Scottish & Southern Electricity Networks

TRANSMISSION

Spittal to Loch Buidhe to Beauly 400 kV OHL Connection Environmental Impact Assessment Volume 5 | Technical Appendix

Appendix 9.1 | Ornithology Survey and Impact Assessment Methods

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Scottish & Southern Electricity Networks
TRANSMISSION

VOLUME 5: APPENDIX 9.1 – ORNITHOLOGY SURVEY AND IMPACT ASSESSMENT METHODS

1. INTRODUCTION

1.1.1 The following sections set out the proposed survey methods for each of these surveys, together with the proposed approach to identifying survey areas for each type of survey and the methods for the assessment of impacts on ornithological receptors.

2. SURVEY METHODS

2.1 Flight Activity Surveys

2.1.1 Flight activity surveys from VPs were undertaken to collect data to quantify the level of flight activity and its distribution in the vicinity of proposed overhead line (OHL) infrastructure. The data will also be used to provide an overview of bird usage of the survey area, which will help inform the assessment of potential disturbance and displacement, as well as identify sections of OHL where mitigation measures may be required.

2.1.2 The VP survey method is based on guidelines outlined by NatureScot on the assessment of onshore windfarms[1] and the assessment of impacts of power lines on birds[2]. Viewsheds from VPs aim to cover 180 degrees. During each VP survey, the viewshed is scanned using binoculars and a telescope, if required, until a target species is detected in flight. Once detected, the bird is followed until it ceases flying or is lost from view. The time the bird is first detected and duration of the flight, while in sight, is recorded on standardised VP recording forms. The flight line of the bird is plotted on to a 1:25 000 scaled map in the field.

2.1.3 The flight height of target species is estimated at the time of detection and at 15 second intervals until the bird(s) are lost from view or have moved outside of the viewshed. Changes in height bands during flights are marked on the map. Flights are categorised into three height bands: below collision risk height (0-5 m); within collision risk height (>5 to 70 m); and above collision risk height (>70 m). If multiple flights occur together, the movement of target species is prioritised over that of secondary species.

Target Species

2.1.4 Flight activity target species comprised:

- All Schedule 1[3] and / or Annex 1[4] raptors;
- All owls;
- All divers;
- All geese (except Canada goose (*Branta canadensis*));
- All terns;
- All skuas;
- All waders;
- All ducks;
- All grebes;
- All gulls; (sections A-B only[5])
- All grouse species excluding red grouse.

Secondary Species

2.1.5 Flight activity secondary species comprised:

- All egrets;

1 NatureScot (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2.
2 NatureScot (2016). Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. Inverness
3 UK Government Legislation (1981). Wildlife and Countryside Act 1981. Available at: https://www.legislation.gov.uk/ukpga/1981/69/contents.
4 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:ev0024&frontOfficeSuffix=%2F
5 Included as target species for these sections only in order to assess connectivity with associated SPAs for which gulls are a contributory species.

- Sparrowhawk;
- Kestrel;
- Buzzard;
- Raven;
- Grey heron; and
- Cormorant.

2.1.6 Passerine flights were not mapped, but movements of large groups of notable birds, i.e., Red Listed Birds of Conservation Concern (BoCC)[6], were recorded. Secondary species flights were not mapped but the number, duration and height of flights was summarised during surveys.

Survey Timing and Effort

2.1.7 Flight activity survey timing and effort follow the recommendations set out by NatureScot[7]:

- 36 hours of observation will be collected from each VP during the breeding season survey;
- 36 hours during the winter season;
- VP watches are of three hours' duration (i.e., 12 three-hour watches per season); and
- VP surveys are stratified across daylight hours to give a representative sample of site use.

2.1.8 Over the 12 months, surveys included a minimum of two watches at dawn (i.e., start 0.5 hours before sunrise – one in autumn and one spring) and a minimum of two dusk watches (i.e., finishing 0.5 hours after sunset – one in autumn and one in spring).

