight activity (high-risk)/SPA (5 km) |
| N36         | N37         | 375586.909 | 804301.321 | Flight activity (high-risk)/SPA (5 km) |
| N35         | N36         | 375267.823 | 804412.724 | Flight activity (high-risk)/SPA (5 km) |
| N34         | N35         | 375054.032 | 804771.348 | Flight activity (high-risk)/SPA (5 km) |
| N33         | N34         | 375062.607 | 805168.492 | Flight activity (high-risk)/SPA (5 km) |
| N32         | N33         | 375111.995 | 805559.915 | Flight activity (high-risk)/SPA (5 km) |
| N31         | N32         | 375162.008 | 805978.626 | Flight activity (high-risk)/SPA (5 km) |
| N30         | N31         | 374905.981 | 806151.287 | Flight activity (high-risk)/SPA (5 km) |
| N29         | N30         | 374569.543 | 806373.77  | Flight activity (high-risk)/SPA (5 km) |
| N28         | N29         | 374234.227 | 806592.465 | Flight activity (high-risk)/SPA (5 km) |
| N27         | N28         | 373820.049 | 806600.481 | Flight activity (high-risk)/SPA (5 km) |
| N26         | N27         | 373640.681 | 806855.355 | Flight activity (high-risk)/SPA (5 km) |
| N25         | N26         | 373719.122 | 807186.261 | Flight activity (high-risk)/SPA (5 km) |
| N24         | N25         | 373811.231 | 807562.902 | Flight activity (high-risk)/SPA (5 km) |
| N23         | N24         | 373895.8   | 807908.71  | Flight activity (high-risk)/SPA (5 km) |
| N22         | N23         | 373962.776 | 808182.579 | Flight activity (high-risk)/SPA (5 km) |
| N21         | N22         | 374191.076 | 808488.423 | Flight activity (high-risk)/SPA (5 km) |
| N20         | N21         | 374167.47  | 808764.018 | Flight activity (high-risk)/SPA (5 km) |
| N19         | N20         | 374140.933 | 809044.369 | Flight activity (high-risk)/SPA (5 km) |
| N18         | N19         | 374111.336 | 809357.047 | Flight activity (high-risk)/SPA (5 km) |
| N17         | N18         | 374179.1   | 809792.078 | Flight activity (high-risk)/SPA (5 km) |
| N16         | N17         | 374237.236 | 810148.557 | Flight activity (high-risk)/SPA (5 km) |
| N15         | N16         | 374383.582 | 810356.199 | Flight activity (high-risk)/SPA (5 km) |
| N14         | N15         | 374625.68  | 810692.402 | Flight activity (high-risk)/SPA (5 km) |
| N13         | N14         | 374832.611 | 810979.767 | Flight activity (high-risk)/SPA (5 km) |
| N12         | N13         | 375037.122 | 811263.772 | Flight activity (high-risk)/SPA (5 km) |
| N11         | N12         | 375099.291 | 811579.787 | Flight activity (high-risk)/SPA (5 km) |
| N10         | N11         | 375166.376 | 811908.207 | Flight activity (high-risk)/SPA (5 km) |
| N9          | N10         | 375423.978 | 812070.671 | SPA (5 km)                             |
| N8          | N9          | 375815.641 | 812313.337 | SPA (5 km)                             |
| N7          | N8          | 376101.257 | 812490.3   | SPA (5 km)                             |
| N6          | N7          | 376330.101 | 812695.054 | SPA (5 km)                             |

| North Tower | South Tower | Easting   | Northing   | Rationale  |
|-------------|-------------|-----------|------------|------------|
| N4          | N6          | 376474.55 | 813120.265 | SPA (5 km) |

#### Applied Mitigation

- 12.11.11 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 17: Schedule of Mitigation**). The Applied Mitigation considered relevant to ornithology is summarised below in **Table 12.12: Applied Mitigation** and is included within the relevant GEMPs and SPPs produced by the Applicant (refer to **Volume 2, Chapter 17: Schedule of 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 the Target Species outlined below in **Table 12.13: Breeding birds recorded during baseline survey, with their associated breeding seasons and disturbance buffers**, and to other 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 EOMP. These plans will also entail ornithological monitoring as detailed below in **Table 12.14: Ornithological Monitoring Requirements**.
- 12.11.12 Other mitigation may be required to reduce potential for impact to ornithological receptors during the construction of the Proposed Development. In exceptional cases this may include dissuasion techniques<sup>92</sup> 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, in consultation with NatureScot. Such additional mitigation measures would be executed in accordance with procedures to be detailed as part of the EOMP.

**Table 12.12: Applied Mitigation**

| Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Project Stage/Timing             | Responsibility        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------|
| <b>O3: Bird Species Protection Plan (BSPP)</b><br>The Applicant's BSPP TG-NET-ENV-505, will be implemented to ensure legislative requirements in relation to the protection of birds is adhered to.<br>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 <sup>93</sup> ) and establishing appropriate protection zones (which are defined in the BSPP) for specially protected or sensitive species.<br>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 Contractors |
| <b>O4: Construction Environmental Management Plan (CEMP)</b><br>Preparation and implementation of the CEMP: this will incorporate an EOMP pursuant to the contractual requirements of the Principal Contractors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Prior to and during construction | Principal Contractors |
| <b>O5: Biodiversity Net Gain (BNG)</b><br>The Applicant will implement on-site and off-site BNG measures, as defined in the BNG Report, which is submitted with the application for Section 37 Consent and deemed planning permission (refer to <b>Volume 2, Chapter 11: Ecology, Section 11.7 Mitigation and Monitoring</b> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Prior to operation               | Applicant             |

<sup>92</sup> NatureScot, 2016. *Dealing with construction and birds*. [Online] Available at: <https://www.nature.scot/doc/dealing-construction-and-birds#Avoiding+disturbance,+including+deterrence+>.

<sup>93</sup> 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 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------|
| 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. |                      |                |

- 12.11.13 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 (refer below for **Table 12.13: Breeding birds recorded during baseline survey, with their associated breeding seasons and disturbance buffers**). Survey buffer distances will differ according to species' disturbance sensitivities<sup>94</sup>, with specific survey methods dependent on Target Species, affected habitat and the likely stage of the breeding cycle.
- 12.11.14 Nest monitoring may be required for nests identified during the construction phase. Relevant requirements will be detailed in the BSPP (refer to **Table 12.12: Applied Mitigation**).

**Table 12.13: Breeding birds recorded during baseline survey, with their associated breeding seasons and disturbance buffers**

| Species         | Status              | Breeding season <sup>36,93</sup> | Disturbance buffer <sup>94, 95</sup>                   | Sensitivity to disturbance <sup>94</sup> |
|-----------------|---------------------|----------------------------------|--------------------------------------------------------|------------------------------------------|
| Red Kite        | Schedule 1A/Annex 1 | April to July, inclusive         | 150-300 m Breeding (Br) / Non-Breeding (NBr)           | Medium                                   |
| Goshawk         | Schedule 1          | March to July, inclusive         | 300-500 m Br                                           | Medium                                   |
| Merlin          | Schedule 1/Annex 1  | April to July, inclusive         | 300-500 m Br                                           | Medium                                   |
| Short-eared Owl | Annex 1             | April to August, inclusive       | 300-500 m Br                                           | Medium/High                              |
| Nightjar        | Annex 1             | Mid-May to mid-September         | 150-500 m Br                                           | Medium/High                              |
| Black Grouse    | Red-list            | April to May (lekking)           | 500-750 m lekking males<br>100-150 m breeding females  | Medium                                   |
| Curlew          | Red-list            | April to August, inclusive       | 200-300 m Br                                           | High                                     |
| Lapwing         | Red-list            | April to August, inclusive       | Not specified, use 100-200 m Br (as for ringed plover) | High                                     |

- 12.11.15 In addition, the BSPP will require pre-commencement surveys to determine important Winter roost sites of birds within 300 m of Proposed Development for the following species between September and March, inclusive:

- Schedule 1A species: Red Kite.

12.11.16 Based on the mitigation principle of avoidance, it is proposed that no construction works would take place within the relevant disturbance buffers during the breeding season (typically April to August inclusive, although refer above to **Table 12.13: Breeding birds recorded during baseline survey, with their associated breeding seasons and disturbance buffers**), where it would result in disturbance to nest sites. Where this is not practical, an appropriate buffer zone between the nest site and sources of disturbance would be established, following NatureScot guidance<sup>90</sup>. This would be established and monitored with advice from a suitably qualified and experienced ornithologist/ECOW and maintained until the chicks have fledged the nest. Appropriate buffer zones would be established on a site-

<sup>94</sup> 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>.

<sup>95</sup> Br – refers to disturbance buffer to be used across breeding season; NBr -refers to disturbance buffer to be used across non-breeding season.

specific basis, as these may depend upon local topography, existing woodland screening and levels of existing human activity, together with the type of construction activity taking place. Where there is the requirement for the use of drones or helicopters, eg for stringing of conductors, placement of bird diverters and/or where materials need to be transported, site and species-specific protection plans will be configured to ensure the protection of nesting birds. In addition to nest sites identified during the breeding season, this process is also applicable to the winter roosting sites of Schedule 1A birds<sup>1</sup>, specifically Red Kite.

- 12.11.17 The ornithological monitoring requirements and recommendations, to be undertaken both pre-commencement and throughout construction are highlighted below in **Table 12.14: Ornithological Monitoring Requirements**.

