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¹ Will not be published with the EA due to the inclusion of confidential data relating to protected species. However, this appendix will be provided to the Scottish Ministers, The Highland Council, Royal Society for the Protection of Birds and NatureScot.



6. ORNITHOLOGY

6.1 Executive Summary

- 6.1.1 Scottish and Southern Electricity Networks Transmission (SSEN Transmission) is proposing a new 132 kV overhead line (OHL) between the consented Achany Wind Farm Extension on-site substation and the existing Shin substation (the Proposed Development). The Proposed Development is anticipated to comprise approximately 16 km of OHL supported by trident H-wood pole, with a short section of underground cable (UGC) of approximately 1.2 km close to the consented Achany Wind Farm Extension on-site substation.
- 6.1.2 Desk and field surveys were undertaken for identified ornithological receptors, including sites designated for nature conservation interests (both statutory and non-statutory) and protected species, according to best practice methodologies. An appraisal of the potential effects of the Proposed Development on ornithological receptors, along with suggested mitigation measures to avoid or reduce any potential effects is presented in this Chapter.
- 6.1.3 The Proposed Development does not pass through any statutory sites designated for nature conservation. Caithness and Sutherland Peatlands Special Protection Area (SPA), Ramsar site and Grudie Peatlands Site of Special Scientific Interest (SSSI) are located within 160 m of the Proposed Development, designated for a range of breeding upland species including divers, raptors, waders and wildfowl. The Strath Carnaig and Strath Fleet Moors SPA is located within 5.9 km of the Proposed Development, designated for breeding hen harrier.
- 6.1.4 Breeding species identified during this appraisal include species associated with the nearby SPAs. Without appropriate mitigation, there is potential for hen harrier and black grouse to be affected by the Proposed Development.
- 6.1.5 Due to the proximity of the Proposed Development to internationally designated sites and the presence of breeding qualifying species, namely hen harrier, within proximity to the proposed works, information to inform a Habitats Regulations Appraisal (HRA) has also been prepared for the Proposed Development (Appendix 6.3: Information to Inform a Habitats Regulations Appraisal).
- 6.1.6 The Applicant has developed detailed General Environmental Management Plans (GEMPs) (Appendix 3.2: SSEN Transmission General Environmental Management Plans) and Species Protection Plans (SPPs) (Appendix 3.3: SSEN Transmission Species Protection Plans) which will be implemented in full to reduce the effects of the Proposed Development on ornithological interests. Species-specific mitigation to further reduce the effects on hen harrier and black grouse is detailed and considered in this appraisal.

6.2 Introduction

- 6.2.1 This Chapter considers the potential effects on ornithology that may arise from the Proposed Development during construction and operation. It sets out the methodologies used to appraise potential effects and where appropriate, recommends and assesses mitigation measures to avoid or reduce the effects.
- 6.2.2 The ornithological appraisal has been undertaken by Orrin Ecology using guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM)² and NatureScot³. All staff contributing to this Chapter have professional experience in ornithological survey and ecological impact assessment. Field surveys were carried out by Helen Chance (MCIEEM), Adam Fraser (MCIEEM) and Gareth Marshall of Blairbeg Consulting Ltd and Orrin Ecology. Further details of the EA Team are included in **Appendix 1.3: EA Team**.

² CIEEM (2018) Guidelines for ecological impact assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.3, updated September 2024. Chartered Institute of Ecology and Environmental Management, Winchester

³ NatureScot (2016) Guidance – Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. Available from: https://www.nature.scot/doc/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds

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- 6.2.3 This Chapter is supported by a series of figures and appendices.
- 6.2.4 An appraisal of the effects of the Proposed Development on non-avian ecological features are addressed separately in **Chapter 5: Ecology**. An appraisal for the UGC section of the Proposed Development is considered separately in **Appendix 1.1**: **Permitted Development Works Appraisal** as part of the Applicant's permitted development rights⁴.
- 6.2.5 From the Achany Wind Farm Extension on-site substation at approximately 280 m above ordnance datum (AOD) the Proposed Development would comprise a section of 1.2 km of new 132 kV UGC, travelling south-west to the proposed cable sealing end (CSE) structure. From the CSE structure, the Proposed Development would continue as an OHL, travelling in a south-easterly direction, passing through Glen Rossal and then to the south of Achany and Rosehall operational wind farms. The OHL would then continue in a south-easterly direction, and after it crosses the A839, pass to the south of Braemore wood and then continue south-east through Shin Forest to connect into Shin substation at approximately 10 m AOD from the north-west.

6.3 Scope of Appraisal

6.3.1 This appraisal is based on the description of the Proposed Development provided in **Chapter 3: The Proposed Development** and also takes into consideration the routeing process, which sought to avoid important ornithological features where possible, as described in **Chapter 2: Routeing Process and Alternatives**.

Study Area and Survey Areas

- 6.3.2 The Study Area covers 10 km from the Proposed Development for internationally designated sites (i.e. SPAs) and 5 km for nationally designated sites (i.e. SSSIs), as displayed on **Figure 6.1: Sites of Nature Conservation**.
- 6.3.3 Vantage Point (VP) locations are shown on **Figure 6.2: Vantage Point Survey Locations**, with viewsheds extending 2 km from VP locations.
- 6.3.4 The spatial extent of each Survey Area varies depending on territorial ranges of species and the disturbance zones for each species. Surveys undertaken to inform the baseline ornithological conditions were completed across the following Survey Areas:
 - 750 m Survey Area encompassing a 750 m buffer from the Proposed Development within which the moorland breeding bird survey was undertaken;
 - 1.5 km Survey Area encompassing a 1.5 km buffer from the Proposed Development within which the breeding raptor and owl surveys, black grouse lek surveys and winter walkover surveys were undertaken; and
 - 3.5 km Survey Area encompassing all suitable lochs and waterbodies within which breeding diver surveys were undertaken.
- 6.3.5 Survey areas, including the location of VPs and the extent of the moorland breeding bird survey area, were agreed in advance between NatureScot and the Applicant in October 2022⁵.

^{*} Contains information relating to locations of protected species and therefore all or parts of these Figures and Appendices are confidential in accordance with wildlife legislation.

⁴ Town and Country Planning (General Permitted Development) (Scotland) Order 1992

⁵ In October 2022, NatureScot was contacted via e-mail with an ornithology scope document. This was a document outlining the intended bird survey methodology for the project including proposed methodology for Vantage Point Surveys and other bird surveys including breeding raptor surveys, breeding diver surveys and other upland breeding bird surveys. Following further correspondence with NatureScot, and clarification on some matters, NatureScot confirmed they were content with the proposed scope of the ornithology surveys for the project.

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TRANSMISSION

- 6.3.6 The entire length of the Proposed Development is not covered by VP viewsheds; instead targeted VP surveys were undertaken to cover areas that provide suitable habitat for target species (SPA qualifying species, Schedule 1 species⁶, Annex I species⁷, Red List species⁸, black grouse, wildfowl and waders) and lie within connectivity distance for those species.
- 6.3.7 This appraisal assumes that embedded mitigation (design features and construction good practice) will be successfully delivered. Direct and indirect effects that will require additional mitigation measures in order that they be avoided / reduced have been addressed.

6.4 Consultation

6.4.1 Consultation was undertaken with relevant stakeholders during the route options and alignment stage of the project. The responses relevant to ornithological receptors received to date from the consultation process are provided in **Table 6.1: Consultation Responses**.