Survey Area

2.1.9 The approach to selecting survey areas followed NatureScot recommendations for bird surveys of OHL projects[8] . Flight activity surveys were targeted at areas within connectivity distance of designated sites for relevant qualifying bird species, and where suitable habitat for qualifying species or other sensitive species existed. Flight activity surveys therefore did not cover 100% of the Proposed Development, however provide appropriate coverage to inform the assessment of effects.

2.1.10 Survey coverage was informed by development of zones of theoretical visibility (ZTVs) using a digital elevation model (DEM) and were 'ground-truthed' to confirm the visible survey area.

2.1.11 VP locations for the 2023 surveys were ground-truthed in April 2023 for the northern half of the Proposed Development (Sections A and B) and September 2023 for the southern half of the Proposed Development (Sections C to E). The location of VPs are set out in **Volume 3, Figure 9.2** with locations provided in **Volume 5, Appendix 9.2 and 9.3.**

[6] Stanbury, A.J., Eaton, M.A., Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A., Lindley, P., McCulloch, N., Noble, D.G. & Win, I. (2021) The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds, 114, 723-747.

[7] NatureScot (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2.

[8] NatureScot (2016). Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. Inverness.

2.2 Breeding Bird Surveys

2.2.1 Surveys were undertaken to identify breeding bird communities along the Proposed Development. The recording method is following the approach of Brown & Shepherd[9] and a scaled-down Common Bird Census[10] method. The recommended method calls for two survey visits to be undertaken, one between April/May and one in June, in weather conditions suitable for recording (avoiding heavy rain, strong winds, and poor visibility). Due to access constraints, some surveys for the northern half of the Proposed Development (Sections A and B) undertaken in 2023 were delayed, with some (first) survey visits taking place in June and some second survey visits taking place in July. As a result, additional targeted breeding bird surveys were undertaken in 2024 in areas of suitable habitat for sensitive species for the northern half of the Proposed Development. Breeding bird surveys for the southern half of the Proposed Development were undertaken between April – June in 2024. NatureScot were consulted on the results of the 2023 surveys for the northern half of the Proposed Development (Sections A and B) and plans to undertake follow up surveys in 2024.

2.2.2 The breeding bird surveys covered all habitats, except for commercial forestry plantations and intensive arable land. In accordance with guidance[11], the survey area for breeding birds extended to 500 m either side of the Proposed Development.

2.2.3 Periodic scanning for birds and stops to listen for bird calls and songs were incorporated into the survey, with all birds seen or heard recorded. On completion of surveys, field data was interpreted using British Trust for Ornithology (BTO) breeding evidence criteria to assign birds into one of three categories of breeding status: confirmed, probable and possible.

2.2.4 Breeding skylark and meadow pipit populations were defined by the highest recorded count of singing birds from the two survey visits. The number and indicative location of likely bird territories was estimated by grouping species registrations from the two survey visits to produce a breeding bird territory map. Birds flying over the site, species suspected to be on migration, or suspected to be summering non-breeders, were categorised as non-breeding.

2.2.5 Areas surveyed in each year are shown in **Volume 3, Figure 9.4a** and in **Volume 5, Appendix 9.2 and 9.3.**

2.3 Breeding Diver Surveys

2.3.1 Records of breeding divers were acquired from the Royal Society for the Protection of Birds (RSPB) Scotland to inform the selection of suitable waterbodies to survey.

2.3.2 Where suitable habitat or existing records of breeding divers were identified, surveys for breeding divers followed best practice methods[12] at suitable waterbodies (i.e., lochans) within 1 km of the Proposed Development. Two survey visits took place for each section of the Proposed Development at each identified lochan between May and July with at least 14 days separating visits. Surveys were undertaken in calm dry conditions. Water and shoreline of suitable lochans were scanned from a distance to avoid disturbing any incubating birds. Bird behaviour was observed, and any potential breeding signs recorded.

[9] Brown, A.F. and Shepherd, K.B., 1993. A method for censusing upland breeding waders. Bird Study, 40(3), pp.189-195.
[10] Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Bedfordshire.
[11] NatureScot (2016). Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds.
[12] Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Bedfordshire.

