Scottish & Southern Electricity Networks

TRANSMISSION

Scottish Hydro Electric Transmission plc

Beauly-Denny Overhead Line Diversion

Environmental Appraisal

Technical Appendices

Appendix 6.1 – Ornithology Baseline

July 2025

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Scottish & Southern Electricity Networks
TRANSMISSION

CONTENTS

1. INTRODUCTION

1.1 Background

1.1.1 Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission'), operating under licence as Scottish Hydro Electric Transmission plc (SHE Transmission plc) is proposing to submit an application for planning permission in principle under the Town and Country Planning (Scotland) Act 19971 (as amended) for consent to replace the existing 400 Kilovolt (kV) overhead transmission line (OHL) between Beauly and Denny, by a distance of approximately 1.7 km (hereafter referred to as the 'Proposed Development'). The Proposed Development includes works required at Fanellan 400 kV substation to facilitate connection of the replacement OHL. The Proposed Development boundary is illustrated on Figures 6.1.2 Breeding Bird Survey Results 2023 and 6.1.3 Flight Activity Survey Results 2023.

1.1.2 The area is currently connected to the wider electricity transmission network by the existing Beauly – Denny 400 kV OHL, which is supported by steel lattice towers. The new section shall also be supported by similarly sized steel lattice towers and built to the same capacity as the existing line.

1.1.3 WSP was commissioned to undertake a breeding bird survey programme to inform the assessment of potential impacts from the Proposed Development. This report details the methods and results of those surveys and the results of surveys from associated developments with overlapping survey areas. Assessment of potential impacts to the species forming the ornithology baseline and subsequent recommendations to ensure no significant residual effects, if appropriate, are detailed in Chapter 6 Ornithology of the Environmental Appraisal Report.

1.2 Confidential Records

1.2.1 The Ornithology Baseline Appendix contains a high-level summary of the breeding status for Schedule 1 raptor species relative to the Proposed Developments Ecological Zone of Influence (EZoI). Full details of nest site locations to inform assessment of potential impacts from the Proposed Development are provided in **Appendix 6.2 – Confidential Schedule 1 Raptors Baseline.**

2 Scottish Natural Heritage. 2016. Assessing Connectivity with Special Protection Areas (SPAs). Available from: https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf

2. METHODS

2.1 Desk Study

2.1.1 A desk-based study to identify designated sites within and surrounding the Proposed Development was undertaken during the site selection stage for the associated Proposed Development 400kV Substation and Converter Station. The provisional search area for statutory designated sites at European or International level with ornithological interests was 10 km beyond the Proposed Development site boundary. The search was extended to 20 km to account for the increased foraging range of certain bird of prey species (osprey *Pandion haliaetus*) and goose species (greylag goose *Anser anser* and pink-footed goose *Anser brachyrhynchus*)[2]. All designated sites are detailed in **Section 3.1** and illustrated on **Figure 6.1.1.**

2.1.2 Additional ornithology baseline data is available from two projects with overlapping survey areas:

- Scarce Breeding Bird Surveys (SBBS) for the Beauly to Peterhead 400kV OHL (2023);
- SBBS for Spittal – Loch Buidhe – Beauly 400kv OHL (2024)

2.1.3 Studies of the distribution of foraging geese from relevant designated sites were used to predict if important foraging assemblages could occur within an Ecological Zone of Influence (EZoI) of the Proposed Development[3]. The EZoI was based on the predicted maximum disturbance/displacement distance relating to pink-footed goose *Anser brachyrhynchus.* Mitchell (2012)[4] provides data on the distribution of pink-footed *Anser brachyrhynchus* and greylag geese *Anser anser* within 20 km of all relevant European sites.

2.2 Flight Activity Survey

2.2.1 A programme of flight activity surveys was conducted from one vantage point (VP) overlooking the airspace above the Site and a surrounding buffer of 100 m as shown on **Figure 6.1.3**. Survey methods followed NatureScot (2017)[5].