Organisation and Date / Project stage	Summary of Consultation Response	Response to Consultation
NatureScot December 2022 / Route Selection Stage	NatureScot noted that the route options lie close to Caithness and Sutherland Peatlands SAC, SPA and Ramsar site, protected for its range of upland habitats, species (including marsh saxifrage and otter) and breeding birds. They highlighted that all route options lie within connectivity distance for SPA bird species.	This was noted. These nature conservation sites of international importance have been considered during the appraisal of route options, at alignment stage and as part of this Chapter.
	In relation to the SPA birds, NatureScot outlined that survey work should follow the NatureScot guidance on power lines and survey methods for onshore wind farms.	This was noted. NatureScot guidance on power lines and survey methods for onshore wind farms has been consulted.
	NatureScot suggested that references to existing environmental information for nearby wind farms would be useful when considering survey requirements for a proposal in this area.	This was noted. Existing environmental information for nearby wind farms was consulted and used to inform an understanding of the baseline environment, where relevant.
	NatureScot pointed out that all of the route options lie close to the Grudie Peatlands SSSI, with Route Option 2 crossing into the site for a short section. The SSSI is protected for its blanket bog and breeding peatland waders (dunlin, golden plover and greenshank). It also forms part of the larger Caithness and Sutherland Peatlands SAC/SPA/Ramsar site, and their advice given for this site will also be relevant for the SSSI.	This was noted, Route Option 2 was not taken forward as the proposed route option. Further consideration of potential effects to the Grudie Peatlands SSSI has been undertaken as the project design has progressed.

Table 6.1: Consultation Responses

⁶ Species included on Schedule 1 of The Wildlife and Countryside Act 1981 (as amended)

⁷ Species included on Annex I of European Council Directive (2009/147/EC) on the conservation of wild birds ('The Birds Directive')

⁸ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and 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. Available online at: https://britishbirds.co.uk/content/status-our-bird-populations



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Organisation and Date / Project stage	Summary of Consultation Response	Response to Consultation
NatureScot July 2023 / Alignment Selection stage	NatureScot welcomed the opportunity to comment on the alignment proposals. In summary, their advice was largely unchanged from the route selection consultation stage; the alignments did not offer a significant or material difference to the protected areas, habitats, and species.	This was noted. The alignment of the Proposed Development was informed by detailed survey findings, which have been continually reviewed as the project design has progressed.
	NatureScot noted that the Proposed Development lies close to the Caithness and Sutherland Peatlands SPA, protected for its range of breeding birds. NatureScot outlined that survey work would be required to inform an assessment of the implications of an OHL and should follow NatureScot guidance on power lines and survey methods for onshore wind farms. NatureScot recommended their guidance on disturbance distances for qualifying bird species should be used when assessing impacts to birds along the route and when developing appropriate mitigation measures (where required).	As above, the nature conservation sites of international importance have been considered during the appraisal of route and alignment options and in this Chapter. NatureScot guidance on power lines and survey methods as well as NatureScot guidance on disturbance distances for qualifying bird species has been used when appraising the potential for effects on birds along the Proposed Development and when developing appropriate mitigation measures.
	NatureScot noted that the alignment options are close to Grudie Peatlands SSSI which is protected for its blanket bog and breeding peatland waders (dunlin, golden plover and greenshank). It also forms part of the larger Caithness and Sutherland Peatlands SAC/SPA/Ramsar site, and their advice given above for this site will also be relevant for the SSSI. NatureScot were pleased to see that previous route options that crossed into the SSSI have now been discounted.	This was noted. This protected site was taken into consideration during the appraisal of route and alignment options and is considered further in this Chapter.
Public July 2023 / Alignment Selection stage	Consultees suggested that active osprey nests near the project should be brought to the attention of the project team. One consultee suggested that for raptors and other animals the infrastructure is compromising the long-term goals of attracting recolonization or introduction of species.	Appropriate protected species surveys have been undertaken as part of this EA and appraisals undertaken to ensure suitable mitigation is provided to avoid disturbance impacts on protected species. NatureScot's protected species advice has been observed for the Proposed Development to help inform protected species survey methods (including timing of surveys, survey area and shelf-life). The scope of ornithological survey effort was agreed with NatureScot in advance of surveys. Nests within the vicinity of the Proposed Development are known and additional advice on the scope of bird survey work in relation to nest sites was provided by NatureScot via e-mail on 23 June 2023.



6.5 Methodology

6.5.1 This section describes the methodology used to gather baseline information, identify and appraise effects resulting from the Proposed Development on features of ornithological interest. Details of the methodologies used to gather and evaluate baseline information in relation to designated sites and protected species are provided in **Appendix 6.1: Ornithology Report**.

Desk Study

- 6.5.2 Baseline data on the nature conservation interest of the Study Area and its surroundings, including information on sites designated for nature conservation and protected species records, were sought from the following sources:
 - Joint Nature Conservation Committee (JNCC) website⁹;
 - NatureScot Site Link website¹⁰;
 - The National Biodiversity Network (NBN) Atlas Scotland (NBN, 2023) website¹¹;
 - Scottish Biodiversity List (SBL)¹²;
 - Highland Nature Biodiversity Action Plan 2021 2026¹³;
 - Highland Raptor Study Group (HRGS) data request;
 - The Environmental Impact Assessment (EIA) and associated documents for Achany Wind Farm Extension (SSE, 2023), Glencassley Wind Farm EIA (SSE, 2012), Achany Wind Farm (SSE, 2005) and Rosehall Wind Farm (E.ON, 2005); and
 - Relevant scientific literature on protected species distribution and conservation status etc.

Field Survey

- 6.5.3 A high-level walkover was undertaken in August 2022 for the routeing selection process, see Chapter 2 for further information on selection of the Proposed Development's route and alignment. Information gathered during this walkover was used to inform surveys for the final alignment selection stage of the Proposed Development.
- 6.5.4 The following field surveys were undertaken between August 2022 and August 2023 to further establish the baseline ornithological conditions at the Proposed Development (plus appropriate buffers where relevant) to inform the appraisal, and were undertaken in line with standard methodologies and best practice guidance:
 - Vantage Point Surveys undertaken monthly for a full year between August 2022 and July 2023. A total of seventy-two hours were collected from each VP during the year long period, with six hours of survey completed at each VP per month. VP locations can be found in Figure 6.2. Originally, a total of seven VPs were used to cover the Proposed Development, however, in June 2023, one VP was discontinued as the route options stage evolved so its vantage point area was no longer required (VP5). Three further VPs were also added at this point to provide further flight characterisation from osprey nests identified within proximity to the Proposed Development, Confidential Appendix 6.2: Confidential Bird Records Confidential has further detail;
 - Moorland Breeding Bird Surveys undertaken across the open moorland habitats within the 750 m Survey Area. Four visits were undertaken between April and July 2023. The moorland breeding bird survey area, as shown in **Figure 6.3**, was initially designed to be a 750 m buffer from the alignment variants that were being considered at the time of survey. Since the conclusion of surveys, the alignment of the Proposed Development has been further refined based on the outcome of further

⁹ https://jncc.gov.uk Accessed June 2024.

¹⁰ https://sitelink.nature.scot/home Accessed June 2024.

¹¹ https://nbn.org.uk Accessed June 2024.

¹² https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop-15/scottish-bidiversity-list Accessed June 2024
¹³ https://www.highlandenvironmentalforum.info/biodiversity/action-plan/ Accessed June 2024



surveys such as peat depth probing. This has resulted in the 750 m Survey Area widening to approximately 1.1 km in places (e.g. as the alignment passes north of Linsidemore). There is a short section where the alignment has moved closer to one side of the 750 m Survey Area as it passes through Shin Forest on the north side of the A837 public road. Here the 750 m Survey Area only extends to 690 m from the Proposed Development;

- Black Grouse Lek Surveys undertaken in April and May 2023 within the 1.5 km Survey Area, as shown on **Figure 6.3**. As discussed above for the Moorland Breeding Bird Surveys, there are sections where the 1.5 km Survey Area extends out to 1.8 km and a short section through Shin Forest where the 1.5 km Survey Area only extends to 1.4 km from the Proposed Development;
- Breeding Diver Surveys desk-based mapping analysis identified six lochs or waterbodies within the vicinity of the Proposed Development with potential to support breeding divers (and other waterbirds) during the Route Options appraisal stage. Distances of these waterbodies to the Proposed Development ranges from between 250 m to 3.5 km, their locations included in Figure 6.3. These lochs were searched between June and August 2023 for any divers using the waterbody;
- Breeding Raptor Surveys suitable habitat was searched for nesting raptors within the 1.5 km Survey Area, as shown in **Figure 6.3**; and
- Winter Walkover Surveys monthly winter walkover surveys were undertaken between September 2022 and February 2023 primarily to undertake searches for roosting hen harrier within the 1.5 km Survey Area, as shown on Figure 6.3. In conjunction with the hen harrier roost survey, any notable aggregations of wintering wildfowl were also recorded.
- 6.5.5 The full details of study areas, methods, species specific legislation and results are provided within Appendix6.1.