2.3.3 All flights observed during the diver surveys were recorded at height bands outlined in paragraph 8.2.9 above. In addition, breeding divers are a target species of the flight activity surveys, and these records were expected to identify regular flight routes between nesting and feeding sites.

2.3.4 Breeding diver surveys for the northern half of the Proposed Development were undertaken in 2023 in parallel with the general breeding bird surveys. Breeding diver surveys of the southern half of the Proposed Development were undertaken in 2024.

2.4 Breeding Scarce Ducks and Grebes Surveys

2.4.1 Where there were records of breeding Schedule 1 ducks and/or grebes comprising garganey, black-necked grebe, Slavonian grebe, common scoter at suitable waterbodies within 1 km of the Proposed Development, for these locations, two survey visits to each lochan took place, with at least 14 days separating visits in accordance with best practice[13]. Surveys for the northern half of the Proposed Development were undertaken in 2023, and surveys for the southern half of the Proposed Development were undertaken in 2024. Survey locations are listed in **Volume 5, Appendix 9.2 and 9.3**.

2.5 Raptor Surveys

2.5.1 Records of breeding and roosting raptor sites have been obtained from the Highland Raptor Study Group (HRSG) during consultation, along with additional data from RSPB Scotland. This consultation helped to avoid unnecessary disturbance by allowing surveys to be targeted at known territories whilst avoiding disturbance of known nest locations. Surveys for raptors were undertaken in suitable habitat (e.g open moorland, woodland and forestry, crags) in accordance with best practice methods[14].

2.5.2 For golden eagle and white-tailed eagle, surveys extended up to 6 km from the Proposed Development with respect to breeding territories, and 2 km for roost sites.

2.5.3 Where eagle nest sites were identified, breeding surveys comprised two survey visits between March and July 2024. Where eagle roost sites were identified, one survey visit took place in winter from a suitable VP overlooking the roost site.

2.5.4 Surveys of other breeding raptors were limited to within a 2 km buffer from the Proposed Development. Two survey visits took place between March and July 2024 at suitable breeding habitats. The exception to this was for owl species (not including short-eared owl) and goshawk whereby the radius was reduced to 1 km from the Proposed Development in accordance with survey guidance for these species[15].

2.5.5 Hen harrier roosting surveys were triggered through consultation/desk study confirmation of known hen harrier roosts within 2 km of the Proposed Development. Survey locations were selected based on records identified during the desk-based study and where potential roost sites were identified during flight activity or other bird surveys. Survey methods followed best practice[16], with visits commencing 1.5 hours before sunset and finishing 0.5 hours after sunset during winter.

13 Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Bedfordshire

14 Hardey, J., Crick, H., Wernham, C., Riley, H. & Thompson, D. (2009): Raptors: a field guide to survey and monitoring. 2nd Edition. Edinburgh.

15 Scottish Natural Heritage (now NatureScot), 2017. Recommended survey methods to inform impact assessment on onshore windfarms. SNH, Battleby, 2017

16 Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Bedfordshire.

2.5.6 Raptor surveys for both the northern and southern halves of the Proposed Development were undertaken during the 2023/2024 non-breeding season and the 2024 breeding season.

2.6 Woodland Grouse Surveys

2.6.1 Records of lekking sites for black grouse and capercaillie were obtained from RSPB. This consultation helped reduce the danger of unnecessary disturbance to leks, particularly that of capercaillie. Woodland grouse surveys for both the northern and southern halves of the Proposed Development were undertaken during the 2024 breeding season.

2.6.2 Surveys for black grouse lekking sites extended up to 1.5 km from the alignment in suitable habitat (e.g heather moorland and rough grassland close to woodlands, woodland edge) in accordance with guidance[17], where records indicated the species liable to be present. Surveys comprised two visits between April and May and followed best practice survey methods[18]. Surveyors scanned pre-identified habitats from strategic locations with a spotting scope, avoiding disturbance. Surveys took place from one hour before dawn until two hours after sunrise, in calm dry conditions with good visibility.

2.6.3 Due to the rare and localised range of capercaillie in Scotland, the survey area for this species is unlikely to extend across the entirety of the Proposed Development and was significantly refined following consultation and desk study.