2.2.2 These surveys involved six hours of survey effort per month at the VP during the breeding season (April to August 2023). Non-breeding season flight activity surveys were not undertaken as the desk study data indicated a lack of ornithological sensitivities in the non-breeding season.

2.2.3 The survey effort from the single VP ultimately achieved 30 hours of survey effort for the breeding season, slightly below the recommended minimum of 36 hours per season. This is discussed further in **Section 2.5 Limitations**.

2.2.4 Survey effort was spread throughout the daytime period where daylight hours best represent temporal flight activity patterns. Each survey was undertaken by a single observer in good conditions (i.e., visibility of at least 2 km). Weather and visibility conditions were recorded including information on wind speed and direction, precipitation and cloud cover. All VP watches were

2 Scottish Natural Heritage. 2016. Assessing Connectivity with Special Protection Areas (SPAs). Available from: https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf

3 Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283. https://www.nature.scot/doc/naturescot-research-report-1283-disturbance-distances-review-updated-literature-review-disturbance#Black-throated+diver,+Gavia+arctica

4 Mitchell, C. (2012). Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland. Wildfowl & Wetlands Trust / Scottish Natural Heritage Report, Slimbridge. 108pp.

5 SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2, March 2017.

limited to a maximum of three hours by any single observer, with a minimum of a half an hour break between any two consecutive surveys.

2.2.5 The paths of all observed flights (flight lines) were drawn directly onto 1:10,000 OS maps in the field. Associated flight data such as species, number of individuals, start time and height above ground level were also recorded.

2.2.6 Considering potential collision risk from OHLs to birds, NatureScot guidance[6] notes there is currently no statistical model available which would provide a robust assessment of potential mortality. In recognition of the difficulty this presents NatureScot recommends that emphasis is put on mitigation where surveys indicate potential conflicts.

2.2.7 To inform appraisal of potential collision risk from the Proposed Development, a qualitative approach has been undertaken based on identifying 'hotspots' of flight activity from sensitive species across the Proposed Development.

2.2.8 Flights have been appraised within a Collision Risk Area (CRA) comprising the Site and a 100 m buffer. A 100 m buffer was considered sufficient to allow for observer error with judging the position of flights given the relatively localised nature of the Proposed Development and also considering that the Proposed Development is now at design freeze.

2.3 Breeding Bird Survey

2.3.1 Breeding bird surveys were undertaken across the Proposed Development plus an additional 100 m from the Proposed Development (the 'Breeding Bird Survey Area'). The survey was undertaken over four survey visits (at least two weeks apart) encompassing the period early-April to early July 2023 (inclusive). The survey methodology followed an adapted version of the British Trust for Ornithology (BTO) Common Bird Census (CBC)[7] whereby the number of visits was reduced from ten to four. Our survey visits are considered sufficient to inform on the breeding bird assemblage and four visits are recommended for breeding bird surveys by NatureScot[5].

2.3.2 During the survey, the surveyor walked the Breeding Bird Survey Area so that all areas of habitat, particularly field boundaries, were surveyed within 50 m. Observations of birds were recorded on survey maps using BTO species and behavioural codes.

2.4 Breeding Bird Territory Analysis

2.4.1 The objective of the breeding bird surveys was to identify the presence and locations of breeding territories held by species of conservation concern. Such species are referred to as 'target species' and were based on the following legislative or conservation lists:

- Annex I of the EU Directive on the Conservation of Wild Birds 79/409/EEC (the 'Birds Directive') (Annex I);
- Schedule 1 (including Schedule 1A and/or A1) of the Wildlife and Countryside Act (1981) (Schedule 1);

6 SNH (2016). Guidance - Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds

7 Marchant, J.H (1983). Common Birds Census Instructions. BTO, Tring.

- 'Red' or 'Amber' on BoCC5[8]; and
- Scottish Biodiversity List (SBL)[9].