**Table 12.14: Ornithological Monitoring Requirements**

| Ornithological Monitoring Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Project Stage/Timing                                         | Responsibility                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------|
| <p><b>Pre-construction Bird Surveys for nesting birds.</b></p> <p>Pre-construction surveys will be undertaken along the Proposed Development (and up to 750 m depending upon habitat and species presence) with focus on Schedule 1/Annex 1 bird species and BoCC Red list species.</p> <p>If any nests or confirmed/suspected breeding territories of species listed on Schedule 1 to the <i>Wildlife &amp; Countryside Act</i> or Annex I of the Birds Directive, are identified during pre-construction surveys or pre-construction nest checks, an exclusion zone around the nest (or territory) would be established (as appropriate to the species). No works would be permitted within the exclusion zone and no personnel or vehicles would be allowed to enter or pass through it until a disturbance risk assessment has been undertaken by the ECoW, to determine any further mitigation measures to avoid disturbance.</p> | Prior to construction (April to August inclusive)            | Principal Contractors (via ECoW) |
| <p><b>Pre-construction Bird Surveys for roosting birds.</b></p> <p>Pre-construction surveys will be undertaken along the Proposed Development with focus on Schedule 1A birds (notably Red Kite).</p> <p>Where works are proposed in areas of suitable roosting habitat for a Schedule 1A species, regardless of the time of year, it is proposed that a pre-construction survey would be undertaken by a suitably experienced ornithologist, prior to commencement of works, to identify any regular roost sites. The survey area should include suitable habitat within 300 m of the Proposed Development for Red Kite. Should any roost sites be identified, a specific protection plan would be developed to avoid disturbance.</p>                                                                                                                                                                                                | Prior to construction (all year round)                       | Principal Contractors (via ECoW) |
| <p><b>Nesting Bird Checks</b></p> <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Prior to and during construction (April to August inclusive) | Principal Contractors (via ECoW) |
| <p><b>Ornithological Monitoring</b></p> <p>Monitoring around the Proposed Development up to 1 km from proposed works is proposed to be undertaken by a suitably experienced ornithologist during construction of the Proposed Development, in addition to the pre-construction surveys that would be completed as part of the BSPP.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | During construction of the Proposed Development              | Principal Contractors (via ECoW) |

#### Compensation/Enhancement

- 12.11.18 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 5, Appendix 3.3: Outline Site Restoration Plan, Volume 5, Appendix 9.6: Outline Landscape Mitigation Design Guide** and **Volume 5, Appendix 11.5: Outline Biodiversity Enhancement Plan** which will also benefit birds.

#### Post-construction monitoring

- 12.11.19 The scientific value of post-construction monitoring is considered to be high for infrastructure developments within the Scottish landscape. The baseline ornithology surveys carried out and reported in this assessment, notably flight activity surveys, provide a valuable opportunity to identify environmental impacts both during and post construction, supported by a suitably robust baseline. As such, the Embedded Mitigation of bird flight diverter placement, together with the efficacy of the Applied Mitigation programme, can be analysed. Before-After-Control-Impact (BACI) studies are important for quantifying impacts of infrastructure developments on birds and can provide a powerful evidence base to help improve design and development processes<sup>87</sup>.
- 12.11.20 It is proposed that post-construction monitoring will be focussed to determine the accuracy and validity of ex-ante predicted level of effects, compared with the ex-post effects realised during construction and operation of the Proposed Development.
- 12.11.21 Consultation with NatureScot in the first instance will be undertaken to agree a suitable approach; however, it is considered likely that post-construction monitoring may include flight activity surveys (potentially from the same VPs used in baseline survey), Winter Goose Foraging Surveys to determine changes in foraging and field use by Target Species (especially SPA qualifying geese species) and/or raptor and wader surveys.

#### **12.12 Assessment of Likely Significant Effects - Construction**

- 12.12.1 The assessment of effects is based on the Proposed Development description (as outlined in **Volume 1, Chapter 3: Project Description**) and the Embedded and Applied Mitigation measures described in **Section 12.11**. During the construction phase, Embedded Mitigation has ensured that designated sites and areas of high bird use are avoided. In addition, Applied Mitigation during construction will safeguard sensitive ornithological sites, ensuring that nesting and roosting birds are not subject to disturbance arising from construction activities. Unless otherwise stated, predicted effects are considered to be adverse (negative) in nature.

#### Predicted Construction Effects

##### *Assumptions Relating to Habitat Loss and Modification*

- 12.12.2 Both permanent and temporary habitat loss and habitat modifications, due to vegetation management or hydrological change, are assessed in **Volume 2, Chapter 11: Ecology**. 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. Approximately 280 hectares will be lost in the short-term for tower working areas and access track construction. Much of this area is likely to be restored with habitats restored/maintained as appropriate. For example, less than 10 hectares of moorland/upland heath will be temporarily lost in Section A in the short-term (Merlin breeding habitat), with only a minimal loss (less than 0.5 hectares) following completion of construction.
- 12.12.3 Felling and vegetation clearance, are described further in **Volume 2, Chapter 8: Forestry**. A summary table of felling by Section is included below for reference and includes felling of woodland (plantation and broadleaf) as well as scrub/regeneration clearance (**Table 12.15: Summary of felling/vegetation clearance areas across Proposed Development Sections**). Proposed felling and clearance areas do not support raptor nest sites identified from the ornithological baseline and comprise habitats that are regionally widespread. Therefore, it is considered that felling and vegetation clearance required to facilitate construction of the Proposed Development will not reduce the availability of key habitat for any bird species.

**Table 12.15: Summary of felling/vegetation clearance areas across Proposed Development Sections**

| Section | Total area to be felled for the Proposed Development |
|---------|------------------------------------------------------|
| A       | 9.3 ha                                               |
| B       | 14.5 ha                                              |
| C       | 21.7 ha                                              |
| D       | 7.9 ha                                               |
| E       | 137.1 ha                                             |
| F       | 44.5 ha                                              |

*Assumptions Relating to Displacement/Disturbance*

- 12.12.4 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 1981* (WCA). Birds listed on Schedule 1 to the WCA are also subject to special protections to prevent reckless disturbance to breeding sites and where identified during pre-construction surveys or nest checks, suitable buffers should be employed around nests to safeguard breeding birds (refer to **Table 12.13: Breeding birds recorded during baseline survey, with their associated breeding seasons and disturbance buffers**). As such, working out with the breeding season is recommended where practicable. For Schedule 1A species such as Red Kite, it is an offence to intentionally or recklessly harass the species at any time, including birds at roost sites outside the breeding season.
- 12.12.5 The construction phase of the Proposed Development will temporarily lead to increased levels of noise and visual disturbance, due to the presence and operation of vehicles, site machinery, materials and site personnel. Activities associated with construction and enabling works will include preparation of existing and new access tracks, forestry clearance, construction of temporary compounds together with borrow pits, formation of landscape and drainage structures, creation of hard standing together with construction of tower foundations and the stringing of conductors. All these elements will introduce additional levels of noise, lighting and visual disturbance (refer to **Volume 2, Chapter .15, Noise and Vibration**).
- 12.12.6 Disturbance can lead to indirect habitat loss, as it has the potential to displace birds from key foraging habitats or important sites like 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.
- 12.12.7 As such, it is possible that some breeding bird territories may be 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.
- 12.12.8 Construction phase effects (from disturbance/displacement and/or direct habitat loss) are assessed for those species for which the Proposed Development has been identified as having a potential Significant effect. The following paragraphs present the findings of the predicted effects, firstly for designated sites and then for each relevant Target Species.

*Designated Sites*

- 12.12.9 A detailed assessment of the potential effects of the Proposed Development on European sites was undertaken, including for:

- the Outer Firth of Forth and St Andrews Bay Complex SPA (qualifying species Herring Gull);
- the Firth of Tay and Eden Estuary SPA (qualifying species Pink-footed and Greylag Goose; Red-breasted Merganser);
- the Loch of Lintrathen SPA (qualifying species Greylag Goose);
- the Loch of Kinnordy SPA (qualifying species Pink-footed and Greylag Goose);
- Montrose Basin SPA (qualifying species Pink-footed and Greylag Goose);
- Fowlsheugh SPA (qualifying species Herring Gull); and
- the Loch of Skene SPA (qualifying species Greylag Goose).

12.12.10 This detailed assessment is provided in the 'shadow' Habitats Regulations Appraisal (**Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**). The Ramsar sites under the SPAs of the same name, and the assessment, is thus also applicable to these designations.

12.12.11 It was concluded in the 'shadow' HRA that there would be no Likely Significant Effects on the qualifying features of these European sites (with the implementation of agreed Embedded Mitigation including consideration of ornithological features during routeing of the Proposed Development through design iterations, and the use of bird diverters across spans considered 'high-risk' together with implementation of the BSPP). In EIA terms, it is therefore concluded that there would be a Negligible effect on European sites, and this is **Not Significant**.

#### *Additional Mitigation*

12.12.12 No additional mitigation is required in relation to the named European sites. Post-construction monitoring has been recommended (refer to paragraph 12.13.23) to determine the efficacy of Embedded Mitigation (ie line marking) and to provide robust data to determine accurately the impacts of the Proposed Development on the SPA qualifying features.

#### *Residual Construction Phase Effects on European Sites*

12.12.13 It is concluded in the 'shadow' HRA that there would be no likely Significant effects on the qualifying features of the European sites and therefore no likely Significant effects on the integrity of any European site, as a result of the construction and operation of the Proposed Development. Adopting EIA terminology, it is concluded that there would be Negligible effects on European sites from the construction of the Proposed Development, and this is **Not Significant**.

#### *Red Kite*

##### *Red Kite - Construction Phase Disturbance*

12.12.14 Open stands of coniferous and broadleaved woodland are used by Red Kite for nesting and communal roosting in winter<sup>96</sup>. Kites forage on open low ground, moorland areas and marginal agricultural habitats, taking carrion and small live prey<sup>97</sup>. During the breeding season Red Kite foraging ranges from the nest site are recorded as 4 km to 6 km<sup>105</sup>. Communal roosts are used between September and March, mainly by non-breeding and juvenile birds, which may be joined by local breeding adults, especially in periods of harsh weather<sup>36</sup>.

12.12.15 Nesting and roosting Red Kite were recorded during survey work, with desk records also providing further information on nesting and roosting sites within the Study Area.

12.12.16 Regional populations for Red Kite, with recorded nest sites within the Study Area, are as follows:

- NHZ 12 – seven pairs; survey recorded no nesting sites in the Study Area;
- NHZ 16 – 60 pairs; survey recorded five nesting sites within the Study Area; and

<sup>96</sup> Škrábal, J., Literák, I., Dostál, M., Raab, R., Horal, D., Matušík, H. & Spakovszky, P., 2021. *Red Kites wintering in their natal area: demographic, environmental and temporary factors affecting spatiotemporal behaviour patterns*. Bird Study 68, 381–395.

<sup>97</sup> García JT, Viñuela J, Sunyer C., 1998. *Geographic variation of the winter diet of the Red Kite Milvus milvus in the Iberian Peninsula*. Ibis 140:302–309. <https://doi.org/10.1111/j.1474-919X.1998.tb04393.x>.

- NHZ 9 – 12 pairs; three pairs recorded nesting in the Study Area.