2.6.4 Survey methods for lekking capercaillie followed NatureScot guidance[19&20]. Two surveys took place at pre-identified locations from April and May between the hours of 04:00 and 08:00 in calm dry conditions.

2.7 Winter Goose Roost Surveys

2.7.1 Winter goose surveys were undertaken at suitable waterbodies (lochs/lochans) within 2 km of the Proposed Development that could not be viewed from other VP locations (i.e., the waterbody was not located within a VP viewshed). Surveys aimed to identify overnight roosting sites used by geese (and swans) and commuting flight paths to these sites.

2.7.2 All identified waterbodies were surveyed once per month from November 2023 to February 2024. Surveys followed best practice methods[21] and were undertaken at either dusk or dawn. Dawn observations at each potential roost site started at least 0.5 hours before sunrise and ended 1 hour after sunrise. Dusk observations at each waterbody started at least 1.5 hours before sunset and ended 0.5 hours after sunset. Surveys for both the northern and southern halves of the Proposed Development were undertaken during winter 2023/2024.

2.8 Winter Goose Foraging Surveys

2.8.1 Surveys were undertaken to record goose foraging activity at known goose foraging areas along the Proposed Development. The principal aim of the surveys was to record the number and distribution of target geese species feeding in the vicinity of the proposed power line in order that possible disturbance effects can be assessed. Surveys were targeted at suitable habitats, including arable fields and grasslands, in areas identified

[17] NatureScot (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2.
[18] Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Bedfordshire.
[19] NatureScot (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2.
[20] NatureScot (2013). Capercaillie Survey Methods. Inverness.
[21] Gilbert, G., Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Bedfordshire.

as known goose foraging areas from published studies on goose foraging[22]. Survey methods follow those employed for the annual survey of greylag goose in Orkney[23] and consist of a pair of surveyors checking for geese by following the road network and stopping at suitable vantage points. Six surveys for both the northern and southern alignments were undertaken between October 2023 and March 2024.

2.9 Survey Programme

2.9.1 During the route selection stage, the northern half of the Proposed Development (Sections A and B) was at a more advanced stage. As a result, bird surveys for this half began earlier than that of the southern half of the Proposed Development (Sections C to E). These earlier surveys of the northern sections of the Proposed Development commenced in May 2023, with flight activity surveys, breeding bird surveys, breeding diver surveys and breeding duck and grebe surveys. Surveys on the northern half of the Proposed Development were undertaken until September 2024 to gather at least 72 hours of survey data across each VP, with 36 hours recorded during the breeding season and 36 hours during the non-breeding season. Due to the timing of the surveys, breeding season hours were split between the 2023 and 2024 breeding seasons. This deviated from recommended breeding season survey guidance and is taken into account in the subsequent presentation of the baseline and the assessment of impacts.

2.9.2 For the southern half of the Proposed Development, 12 months of flight activity surveys commenced in September 2023 and ran until September 2024. Breeding bird surveys for the southern half of the Proposed Development were undertaken between April and July 2024.

2.9.3 Winter goose roost surveys and winter raptor surveys across the whole Proposed Development (north and south) started in October and November 2023, respectively.

2.9.4 Surveys for breeding raptors, black grouse and capercaillie across the whole of the Proposed Development (north and south), where relevant, commenced in March/April 2024. This allowed survey areas to be informed by records obtained from consultation and the results of surveys undertaken during 2023.

2.10 Survey Limitations

2.10.1 Survey limitations related primarily to access restriction including those related to land management, shooting, livestock management, winter weather conditions, areas of impassable terrain and in some limited areas, access being denied by landowners.

VP Surveys

2.10.2 Where access to land for flight activity surveys was delayed, additional hours were re-scheduled within the relevant season to make up the total recommended hours for each season. In Section A, due to alignment changes and land access restrictions, only breeding season flight activity surveys were undertaken at VPs 71, 72, 75, 76 and 77. Given the ornithological interest in the habitats present in the areas covered by these VPs (primarily relating to breeding divers, raptors and upland waders) this is not considered to be a significant limitation of the assessment.

