Appendix 6.1: Ornithology Technical Report

Scottish Power Energy Networks

Scoop Hill 132kV Connection Project

Appendix 6.1: Ornithology Technical Report

Final report
Prepared by LUC
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Contents

Chapter 1
Introduction

1.1 This report supports **Chapter 6: Ornithology** of the Scoop Hill 132kV Connection Project Environmental Report (ER) and details the results of ornithology surveys undertaken by LUC at the location of the proposed Scoop Hill 132kV Connection Project, located approximately 3.5km south of Moffat in Dumfries & Galloway. Surveys were carried out between April and August 2021 and between April and June 2022.

1.2 Surveys were undertaken to collect data on the baseline bird community at the location of the proposed Scoop Hill 132kV Connection Project during the breeding season, and aimed to establish:

- The composition of breeding bird community.
- The level of flight activity by breeding and foraging birds.

1.3 Surveys focussed on collecting information on the presence, abundance, distribution and flight activity of breeding birds of conservation concern. These are species listed on Annex 1 of the EU Bird Directive, species listed on Schedule 1 of the Wildlife and Countryside Act (1981) (WCA), and species on the Red List of Birds of Conservation Concern (BoCC) (Stanbury et al. 2021)[1].

[1] 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. British Birds 114: 723-747.

Chapter 2
Consultations and Desk Study

2.1 The Scoop Hill 132kV Connection Project does not pass through any statutorily designated sites that cite ornithological interests. The nearest Special Protection Area (SPA) is the Castle Loch (Lochmaben) SPA, designated for wintering pink footed geese (*Anser brachyrhynchus*) and situated approximately 18km to the south. The nearest Site of Special Scientific Interest (SSSI) is the Tweedsmuir Hills SSSI, designated in part for its breeding bird assemblage and situated approximately 15km to the north-east.

2.2 In December 2020, a pre-scoping consultation enquiry and data request was made to NatureScot, to confirm the suitability of ornithology survey and assessment proposals, and to ask for any information held by NatureScot on key bird populations or sites.

2.3 Information on the presence and location of Annex 1, Schedule 1 and red-listed birds were obtained from technical annexes supporting relevant chapters of the Scoop Hill Community Wind Farm EIA Report[2].

[2] Community Windpower (2020) Scoop Hill Community Wind Farm Environmental Impact Assessment Report.

Chapter 3
Field methods

Survey Periods

3.1 In 2021, flight activity surveys in the breeding season commenced on 30th April and ceased on 17th August. In 2022, a three-visit breeding bird survey was undertaken on 13 April (visit 1), 10 May (visit 2) and 14 June (visit 3).

Survey Areas

3.2 For flight activity surveys in 2021, a single vantage point (VP) was established to ensure good visual coverage of airspace over the potential route options being considered at the preliminary routeing stage, plus a 500m buffer around the options (see ER **Figure 6.1**).

3.3 Breeding bird surveys were undertaken in 2022 within at least 250m of the proposed route (see ER **Figure 6.1**).

Survey Personnel

3.4 Surveys were undertaken by Alex Scullion (AS) and Michal Ostalowski (MO). Both are experienced surveyors and had received appropriate training in the field survey methods being used.

Field Surveys

Flight Activity Surveys

3.5 Information on bird flight activity was collected during systematic watches from a single VP, located to provide good views of the airspace over and surrounding the proposed route options. VP watches followed the methods described by Band *et al.* (2007)[3] and collected flight activity information on a defined list of target species (**Appendix A**), to provide information on areas of high flight activity and options for mitigation. It also provided information on how the bird community used habitats at the location of the proposed Scoop Hill 132kV Connection Project, including information on bird behaviour, habitat use and breeding status.

3.6 The VP location was selected using a mixture of GIS analyses and field surveys (see ER **Figure 6.1**).

[3] Band, W., Madders, M. & Whitfield, D.P. (2007) Developing field and analytical methods to assess avian collision risk at wind farms. In: de Lucas M, Janss GFE, Ferrer M eds. Birds and wind farms: risk assessment and mitigation. Madrid, Quercus. Pp. 259–275.

3.7 VP watches were undertaken by scanning airspace in front of the observer and 90 degrees either side to a distance of 2km. The front viewing direction was fixed, meaning that each watch scanned a consistent 180-degree arc in front of the observer. A bespoke field map indicated the viewing area.

3.8 All watches lasted 3 hours. Watches were undertaken in daylight hours, and their timing varied to include the early, middle and late parts of the day. Watches were undertaken from each VP in all months of the survey period. Watches were undertaken in a range of weather conditions, but observers aimed to ensure that visibility and weather conditions allowed the detection of flight activity within the viewshed (**Appendix B: Tables B1** and **B2**).

3.9 In total, 36 hours of flight activity survey was undertaken from the VP in the breeding season (**Table 3.1**).

Table 3.1: Monthly hours of flight activity survey time

Month	Watch hours
April	6.0
May	6.0
June	12.0
July	6.0
August	6.0
Total	**36.0**

3.10 VP watches collected information on target bird flight activity using three different recording methods. The method used depended on the species detected (see **Appendix A**). The viewing area was scanned until a target species was detected. Recording was then made as follows:

- All target species flights – flights by target species on the A, B and C lists were recorded as an occurrence during a particular 5-minute period of the VP watch. The recording method totalled the minimum number of individuals of each target species observed in the VP survey area during the previous 5-minute period.
- Focal timed flights – flights by species on the A list were timed from the moment of detection, until they were either lost to view or landed. For the duration of the flight, the height of the bird(s) was estimated every 15 seconds aided by an audible countdown timer, and recorded within one of the following height bands: <10m; 10-30m; and >30m. Finally, the location flight was mapped onto a 1:25,000 OS map, the flight direction noted and the line numbered to correspond to the recorded data on timing and height. The time the bird was first seen was recorded, along with their age and sex if this was distinguishable.
- Focal untimed flights – flights by species on the B list were not timed, but the flight was mapped as above and a record was made of the height band(s) occupied by the bird during the flight.