2.4.2 Breeding bird survey records were entered into ArcMap Geographical Information System (GIS) software. These were then analysed to identify the minimum number of probable or confirmed breeding territories for all target species recorded. This was done following the CBC methods[6]. This either involves the identification of clusters of registrations of birds of the same species displaying breeding characteristics (e.g., singing, alarm calling, nest building, mating) or food provisioning in the same general area over successive survey visits (probable breeding), or the discovery of an active nest (e.g., containing eggs or chicks) (confirmed breeding). Given that the surveys comprised four visits over the breeding season, the minimum requirement for a cluster, and hence a probable breeding territory, was at least two registrations conforming to the above criteria recorded on separate survey visits conducted at least ten days apart.

2.4.3 Non-target species (e.g., listed as 'Green' on BoCC) were identified as being present within the Breeding Bird Survey Area but territory analysis was not conducted on these species due to their lower conservation value and the low likelihood of significant adverse effects[10] from the Proposed Development on those species.

2.5 Assumptions and Limitations

2.5.1 The breeding bird survey represents an adapted version of the CBC methodology with fewer survey visits undertaken. Four survey visits are considered sufficient to provide an estimate of breeding territories to enable an assessment of effects of the Proposed Development to be undertaken. The number and location of breeding territories is an estimate based on the species and behaviours recorded.

2.5.2 After completion of the Breeding Bird Surveys, the Site Boundary was increased to encompass a larger area of land as shown on **Figures 6.1.1 to 6.1.3**. The additional area includes shared access tracks (included in the associated Proposed Development for the Fanellan 400kV Hub planning application 25/00826/FUL) which is situated on agricultural grazing pasture and therefore considered to be of low ornithological value.

2.5.3 A Scarce Breeding Bird Survey overlapping the expanded Site Boundary and 2 km study area was conducted for the related proposed Beauly-Peterhead 400kV OHL in 2023 and for the proposed Spittal – Loch Buidhe – Beauly 400kv OHL in 2024 with data collected relating to sensitive breeding species (Schedule 1 raptors). The study area used for the associated projects had complete overlap with the 2 km Schedule 1 raptor study area for the Proposed Development.

2.5.4 Flight activity surveys from the single VP achieved 30 hours of survey effort for the breeding season, slightly below the recommended minimum of 36 hours per season. This is not considered a

8 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). Birds of Conservation Concern 5: 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.

9 The Scottish Biodiversity List is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. For the complete list please visit: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list.

10 For adverse effects to species, conservation status defined in the CIEEM EcIA Guidelines was considered as follows: conservation status is determined by the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area

significant limitation. Thirty hours of survey coverage was achieved across a large proportion of the breeding season (April to August) and was considered sufficiently representative of flight activity.

2.5.5 Bird survey data is typically valid if collected within the last five years or within three years if the populations of key species are known to be changing rapidly, for example, if conditions are likely to change more quickly due to ecological processes or anticipated changes in management.

3. SURVEY RESULTS

3.1 Desk Study

3.1.1 The following statutory designated sites at European or International level with ornithological interests were identified within the search area:

- Inner Moray Firth Special Protection Area (SPA) and Ramsar (3.3 km north-east) – designated for breeding osprey *Pandion haliaetus* and common tern *Sterna hirundo*, and non-breeding/overwintering greylag goose *Anser anser*, goldeneye *Bucephala clangula*, greater scaup *Aythya marila*, teal *Anas crecca* , wigeon *Mareca penelope* , goosander, red-breasted merganser *Mergus merganser*, bar-tailed godwit *Limosa lapponica*, redshank *Tringa totanus*, curlew *Numenius arquata*, oystercatcher *Haematopus ostralegus*, cormorant *Phalacrocorax carbo*, and waterfowl assemblage.
- Moray Firth SPA (6.2 km north-east) – designated for non-breeding common scoter, eider, goldeneye *Bucephala clangula*, great northern diver *Gavia immer*, long-tailed duck *Clangula hyemalis*, red-breasted merganser *Mergus merganser*, red-throated diver *Gavia stellata*, scaup *Aythya marila*, shag *Gulosus aristotelis*, Slavonian grebe *Podiceps auritus*, and velvet scoter *Melanitta fusca*.
- Glen Affric to Strathconon SPA (9.4 km west) – designated for breeding golden eagle *Aquila chrysaetos*.
- North Inverness Lochs SPA (8.9 km south) – designated for breeding Slavonian grebe *Podiceps auritus*.
- Cromarty Firth SPA and Ramsar (14 km north-east) – designated for breeding osprey *Pandion haliaetus* and common tern *Sterna hirundo*, and non-breeding/overwintering whooper swan *Cygnus cygnus*, greylag goose *Anser anser*, pintail *Anas acuta*, wigeon *Mareca penelope*, greater scaup *Aythya marila*, red-breasted merganser *Mergus merganser*, bar-tailed godwit *Limosa lapponica*, dunlin *Calidris alpina*, knot *Calidris canutus*, curlew *Numenius arquata*, redshank *Tringa totanus*, oystercatcher *Haematopus ostralegus*, and waterfowl assemblage.