2.10.3 NatureScot guidance for surveys for wind farms, which are referenced by the guidelines on assessing the impacts of OHLs, recommends that individual elements of a bird survey programme should not be split across different years. Due to survey commissioning and land access considerations, breeding season VP surveys

[22] Mitchell, C., 2012. Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland. WWT Publications.
[23] Mitchell, C., 2012. Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland. WWT Publications.

were split across the 2023 and 2024 breeding seasons for Sections A and B (May to August 2023 and March to May 2024). Results from both years have been compared and are considered together to provide a representative baseline, with the baseline presented in **Volume 2, Chapter 9: Ornithology** discussing any instances where splitting the surveys across two season could have affected the results. As a result, this is not considered to be a significant limitation.

2.10.4 Based on the final design of the Proposed Development, there is the potential for a number of towers to exceed the 70m 'at collision risk' height band. To address this, in addition to all flights crossing the alignment at height band B (>5 m -70 m), where the vertical Limit of Deviation (LoD) could increase tower (and therefore earth wire) heights above 70 m, flights in height band C (>70 m) have also been considered to be at potential collision risk height. This approach is considered to address any limitations relating to alignment between the height bands used to record flight height and the potential for towers (and therefore the earth wire of the Proposed Development) to exceed 70 m.

Breeding Bird Surveys

2.10.5 There were some areas where access was restricted for breeding bird surveys. Where access was restricted to small land parcels, surveys were conducted from adjacent land parcels where visibility allowed. Across the southern half of the Proposed Development (Sections C, D and E) some areas could not be accessed due to the presence of impassable stands of bracken, livestock in fields or to avoid disturbance to breeding Schedule 1 species identified during the first survey visit. In relatively few areas, single survey visits were undertaken, or survey were undertaken outwith the optimal season. Where access was completely refused, or where amendments were made to the alignment or position of access tracks after the completion of breeding bird surveys, these areas were not surveyed. In some areas, only a single visit was possible due to access restrictions. For the northern half of the Proposed Development (Sections A and B) where breeding bird surveys commenced in May 2023, it was considered possible that some early breeding species may have been under recorded. A second season of surveys was undertaken in 2024 with surveys starting in April to capture early breeding attempts. Surveys in 2024 were targeted at areas where results from surveys in 2023 and the habitats present indicated the potential presence of sensitive species. Areas surveyed in each year are shown in **Volume 3, Figure 9.4** and in **Volume 5, Appendix 9.2 and 9.3**.

2.10.6 The limitations related to survey access cover a relatively small percentage of the Proposed Development, however, and are not considered to be a significant limitation of the assessment. Where access tracks or other ancillary infrastructure locations were finalised following the completion of surveys and will be located outside of surveyed areas, pre-construction follow up surveys may need to be undertaken.

Breeding Raptors

2.10.7 Access restrictions affected some breeding raptor surveys as well as the breeding bird walk over surveys as set out above.

Breeding Diver, Duck and Grebes

2.10.8 Within Section E, five water bodies were surveyed for divers, scarce breeding ducks and grebes once rather than twice. Three were surveyed once due to a change in the alignment bringing additional waterbodies within 1 km of the Proposed Development part way through the breeding season and two were surveyed once due to access restrictions later in the breeding season. Given the findings of the surveys which were completed, it is possible that one additional red-throated diver territory could have been missed within potential disturbance distance of the Proposed Development, and this is discussed in **Section 9.5** of **Volume 2, Chapter 9: Ornithology.**

Woodland Grouse

2.10.9 Access limitations discussed und Breeding Bird Surveys also applied to woodland grouse surveys in relevant areas. Within Section E, two historic records of lek sites identified in data obtained from the RSPB could not be surveyed due to access restrictions. The closest lek was approximately 750 m from the Proposed Development. The potential that these leks are still active was taken into account in the impact assessment in **Section 9.5 of Volume 2, Chapter 9: Ornithology.**

Wintering Geese Roosts

2.10.10 Within Section E, only two goose roost surveys were possible at Loch Achonachie due to access restrictions. The results of flight activity surveys and the two completed surveys have been used to inform the baseline and a precautionary approach to potential use by wintering geese and swans during the rest of the winter season has been used in the assessment.