- 12.12.17 At the regional population level, there is potential for construction phase disturbance to have a Significant impact on the regional Red Kite populations of NHZ 9 – North East Coastal Plains (potentially 25% of the breeding regional population is present within the Study Area of the Proposed Development) and NHZ 16 – Eastern Lowlands (with up to 8 % of the breeding regional population present in the Study Area of the Proposed Development); refer to **Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations**.
- 12.12.18 Red Kites can be tolerant of human presence near to their nest sites, often using suitable trees near farm buildings, for example. However, nest failure due to human disturbance can occur and pairs not exposed to human activity are likely to be less tolerant of such disturbance<sup>94</sup>. Ruddock & Whitfield<sup>98</sup> reported that breeding Red Kites were unlikely to be disturbed from a human on foot at distances greater than 300 m from a nest, with 150 - 300 m the adopted disturbance distance from NatureScot guidance<sup>94</sup>.
- 12.12.19 Pre-construction surveys will be carried out along the route of the Proposed Development where suitable nesting habitat is present for Red Kite, including in areas of nesting habitat surveyed as part of the BSPP and as outlined in **Table 12.14: Ornithological Monitoring Requirements**.
- 12.12.20 Disturbance to nesting sites will be managed through the BSPP, so that no disturbance occurs to nesting birds and offspring. This will be ensured via timing restrictions to avoid the breeding season (seasonal) and enforcement of disturbance buffers where nests are identified during construction. These would be informed by pre-construction and construction-phase surveys, data requests and continued monitoring throughout the lifecycle of the Proposed Development (refer to **Table 12.14: Ornithological Monitoring Requirements**).
- 12.12.21 Roosting Red Kite will also be protected through the BSPP (refer to **Table 12.14: Ornithological Monitoring Requirements**). Where roosting birds are present, protection will be ensured by avoiding disturbance to roosting birds by carrying out construction activities out with roosting hours in the first instance (considered to be from approximately three hours before sunset to one hour after sunrise<sup>99</sup>). Where this is not possible, a site- and construction activity-specific plan will be developed to avoid disturbance to roosting birds (refer to **Table 12.14: Ornithological Monitoring Requirements**).

#### *Red Kite - Construction Phase Habitat Loss*

- 12.12.22 It is possible that some foraging habitat may be lost or temporarily unavailable to Red Kite, which may affect breeding success in the short-term. During the breeding season the core foraging range of Red Kite is typically 4 km from the nesting site, with a maximum range given as 6 km<sup>105</sup>. As such, foraging may occur on average over an area of 50 km<sup>2</sup> from the nest. Should construction effects occur across the full extent of a breeding territory, it is possible that up to 10 % of the foraging area (5 km<sup>2</sup>) may be temporarily lost to hunting birds within 4 km of the nest (assuming works extending to 250 m either side of the Proposed Development are present across the potential foraging distance 4 km from the nest ie extending 8 km along the length of the Proposed Development). In such circumstances it is possible that the Red Kite may have to forage further from the nest to accommodate this temporary loss, which may reduce productivity by at least 10 % (assuming territory size and ranging are linked to breeding success). However, it is highly unlikely that works will proceed simultaneously across this extent, within any specific territory. The number of breeding Red Kite pairs in Scotland has initially doubled every 4-6 years<sup>100</sup>. Productivity remains stable in NHZ 9 and NHZ 16, with the populations still expanding, although at a reduced rate<sup>35</sup>. Should a reduction in foraging habitat lead to a temporary reduction of productivity across these regions, it is unlikely that the effect would be Significant at the regional population level. It is also considered that sufficient foraging habitat is widespread beyond any potential construction displacement areas. Indeed, Red Kite are known to take advantage of anthropogenic food sources, with the potential that construction activities such as groundworks may reveal additional food resources (pers. Obs.).

<sup>98</sup> Ruddock, M & Whitfield, D. P., 2007. *A review of disturbance distances in selected bird species*. SNH guidance.

<sup>99</sup> Carter, I. and Grice, P., 2000. *Re-established Red Kites in England*. British Birds, 93, 304-322.

<sup>100</sup> Scottish Raptor Study Group, n.d. *Monitoring and conserving Scotland's birds of prey*. [Online] Available at: <https://www.scottishraptorstudygroup.org/raptors/red-kite/#:~:text=The%20number%20of%20breeding%20pairs,European%20range%20for%20this%20species.>

- 12.12.23 Nesting habitat loss is unlikely to affect Red Kite along the route of the Proposed Development, given that the forestry blocks where this species was recorded nesting are not required to be felled and with Red Kite showing a tendency to re-use nests across years<sup>101</sup>; **Table 12.15: Summary of felling/vegetation clearance areas across Proposed Development Sections** describes the areas to be felled along the Proposed Development, with at most 44 hectares removed in woodlands where Red Kite are known to nest and with no direct removal of known nesting habitat. Habitat loss or modification is therefore considered to be a short-term **Not Significant, Negligible** impact to regional Red Kite populations.
- 12.12.24 The effects of construction activities, including pre-construction felling/vegetation clearance, as well as the siting of infrastructure, on both roosting and nesting Red Kite will be of a short-term temporal magnitude and of **Negligible** spatial magnitude effect on the NHZ regional populations of the species and is therefore considered **Not Significant** under the EIA Regulations.

*Additional Mitigation*

- 12.12.25 No additional mitigation is required in relation to Red Kite beyond that detailed in the BSPP and monitoring as outlined in **Table 12.14: Ornithological Monitoring Requirements**.

*Residual Construction Phase Effects on Red Kite*

- 12.12.26 With Implementation of the BSPP it is predicted that there would be Negligible effects from the construction phase of the Proposed Development on the regional (NHZ 16 and NHZ 9) populations of Red Kite, and this is **Not Significant**.

*Goshawk*

- 12.12.27 Baseline survey results, together with desk study records, recorded Goshawk breeding within the region NHZ 12 – North East Glens, only. Up to three nesting sites are present within the Study Area here, potentially representing as much as 12 % of the regional population of the species.

*Goshawk- Construction Phase Disturbance*

- 12.12.28 Goshawk are considered to show a level of medium sensitivity to disturbance<sup>94</sup>. The species is most susceptible during the early stages of breeding, when nest building and during the early stages of incubation<sup>104</sup>. Thus, there is potential for breeding birds to be disturbed during construction of the Proposed Development.
- 12.12.29 Disturbance buffer distances of between 300-500 m are suggested for Goshawk nesting sites<sup>94</sup>. Therefore, should nesting occur within 500 m of the Proposed Development there is a potential risk of disturbance as a direct result of the construction works, potentially leading to abandonment of the nesting attempt. Implementation of the BSPP would ensure that any active Goshawk nesting attempts were safeguarded. Should Goshawk be deterred from using historic nesting areas while establishing territories, there is potential for alternative nesting habitat to be used in the wider area, with Goshawk known to move up to 2.5 km to another nest site in alternative years<sup>102</sup>.
- 12.12.30 Goshawk can become conditioned to some types of regular disturbance, such as road traffic, if the disturbance is present from the start of nesting<sup>98</sup>. There is reference to successful Goshawk breeding attempts in close proximity (80 m and 170 m) to the main access track for the existing Mid Hill Wind Farm in 2015 and 2018<sup>103</sup>. Further, a nesting Goshawk pair with chicks did not respond to logging trucks which were recorded passing within 80 m of the nest site<sup>104</sup>. Therefore, Goshawk are considered relatively tolerant of human activities in some situations. Although the Proposed Development is relatively isolated, the areas where Goshawk breed within commercial plantations are subject to existing disturbances, including forestry activities and activity in relation to existing OHL infrastructure,

<sup>101</sup> English Nature, 2002. *Return of the red kite. The red kite reintroduction programme in England*. [Online] Available at: <https://publications.naturalengland.org.uk/publication/84009>.

<sup>102</sup> Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D., 2013. *Raptors: A field guide for surveys and monitoring*. Stationery Office Books.

<sup>103</sup> As per Fred Olsen Renewables Fetteresso Wind Farm EIA 2019 (Chapter 7: Ornithology – online).

<sup>104</sup> Goodship, N.M. and Furness, R.W., 2022. *Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species*. [Online] Available at: <https://www.nature.scot/doc/naturescot-research-report-1283-disturbance-distances-review-updated-literature-review-disturbance>. A report from MacArthur Green to NatureScot.

whilst supporting successful nesting Goshawk (refer to **Volume 6, Appendix 12.2: Confidential Ornithology Report**).

*Goshawk- Construction Phase Habitat Loss*

- 12.12.31 Goshawk need access to the nest to be sufficiently open below the tree canopy, to allow entrance/egress. Plantation blocks of conifers become more favourable when trees are c. 40-60 years of age and at the end of the commercial cycle, and/or when thinning or windthrow has occurred, to provide enough space between trees. Commercial forestry within the route of the Proposed Development is predominantly Sitka spruce (*Picea* spp.) with stands of different ages with topographical variety and habitat richness. This habitat attracts Goshawk and allows it to breed in relatively high numbers (over 10% of the Scottish population are present within the NHZ 12 region; refer to **Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations**). A substantial effect on the regional population due to habitat loss during construction is not predicted, due to the small loss of suitable nesting habitat and the multiple alternative forestry blocks present outside the route of the Proposed Development that would ensure continuity of Goshawk nesting habitat. Also, nesting and foraging habitat within commercial conifer plantations is subject to constant change, due to the nature of rotational harvesting.
- 12.12.32 Foraging by Goshawk in the breeding and non-breeding seasons may be affected by construction activities, with birds potentially limiting foraging activity in habitats located in close proximity to construction work. In addition, prey densities may be reduced near construction work, resulting in lower hunting efficiency; both factors could potentially lead to short-term adverse effects on productivity and survival. However, Goshawk hunting ranges are relatively large, extending to forested and open ground habitats several kilometres from nesting areas (Goshawk core foraging range is given as 3 km<sup>105</sup> but this may extend up to 10 km from the nest<sup>105</sup>), and overlapping with neighbouring Goshawk, so it is likely that large parts of their foraging range will be unaffected by construction work at any one time.
- 12.12.33 Details of mitigation measures to prevent or minimise any disturbance to breeding Goshawk will be included in the BSPP. These will include pre-construction surveys for breeding activity to identify nesting sites, with the implementation of an appropriate disturbance buffer around active nests, together with monitoring for disturbance events during the nesting period. Construction works with the potential to disturb nesting Goshawk within the disturbance buffer area will be delayed until the nest is confirmed as inactive. These mitigation measures will be robust and sufficient to prevent disturbance to breeding Goshawk.
- 12.12.34 In summary, with nesting Goshawk safeguarded through the BSPP and foraging opportunities for Goshawk continuing to be available at distances beyond the influence of construction activities, the short-term temporal effect of construction activities on the regional Goshawk population is **Negligible** and **Not Significant**.

*Additional Mitigation*

- 12.12.35 No additional, specific mitigation is required for Goshawk, beyond that detailed in the BSPP and monitoring as outlined in **Table 12.14: Ornithological Monitoring Requirements**.