Appraisal of Effects

6.5.6 The appraisal has been undertaken according to the current guidance detailed by the CIEEM¹⁴. The appraisal of the significance of predicted effects on ornithological receptors is based on both the 'sensitivity' of a receptor and the nature and magnitude of the effect that the Proposed Development will have on it. Effects may be direct (e.g. the loss of species through the destruction of nests or habitats that support them), or indirect (e.g. displacement effects due to noise or disturbance) on receptors located within and out with the Study Area.

Sensitivity / Importance of Ecological Receptors

- 6.5.7 A key consideration in appraising the effects of any development on ornithological receptors is based on both the sensitivity of a receptor and the nature and magnitude of the effect that the Proposed Development will have on it. In appraising these effects, consideration is required to define the species that need to be considered.
- 6.5.8 The approach that has been undertaken for this appraisal is to identify 'sensitive ornithological receptors' individually (species and habitats that are both valued in some way and could be affected by the Proposed Development) and separately, and to consider legally protected species.
- 6.5.9 As per CIEEM guidance, it is not necessary to carry out detailed appraisal on features that are sufficiently widespread, unthreatened, and resilient to the effects of the Proposed Development. Those receptors that are potentially affected by the Proposed Development and deemed to be of at least local importance are taken forward for appraisal. Ornithological features have been valued using the scale set out in **Table 6.2** below, with examples provided of criteria used when defining the level of value.

¹⁴ CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.3. Updated September 2024. Chartered Institute of Ecology and Environmental Management, Winchester.



Table 6.2: Scale of Value

Sensitivity of Receptor	Examples (Guidance to Evaluation)
Very High (International)	An internationally important site e.g. Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar (or a site proposed for, or considered worthy of such a designation); A regularly occurring substantial population of an internationally important species (listed on Annex I of the Birds Directive), or regularly occurring migratory species listed under Annex II of the Birds Directive connected to an SPA designated for this species.
High (National)	A species listed as a qualifying feature of a nationally designated site e.g. Site of Special Scientific Interest (SSSI); Species present in nationally important numbers (>1% national population); Ecologically sensitive species such as rare birds (<300 breeding pairs in the UK).
Medium (Regional)	A species listed under Schedule 1 of the Wildlife and Countryside Act of Annex I of the Birds Directive; Species present in regionally important numbers (>1% of the regional population); Species occurring within SPAs but not crucial to the integrity of the site.
Low	Species described above but which are present infrequently or in very low numbers; A regularly occurring, substantial population of a nationally scarce species, including species listed on the UK and Local BAPs, e.g. skylark.

6.5.10 The behavioural sensitivity of ornithological receptors is also important when appraising potential effects. Different species respond differently to stimuli, making some particularly sensitive to development activities and others less so. By way of example, sensitivity is determined according to species behaviour, using broad criteria set out in **Table 6.3** below, summarised from current guidance¹⁵. Sensitivity can vary dependent on the activity the species is undertaking, for example, a species is likely to be less tolerant of disturbance close to its nest during the breeding season than at other times of the year. Thus, sensitivity changes with both space and time.

Behavioural Sensitivity Level	Definition
High	Species occupying remote areas away from human activity and exhibiting strong and long-lasting reactions to disturbance events. Examples include divers, greenshank, eagles and curlew.
Medium	Species that appear to be warily tolerant of human activity and exhibit short-term reactions to disturbance events. Examples include black grouse, dunlin, hen harrier and golden plover.
Low	Species occupying areas subject to frequent human activity and exhibiting mild and brief reactions to disturbance events. Examples include kestrel and barn owl.

Table 6.3: Behavioural Sensitivity Criteria

¹⁵ Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022) Disturbance distances review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283



Magnitude of Effect

- 6.5.11 Potential effects of the Proposed Development are appraised with consideration of changes to the extent and integrity of an ornithological feature. Effects can vary according to size, extent, duration, timing and frequency. These factors are brought together to appraise the magnitude of the effect on the particular valued ecological receptor, and on the 'integrity' of the habitats that support them. A definition of integrity can be found within Scottish Executive circular 6/1995 updated by the Scottish Executive (2000)¹⁶ which states "The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified". This definition is with reference to statutory designated sites but is applied to wider habitats and species for the purposes of this appraisal.
- 6.5.12 Wherever possible, the magnitude of the effect is quantified through professional judgement, legislation, best practice guidance and consideration of the predicted degree of change to baseline conditions to assign the effects on the receptors to one of four classes of magnitude, as defined in **Table 6.4**.

Magnitude	Definition
High	A permanent or long-term effect on the integrity of a site or conservation status of a habitat, species assemblage / community, population or group. If adverse, this is likely to threaten its sustainability; if beneficial, this is likely to enhance its conservation status
Medium	A permanent or long-term effect on the integrity of a site or conservation status of a habitat, species assemblage / community, population or group. If adverse, this is unlikely to threaten its sustainability; if beneficial; this is likely to be sustainable but is unlikely to enhance its conservation status.
Low	A short-term but reversible effect on the integrity of a site or conservation status of a habitat, species assemblage / community, population or group that is within the range of variation normally experienced between years.
Negligible	A short-term but reversible effect on the integrity of a site or conservation status of a habitat, species assemblage / community population or group that is within the normal range of annual variation.

Table 6.4: Magnitude of Effect

Significance of Effect

¹⁶ Scottish Executive (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 and Birds Directives'). Updating Scottish Office Circular 6/1995.

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- 6.5.13 Although an EIA is not required for the Proposed Development (see Chapter 1: Introduction and Background) the process for environmental appraisal aligns with EIA Regulations and the levels of significance are equivalent. As such, within the context of the EIA Regulations and in line with current NatureScot guidance¹⁷, the top three geographical tiers (international, national and regional) are the most important. This means that if there is an effect at this population level, it is considered 'significant' in terms of the EIA regulations. For breeding bird species, NatureScot uses Natural Heritage Zones (NHZ) as the appropriate regional biogeographical differences between zones. The Proposed Development lies within the NHZ 7: Northern Highlands. The Scottish Wind Farm Bird Steering Group published a review of NHZ bird populations across Scotland¹⁸. The regional population estimates used in this appraisal are mostly derived from this reference but have been superseded where more up-to-date population data are available for individual species.
- 6.5.14 Having followed the process of attributing a value to an ornithological receptor, ascertaining its sensitivity and characterising potential effects, the significance of the effect is then determined. The CIEEM guidelines use only two categories to classify effects: "significant" or "not significant". The significance of an effect is determined by considering the value of the receptor and the magnitude of the effect and applying professional judgement as to whether the integrity of the receptor will be affected.
- 6.5.15 Effects are more likely to be significant where they affect receptors of higher conservation value or where the magnitude of the effect is high. Effects not considered to be significant would be those where the integrity of the receptor is not threatened, effects on receptors of lower conservation value, or where the magnitude of the effect is low.
- 6.5.16 Another key consideration in assessing the effects of any development on ornithological receptors is to define the areas of habitat and the species that need to be considered. This requires the identification of a potential zone of influence, which is defined as those areas and resources that may be affected by biophysical changes caused by project activities, however remote from a site. The zone of influence for ornithological features varies according to the characteristic of the feature and the nature of the potential impact. In this appraisal, effects are assessed for designated sites within the relevant Study Area shown on Figure 6.1 and for individual species within the Survey Areas defined in Figure 6.3.
- 6.5.17 It is noted that some potential effects are not considered significant in EIA terms. Where such effects are identified, no specific mitigation is required, however good practice would be to control these effects as far as practicable.