3. ASSESSMENT METHODS

3.1 Realistic Worst Case Proposed Development Assessed

3.1.1 The assessment is based on the location of the Proposed Alignment and access tracks as a realistic worst case, rather than development being present across the whole of the LoD. Although consent is being requested to enable the Applicant to move tower positions within the LoD, assessment of development within the whole LoD is considered to be un-realistic and overly precautionary.

3.1.2 Where greater impacts related to disturbance/displacement from construction activity or presence of tower locations could occur if individual tower locations are moved from the Proposed Alignment within the LoD, mitigation measures are identified to maintain distances to sensitive receptors and avoid impacts occurring of a higher magnitude than those assessed and presented.

3.1.3 Potential for collision risk has been based on the number of flights crossing the Proposed Alignment recorded during baseline flight activity surveys. All flights crossing the alignment at height band B (>5 m -70 m) were considered to be at potential collision risk height (CRH). For parts of the Proposed Alignment where the vertical LoD could increase tower (and therefore earth wire) heights above 70 m, flights in height band C (>70 m) have also been considered to be at potential CRH. Where individual flights crossed the alignment more than once (e.g. where a flight circled back to cross the alignment) the total number of individual crossings has been reported in the chapter, which may differ from numbers presented in:

- **Volume 5, Appendix 9.2: Ornithology Technical Report – Sections A and B;**
- **Volume 5, Appendix 9.3: Ornithology Technical Report – Sections C, D and E;**
- **Volume 5, Appendix 9.4a: Ornithology Confidential Report– Sections A and B; and**
- **Volume 5, Appendix 9.4b: Ornithology Confidential Report– Sections C, D and E.**
- **Volume 5, Appendix 9.4c: Additional Sensitive Ornithological Information**

3.2 Embedded Mitigation

3.2.1 Mitigation for the Proposed Development is split into two categories: embedded mitigation, and additional mitigation. The Proposed Development was selected via an iterative design process as described in **Volume 2, Chapter 4: The Routeing Process and Alternatives** with avoidance of impacts embedded into the design. This allowed the mitigation hierarchy to be applied and impacts to sensitive receptors were avoided where practicable.

3.2.2 Embedded mitigation measures will be further implemented as both the detailed design continue and the construction phase commences, including the timing of installation and careful siting of permanent and temporary structures to avoid or minimise interaction with sensitive ornithological receptors.

3.2.3 Compliance with project wide and site-specific environmental management procedures, with reference to the Proposed Development's Construction Environmental Management Plan (CEMP) will also be implemented. This will describe the proposed approach to construction methods and environmental protection during construction of the Proposed Development, including (but not limited to) details of ornithological constraints and measures (e.g., site working hours, control of light spill, noise emissions, pollution, dust management and avoiding incursion into habitats to be retained), procedures for surface water management and pollution prevention guidelines.

3.2.4 The Applicant has established General Environmental Management Plans (GEMPs) (**Volume 5, Appendix 3.3: GEMPs** and **Volume 5, Appendix 3.4: SPPs**), which will be implemented through the CEMP. Based on

ecologically sensitive receptors identified in this Impact Assessment, relevant GEMPs include, but are not limited to:

- Working in or Near Water;
- Bad Weather;
- Working in Sensitive Habitats;
- Forestry;
- Working with Concrete;
- Oil Storage and Refuelling;
- Waste Management;
- Soil Management;
- Dust Management;
- Biosecurity (On Land); and
- Restoration.

3.2.5 Embedded measures to protect biodiversity will include a pre-construction site survey of the construction area plus the appropriate disturbance zone, by a suitably qualified Ecological Clerk of Works (ECoW), focusing on habitats and species to be directly and indirectly impacted by the Proposed Development. The purpose of these surveys would be to confirm any changes to, and update of the baseline, and to confirm the data on which this Impact Assessment is based, are still true. Should a new bird species or species distribution be identified, the Bird SPPs (included within the CEMP) would be followed during construction of the Proposed Development and an assessment undertaken to understand the impacts the Proposed Development may have on that species, as well as any further measures that should be put in place, for example.