*Residual Construction Phase Effects on Goshawk*

- 12.12.36 With implementation of the BSPP it is predicted that there would be Negligible residual effects of the construction phase of the Proposed Development on the regional (NHZ 12) population of Goshawk, and this is **Not Significant**.

*Merlin*

*Merlin - Construction Phase Disturbance*

- 12.12.37 A pair of Merlin was recorded nesting within the Study Area in 2023 (but not in 2024), in an upland area with significant cover of heather in Section A (within NHZ 16 – Eastern Lowlands region). Merlin is a bird of the uplands and the NHZ 16 region is at the eastern-most part of its breeding distribution, with a regional population of just four pairs (refer to **Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations**). No published monitoring data are available from Scottish Raptor Monitoring Scheme in this region; however, there has been a slight (non-significant) population reduction since the 1990s, when the Scottish population was estimated as

<sup>105</sup> NatureScot, 2016. *Assessing Connectivity with Special Protection Areas (SPAs)*.

785 pairs (now 733 pairs<sup>35</sup>). Productivity remains generally stable; however, breeding success has decreased to the west of the Proposed Development Study Area, in NHZ 12 North East Glens<sup>35</sup>

- 12.12.38 Merlin have a medium sensitivity to disturbance<sup>94</sup>. For example, Newton et al. (1981<sup>106</sup>) suggested that increased human recreational disturbance in the Peak District may prevent this species from achieving former breeding numbers in that area, with birds especially sensitive during the early part of the breeding season. Habituation to disturbance does occur, however, with Merlin observed perching along paved roads habituated to the greater traffic volume associated with them<sup>106</sup>. The disturbance distance for the species, as defined by NatureScot, is from 300 – 500 m from the nest site<sup>94</sup>.
- 12.12.39 Construction of the Proposed Development has potential to result in increased temporary disturbance to breeding and hunting Merlin. There would also be a general increase in human activity in areas where background disturbance levels are likely to be relatively low. Implementation of the BSPP would ensure that any active merlin nesting attempts were safeguarded, for example, via seasonal restrictions in construction activities near potential breeding sites. There is potential for the breeding site identified during survey work in 2023 to be avoided during construction of the Proposed Development; however suitable habitat exists in the wider area, with nesting opportunities located away from potential disturbance sources; therefore, it is considered possible that breeding Merlin could relocate, without being lost from the regional population. The breeding pair recorded in 2023 was not present in 2024, but they may have nested elsewhere, as Merlin can use different nest sites some distance apart in different years<sup>102</sup>. Suitable nesting habitat is present beyond the 500 m distance from working areas that constitutes the top end of the disturbance distance for the species.
- 12.12.40 If nest sites are confirmed during pre-construction surveys, protection measures would be put in place to avoid any disturbance to the birds (refer to **Section 12.5**).

#### *Merlin – Construction Phase Habitat Loss*

- 12.12.41 Merlin have a core foraging range of up to 5 km from the nest site<sup>105</sup>, with the wider environment potentially providing up to 78 km<sup>2</sup> of foraging habitat (assuming the nest site is at the centre of the breeding territory). It is unlikely that more than 5 km<sup>2</sup> of this foraging area would be lost due to construction, with likely considerably less than this being subject to disturbance at the same time. The Proposed Development does cross through an area of upland heathland/moorland in Section A (east of Milton of Ogilvie), which provides optimal foraging and nesting habitat. However, Merlin will forage across a range of habitats and the mosaic of upland farmland, small plantations, upland moorland and open lowland areas is present across the potential foraging range within Section A, where the breeding pair were located. As such, any loss of foraging and nesting habitat is likely to be limited. Prey species, generally ground nesting passerines, will also largely be unaffected by the Proposed Development in the core foraging range of nesting Merlin.
- 12.12.42 With the BSPP in place to safeguard nesting attempts, alternative nesting habitat available and substantial foraging resources in the wider area, the short-term effects of habitat loss due to construction are considered negligible and overall effects on the regional (NHZ 16) Merlin population are judged to be **Negligible and Not Significant**.

#### *Additional Mitigation*

- 12.12.43 No additional mitigation (beyond that proposed in the BSPP and monitoring as outlined in **Table 12.14: Ornithological Monitoring Requirements**) is required in relation to Merlin.

#### *Residual Construction Phase Effects on Merlin*

- 12.12.44 With implementation of the BSPP it is predicted that there would be **Negligible** residual effects of the construction phase of the Proposed Development on the regional (NHZ 16) population of Merlin, and this is **Not Significant**.

<sup>106</sup> I. Newton, J. E. Robinson & D. W. Yalden, 1981. Decline of the Merlin in the Peak District, Bird Study, 28:3, 225-234, DOI: 10.1080/00063658109476727.

### *Short-eared Owl*

#### *Short-eared Owl - Construction Phase Disturbance*

- 12.12.45 A single pair of Short-eared Owl was present in the Section A Study Area in 2023 (none recorded in 2024). This represents over 1 % of the NHZ 16 regional population of the species (58 pairs; refer to **Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations**. Implementation of the BSPP would ensure that any active short-eared owl nesting attempts were safeguarded. Construction activities have potential to impact upon breeding and foraging birds, including causing breeding ranges to become less favourable. However, breeding Short-eared Owl populations can vary significantly from year to year due to their low site fidelity, in large part due to prey availability<sup>64</sup>. With a substantial part of the Section A Study Area suitable as breeding and foraging habitat for Short-eared Owl, it is likely that any displaced birds would occupy alternative breeding ranges elsewhere in the region.
- 12.12.46 Recommended safe working distances have been suggested of 300 to 500 m as a disturbance buffer considered appropriate for Short-eared Owl<sup>94</sup>.

#### *Short-eared Owl - Construction Phase Habitat Loss*

- 12.12.47 Short-eared Owl numbers are strongly linked to the field vole (*Microtus* sp.) population, a small mammal that shows large fluctuations in population levels across and between years. Voles are present across most habitat types, although they do have a preference for marshy grasslands (ie areas where rushes are present). Short-eared Owl usually forage close to their nest sites (core foraging range of 2 km; foraging area 12.5 km<sup>2</sup>), although the range may extend up to 5 km, likely related to vole populations<sup>107</sup>. Given this extent of ranging available to the species and the ubiquitous prey species (with fluctuations in population unrelated to anthropogenic effects), temporary habitat loss associated with construction of the Proposed Development is unlikely to significantly impact the NHZ 16 regional population of Short-eared Owl.
- 12.12.48 Short-term effects during the construction phase are predicted to be spatially negligible for Short-eared Owl and the overall effect on the regional population is predicted to be **Negligible** and **Not Significant**.

#### *Additional Mitigation*

- 12.12.49 No additional mitigation (beyond that proposed in the BSPP and monitoring as outlined in **Table 12.14: Ornithological Monitoring Requirements**) is required in relation to Short-eared Owl.

#### *Residual Construction Phase Effects on Short-eared Owl*

- 12.12.50 With implementation of the BSPP it is predicted that there would be **Negligible** residual effects of the construction phase of the Proposed Development on the regional (NHZ 16) population of Short-eared Owl, and this is **Not Significant**.

### *Nightjar*

- 12.12.51 Breeding Nightjars are present within commercial forestry blocks in Section D and Section E. These areas support a mosaic of habitats suitable for breeding Nightjar, including areas of heath, bracken and grassland, adjacent to the clear-fell and pre-thicket forestry stages. Indeed, clearfelling of forestry provides important habitat for Nightjar, with a majority of males recorded in a BTO study, found within 1 km squares containing forestry plantations, with birds favouring forest rides and edges<sup>108</sup>. Also, in Wales, Nightjars are almost exclusively associated with commercial plantation forestry<sup>108</sup> with recent published evidence showing that birds in Scotland are also exploiting this habitat<sup>66</sup>. No NHZ regional population is listed for Nightjar, with surveys from early 2000's recording only 27 churring/displaying males in Scotland<sup>36</sup>.

<sup>107</sup> Glue, D.E., 1977. *Feeding Ecology of the Short-eared Owl in Britain and Ireland*. Bird Study, 24, 70-78.

<sup>108</sup> British Trust for Ornithology, 2005. *The Status and Distribution of The European Nightjar Caprimulgus europaeus in Britain in 2004*. BTO Research report No. 398.

#### *Nightjar - Construction Phase Disturbance*

- 12.12.52 A recent study on Nightjar responses to windfarm construction found no reduction in breeding success at construction sites in plantation woodland, compared to non-construction sites in similar habitat<sup>109</sup>. The construction sites were subject to disturbance avoidance measures in respect of breeding Nightjar, namely 'no works' disturbance zones within 50-150 m of Nightjar nests. This demonstrates that with appropriate site safeguarding measures in place, Nightjars will nest successfully in relatively close proximity to wind farm sites during the construction phase.
- 12.12.53 Avoidance of some parts of the Proposed Development by prospecting birds during the construction phase may occur due to perceived disturbance levels<sup>110</sup>. However, within the wider area there are substantial areas of alternative suitable habitat. Any disturbance displacement at this stage in the Nightjar breeding cycle is considered likely to lead to birds moving elsewhere, locally or further afield, rather than failing to breed<sup>111</sup>.
- 12.12.54 Strategies to safeguard breeding Nightjar during construction should aim to avoid impact either through micro-siting of infrastructure within the LOD to avoid nesting sites and/or timing of works (ie works out with the period May to mid-September in suitable habitat<sup>109</sup>). Where this is not possible, monitoring should be employed together with implementation of the BSPP, to establish protocols to safeguard the nests from disturbance associated with key construction activities (refer to **Section 12.5**).
- 12.12.55 Recommended safe working distances have been suggested of 150 to 500 m as a disturbance buffer considered appropriate for Nightjar<sup>94</sup>.

#### *Nightjar - Construction Phase Habitat Loss*

- 12.12.56 Clearfell forestry provides important habitat for Nightjar. The population recovery recorded in England from the 1980's to the early 1990's was attributed to these forestry practices. In the BTO study, 55 % of males recorded were found within 1 km squares containing forestry plantations, with birds favouring forest rides and edges<sup>112</sup>. More recently, the study by Knox<sup>66</sup> also notes that commercial forestry plantations and clearfell areas within those forests are a key habitat being exploited by Nightjar<sup>109</sup>.
- 12.12.57 Surveys for the Proposed Development identified that nesting in the Study Area (occurring in 2023 and 2024) took place in areas that had been recently felled. A further successful nest in 2024 appears to have been within the Study Area, occurring in an area of forestry requiring removal for infrastructure development in summer 2026. Habitat for which these records are present would appear unexceptional from the perspective of Nightjar breeding habitat preferences, with other parts of commercial forestry in the Study Area supporting a similar mosaic of habitats; including areas of heath, bracken and grassland, adjacent to clear-fell and pre-thicket forestry stages which Nightjar tend to exploit. Habitat loss during the construction phase is therefore not predicted to have a **Significant** effect on the regional or national Nightjar population.
- 12.12.58 In summary, the short-term effects of construction on breeding Nightjar, with nests safeguarded through implementation of relevant measures in the BSPP (refer to **Section 12.5**), would be spatially negligible, with overall effects predicted to be **Negligible** and **Not Significant**.