Collision Risk Assessment

6.5.18 In line with current guidance from NatureScot¹⁹, a generic collision risk modelling approach, typically carried out for wind farm developments, has not been undertaken as part of this EA as this is considered to be less appropriate for assessing collision risk with power lines. Instead, current guidance recommends that emphasis is put on mitigation where the assessment has indicated potential risks. Results of baseline surveys are analysed to identify any 'hot-spots' where mitigation may be required.

Limitations to the Appraisal

 $^{^{17}}$ SNH (2018) Assessing significance of impacts from onshore wind farms outwith designated areas (Version 2), SNH.

¹⁸ Wilson, M.W., Austin, G.E., Gillings, S., and Wernham, C.V. (2015) Natural Heritage Zones Population Estimates. SWBSG Commissioned Report: 1504

¹⁹ NatureScot (2016) Guidance – Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds. Available from: https://www.nature.scot/doc/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds

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- 6.5.19 Bird surveys are based on sampling techniques and results give an indication of numbers and activities of birds at the particular times that surveys were carried out. The surveys for the Proposed Development were distributed by time of day and by date throughout the year to give a representation of the range of activity, but were limited occasionally by inclement weather, though this did not compromise overall survey effort.
- 6.5.20 The location of access tracks, both permanent and temporary, were defined following completion of detailed field surveys resulting in one section of temporary access track from proposed pole 30 (see Figure 3.1a-e) to the consented Achany Wind Farm Extension access track falling partially out with the 750 m Survey Area. The remaining sections of access track (both temporary and permanent), are covered by the ornithology survey areas but are not buffered to the full distances, as shown on Figure 6.3. Whilst it is possible that additional species may have been identified if the access tracks were buffered to the full 750 m / 1.5 km, pre-construction breeding bird surveys and ongoing watching briefs throughout construction, as described in paragraph 6.7.3, will be undertaken within the full buffer distance, avoiding any risk of disturbance to breeding birds.

6.6 Baseline Conditions

6.6.1 The zone of sensitivity for ornithological features varies according to the characteristics of the feature and the nature of the potential effect. In this appraisal, effects are assessed for designated sites within the relevant Study Area shown on Figure 6.1 and for individual species within the Survey Areas defined in Figure 6.3. Details of the spatial extent of each Survey Area are detailed within Appendix 6.1.

Internationally Designated Sites

- 6.6.2 Potential effects of the Proposed Development on internationally designated sites are considered for all sites that fall within 10 km of the Proposed Development.
- 6.6.3 Three SPA sites were identified within 10 km of the Proposed Development and are considered to be within connectivity distance²⁰. Summaries of their citations are provided in **Table 6.5** and their locations shown on **Figure 6.1**.

Site Name	Distance to Proposed Development	Description
Caithness and Sutherland Peatlands SAC (Site code: 8242),	160 m	Designated for one of the best examples of blanket bog in the world, supporting important populations of breeding birds.
SPA (Site code 8476), Ramsar site (Site code 8412)		Qualifying SPA and Ramsar interests: Black-throated diver (<i>Gavia arctica</i>); Wigeon (<i>Anas penelope</i>); Common scoter (<i>Melanitta nigra</i>); Red-throated diver (<i>Gavia stellata</i>); Hen harrier (<i>Circus cyaneus</i>); Golden eagle (<i>Aquila chrysaetos</i>); Golden plover (<i>Pluvialis apricaria</i>); Dunlin (<i>Calidris alpina</i>); Greenshank (<i>Tringa nebularia</i>); Wood sandpiper (<i>Tringa glareola</i>); Short-eared owl (<i>Asio flammeus</i>) and Merlin (<i>Falco columbarius</i>).
		The site also supports a range of important habitats, discussed in more detail in Chapter 5 .

Table 6.5: Summary of Internationally Designated Sites

²⁰ SNH (2016) Assessing Connectivity with Special Protection Areas (SPAs). Available online: https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20protection%20areas.pdf

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Site Name	Distance to Proposed Development	Description
Strath Carnaig and Strath Fleet Moors SPA (Site code 9190)	5.9 km	A two-part SPA, 7.2 km north-east and 5.9 km east of the Proposed Development. The site comprises two large upland areas between Dornoch and Lairg, designated for its important population of breeding hen harrier. The SPA supports a diverse mosaic of habitats suitable for nesting and foraging hen harriers including heather moorland, blanket bog, acid grassland, native woodland and plantation forestry with open areas.
Lairg and Strath Brora Lochs SPA (Site code 8522)	9.9 km	This SPA comprises a group of eight small oligotrophic lochs which support an internationally important population of black-throated divers. The large population size and high productivity rate of the birds using the lochs means the site makes a significant contribution to the production of fledged chicks in Scotland as a whole. The closest loch is located 9.9 km northeast of the Proposed Development.

Nationally Designated Sites

- 6.6.4 Potential effects on nationally designated sites are considered for all sites that fall within 5 km of the Proposed Development.
- 6.6.5 One SSSI designated for ornithological interests was identified within 5 km of the Proposed Development. Summaries of its citation is provided in **Table 6.6** and its location shown on **Figure 6.1**.

Site Name	Distance to Proposed Development	Description
Grudie Peatlands SSSI (Site code 750)	160 m	Forming part of the Caithness and Sutherland Peatlands SAC, SPA and Ramsar site, Grudie Peatlands SSSI is designated for its important breeding populations of dunlin, golden plover and greenshank. The site also supports a broad range of important habitats, discussed in more detail in Chapter 5 .

Table 6.6: Summary of Nationally Designated Sites

Local Sites of Nature Conservation Interest

6.6.6 There are no Local Nature Reserves, wildlife sites or other local designated sites within 5 km of the Proposed Development.

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TRANSMISSION

6.6.7 Whilst not designated for nature conservation, three wind farm habitat management areas are located within proximity to the Proposed Development and are (or will be subject to finalisation) actively managed to promote biodiversity. The Achany Wind Farm Habitat Management Plan (HMP)²¹ area is located north of the Proposed Development and has target species of both black grouse (*Tetrao tetrix*) and water vole (*Arvicola amphibius*). The Survey Area overlaps slightly with the Rosehall Wind Farm Conservation Management Plan²² (CMP) area. Black grouse and greenshank conservation and habitat improvement are target aims for the Rosehall CMP. The outline HMP area for the consented Achany Wind Farm Extension²³ is located to the northwest of the Survey Area and is still to be agreed with the local planning authority prior to development commencing.

Species Accounts

- 6.6.8 The sections below summarise the findings of desk surveys, flight activity recorded from VP surveys and the results of moorland breeding bird surveys, black grouse lek surveys, breeding diver surveys and winter walkover surveys for individual species. The species accounts below focus on qualifying species of the nearby SPAs and Ramsar sites and also include additional species that may be sensitive to disturbance / collision (e.g. black grouse). Where information is available from data requests made to the Highland Raptor Study Group (HRSG) for the Proposed Development or from nearby wind farm EIAs, this is included below in individual species accounts.
- 6.6.9 Characterisation of flight activity recorded from VPs summarises the number of flights at Potential Collision Height (PCH) defined as between 10 and 20 m above ground level; and the number of flights within the Potential Collision Zone (PCZ) defined as the Limit of Deviation (LoD) i.e. 50 m either side of the Proposed Development. Where information is considered sensitive, i.e. the location of a Schedule 1 bird nest, this information has been removed from this Chapter and is included in **Confidential Appendix 6.2**.
- 6.6.10 Target species flightlines are displayed on Figure 6.4 for breeding and non-breeding seasons. Figure 6.5: Moorland Breeding Bird Survey Records, displays the location of breeding bird territories. For locations of breeding raptors and owls, black grouse leks and Schedule 1 waders, refer to Confidential Appendix 6.2.

Barn Owl

6.6.11 A Schedule 1 species but not a qualifying feature of any nearby SPAs or SSSIs. The data request to HRSG for the Proposed Development returned three records within 6 km, one of which was within 2 km of the Proposed Development. Three flights were observed during VP surveys, none within the PCZ at PCH. A single breeding location was identified within the breeding raptor survey area, 810 m from the nearest proposed pole location. See Confidential Appendix 6.2 for further details.