3.2.6 A Construction Traffic Management Plan (CTMP) for the Proposed Development is also in draft (**Volume 5, Appendix 14.6: Outline Construction Traffic Management Plan)** and will be updated iteratively in advance of the start of construction and throughout the construction phase. Whilst it is not an ornithology-focused plan it will help to avoid / manage effects on ornithological features in the vicinity of the areas to be directly affected, for example to prevent spillages, discharges, and unnecessary incursion into habitats, as well as implementing speed limits and caution signage etc. which may avoid or reduce direct mortality of species associated with vehicle collisions.

3.2.7 Management felling areas are not within the control of the Applicant and on account of the statutory obligations requiring the replanting of these areas by landowners, the replanting of areas felled on account of management felling (only), are considered to be included as part of the embedded mitigation for the Proposed Development. Management felling, whilst out with the Applicant's control, due to the requirement for future landowner agreement, it is the intention that the Applicant will undertake the management felling works alongside clearance of the operational corridor. Where this is the case, management felling will be undertaken in line with the Applicant's SPP's and GEMP's.

3.3 Assessing Significance

3.3.1 The impact assessment presented within **Volume 2, Chapter 9: Ornithology** has been completed taking account of the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (revised in September 2024) and refers to not significant, rather than negligible. It considers the likely effects of construction and operational activities of the Proposed Development on birds of conservation importance. The assessment has been informed by a combination of

desk-based study findings, field surveys and consultation with relevant statutory and non-statutory organisations.

3.3.2 The approach to EcIA outlined in the CIEEM Guidance avoids and discourages the use of a matrix approach and categorisation, in an effort to avoid spurious quantification, in which numerical scores or significance rankings / categories are used without a clear definition of the criteria and thresholds that underpin them. Whilst a matrix approach is commonly used by other disciplines in EIA by disciplines other than ecology to assign significant residual effects to categories (e.g. major, moderate, minor), the approach taken for ecology is to identify effects that are either 'not significant' or 'significant' at a defined geographic level.

Method for the Assessment of Significant Effects

3.3.3 The process followed when assessing the impacts of the Proposed Development involved;

- Defining the likely potential impacts on ecological receptors resulting from the Proposed Development;
- Defining the value of ecological receptors;
- Determining the magnitude of impact on ecological receptors as a result of the Proposed Development;
- Determination of the significance of effects on ecological receptors;
- Identification of opportunities to further avoid, reduce, mitigate or compensate for significant impacts;
- Identification of opportunities for enhancement to meet the requirements of NPF4; and,
- Determination of any significant residual impacts.

Valuation of Ecological Features

3.3.4 Assignment of levels of importance for designated sites, habitats and species is based on professional judgement informed by a number of factors including;

- level of protection;
- rarity;
- conservation status;
- population trends; and,
- quality / extent of the feature(s) in relation to the Proposed Development.

3.3.5 Reference was made to NatureScot guidance on determining target species for assessment[24]. The importance of ornithological features was determined in relation to relevant European, national and local guidance and taking account the results of baseline surveys, desk study information and the importance of features within the context of the region. This included Natural Heritage Zone (NHZ) populations, SBL and Highland Nature Biodiversity Action Plan Priority Species.

3.3.6 Legal protection is considered separately from value. The protection of a particular ecological feature through international or national legislation does not mean that the feature is of international or national importance. For example, the nests of all breeding birds are protected under national legislation, The WCA 1981, but this does not mean that all birds' nests are of national importance.

[24] *Assessing Significance of Impact from Onshore Windfarms on Birds Outwith Designated Areas.* 2018 NatureScot, Inverness.

Designated Sites

3.3.7 The approach taken to valuation of designated sites has been directly linked to its protected status, with European sites (Special Protection Areas (SPA)) and wetlands of international importance (Ramsar sites) being allocated a high importance. Nationally protected sites (Sites of Special Scientific Interest (SSSI) allocated medium importance. No sites of local importance were identified within 1 km of the Proposed Development and have therefore not been included.