#### *Additional Mitigation*

- 12.12.59 No additional mitigation is required given that no Significant effects on Nightjar are predicted from the construction of the Proposed Development. The BSPP (outlined in **Section 12.5**) together with pre-construction monitoring and nest checks will be adhered to, as well as monitoring as outlined in **Table 12.14: Ornithological Monitoring Requirements**.

<sup>109</sup> Shewring, M., 2022. *European Nightjar and Upland Plantation Woodland Management*. PhD Thesis, Cardiff University.

<sup>110</sup> Lowe, A., Rogers, A.C. and Durrant, K.L., 2014. *Effect of human disturbance on long-term habitat use and breeding success of the European Nightjar, Caprimulgus europaeus*. Avian Conservation and Ecology 9: 6.

<sup>111</sup> Dolman, P.M., 2010. *Woodlark and nightjar recreational disturbance and nest predator study 2008 and 2009*. Final Report to Breckland District Council. University of East Anglia.

<sup>112</sup> British Trust for Ornithology, 2005. *The Status and Distribution of The European Nightjar Caprimulgus europaeus in Britain in 2004*. BTO Research report No. 398.

*Residual Construction Phase Effects on Nightjar*

- 12.12.60 With implementation of the BSPP it is predicted that there would be **Negligible** residual effects from the construction phase of the Proposed Development on the national population of Nightjar, and this is **Not Significant**.

*Residual Construction Phase Effects on Target Species*

- 12.12.61 It is concluded in the assessments above that there would be no likely Significant construction effects on identified Schedule 1/Annex 1 birds or BoCC Target Species as a result of the construction phase of the Proposed Development. It is therefore concluded that there would be **Negligible** residual effects on Schedule 1/Annex 1 birds from the construction of the Proposed Development, and this is **Not Significant**, with no significant residual construction effects predicted.

**12.13 Assessment of Likely Significant Effects – Operation**

- 12.13.1 This Section presents the assessment of effects of the operational phase of the Proposed Development. The only impact pathway taken forward for assessment is potential collision mortality on relevant ornithological features identified during baseline studies. The following Target Species are assessed with reference to potential operational impacts to regional populations: Red Kite, Goshawk, Merlin, Short-eared Owl and Nightjar. The qualifying features of SPAs (refer to **Table 12.7: 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 significant effect, are assessed within the context of their SPA Conservation Objectives (refer to **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**). 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

- 12.13.2 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.
- 12.13.3 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. 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.
- 12.13.4 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<sup>123</sup>.
- 12.13.5 Embedded Mitigation has been incorporated into the design of the Proposed Development to reduce risk to these sensitive species, including goose and swan species that form the qualifying features of the SPAs outlined in **Table 12.7: Statutory Designated Sites with features of Ornithological Interest with potential for connectivity to the Proposed Development**. In addition, raptor species may be at increased risk of collision where the Proposed Development is located close to nesting sites<sup>122,122</sup>.

Issues Scoped Out

- 12.13.6 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 12.1: Summary of Consultation of relevance to Ornithology**), as they are not predicted to result in Significant adverse effects from operation of the Proposed Development:
- barrier effects;
  - electrocution; and
  - foraging habitat loss.

### *Barrier Effects*

- 12.13.7 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<sup>113</sup>. Given the presence of a number of existing OHLs (at 132 kV and 275 kV) in the vicinity of some Sections of the Proposed Development (and following a similar north to south alignment), 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 does represent elevated heights 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 and OPGW<sup>114</sup>; whilst the Proposed Development provides towers between 50 m and 70 m agl (refer to **Volume 1, 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<sup>115</sup>. The potential for operational barrier effects is therefore scoped out of detailed assessment, with the exception of SPA qualifying features (refer to **Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal**).

### *Electrocution*

- 12.13.8 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 is possible, as the gaps between the conductors and the perch points would be greater than any bird wingspan. This effect has been scoped out of detailed assessment following consultation with NatureScot (refer to **Table 12.1: Summary of Consultation of relevance to Ornithology**).

### *Foraging habitat loss*

- 12.13.9 Direct and permanent loss of foraging habitat due to the presence of the Proposed Development would not result in adverse effects on SPA qualifying species. The foraging habitat of wildfowl and Herring Gull is open ground, including agricultural fields, and the scale of habitat losses relative to the availability of alternative foraging habitat in the surrounding environment would be minimal, with no prospect of leading to significant effects. As such, foraging habitat loss during the operational phase has been scoped out of effects on both Designated Sites (and their qualifying species) and other Target Species in agreement with NatureScot (refer to **Table 12.1: Summary of Consultation of relevance to Ornithology**, page 6).

### *Disturbance*

- 12.13.10 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*

- 12.13.11 A detailed assessment of the potential effects of the Proposed Development on European sites is provided in the 'shadow' HRA (**Volume 5, Appendix 12.3: Shadow Habitats Regulations Appraisal (HRA)**). The Ramsar sites underlying the SPAs of the same name, and the assessment is thus also applicable to these designations.

<sup>113</sup> 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.

<sup>114</sup> Telcontor.net, 2025. *Technical Information on British high-voltage power lines*. [Online] Available at: [https://telcontar.net/Power/pylons/power\\_lines](https://telcontar.net/Power/pylons/power_lines).

<sup>115</sup> 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.

- 12.13.12 It was concluded in the ‘shadow’ HRA that there would be no likely Significant effects on the qualifying features of European sites with potential for connectivity with the Proposed Development (following implementation of Embedded Mitigation, including the placement of OHL through design iterations and installation of bird diverters across spans considered ‘high-risk’). In EIA terms, it is therefore concluded that there will be **Negligible** effect on European sites (Negligible spatial magnitude across the long-term) during the operational phase of the Proposed Development, and this is **Not Significant**.

*Red Kite – Operational Collision Risk*

- 12.13.13 Red Kites are potentially vulnerable to collision as they spend of the majority of flight time at heights that overlap the height range of high voltage OHLs<sup>116</sup>. The risk of Red Kite collision is considered to be highest when OHLs are located within 1.5 km of a nest<sup>116</sup>. In Germany, adverse effects of collision mortality on juvenile and adult survival rates have been predicted as a result of the continuing expansion of onshore wind farms and associated infrastructure<sup>117, 118</sup>, although this is largely associated with turbine collisions. Collision fatalities with OHLs have been recorded in Scotland, although the three known fatalities also occurred at a wind farm development<sup>119</sup>; therefore, the potential for confounding factors cannot be discounted. At present, the situation in Scotland is slightly different to mainland Europe as the Red Kite population, whilst gradually expanding, remains relatively restricted to areas around the four re-introduction sites, therefore less overlap exists between current Red Kite distribution and new renewable energy infrastructure. However, this is likely to change as the Red Kite population grows and onshore renewables and electricity distribution networks expand. A population model for the North Scotland Red Kite population determined that infrastructure development, including collision with turbines and OHLs<sup>120</sup> was not considered to have a major influence on population growth<sup>121</sup>. A model of the Welsh Red Kite population, where numbers are increasing at a greater rate than in Scotland, showed that the population would continue to grow even if mortality, ie wind farm collisions and other deaths, killed up to 12% of the national Red Kite population<sup>121</sup>. These studies demonstrate that some Red Kite populations can tolerate additional mortality arising from infrastructure that overlaps their range.
- 12.13.14 Collision risk is likely to be higher when OHLs are closer to the nesting sites<sup>123</sup>. Birds nest-building, returning to the nest with food items, and the presence of newly fledged birds will increase levels of flight activity and, hence, collision risk where OHLs occur within a few hundred metres of the nest. Indeed, Hötter et al. (2017<sup>122</sup>) found that breeding Red Kites spend most of their time within a radius of approximately 1 km around their nests.
- 12.13.15 The regional Red Kite populations within NHZ 16 and NHZ 9 (see **Table 12.9: National and regional population estimates of Target Species**) were identified as having the potential to be adversely affected by the Proposed Development. Baseline studies recorded five pairs of Red Kites within the Study Area overlapping with NHZ 16, and three pairs in the Study Area overlapping with NHZ 9. No flight activity surveys were carried out during the breeding season; however, with the potential for active nests within 500 m of the Proposed Development, there is a risk of collision mortality. As a species, Red Kite have been identified as having a “very low” risk of mortality from collision with OHLs<sup>123</sup>, due to Red Kite being very proficient fliers, with low wing loading and relatively slow flight speeds<sup>123</sup>. Population modelling often ignores OHL collisions in part due to the relatively low potential for impacts<sup>120</sup>.

<sup>116</sup> Pfeiffer, T. and Meyburg, B-U., 2022. *Flight altitudes and flight activities of adult Red Kites (Milvus milvus) in the breeding area as determined by GPS telemetry*. Journal of Ornithology, 163: 867-879.

<sup>117</sup> Katzenberger J., 2019. *Verbreitungsbestimmende Faktoren und Habitateignung für den Rotmilan Milvus milvus in Deutschland*. Vogelwelt 139: p. 117-128.

<sup>118</sup> Busch M, Katzenberger J, Trautmann S, Gerlach B, Droschmeister R, and Sudfeldt C., 2020. *Drivers of population change in common farmland birds in Germany*. Bird Conserv Int 30: p. 335–354.

<sup>119</sup> Duffy, K. & Urquhart, B., 2014. *Braes of Doune Windfarm Report on red kite studies 2004 to 2012*. Unpublished report to the Braes of Doune Wind Farm Ornithology Steering Group. [Online] Available at: <https://www.natural-research.org/ecological-consultancy-company/ornithology/windfarm-impact-studies-kites-braes-doune-scotland>.

<sup>120</sup> Sansom, A., Etheridge, B., Smart, J. & Roos, S., 2016. *Population modelling of North Scotland red kites in relation to the cumulative impacts of wildlife crime and wind farm mortality*. Scottish Natural Heritage Commissioned Report No. 904.

<sup>121</sup> Hereward, H.F.R., Macgregor, C.J., Gabb, O., Connell, A., Thomas, R.J., Cross, A.V. & Taylor, R.C., 2024. *Modelling population-level impacts of wind farm collision risk on Welsh Red Kites*. BTO Research Report 766, BTO, Thetford, UK.