Black-throated Diver

6.6.12 A Schedule 1, Annex I and Amber List species and qualifying feature of the Caithness and Sutherland Peatlands SPA and Lairg and Strath Brora Lochs SPA. The RSPB data request for the Achany Wind Farm Extension returned one record within the past five years of a pair recorded on Loch Shin, 6 km north-east of the wind farm. No breeding territories were identified during the surveys undertaken for Achany Wind Farm Extension in 2019 or 2020 within 1 km of the site. No flights were observed during VP surveys and there were no observations of this species during breeding diver, moorland breeding bird, breeding raptor or winter walkover surveys.

²¹ Applied Ecology (2020) Achany Wind Farm Habitat Management Plan. Year 10 Review.

²² Natural Power (2010) Rosehall Wind Farm Conservation Management Plan 123_R_NPC_EON_1_d04

²³ SSE (2021) Achany Wind Farm Extension Environmental Impact Assessment Report



Black grouse

6.6.13 A Red List species but not a qualifying feature of nearby SPAs or SSSIs. Surveys undertaken during 2019 and 2020 recorded leks within Glen Cassley. Black grouse lek surveys identified three leks within proximity to the Proposed Development. All three leks were typically small, with less than 5 males recorded at each lek. See Confidential Appendix 6.2 for further details.

Common scoter

6.6.14 A Schedule 1 and Red List species and a qualifying feature of the Caithness and Sutherland Peatlands SPA and Lairg and Strath Brora Lochs SPA. No flights were observed during VP surveys and there were no observations of this species during moorland breeding bird, breeding diver, breeding raptor or winter walkover surveys.

Curlew

6.6.15 Twelve flights were observed during VP surveys, none within the PCZ at PCH. In addition, two territories were identified within the moorland breeding bird survey area – one west of Rosehall Wind Farm, 220 m from the nearest proposed pole location and another south of the A839, 410 m from the nearest proposed pole location, see **Figure 6.5**.

<u>Dunlin</u>

6.6.16 A Red List species and qualifying feature of the Caithness and Sutherland Peatlands SPA and Grudie Peatlands SSSI. Surveys undertaken for the Achany Wind Farm Extension identified the presence of dunlin breeding within 500 m of the wind farm site. Two flights were observed during VP surveys, none within the PCZ at PCH. No territories were recorded within the moorland breeding bird survey area, but a pair of birds were observed during raptor surveys in June 2023 and diver surveys in July 2023, 160 m from the edge of the moorland breeding bird survey area, within proximity of Loch an Ràsail, see Figure 6.5.

Greenshank

6.6.17 A Schedule 1 and Amber List species and qualifying feature of the Caithness and Sutherland Peatlands SPA and Grudie Peatlands SSSI. Surveys undertaken in 2019 and 2020 for the Achany Wind Farm Extension identified several territories within 500 m of the wind farm site, with two of these records being within 750 m of the Proposed Development. Six flights were observed during VP surveys, none within the PCZ at PCH. In addition, one territory was identified within the moorland breeding bird survey area, see Confidential Appendix 6.2 for further details.

Golden eagle

6.6.18 A Schedule 1 (1A and A1²⁴) species and qualifying feature of the Caithness and Sutherland Peatlands SPA. The RSPB and HRSG data request for Achany Wind Farm Extension returned no nesting records within 6 km of the wind farm site, with the closest occupied territory being over 15 km from the wind farm site. Eight flights were observed during VP surveys, none within the PCZ at PCH. No territories were identified within the breeding raptor survey area.

²⁴ Birds listed on Schedules A1 and 1A receive additional protection which makes it an offence to intentionally or recklessly take, damage, destroy or interfere with any nest habitually used by any Schedule A1 wild birds or to at any time harass any wild bird included on Schedule 1A.



Golden plover

6.6.19 A qualifying feature of the Caithness and Sutherland Peatlands SPA and Grudie Peatlands SSSI. Surveys undertaken in 2019 and 2020 for the Achany Wind Farm Extension identified several territories within 500 m of the wind farm site. Sixteen flights were observed during VP surveys, two within the PCZ at PCH. One territory was recorded within the moorland breeding bird survey area, 730 m north-west of the proposed cable sealing end (CSE) structure, see Figure 6.5. An additional territory was identified south-west of Loch na Fuaralaich out with the 750 m Survey Area, 845 m from the Proposed Development.

Greylag goose

6.6.20 Surveys undertaken for the Achany Wind Farm Extension did not record any breeding within 1 km of the wind farm and limited flights were recorded over the wind farm area. Eleven flights were observed during VP surveys, none within the PCZ at PCH. Two breeding territories were recorded within the moorland breeding bird survey area, one east of Durcha 560 m from the nearest proposed pole location and another close to Loch Doire a' Chatha, 200 m from the nearest proposed pole location, see Figure 6.5. Winter walkovers recorded a single aggregation of 49 greylag geese in a grassland field at Inveran, 550 m west of the Shin substation, in December 2022. No roosts were identified within the 1.5 km Survey Area during the winter walkover surveys.

Hen harrier

6.6.21 A Schedule 1 (1A) and qualifying feature of the Caithness and Sutherland Peatlands SPA and Strath Carnaig and Strath Fleet Moors SPA. Surveys for the Achany Wind Farm Extension did not identify any nests within 2 km of the site. The data request to RSPB for the wind farm returned eight records of hen harrier from 2016 within 6 km of the wind farm site. The HRSG data request for the Proposed Development returned no hen harrier records within 6 km. A total of fourteen flights were observed during VP surveys, with six recorded at PCH within the PCZ. One territory was recorded within the breeding raptor survey area, see Confidential Appendix 6.2 for further details. No roosts were identified within the 1.5 km Survey Area during the winter walkover surveys.

Lapwing

6.6.22 A UKBAP and SBL priority species but not a qualifying feature of nearby SPAs or SSSIs. No flights were recorded from VPs. Two territories were recorded within the moorland breeding bird survey area, one south of Shin substation, 690 m from the nearest proposed pole location and another 460 m from the nearest infrastructure (temporary access track), located south of the point where the alignment crosses the A839 public road, see **Figure 6.5**.

<u>Merlin</u>

6.6.23 A Schedule 1 species and qualifying feature of the Caithness and Sutherland Peatlands SPA. Surveys undertaken in 2019 and 2020 for the Achany Wind Farm Extension identified two nesting attempts within 2 km, these were located further than 1.5 km from the Proposed Development. The data request from the HRSG for the Proposed Development confirmed there were no further nests recorded within 6 km of the Proposed Development. Four flights were observed during VP surveys, none within the PCZ at PCH. No territories were recorded within the breeding raptor survey area.



<u>Osprey</u>

6.6.24 A Schedule 1 species but not a qualifying feature of nearby SPAs or SSSI. Surveys undertaken in 2020 for the Achany Wind Farm Extension identified one nest, located further than 3 km from the Proposed Development. The HRSG data request for the Proposed Development returned 8 records within 6 km, three of which are within 2 km of the Proposed Development. A total of 27 flights were observed during VP surveys, none within the PCZ at PCH. Three breeding territories were identified within the breeding raptor survey area, see Confidential Appendix 6.2 for further details.

Pink-footed goose

6.6.25 Waterfowl species that can aggregate in large numbers during wintering months but not a qualifying feature of nearby SPAs or SSSI. Surveys undertaken for the Achany Wind Farm Extension recorded infrequent flight activity. Nine flights were observed during VP surveys, none within the PCZ at PCH. Winter walkovers recorded a single aggregation of 16 pink-footed geese in a grassland field 830 m south of Shin substation, in December 2022 and recorded an additional 35 in the same field in February 2023. No roosts were identified within the 1.5 km Survey Area during the winter walkover surveys.