3.1.2 There are no statutory designated sites at National or Local level within 2 km of the Proposed Development site. There are no non-statutory designations or nature conservation sites which overlap with the Proposed Development site or are otherwise connected.

3.1.3 The distribution maps in Mitchell (2012) for foraging geese within 20 km of the Inner Moray Firth SPA/Ramsar and Cromarty Firth SPA/Ramsar show no indication that the Proposed Development Site is within an important foraging area for geese from the European sites. More dense clusters of foraging activity are indicated to the north-east of the Proposed Development.

3.2 Flight activity survey

3.2.1 Flights are shown on **Figure 6.1.3**. Flight activity surveys between April 2023 and August 2023 recorded six species crossing the CRA across a total of 39 flights:

- greylag goose (one flight);
- oystercatcher (one flight);
- lapwing (five flights);
- herring gull *Larus argentatus* (three flights);
- osprey *Pandion haliaetus* (13 flights); and

- red kite (16 flights).

An additional notable species recorded during the flight activity surveys beyond the CRA was Honey-buzzard *Pernis apivorus* with two flights. This species is discussed in the context of a likely breeding territory in the wider area.

3.3 Breeding Bird Survey

3.3.1 A total of 22 bird species were recorded between April and July 2023, inclusive of two Schedule 1 and/or Annex I listed species. Four species (red kite *Milvus milvus*, crossbill *Loxia curvirostra*, house martin *Delichon urbicum* and swallow *Hirundo rustica*) were only recorded in flight across the Breeding Bird Survey Area. A summary of the results for all target species recorded is provided below in **Table 6.1** Error! Reference source not found.. The distribution of those target species exhibiting territorial behaviour, as defined above in Section 2.3, is illustrated in **Figure 6.1.2 Breeding Bird Survey Results**. Target species not confirmed as holding territory are not illustrated on Figure 6.1.2.

Table 6.1 Breeding Bird Survey Results – All species

Species	Scientific name	Count	Annex I	Schedule 1	BoCC[11]	SBL[12]
Lapwing	*Vanellus vanellus*	1 T	-	-	Red	Yes
Skylark	*Alauda arvensis*	3 T	-	-	Red	Yes
House martin	*Delichon urbicum*	1 F	-	-	Red	-
Starling	*Sturnus vulgaris*	15 I	-	-	Red	Yes
Mistle thrush	*Turdus viscivorus*	12 I	-	-	Red	-
Tree sparrow	*Passer montanus*	1 I	-	-	Red	Yes
House sparrow	*Passer domesticus*	19 I	-	-	Red	Yes
Linnet	*Linaria cannabina*	5 I	-	-	Red	Yes
Yellowhammer	*Emberiza citrinella*	3 T	-	-	Red	Yes
Oystercatcher	*Haematopus ostralegus*	3 I	-	-	Amber	-
Common gull	*Larus canus*	8 I	-	-	Amber*	-
Rook	*Corvus frugilegus*	44 I	-	-	Amber	-
Willow warbler	*Phylloscopus trochilus*	5 I	-	-	Amber	-
Whitethroat	*Curruca communis*	1 I	-	-	Amber	-
Wren	*Troglodytes troglodytes*	2 I	-	-	Amber	-

[11] 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). Birds of Conservation Concern 5: 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.