<sup>122</sup> Hotker, H., Mammen, K., Mammen, U. and Rasran, L., 2017. *Red kites and wind farms – telemetry data from the core breeding range*. Wind Energy and Wildlife Interactions (CWW2015 Conference).

<sup>123</sup> 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.

Nevertheless, to further reduce risk, as part of the Embedded Mitigation strategy, line marking has been introduced at spans where there is potential for nesting Red Kite to be present within 500 m, or where relatively high levels of flight activity were recorded during the winter goose flight activity surveys and suitable nesting habitat was present. Line marking will be carried out on spans within 500 m of these sensitive areas (the location of which is discussed within the confidential appendix only (**Volume 6, Appendix 12.2: Confidential Ornithology Report**), to avoid possible identification of Schedule 1 nesting sites). Line marking will reduce OHL collision risk for the regional populations of Red Kite in NHZ 16 and NHZ 9.

- 12.13.16 As such, despite a long-term/permanent temporal magnitude, the spatial magnitude of impact on the regional populations of Red Kite in NHZ 16 and NHZ 9 is predicted to be negligible during the operational phase of the Proposed Development and therefore the effect on conservation status of the regional populations is predicted to be **Negligible and Not Significant**.

*Additional Mitigation*

- 12.13.17 No additional mitigation is required, given that no Significant effects on the regional Red Kite populations are predicted from the operational phase of the Proposed Development.

*Residual Operational Effects*

- 12.13.18 Residual operational effects on Red Kite arising from collision risk are predicted to be Negligible and **Not Significant**.

*Goshawk - Operational Collision Risk*

- 12.13.19 Goshawk flights were recorded during non-breeding flight activity surveys in Section C (five flights; NHZ 16) and Section F (one flight; NHZ 9). No flight activity surveys were carried out in the breeding season. Recorded flights were of birds at and above potential collision height, occurring over forested areas. Nesting was recorded in Sections D and E in region NHZ 12 – North East Glens, with FLS providing records of three historic nesting sites (potentially comprising up to 5 % of the regional population) within the Study Area (refer to **Table 12.9: National and regional population estimates of Target Species**).
- 12.13.20 Goshawk are a highly manoeuvrable and active bird of prey species, able to negotiate dense forestry while hunting, and hence have high visual acuity<sup>124</sup>. During display or commuting flights, Goshawk are highly unlikely to collide with OHLs; however, while in pursuit of prey birds they will be at higher risk<sup>125</sup>. Bevanger and Overskaug<sup>126</sup> reported that 'utility structures', including overhead wires were a major cause of Goshawk mortality. They associated this with birds hunting low to the ground (6-20 m), a height that overlapped with low voltage distribution OHLs, which were the predominant overhead lines in their Study Area. However, some of the reported mortality was likely to have been caused by electrocution, and not collision. The design of the Proposed Development includes wayleaves of up to 90 m which will provide hunting birds with additional time and space for avoidance of OHLs during fast flights (in comparison to the distribution OHLs predominant in the aforementioned study). Goshawk often use infrastructure like fences, roofs and buildings as vantage points from which to hunt<sup>125</sup>, suggesting beneficial effects for the species and habituation to novel infrastructure (ie the conductors and towers become recognised and avoided/used during foraging, for example). It is also notable that the traditional nesting sites within the Study Area exist with several high voltage OHLs and associated infrastructure present nearby, with repeated successful nesting in nearby habitats, pointing to tolerance of OHLs, low/limited collision rates and habituation.
- 12.13.21 It is likely that collision risk for Goshawk will be very low given the height of the OHLs, extent of wayleave and the species' flight behaviours; however, it is recognised that collision fatalities associated with the Proposed Development may result in a very small increase in the background mortality rate in the regional Goshawk population of NHZ 12. Goshawk were recorded across all three NHZ regions, but breeding was recorded in NHZ 12 only, with up to 12 % of

<sup>124</sup> Bevanger, K., 1994. *Bird interactions with utility structures; collision and electrocution, causes and mitigating measures*. Ibis 136: p. 412-425.

<sup>125</sup> Rutz C., 2006. *Home range size, habitat use, activity patterns and hunting behaviour of urban-breeding Northern Goshawks Accipiter gentilis*. Ardea 94(2): 185-202.

<sup>126</sup> Bevanger, K. and Overskaug, K., 1998. *Utility structures as a mortality factor for raptors and owls in Norway*. In Chancellor R.D., *Holarctic birds of prey* p. 381-392.

the NHZ 12 Goshawk population present within the Study Area (three traditional nesting sites are present, from the wider 25 pair NHZ population; refer to **Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations**). Flight activity was limited across the Proposed Development, with the presence of existing OHL infrastructure in areas known to support successful nesting attempts, suggesting habituation and low collision rates. Although no flight activity surveys were carried out during the breeding season, collision rates are considered likely to be very low. Successful nesting (and therefore, successful foraging) locally would suggest that the collision risk is highly unlikely to have an impact on the conservation status of the regional Goshawk population, with overall effects of operational collision risk predicted to be **Negligible** and **Not Significant**.

*Additional Mitigation*

- 12.13.22 No additional mitigation is required, given that no Significant effects on the regional Goshawk population are predicted from the operational phase of the Proposed Development.

*Merlin - Operational Collision Risk*

- 12.13.23 Only two flights by Merlin were recorded across all flight activity surveys; however, nesting was recorded within the Study Area in Section A (NHZ 16 region). The presence of nesting birds near to the Proposed Development would result in flight activity to and from the nest site during the breeding season. Merlin is a small raptor that is exceptionally manoeuvrable when hunting, when they mainly pursue small birds which tend to fly low to the ground<sup>127</sup>. Hence, Merlin usually hunt and take prey on or close to the ground and below the height of OHL conductors. In addition, Merlin nest in open ground, where there are relatively few obstacles and those that are present can generally be easily discerned from the background/horizon. Hence, collision risk is likely to be very low for the species, and the standard wind farm avoidance rate of 98% reflects a default value (albeit high, as supporting data to verify a higher rate is lacking).
- 12.13.24 Direct evidence of low collision risk is provided by a study carried out within the Drumochter Hills SPA, to assess the effects of the Beaulieu to Denny 400 kV OHL on the Merlin SPA population<sup>128</sup>. Although it was recognised that the Beaulieu to Denny 400 kV OHL did present a small collision risk, Merlin flight activity was generally at lower heights ie below the OHL, or at heights corresponding to the conducting wires (where the wire width is greater and more visible than the earth wire), which reduced the level of risk.
- 12.13.25 The Proposed Development is likely to present a very small collision risk to breeding Merlin in Section A, which lies within the NHZ Eastern Lowlands region. Habitat and prey availability are similar to the Drumochter Hills area; therefore, it is anticipated that flight activity will be largely restricted to low-level hunting and commuting to and from the nest. Breeding locations will also change, so it is possible that collision risk will not impact upon breeding populations in some years. Hence, collisions with the OHL do not represent a substantial risk to the regional Merlin population, which numbers four pairs (**Table 12.10: Summary of baseline data and relevance to regional (NHZ) populations**). No Merlin were recorded breeding in the other regions in which the Proposed Development lies. Therefore, despite the potential for a long-term effect on the regional population of Merlin, this is predicted to be spatially negligible, and overall effects arising from collision mortality are predicted to be **Negligible** and **Not Significant**.

*Additional Mitigation*

- 12.13.26 No additional mitigation is required given that no Significant effects on the regional Merlin population are predicted from the operational phase of the Proposed Development.

*Short-eared Owl - Operational Collision Risk*

- 12.13.27 No Short-eared Owl flights were recorded during flight activity surveys. In 2023, a single breeding attempt was recorded within the Study Area in Section A (NHZ 16 region only).

<sup>127</sup> Sodhi, N. S., Warkentin, I. G. and Oliphant, L. 1991. *Hunting techniques and success rates of urban merlins (Falco columbarius)*. Journal of Raptor Research, 25.

<sup>128</sup> Annex 10 Proposed Beaulieu to Denny 400kV Overhead Transmission Line – Drumochter Hills SPA Merlin Special Study.

- 12.13.28 Given the presence of breeding Short-eared Owl within the Study Area (Section A) and the availability of suitable breeding habitat, it is likely that breeding birds could be present during the operational phase when foraging flights and flights to and from the nest site(s) would occur. Short-eared Owl fly at low heights during foraging, with only occasional courtship flights at height<sup>129</sup>. Hence, the species is at relatively low risk of collision due to their flight behaviours<sup>130</sup>, and the avoidance rate of 98% used for collisions with wind turbines is precautionary, due to an absence of data supporting a higher avoidance rate<sup>131</sup>. During baseline surveys, less than 2 % of the regional NHZ 16 breeding population of Short-eared Owl was recorded within the Study Area, with the NHZ estimated to support 58 pairs (**Table 12.9: National and regional population estimates of Target Species**). As such, even if the two known birds were to collide with the Proposed Development, the effect would be classed as of Low spatial magnitude. However, given the flight behaviour of the species and the likely sporadic occurrence of breeding attempts during the operational phase, this scenario is considered highly unlikely, and spatial effects arising from collision mortality during the operational phase are predicted to be negligible. Overall, collision effects on the regional Short-eared Owl population are predicted to be **Negligible** and **Not Significant**.

*Additional Mitigation*

- 12.13.29 No additional mitigation is required given that no Significant effects on the regional Short-eared Owl population are predicted from the operational phase of the Proposed Development.

*Nightjar - Operational Collision Risk*

- 12.13.30 Nightjar flight activity was not monitored during surveys for the Proposed Development. Records of breeding Nightjar were provided via Aberdeenshire Council, who reported that at least two pairs were present within the Study Area.
- 12.13.31 Nightjar are classed as being at low risk of collision with OHLs, since they have low wing loading and exceptional flight manoeuvrability<sup>109</sup>. Nightjar fly at low heights in sustained pursuits of their night-flying insect prey. They normally approach prey from below and may exceptionally hover and swoop down. They also make short flights from low perches or from the ground, returning to the perch after prey capture. The majority of flight activity is therefore at low heights and below 20 m, as the birds catch low-flying insects<sup>132</sup>.
- 12.13.32 The risk of collision with OHLs by Nightjars was considered to be negligible by researchers working on avoidance behaviour of the species nesting around wind farms across Europe<sup>109</sup>. Hence, due to the species' ecology and physical adaptations to nocturnal foraging, it is considered highly unlikely that Nightjars would be vulnerable to collision with the OHL.
- 12.13.33 No collision effects are predicted for Nightjar due to the Proposed Development and Nightjar are not predicted to be affected at the regional or national level by the Proposed Development.
- 12.13.34 Therefore, effects of collision risk on the regional population of Nightjar are considered to be spatially negligible across the operational phase of the Proposed Development, and overall effects are predicted to be **Negligible** and **Not Significant**.