Red-throated diver

6.6.26 A Schedule 1 species and qualifying feature of the Caithness and Sutherland Peatlands SPA. The RSPB data request for the Achany Wind Farm Extension returned no records within 6 km and no breeding attempts were made during 2019 or 2020 within 1 km of the wind farm. Three flights were observed during VP surveys, none within the PCZ at PCH. A pair were observed during breeding diver surveys, see **Confidential Appendix 6.2** for further details.

Red kite

6.6.27 A Schedule 1 (1A) species but not a qualifying feature of nearby SPAs or SSSI. Surveys undertaken for the Achany Wind Farm Extension identified no nests within 2 km of the wind farm in 2019 or 2020. The HRSG data request for the Proposed Development did not return any nesting records within 6 km. Seven flights were observed during VP surveys, none within the PCZ at PCH. No territories were identified within the breeding raptor study area.

Short-eared owl

6.6.28 A qualifying feature of the Caithness and Sutherland Peatlands SPA. Surveys undertaken for the Achany Wind Farm Extension identified no nests within 2 km of the wind farm in 2019 or 2020. The HRSG data request for the Proposed Development did not return any nesting records within 6 km. Two flights were observed during VP surveys, none within the PCZ at PCH. No territories were recorded within the breeding raptor survey area.

White-tailed eagle

6.6.29 A Schedule 1A species and qualifying feature of the Caithness and Sutherland Peatlands SPA. See
 Confidential Appendix 6.2 for further details on desk study results. Eleven flights were observed during VP surveys, none within the PCZ at PCH. No territories were recorded within the breeding raptor survey area.



<u>Wigeon</u>

6.6.30 A notified feature of the Caithness and Sutherland Peatlands Ramsar site. Survey work undertaken during 2019 and 2020 for the Achany Wind Farm Extension recorded no breeding attempts within 2 km of the wind farm and no flights. No territories were recorded within the moorland breeding bird survey area and no flights were observed during VP surveys for the Proposed Development.

Wood sandpiper

6.6.31 A Schedule 1 species and qualifying feature of the Caithness and Sutherland Peatlands SPA. Surveys undertaken for the Achany Wind Farm Extension in 2019 and 2020 did not record any wood sandpiper. No flights were observed during VP surveys and no observations were made during the moorland breeding bird surveys. In late May 2023, a bird was heard calling from VP 4, presumed to be around Loch Doire a' Chatha or along the woodland edge south of the turbines at Rosehall. This bird was heard only and not observed during the VP survey. No further calls were heard and no birds were subsequently identified within the moorland breeding bird survey area.

6.7 Potential Effects

6.7.1 The enabling and construction works, the forestry felling, the installation of access routes (both temporary and permanent) and the installation and operation of the Proposed Development all have the potential to have an effect on ornithological receptors.

Embedded Mitigation

- 6.7.2 Prior to assessing potential effects upon important ornithological receptors, the embedded mitigation relevant to this appraisal is considered. The embedded mitigation relevant to this appraisal consists of reliable tried and tested measures including:
 - Implementation of the Applicant's General Environmental Management Plans (GEMPs) (Appendix 3.2), particularly oil storage and refuelling, soil management, working in sensitive habitats and working in or near water; and
 - Adherence to the relevant general binding rules specified in the Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended (CAR) and any project-specific registrations or licences required prior to any construction works commencing;
 - Employment of an Environmental Clerk of Works (ECoW) to provide advice, guidance and monitoring, during pre-construction and construction. The ECoW would monitor and advise on the implementation of both the planning conditions and the environmental commitments made within this Environmental Assessment (EA), see Chapter 10: Schedule of Mitigation. The ECoW would also advise on the implementation of any required exclusion zones or restricted construction access for protected species. Routine inspections would be undertaken by the ECoW. Toolbox talks would be provided by the ECoW to all site personnel where applicable on relevant site sensitivities, legislation, guidance and any mitigation measures in place on site for protected species and the role of the site personnel in implementing them.
- 6.7.3 Design and generic embedded mitigation of relevance to protected and priority species comprises the following:
 - The proposed Construction and Environmental Management Plan (CEMP)
 - The Applicant's SPP for breeding birds (**Appendix 3.3**) details a mitigation hierarchy to avoid or minimise effects on protected or priority species. Avoidance and mitigation measures to be detailed typically include:
 - Relevant local recorders e.g. HRSG, would be contacted at the pre-construction phase for recent records of sensitive species that might be affected;



- Pre-construction surveys and monitoring would be undertaken by a suitably qualified ornithologist up to 1 km either side of the LoD in accordance with current guidance;
- ECoW to undertake checks for protected species including Schedule 1 birds and nests of all breeding birds immediately before felling and construction works;
- Pre-construction environmental inductions would be given to all construction staff, including information on sensitive species and legislation;
- Regular ongoing watching briefs for breeding birds across the construction and felling areas during the breeding season (mid-March to end of August); and
- An emergency procedure would be implemented if breeding birds are encountered. All work would cease within 50 m (non-scheduled species) or the relevant maximum protection distance for the species and the ECoW would define any mitigation required in line with the Bird SPP.
- 6.7.4 It is expected that the following would be included within the site-specific CEMP, with the ECoW monitoring compliance with the site environmental documentation:
 - Vehicle speed limits for site tracks would be imposed during the construction and operational phases to
 reduce the likelihood of injury or mortality of protected bird species (e.g. grouse that may be attracted
 to fine gravels on the sections of permanent access tracks and wader chicks that are usually small and
 hard to see moving across the temporary trackway or permanent access tracks);
 - In accordance with SEPAs Guidance for Pollution Prevention GPP02 any fuel and chemical storage would be bunded and would not be stored within 50 m of watercourses or waterbodies;
 - Fuel deliveries and refuelling would be undertaken by trained staff in a designated area with an impermeable base. All fuel related activities would take place more than 50 m away from any watercourse;
 - Emergency spill response kits would be available and maintained during construction works;
 - Mechanical plant would be well maintained and inspected regularly for leaks;
 - Drip trays would be placed under stationary vehicles which could potentially leak fuel / oils; and
 - The ECoW would have authority to stop any works that may have potential to impair habitats that support nesting birds.
- 6.7.5 Indicative pole locations are shown on **Figure 3.1a-e** and detailed in **Appendix 3.1**. A micro-siting allowance (the LoD) of 50 m either side of the centre line of the proposed OHL and 25 m either side of the centre line of proposed tracks has been sought to allow for any further micro-siting that may be required during the construction process to reflect localised land, engineering and environmental constraints. Micro-siting will only be undertaken where poles can be moved into an area of reduced sensitivity and where landownership boundaries allow.

Effects and Ornithological Receptors Scoped Out

6.7.6 Where it can be considered that effects from the Proposed Development are unlikely and appropriate embedded mitigation is in place, several ornithological receptors can be scoped out based on the desk-study results and baseline data collected. Ornithological receptors that have been scoped out of the appraisal are set out in **Table 6.7**, alongside reasoning.