Characterising Impacts

3.3.8 The magnitude of predicted impacts is identified through professional judgement informed by best practice guidance and where appropriate legislative context. Consideration has been given to the predicted degree of change to baseline conditions, how the ecological features are likely to respond, and the duration, frequency / timing and reversibility of an impact. Impacts are considered during construction and operation of the Proposed Development. Impacts associated with decommissioning are not considered on account of the need for the Proposed Development, based on existing technology, being in perpetuity.

3.3.9 Identification of impact pathway has been assessed as per the following;

- **Direct** - where the effect is a direct result (or primary effect) of the Proposed Development. An example of a direct impact would be the disturbance of a breeding Schedule 1 pair due to the construction of a temporary access track.
- **Indirect** - a knock-on effect which occurs within or between environmental components and may include effects on the environment which are not a direct result of the Proposed Development, often occurring away from the proposals or as a result of a complex biological or chemical pathway. An example of an indirect impact would be the excessive drying (or wetting) of a habitat as a result of installation of a steel lattice tower foundation leading to a change or loss of supporting habitat for a particular bird species.

3.3.10 Temporal impacts have been assessed as per the following;

- **Permanent** – where the effect represents a long-lasting change for a defined receptor. An example of a permanent impact is the loss of a supporting habitat within the footprint of a permanent access track.
- **Temporary** – where the effect occurs for a limited period of time and the change for a defined receptor can be reversed. An example of a temporary impact is the disturbance resulting from construction activity at a lattice tower location.

Determination of Significance

3.3.11 The significance of effects has been determined using standard impact assessment methods and criteria (see below):

- the magnitude of both positive and negative effects, as determined by intensity, frequency and by the extent of the effect in space and time;
- the vulnerability of the habitat or species to the changes likely to arise from the Proposed Development;
- the ability of the habitat, species, or ecosystem to recover, considering both fragility and resilience;
- the viability of component ecological elements and the integrity of ecosystem function, processes, and favourable condition;
- value within a defined geographic frame of reference (e.g., UK, national, regional, local);
- the biodiversity value of affected species, populations, communities, habitats, and ecosystems, considering aspects such as rarity, distinct subpopulations of a species, habitat diversity and connectivity, species-rich assemblages and species distribution and extent;

- designated sites, and where a site has multiple designations the effects on the features of each designation; and
- protected species status.

3.3.12 Value and magnitude of effect are weighed using professional judgement and impacts are reported as either 'significant' at a particular geographical level (e.g. internationally, nationally, locally), or 'not significant'. A 'significant effect' is an effect "…*that either supports or undermines biodiversity conservation objectives for important ecological features, or for biodiversity in general*."[25]

3.3.13 Where significant effects are predicted, additional mitigation is identified to reduce or eliminate effects (where possible). Following the application of additional mitigation, effects are reappraised and residual effects (effects remaining following application of mitigation or compensation) reported. This approach strives to make the EcIA more transparent and demonstrate the adequacy / necessity of proposed additional mitigation.

3.3.14 An assessment is made with regards to the significance of effects for each Section of the Proposed Development and the Proposed Development as a whole. For the Proposed Development as a whole, the assessments for each Section of the Proposed Development that will affect the same species population or designated site are considered together.

3.4 Cumulative Assessment

3.4.1 Cumulative effects arising from the addition of the Proposed Development to other cumulative developments are assessed. Cumulative developments identified as consented, in planning, those within the public domain, and those deemed reasonably foreseeable, are illustrated alongside the Proposed Development in **Volume 3, Figure 5.1: Cumulative Developments** and in **Volume 2, Chapter 5: EIA Process and Methodology**.

3.4.2 The assessment of cumulative effects is limited to species of international, national or regional importance for which a likely effect has been identified relating to the Proposed Development. Therefore, only effects assessed as minor or above are included in the cumulative assessment. Effects that are assessed to be negligible are not taken forward to the cumulative assessment as it is considered that such effects will not contribute to cumulative effects.

[25] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.