*Additional Mitigation*

- 12.13.35 No additional mitigation is required, given that no Significant effects on the Nightjar population are predicted from the operational phase of the Proposed Development.

<sup>129</sup> Owl Research Institute, n.d. *Short-eared Owl*. [Online] Available at: <https://www.owlresearchinstitute.org/short-eared-owl>.

<sup>130</sup> Shaffer, J.A., Igl, L.D., Johnson, D.H., Sondreal, M.L., Goldade, C.M., Nenneman, M.P., and Euliss, B.R., 2021. *The effects of management practices on grassland birds—Short-eared Owl (Asio flammeus)*, chap. Q of Johnson, D.H., Igl, L.D., Shaffer, J.A., and DeLong, J.P., eds., *The effects of management practices on grassland birds: U.S. Geological Survey Professional Paper 1842*, 12 p. [Online] Available at: <https://doi.org/10.3133/pp1842Q>.

<sup>131</sup> NatureScot, 2025. *Wind farm impacts on birds - Use of Avoidance Rates in the NatureScot Wind Farm Collision Risk Model*. [Online] Available at: <https://www.nature.scot/doc/wind-farm-impacts-birds-use-avoidance-rates-naturescot-wind-farm-collision-risk-model>.

<sup>132</sup> Calbrade, N & Henderson, I., 2009. *A survey of Nightjar flight heights at Clocaenog Forest in 2009*. BTO Research Report no. 542.

#### 12.14 Assessment of Residual Significant Effects - Operation

##### Additional Mitigation

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

##### Residual Operational Effects

- 12.14.2 As no Additional Mitigation is proposed, the residual operational effects are the same as those identified above in **Section 12.13** and are predicted as being **Negligible** and **Not Significant** for all bird species assessed.

#### 12.15 Assessment of Likely Significant Effects - Decommissioning

- 12.15.1 The decommissioning phase has the potential to result in similar effects to those arising from construction. Functional habitat developed across the lifetime of the Proposed Development 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.
- 12.15.2 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 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.
- 12.15.3 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.

#### 12.16 Assessment of Likely Cumulative Effects

##### Introduction

- 12.16.1 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 regions NHZ 9 North East Coastal Plain, NHZ 12 North East Glens and NHZ 16 Eastern Lowlands. '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.

##### Findings of the Cumulative Assessment

- 12.16.2 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 12.16: Cumulative assessment for Intra (Associated) Developments** provides a cumulative assessment of the Proposed Development with the Intra (Associated) Developments defined in **Volume 2, Chapter 16: Cumulative Effects** these are the substation proposals at Emmock and Hurlie which would be directly connected with the proposed OHL. The findings of the cumulative assessments for the respective Intra Developments are summarised in paragraphs 12.16.8 to 12.16.13 below.
  - **Table 12.17: Cumulative assessment for Inter Developments** provides a cumulative assessment of the Proposed Development and Intra (Associated) Developments with other reasonably foreseeable SSEN-T and third party developments (collectively, referred to as Inter Developments) as defined in **Volume 2, Chapter 16: Cumulative Effects** and paragraphs 12.16.6 to 12.16.7 below.

- 12.16.3 A brief commentary is then provided following **Table 12.17: Cumulative assessment for Inter Developments** on the predicted cumulative effects of the Proposed Development in combination with the Intra and Inter projects considered in the assessment.
- 12.16.4 NatureScot guidance<sup>133</sup> 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.
- 12.16.5 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 Red Kite, Goshawk, Merlin, Short-eared Owl and Nightjar, 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.
- 12.16.6 Projects chosen for inclusion to determine in-combination effects for the identified SPAs 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.
- 12.16.7 The spatial scale for the ornithology cumulative assessment includes plans and 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 12.16: Cumulative assessment for Intra (Associated) Developments** and **Table 12.17: Cumulative assessment for Inter Developments**. The schemes are presented in relation to the NHZ regions within which they occur, and with reference to the presence of Target Species, ie Red Kite, Goshawk, Merlin, Short-eared Owl and Nightjar, taken forward for cumulative assessment.

#### Summary of Predicted Effects for Emmock and Hurlie Substations

- 12.16.8 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.
- 12.16.9 All effects of the Hurlie substation on the breeding bird assemblage, including breeding Schedule 1/Annex 1 species of High sensitivity, are considered 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 Hurlie substation is predicted for ornithological receptors.

#### Emmock Substation

##### *Residual Construction Effects*

- 12.16.10 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.

<sup>133</sup> 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>.

*Residual Operational Effects*

- 12.16.11 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.

*Hurlie Substation**Residual Construction Effects*

- 12.16.12 There are no Significant effects arising from the Hurlie substation that have been predicted during construction, and as such the residual construction effects are predicted as being **Negligible** and **Not Significant** for all bird species.

*Residual Operational Effects*

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

**Table 12.16: Cumulative assessment for Intra (Associated) Developments**

| Development                      | Section | Location                                                  | Description                                                    | Status                         | Residual Significant Effects                                                                               | Cumulative Assessment                    | Additional Mitigation in relation to Target Species   | Target Species recorded     |
|----------------------------------|---------|-----------------------------------------------------------|----------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------|-----------------------------|
| <b>NHZ – 16 Eastern Lowlands</b> |         |                                                           |                                                                |                                |                                                                                                            |                                          |                                                       |                             |
| Emmock 400 kV substation         | A       | Proposed Development connects to this proposed substation | Proposed Construction and Operation of a 400 kV AC Substation  | In planning                    | No significant residual effects identified                                                                 | No likely significant cumulative effects | Not Applicable                                        | No                          |
| <b>NHZ 12 – North East Glens</b> |         |                                                           |                                                                |                                |                                                                                                            |                                          |                                                       |                             |
| Hurlie 400 kV substation         | D/E     | Proposed Development connects to substation (Section E)   | Proposed Construction and operation of a 400 kV AC substation. | Planning application submitted | No significant residual effects identified. Desk records supplied by FLS for breeding Goshawk and Nightjar | No likely significant cumulative effects | Species-specific BSPP to be implemented for Nightjar. | Goshawk & Nightjar breeding |

**Table 12.17: Cumulative assessment for Inter Developments**

| Development                                        | Section | Location                                                          | Description                                                                                                                                                                                                                                                          | Status                                                 | Residual Significant Effects                                                                                                                                                                                  | Cumulative Assessment                    | Additional Mitigation | Target Species recorded                 |
|----------------------------------------------------|---------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------|-----------------------------------------|
| <b>NHZ 16 – Eastern Lowlands</b>                   |         |                                                                   |                                                                                                                                                                                                                                                                      |                                                        |                                                                                                                                                                                                               |                                          |                       |                                         |
| Alyth to Tealing 275 kV OHL Upgrade (to 400 kV)    | A       | 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.<br><br>No significant residual effects identified | No likely significant cumulative effects | Not Applicable        | No                                      |
| Tealing to Westfield 275 kV OHL Upgrade (to 400kV) | A       | Immediate proximity to Emmock substation and Proposed Development | Upgrade of approximately 38 km of OHL.<br>Tie-in of existing (upgraded) Alyth to Tealing OHL to proposed Emmock substation*, Tie-in of (existing, upgraded) Tealing to Westfield OHL to proposed Emmock substation* and Emmock and Tealing Substation OHL Tie-Back's | Application for Section 37 Consent; submission in 2024 | No significant residual effects identified                                                                                                                                                                    | No likely significant cumulative effects | Not Applicable        | No                                      |
| Ark Hill Wind Farm                                 | A       | Approximately 2.8 km west 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 (NTS) |

| Development                                   | Section | Location                                                                                     | Description                                                                                                                                                                                                | Status                                                 | Residual Significant Effects               | Cumulative Assessment                    | Additional Mitigation            | Target Species recorded                                                       |
|-----------------------------------------------|---------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------|------------------------------------------|----------------------------------|-------------------------------------------------------------------------------|
| Ark Hill Wind Farm Extension/Phase 2          | A       | Approximately 2.8 km west of Proposed Development                                            | Extension to Ark Hill Wind Farm consisting of the erection of 4 wind turbines, & formation of access tracks                                                                                                | Application for Section 36 Consent; submission in 2024 | No significant residual effects identified | No likely significant cumulative effects | Not Applicable                   |                                                                               |
| Clochnahill Wind Farm                         | D       | RLB 2.7 km from Proposed Development                                                         | Four turbine wind farm                                                                                                                                                                                     | Operational                                            | No information                             | No information                           | No information                   | Baseline surveys in 2004 & 2005<br>No Goshawk recorded (from Fetteresso EIAR) |
| Emmock and Tealing OHL Tie-ins and Tie-Back's | A       | Immediate proximity to Emmock substation                                                     | Diversion of short sections of the Alyth to Tealing and Tealing to Westfield 275 kV OHLs to connect with the proposed Emmock substation                                                                    | Scoping report submitted                               | No significant residual effects identified | No likely significant cumulative effects | Not Applicable                   | No                                                                            |
| Frawney                                       | A       | RLB 900 m to the east of Proposed Development                                                | Five turbine wind farm                                                                                                                                                                                     | Approved                                               | No significant residual effects            | No likely significant cumulative effects | Not Applicable                   | Goshawk nesting out with Site                                                 |
| Glendye Wind Farm Grid Connection             | C       | Directly adjacent to Proposed Development. Connection to the existing Fetteresso Substation. | A new 132 kV overhead line to connect the consented Glendye Wind Farm to the National Grid.<br>New 20 km 132 kV OHL supported by steel trident poles (to connect into the existing Fetteresso substation). | In planning                                            | EIA in preparation                         | Not available at time of writing         | Not available at time of writing | Not available at time of writing                                              |
| Govals Farm                                   | A       | RLB 600 m to the east of the Proposed Development                                            | Six turbine wind farm                                                                                                                                                                                      | Approved                                               | No information                             | No information                           | No information                   | No information                                                                |
| Muir of Pert                                  | C       | RLB 3 km southeast of the                                                                    | Erection of a Four turbine wind farm                                                                                                                                                                       | Scoping                                                | No information                             | No information                           | No information                   | No information                                                                |