[12] The Scottish Biodiversity List is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. For the complete list please visit: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list.

Species	Scientific name	Count	Annex I	Schedule 1	BoCC[11]	SBL[12]
Song thrush	*Turdus philomelos*	1 T	-	-	Amber	Yes
Dunnock	*Prunella modularis*	1 I	-	-	Amber	-
Meadow pipit	*Anthus pratensis*	12 I	-	-	Amber	-
Bullfinch	*Pyrrhula pyrrhula*	5 I	-	-	Amber	Yes
Red Kite	*Milvus milvus*	1 F	Yes	Yes	Green	Yes
Barn swallow	*Hirundo rustica*	1 F	-	-	Green	-
Common crossbill	*Loxia curvirostra*	2 F	-	Yes	Green	-
Key to Count Codes. T: Number of estimated territories I: Number of individuals. F: Number of individuals seen in flight only						

3.4 Scarce Breeding Bird Survey

3.4.1 Scarce Breeding Bird Surveys were conducted for the related proposed Beauly-Peterhead OHL development (2023) and proposed Spittal – Loch Buidhe – Beauly 400kv OHL development (2024), the survey areas of which overlapped the updated Proposed Development footprint and a 2 km study area. The surveys targeted sensitive breeding Schedule 1 raptors, of which three species were confirmed as nesting within the 2 km study area: osprey *Pandion haliaetus* (SPA qualifying - two nest sites in 2023, two nest sites in 2024); red kite *Milvus milvus* (one nest site in 2024); and peregrine *Falco peregrinus* (one nest site in 2023). These results are discussed in further detail in **Appendix 6.2 – Confidential Schedule 1 Raptors Baseline** and illustrated in **Confidential Figure 6.2.1** accompanying Appendix 6.2.

3.4.2 In addition, there were flight observations of the Schedule 1 species honey-buzzard *Pernis apivorus* within the study area during surveys for the related proposed Beauly-Peterhead OHL development. Although breeding was not confirmed, flight activity from this species indicated a territory was established within the wider area surrounding the Proposed Development. This activity involved three observations of the same individual on a single date in June 2023. One of the flights involved 'wing clapping' display indicative of territorial behaviour.

3.4.3 Further to this, an apparent pair of honey-buzzard were watched in flight together during the novel flight activity surveys in August 2023. This flight activity was beyond the CRA.

4. CONCLUSIONS

4.1.1 The assemblage of breeding birds recorded within the Study Area during Breeding Bird Surveys is typical of a woodland and agricultural habitat mosaic. Four species of elevated conservation concern (red-listed BoCC5, SBL) were found to be holding breeding territories within the Proposed Development: lapwing, song thrush, skylark, and yellowhammer. An additional six red-listed species were recorded foraging within or over the Proposed Development: house martin, starling, mistle thrush, tree sparrow, house sparrow, and linnet. A single commuting flight for common crossbill (Schedule 1 species) was recorded.

4.1.2 Sensitive breeding Schedule 1 raptors confirmed as breeding within 2 km of the Proposed Development from overlapping proposed scheme survey data include osprey, red kite and peregrine. Flights of these raptors across the Proposed Development area during the Flight Activity surveys were likely to include those birds holding breeding territories within the wider area. A relatively high number of flights was recorded for red kite and osprey with 16 and 13 flights respectively.

4.1.3 The large foraging range of up to 20 km for osprey means there is a potential link with qualifying populations of the Inner Moray and Firth SPA and Ramsar and Cromarty Firth SPA and Ramsar and birds breeding within 2 km of the Proposed Development.

4.1.4 Geese species were recorded on only one occasion during the related proposed Beauly-Peterhead OHL scheme with overlapping study areas. A flock of eight greylag geese was recorded in flight only during the flight activity surveys and not seen to land, with no indication of the Proposed Development area being utilised as a foraging area by greylag goose *Anser anser* or other geese species.