Table 6.7: Ornithological Receptors Scoped Out

Ornithological Receptor Scoped Out	Reasoning
Lairg and Strath Brora	Qualifying species not recorded during baseline surveys.
Lochs SPA	Effects are negligible and no specific mitigation is required in addition to the
	implementation of best practice measures detailed in the GEMPs and SPPs.
Black-throated diver*	Not recorded as breeding within proximity of the Proposed Development and
Common scoter*	no flight activity recorded.
Wigeon*	Effects are negligible and no specific mitigation is required in addition to the
	implementation of best practice measures detailed in the GEMPs and SPPs.
Barn owl	A single breeding territory was recorded within the breeding raptor survey
	area. This territory is located at a greater distance to the Proposed
	Development than the published disturbance distance for this species (50 –
	100 m). A low level of flight activity was recorded during surveys, with no
	flights recorded within the PCZ at PCH.
	Effects are negligible and no specific mitigation is required in addition to the
	implementation of best practice measures detailed in the GEMPs and SPPs.
Curlew	Two breeding territories were recorded within the moorland breeding bird
	survey area. One territory is located within potential disturbance distance to
	the Proposed Development (200 – 300 m). Low to moderate levels of flight
	activity were recorded during surveys, with no flights recorded within the PCZ
	at PCH.
	Effects are negligible and no specific mitigation is required in addition to the
	implementation of best practice measures detailed in the GEMPs and SPPs.
Dunlin*	Not recorded as breeding within 750 m of the Proposed Development. A low
	level of flight activity was recorded during surveys, with no flights recorded
	within the PCZ at PCH. Effects are negligible and no specific mitigation is
	required in addition to the implementation of best practice measures detailed
	in the GEMPs and SPPs.
Greenshank*	One territory was recorded within the moorland breeding bird survey area.
	This territory is located at a greater distance to Proposed Development than
	the published disturbance distance for this species (300 – 500 m). A low level
	of flight activity was recorded during surveys, with no flights recorded within
	the PCZ at PCH. Effects are negligible and no specific mitigation is required
	In addition to the implementation of best practice measures detailed in the
Osldan asulat	GEMPs and SPPs.
Golden eagle"	Not recorded as breeding within the breeding raptor survey area. A low level
	the RCZ at RCH
	LIFE FOZ AL FOT.
	implementation of best practice measures detailed in the GEMPs and SPPs
Golden plover*	One territory was recorded within the moorland breeding bird survey area
	This territory is located at a greater distance to Proposed Development than
	the published disturbance distance for this species $(200 - 500 \text{ m})$. A low level
	of flight activity was recorded during surveys with two flights recorded within
	the PCZ at PCH.
	Effects are negligible and no specific mitigation is required in addition to the
	implementation of best practice measures detailed in the GEMPs and SPPs.
Greylag goose	Two breeding territories were recorded within the moorland breeding bird
, , , , , , , , , , , , , , , , , , , ,	survey area. Both territories are located within potential disturbance distance



Ornithological Receptor Scoped Out	Reasoning
	to the Proposed Development (200 – 600 m). A low level of flight activity was recorded during surveys, with no flights recorded within the PCZ at PCH. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
Lapwing	 Two territories were recorded within the moorland breeding bird survey area. Both territories are located at a greater distance to the Proposed Development than the published disturbance distance for this species (200 – 300 m). No flight activity was recorded during VP surveys. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
Merlin*	No breeding territories are located within the breeding raptor survey area. A low level of flight activity was recorded during surveys, with no flights recorded within the PCZ at PCH. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
Osprey	Three nests located within the breeding raptor survey area. All three territories are located at a greater distance to the Proposed Development than the published disturbance distance for this species (350 – 750 m). Flight activity was moderate and centred around the three nest sites. Additional surveys were undertaken to characterise the flights from each nest site whilst they were active. No flights were recorded within the PCZ at PCH. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
Pink-footed goose	No roosting sites identified within 1.5 km of the Proposed Development. No flights were recorded within the PCZ at PCH. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
Red-throated diver*	Possible breeding attempt within 3.3 km of the Proposed Development. This territory is located at greater distance to the Proposed Development than the published disturbance distance for this species (500 – 750 m). A low level of flight activity was recorded, with no flights recorded within the PCZ at PCH. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
Red kite	No breeding territories were identified within the breeding raptor survey area. A low level of flight activity was recorded, with no flights recorded within the PCZ at PCH. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
Short-eared owl*	No breeding territories were identified within the breeding raptor survey area. A low level of flight activity was recorded, with no flights recorded within the PCZ at PCH. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
White-tailed eagle	No breeding territories were identified within the breeding raptor survey area. A low level of flight activity was recorded, with no flights recorded within the PCZ at PCH. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.



Ornithological Receptor Scoped Out	Reasoning
Wood sandpiper*	No breeding territories were identified within the moorland breeding bird survey area. No flights were recorded, despite a bird being heard within the survey area on one occasion. Effects are negligible and no specific mitigation is required in addition to the implementation of best practice measures detailed in the GEMPs and SPPs.
Bird mortality through electrocution	Birds can be at risk of electrocution from contact with unprotected wires and associated metal infrastructure. Large birds are generally more vulnerable to electrocution by OHLs because of the greater risk of spanning between two phase conductors or energised and earthed structures with outreached wings or other body parts. Many bird species (particularly raptors) are attracted to OHLs and their supports, especially in open un-forested areas, as they provide lookout posts, as well as being used generally for perching, nesting and roosting. Ground nesting species (such as hen harrier) rarely use OHL supports for perching / hunting and are therefore at less risk from electrocution ²⁵ . Studies carried out to investigate avian electrocuted ²⁶ . The configuration of the wires and conductors of the Proposed Development means that it is not possible for a bird to touch two conductor wires simultaneously due to the gaps between the conductors and perch points being greater (2.5 m) than any bird wing span found within the Study Area.
*Qualifying species of Cait	hness and Sutherland Peatlands SPA and Ramsar site / Grudie Peatlands

Ornithological Receptors Taken Forward for Appraisal

- 6.7.7 Based on the consultation responses and known environmental sensitivities, this appraisal considers the following receptors:
 - Hen harrier (a qualifying species of the Caithness and Sutherland Peatlands SPA and Ramsar site and Strath Carnaig and Strath Fleet Moors SPA) International importance; and
 - Black grouse National importance.
- 6.7.8 Potential effects on the ornithological receptors to be assessed associated with the construction and / or operation of the Proposed Development are:
 - Loss of habitat and habitat modification the loss of critical habitats due to land take for infrastructure and habitat modification changes due to changes in land management may occur. This includes the restructuring of forest habitats due to proposed felling works to accommodate the Proposed Development. Changes may be temporary or long-term;

²⁵ Haas, D., Nipkow, M., Fielder, G., Schneider, R., Haas, W. and Schurenberg, B. (2005) Protecting birds from powerlines. Nature and Environment, 140. Council of Europe Publishing, Strassbourg

²⁶ Janss, G. and Ferrer, M. (1999) Avian electrocution on power poles: European experiences. Birds and Power Lines: Collision, Electrocution and Breeding. Quercus, Madrid, Spain, pp. 145 – 164.



- Disturbance / displacement disturbance of breeding birds, lekking birds and displacement of foraging birds in suitable habitats may occur, primarily during construction works, but also during operational maintenance works; and
- Accidental mortality of individual birds due to collision risk resulting from contact with the pole structures and OHL during operation.
- 6.7.9 Information to inform a Habitats Regulation Appraisal (HRA) is provided in **Appendix 6.3** due to the proximity of the Caithness and Sutherland Peatlands SPA and Strath Carnaig and Strath Fleet Moors SPA to the Proposed Development and the presence of qualifying species (hen harrier) within proximity to the proposed works.

Hen Harrier

6.7.10 See Confidential Appendix 6.2 for further details on potential effects.

Black Grouse

6.7.11 See Confidential Appendix 6.2 for further details on potential effects.

Cumulative

- 6.7.12 This appraisal considers the potential for cumulative effects with other OHL and wind farm developments that are consented or at application stage. Operational developments including wind farms and OHLs are considered to form part of the baseline. Projects at scoping stage are not considered as they generally do not have sufficient information on potential effects to be included. Projects that have been refused of withdrawn are also not included. Developments that are considered within this appraisal are included in **Table 6.8: Energy Development Sites within 5 km of the Proposed Development ²⁷.** This appraisal focuses on ornithological features for which potential effects of the Proposed Development have been identified, namely hen harrier and black grouse.
- 6.7.13 For all developments considered in **Table 6.8**, pre-construction bird surveys are proposed to reduce the risk of disturbance to any breeding birds. Overall, the potential for the Proposed Development to contribute significant effects to ornithological features at a regional level, in-combination with other similar developments is considered unlikely.

Development	Stage	Distance from Proposed Development (km)	Potential Effects and Mitigation
Achany Wind Farm	Consented	0 km	No effects were considered likely for hen
Extension			harrier, black grouse, or designated sites (SPAs).
Strath Oykel Wind	Consented	4.7 km south-west	No effects were considered likely for hen
Farm			harrier, black grouse, or designated sites
			(SPAs).
Garvary Wind Farm	Consented	4 km north-east	The EIA reports negligible collision risk to
			hen harriers, but noted potential for
			disturbance to hen harrier in the absence

Table 6.8: Energy Development Sites within 5 km of the Proposed Development

²⁷ Based on a cumulative baseline search of consented or submitted planning applications three months prior to submission of the application to allow finalisation of the EA.