| Development                      | Section | Location                                                                        | Description                                               | Status                                                          | Residual Significant Effects                                                                                                          | Cumulative Assessment                                                                                                                              | Additional Mitigation                                                                                             | Target Species recorded                                                                                     |
|----------------------------------|---------|---------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|                                  |         | Proposed Development                                                            |                                                           |                                                                 |                                                                                                                                       |                                                                                                                                                    |                                                                                                                   |                                                                                                             |
| St John's Hill                   | D       | RLB 6.7 km southeast of the Proposed Development                                | Nine turbines                                             | Operational                                                     | No information                                                                                                                        | No information                                                                                                                                     | No information                                                                                                    | Baseline surveys in 2004 & 2005.<br>No Goshawk recorded (from Fetteresso EIAR)                              |
| St Mary's Well                   | B       | RLB 1.4 km to the east of the Proposed Development                              | No information                                            | Scoping                                                         | No information                                                                                                                        | No information                                                                                                                                     | No information                                                                                                    | No information                                                                                              |
| Tullo                            | D       | RLB 4.5 km to the east of the Proposed Development                              | Seven turbine wind farm                                   | Operational                                                     | No information                                                                                                                        | No information                                                                                                                                     | No information                                                                                                    | Baseline surveys in 2003.<br>No Goshawk recorded (from Fetteresso EIAR)                                     |
| Tullo II Windfarm                | D       | RLB 4 km to the east of the Proposed Development                                | Ten turbine wind farm                                     | Approved                                                        | No information                                                                                                                        | No information                                                                                                                                     | No information                                                                                                    | Baseline surveys in 2009 & 2010<br>Single Goshawk flight recorded (from Fetteresso EIAR)                    |
| <b>NHZ 12 – North East Glens</b> |         |                                                                                 |                                                           |                                                                 |                                                                                                                                       |                                                                                                                                                    |                                                                                                                   |                                                                                                             |
| Craigneil Wind Farm              | D/E     | RLB overlaps with Proposed Development- to the North and Northeast of Rickarton | Erection of 7 wind turbines and associated infrastructure | Pre-application – previous application for 11 turbines rejected | 11 turbine application (from Fetteresso EIAR):<br>Goshawk flight activity recorded.<br>Collision risk not significant.<br>No breeding | No information present from current seven turbine application.<br>Considered that impacts on Red Kite and Goshawk will be addressed through layout | No information – new scheme likely to include micro-siting and layout changes to mitigate raptor flight activity. | Baseline surveys between 2012 & 2014<br>Red Kite flight activity (no breeding)<br>Goshawk (flight activity) |

| Development          | Section | Location                       | Description          | Status    | Residual Significant Effects                                                                                                                                                                                                                                                 | Cumulative Assessment                                                                          | Additional Mitigation                                                                                                              | Target Species recorded                                                                                               |
|----------------------|---------|--------------------------------|----------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                      |         |                                |                      |           | Goshawk present – Durris Forest out with Site with potential for breeding birds. RSPB raised concerns regarding presence of Red Kite population in previous, rejected, application. No significant effects concluded                                                         | and mitigation steps to provide no likely significant cumulative effects on any Target Species |                                                                                                                                    |                                                                                                                       |
| Fetteresso Wind Farm | E       | RLB 4.4km northwest of the LOD | 10 turbine wind farm | Consented | Flight activity surveys - collision mortality of one Goshawk every 1.8 years. Residual significance – Not Significant (felling and habitat change predicted to reduce flight activity considerably). Up to five Goshawk territories located within raptor Study Area. Short- | No likely significant cumulative effects for any Target Species                                | For Goshawk: Nest monitoring prior to construction. Exclusion zones around active nests<br>Good practice during felling activities | Baseline surveys in 2015/15& 2018<br>Goshawk nesting<br>Red Kite roost over 8 km from Site.<br>Nightjar not recorded. |

| Development                            | Section | Location                               | Description                        | Status                                                 | Residual Significant Effects                                                                                                                                                                                       | Cumulative Assessment                                                                                                                                                                                                                                          | Additional Mitigation                                   | Target Species recorded                                                                                                     |
|----------------------------------------|---------|----------------------------------------|------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|                                        |         |                                        |                                    |                                                        | term construction impacts predicted as Not Significant. No significant residual effects                                                                                                                            |                                                                                                                                                                                                                                                                |                                                         |                                                                                                                             |
| Glendye Wind Farm (Fasque and Glendye) | C       | 3 km northwest of Section C            | Erection of 26 turbines, wind farm | Application for Section 36 Consent; submission in 2024 | Flight activity of Goshawk – operational effects considered Negligible and Not significant. No breeding. No significant residual effects identified                                                                | No likely significant cumulative effects                                                                                                                                                                                                                       | No construction works within 750 m of Black Grouse leks | Baseline surveys between 2012 & 2016; further surveys 2018 Goshawk flights – no breeding.                                   |
| Hill of Fare Wind Farm                 | F       | RLB is approximately 800 m east of LOD | Erection of 16 turbines            | Application for Section 36 Consent; submission in 2024 | No significant unmitigated effects were predicted for Red Kite and so the residual effect on the Aberdeenshire population remains unchanged (minor adverse not significant in the context of the EIA Regulations). | The unmitigated impact of cumulative collisions on the Aberdeenshire population of Red Kite is considered to be of low magnitude and therefore considered to be minor adverse and not significant in the context of the EIA regulations. No likely significant | Not Applicable                                          | Baseline surveys 2020 to 2022<br>Breeding Goshawk present out with Site. Flight activity only.<br>Red Kite flight activity. |

| Development                                        | Section | Location                                          | Description                                                                                                                                  | Status                               | Residual Significant Effects                                                                                                                                         | Cumulative Assessment                    | Additional Mitigation | Target Species recorded                                                                                |
|----------------------------------------------------|---------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------|
|                                                    |         |                                                   |                                                                                                                                              |                                      |                                                                                                                                                                      | cumulative effects                       |                       |                                                                                                        |
| Meikle Carewe Wind Farm (revised application)      | E       | RLB 2.6 km northeast of the LOD                   | 12 turbine wind farm                                                                                                                         | Operational                          | No significant effect predicted on Goshawk with no Goshawk present breeding or recorded in flight. No significant residual effects identified (from Fetteresso EIAR) | No likely significant cumulative effects | No information        | Baseline surveys 1999 (supplementary surveys 2004 & 2006). No Goshawk recorded (from Fetteresso EIAR). |
| Mid Hill Wind Farm                                 | D       | RLB 5 km northwest of the LOD                     | Twenty-five turbines                                                                                                                         | Operational                          | No information                                                                                                                                                       | No information                           | No information        | Baseline surveys 2002. No Goshawk recorded (from Fetteresso EIAR)                                      |
| Mid Hill 2 (Extension)                             | D       | RLB 5 km northwest of the LOD                     | Eight turbines                                                                                                                               | Operational                          | No information                                                                                                                                                       | No information                           | No information        | Baseline surveys 2005 & 2006. No Goshawk recorded (from Fetteresso EIAR)                               |
| <b>NHZ 9 -North East Coastal Plain</b>             |         |                                                   |                                                                                                                                              |                                      |                                                                                                                                                                      |                                          |                       |                                                                                                        |
| Bowdun Offshore Wind Farm Onshore Cable Connection | C/D/E   | Located within site of proposed Hurlie substation | Grid Connection Point (GCP) at Hurlie substation. Proposed infrastructure includes:<br>Landfall site<br>Cable Corridor<br>Onshore substation | Scoping report submitted end of 2024 | Scoping response does not provide comment on onshore ornithology                                                                                                     | No information                           | No information        | No information                                                                                         |

## TRANSMISSION

| Development                              | Section | Location                   | Description                                                                                                                                                                                                                                                                                                                     | Status                                | Residual Significant Effects | Cumulative Assessment | Additional Mitigation | Target Species recorded |
|------------------------------------------|---------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------|-----------------------|-----------------------|-------------------------|
| SSEN Transmission offshore grids project | E       | Close to Hurlie substation | <p>Creation of offshore grid network. The onshore infrastructure, is likely to include:</p> <ul style="list-style-type: none"> <li>- An onshore HVDC converter station, which may connect to the proposed Hurlie substation via underground cables</li> <li>- Underground cables from the coast to Converter station</li> </ul> | Pre-application SSEN proposed project | No information               | No information        | No information        | No information          |

## 12.17 Summary of Total Intra and Inter Cumulative Effects

- 12.17.1 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.

## 12.18 Summary of Significant Effects

- 12.18.1 **Table 12.18: Summary of Significant Effects** below, summarises the predicted residual effects of the Proposed Development on ornithology features identified in this assessment.

**Table 12.18: Summary of Significant Effects**

| Predicted Effects on regional populations                                     | Significance of the Predicted Effects | Mitigation                        | Significance of Residual Effects Following Additional Mitigation |
|-------------------------------------------------------------------------------|---------------------------------------|-----------------------------------|------------------------------------------------------------------|
| <b>Construction – habitat loss/fragmentation and disturbance/displacement</b> |                                       |                                   |                                                                  |
| <i>Designated Sites</i>                                                       | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Red Kite (NHZ 16 &amp; NHZ 9)</i>                                          | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Goshawk (NHZ 12)</i>                                                       | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Merlin (NHZ 16)</i>                                                        | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Short-eared Owl (NHZ 16)</i>                                               | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Nightjar (National)</i>                                                    | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <b>Operation: collision mortality</b>                                         |                                       |                                   |                                                                  |
| <i>Designated Sites</i>                                                       | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Red Kite (NHZ 16 &amp; NHZ 19)</i>                                         | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Goshawk (NHZ 12)</i>                                                       | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Merlin (NHZ 16)</i>                                                        | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Short-eared Owl (NHZ 16)</i>                                               | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <i>Nightjar (National)</i>                                                    | Not Significant                       | No additional mitigation required | Not Applicable                                                   |
| <b>Cumulative (construction and operation)</b>                                |                                       |                                   |                                                                  |
| <i>All Target Species</i>                                                     | Not Significant                       | No additional mitigation required | Not Applicable                                                   |

### Summary and Conclusion on Significance of Effects

- 12.18.2 It is concluded that the Proposed Development, together with other Associated Project-Related Developments listed in **Table 12.16: Cumulative assessment for Intra (Associated) Developments** and **Table 12.17: Cumulative assessment for Inter Developments** would have no likely significant effects. Nor would the Proposed Development

and other in-combination development with other SSEN Transmission and third-party developments have likely significant cumulative effects on ornithological receptors discussed in this Ornithological Impact Chapter. This relies on the embedded and applied mitigation measures described in this Chapter to avoid or minimise the risk on species of High and Moderate NCI, and on the other developments which formed part of the cumulative assessment also doing the same.