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Development	Stage	Distance from Proposed Development (km)	Potential Effects and Mitigation
			of mitigation. No effects were considered
			likely for black grouse.
Lairg II Wind Farm	Consented	4.8 km north-east	The EIA reports no significant effects
			predicted for hen harrier or black grouse.
			The outline habitat management plan
			includes habitat creation for hen harrier
			and black grouse.

6.8 Mitigation

- 6.8.1 General and embedded mitigation measures for protected species, such as complying with best practice, micrositing provisions, presence of an ECoW and adherence to a site-specific detailed CEMP are included in paragraphs 6.7.2 6.7.5.
- 6.8.2 Potential effects during construction and operation of the Proposed Development have been identified for hen harrier and black grouse. Additional mitigation is discussed below to reduce these effects.

Re-routing and Alternatives

- 6.8.3 Extensive consideration has been given to avoidance of both the hen harrier nest and black grouse lek by rerouting the Proposed Development either to the north of the black grouse lek or to the south of the hen harrier nest. Consideration of re-routing has taken into account many factors including peat depth, habitats and hydrology. It was determined that the re-routing of the alignment to avoid the ornithological constraints would result in greater impacts to other features of interest. See **Confidential Appendix 6.2** for further detail.
- 6.8.4 The most appropriate solution for the Proposed Development in terms of operation and maintenance of the network, and in the best interest of the consumer, was considered to be OHL over UGC wherever possible. Further reasons for the use of OHL rather than UGC for the grid connection are discussed in Chapter 1, Chapter 2 and Chapter 3 of this EA.

Hen Harrier – disturbance / displacement

- 6.8.5 Hen harriers are included in Schedule 1A giving them legal protection against disturbance year-round rather than the breeding season only. They are considered a species of Medium behavioural sensitivity (refer to **Table 6.3**). As disturbance or displacement of the pair breeding within proximity to the Proposed Development could lead to effects on the neighbouring SPAs, it is important not to create any unnecessary disturbance to hen harrier using this area during the breeding season. No hen harrier roosts were identified within proximity to the Proposed Development to suggest that construction out with the breeding period would result in adverse effects on this species. It is recognised that hen harrier can move their nest sites within areas of similar suitable habitat and that new nests and new roosts could be established and additional birds could move into an area. In addition to the general measures set out in the Bird SPP (**Appendix 3.3**), a species-specific hen harrier SPP would be developed by the ECoW prior to construction commencing which would include the following:
 - background information on the legal protection of hen harrier and the responsibilities of the Applicant, the Principal Contractor and the ECoW / ornithologist in protecting this species from disturbance;
 - pre-construction surveys for breeding and roosting hen harriers undertaken in accordance with current guidance and at the correct time of year; and



- pre-construction surveys must be up to date and have been undertaken at no more than six months prior to the commencement of works, including enabling, felling and construction works.
- 6.8.6 See Confidential Appendix 6.2 for further details on potential effects and mitigation measures.
- 6.8.7 Dissuasion techniques such as the use of bird scarers, as set out in the general Bird SPP, will not be undertaken within 750 m of nests sites as this would not be appropriate for a Schedule 1 species.
- 6.8.8 If hen harriers are found to be breeding elsewhere within proximity to the Proposed Development, a 750 m safe working distance would be implemented and maintained to avoid disturbance to birds and the hen harrier SPP would be implemented, monitored by the ECoW or suitably experienced ornithologist.

Hen Harrier – Collision Risk

6.8.9 Collision risk has been identified as a potential effect for hen harrier within proximity to an identified nest site. To mitigate this risk, line marking is proposed for a section of OHL closest to the nest and covering the area where VP flight activity surveys identified flights crossing the Proposed Development at potential collision height. The section of OHL will be marked using reflective Bird Flight Diverters (BFDs), spaced at 5 m intervals that will be maintained for the duration of the operational period. See **Confidential Appendix 6.2** for further details on potential effects and mitigation measures.

Black Grouse - disturbance / displacement

- 6.8.10 Black grouse are considered a species of Medium behavioural sensitivity (refer to **Table 6.3**), but are most at risk from disturbance whilst displaying at leks, which are used from March to the end of May. Black grouse will return to suitable lek sites if the population within the area persists. In addition to the general measures set out in the Bird SPP (**Appendix 3.3**), a species-specific black grouse SPP would be developed by the ECoW prior to construction commencing which would include the following:
 - background information on the legal protection of black grouse leks and the responsibilities of the Applicant, the Principal Contractor and the ECoW / ornithologist in protecting this species from disturbance;
 - the undertaking of pre-construction surveys for lekking birds undertaken in accordance with current guidance and at the correct time of year;
 - pre-construction surveys must be up-to-date and have been undertaken at no more than six months prior to the commencement of works, including enabling, felling and construction works; and
- 6.8.11 See **Confidential Appendix 6.2** for further details on potential effects and mitigation measures.
- 6.8.12 Dissuasion techniques such as the use of bird scarers, as set out in the general Bird SPP, will not be undertaken within 750 m of a confirmed lek site as it would not be appropriate to discourage black grouse from using a preferred lek site.

Black Grouse – collision risk

6.8.13 See **Confidential Appendix 6.2** for further details on potential effects and mitigation.

Habitat Enhancement and Biodiversity Net Gain

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TRANSMISSION

6.8.14 In line with NPF4²⁸, consideration has been given to how the Proposed Development can deliver enhancement to biodiversity over its lifetime. Chapter 5 sets out an Outline Habitat Management Plan (OHMP) which seeks to delivery peatland restoration in areas within proximity to the Caithness and Sutherland Peatlands SPA and Grudie Peatlands SSSI. Peatland restoration actions are likely to be directly beneficial to both designated and wider countryside breeding upland bird species.

6.9 Residual Effects

- 6.9.1 This section considers the potential residual effects of the construction and operation of the Proposed Development, following the implementation of mitigation measures set out in Section 6.8, in addition to the embedded mitigation set out in paragraphs 6.7.2 6.7.5.
- 6.9.2 To reduce the effects of the Proposed Development on black grouse, hen harrier and associated SPAs, species-specific mitigation has been included within the appraisal in Section 6.8. These measures include the development and implementation of a hen harrier SPP and black grouse SPP, the installation of BFDs along a section of the OHL where there is an identified collision risk 'hot-spot' for both species and the avoidance of works (including enabling, vegetation clearance and construction) between March and August in the area within proximity to the nest and lek locations. The implementation of the embedded mitigation and additional mitigation proposed for both these species will reduce and minimise the effects on both species.

6.10 Summary

- 6.10.1 This Chapter has considered the potential effects of the Proposed Development on ornithological receptors and has set out the methodology used to establish the baseline conditions present at the time of surveys. The Proposed Development has largely been designed to avoid designated sites and locations of protected species as far as possible, whilst giving consideration to other constraints to the project.
- 6.10.2 Embedded mitigation by adoption of the Applicant's detailed GEMPs and SPPs, the employment of a suitably experienced ECoW or ornithologist to undertake pre-construction surveys for protected species and implement any required works restriction zones would reduce the potential effects of construction and operation works on ornithological receptors.
- 6.10.3 Additional measures are proposed for hen harrier and black grouse to reduce effects from the risk of disturbance / displacement and mortality through collision with the OHL, this includes species-specific SPPs for both species and the installation of BFDs along a section of OHL where there is an identified collision risk 'hot spot' for both species. The construction of the Proposed Development is anticipated to take place over a 23-month period, and as such it would not be possible for all works to be undertaken out with the breeding bird season. However measures set out in the species-specific SPPs for hen harrier and black grouse include the avoidance of construction works within proximity to nest and lek sites during the breeding / lekking season. These tailored and species-specific mitigation measures will reduce the risk to ornithological receptors that could potentially be affected by the Proposed Development.