3.11 At the end of each watch, summary maps were produced showing mapped flight lines, cross referenced to recording forms holding data on the flight timings and heights.

Breeding Bird Surveys

3.12 Breeding birds on open ground habitat were surveyed by undertaking walkover surveys of habitat within at least 250m of the proposed OHL route between April and June 2022 (**Figure 6.1**). Surveys were undertaken using a modified version of the Brown and Shepherd (1993)[4] method for upland breeding waders. The whole survey area was visited on three occasions in 2022: 13th April (visit 1); 10th May (visit 2); and 14th June (visit 3) (**Table 3.2; Appendix B: Table B3**).

Table 3.2: Breeding bird survey effort

Session ID	Date	Start time	Finish time	Duration	Surveyor
220413_1	13/04/22	0845	1315	04:30	MO
220510_1	10/05/22	0910	1345	04:35	MO
220614_1	14/06/22	1000	1515	05:15	MO

3.13 Surveyors approached to within 100m of all parts of the survey area, aiming to maintain a constant search effort over the area. Surveyors scanned all areas and listened for bird calls to locate target species and classify behaviour to help ascertain their breeding status. The location of individuals was mapped, and a record was made of any behaviour characteristic of breeding. Summary maps were made for each visit, showing the likely distribution of breeding territories. Species specific distance thresholds were used to separate individuals into different breeding territories. Overall population estimates were obtained by combining data from all three survey visits into a territory map, and using behaviour records to assign breeding status for each territory.

[4] Brown, A.F. & Shepherd, K.B. (1993) A method for censusing upland breeding waders, Bird Study, 40:3, 189-195.

Chapter 4
Results

Raptors

Osprey

Occurrence and status

4.1 Osprey were recorded on 14 occasions during the 2021 breeding season. Records were mainly of birds in flight, recorded during VP watches. There were two incidental records confirming the presence of adults at an active nest site, approximately 1.8km from the Scoop Hill 132kV Connection Project.

Flight activity

4.2 Twelve flights by osprey were recorded during VP watches, but all were at least 1.5km from the Scoop Hill 132kV Connection Project, with no crossings of the proposed OHL (**Table 4.1**; see ER **Figure 6.2**). The total flight time by osprey was 945 seconds with the majority of time spent below 30m (**Appendix B: Table B4**).

Red kite

Occurrence and status

4.3 Red kites were recorded on five occasions during the 2021 breeding season and three times in 2022. All records from 2021 were of birds in flight, observed during VP watches; in 2022, birds were seen in flight on three occasions during breeding bird surveys. There was no evidence of breeding by red kite.

Flight activity

4.4 During VP watches in 2021, red kites were recorded in flight for a total of 1620 seconds and all flight time was at above 30m (**Appendix B: Table B4**). One flight was within 500m of the Scoop Hill 132kV Connection Project, and this crossed the proposed OHL eight times (**Table 4.1**; see ER **Figure 6.2**).

Peregrine

Occurrence and status

4.5 Peregrine was recorded in flight on one occasion in 2022. A peregrine breeding site is approximately 570m from the Scoop Hill 132kV Connection Project. VP watches did not record peregrine or any evidence of breeding in 2021, but a

peregrine carrying food was recorded in the vicinity of the nest in 2022, so a breeding attempt was considered probable.

Other raptors

Occurrence and status

4.6 Buzzard and kestrel were occasionally seen during VP watches in 2021. Sparrowhawk was recorded once during VP watches (**Table 4.1**).

Waders

Common sandpiper

Occurrence and status

4.7 Common sandpipers were present within suitable habitat along the River Annan. A single territory was present, estimated to be centred within 100m of the Scoop Hill 132kV Connection Project (see ER **Figure 6.3**).

4.8 Oystercatcher was present, with four individuals recorded during breeding bird surveys in 2022. There was no evidence of a breeding attempt.

Other species

Occurrence and status

4.9 Several relatively common passerine species were recorded during breeding bird surveys. There were estimated to be four song thrush territories, and a single linnet territory. Cuckoo were also present and are likely to have bred (see ER **Figure 6.3**).

4.10 Raven was recorded once during flight activity surveys in 2021 (**Table 4.1**).

Table 4.1: Species recorded during VP watches in April to August 2021

Species	Occurrences*	% occurrence^
Buzzard	17	3.9
Kestrel	13	3.0
Osprey	11	2.5
Red kite	9	2.1
Raven	3	0.7
Starling (flock)	2	0.5
Sparrowhawk	1	0.2

*the number of 5-minute periods that each species was recorded in flight during VP watches; ^the percentage of 5-minute periods that each species occurred (n = 432).

Appendix A

Target Species Lists

A.1 Flight activity survey species lists

A-list species	B-list species	C-list species
Red-throated diver	Whooper swan	Cormorant
Black-throated diver	Greylag goose	Heron
Common scoter	Barnacle goose	Buzzard
White-tailed eagle	White-fronted goose	Sparrowhawk
Golden eagle	Pink footed goose	Kestrel
Osprey	Brent goose	Red grouse
Red kite	Bean goose	Grey partridge
Marsh harrier	Golden plover	Lapwing
Hen harrier	Dunlin	Redshank
Honey buzzard	Greenshank	Common sandpiper
Goshawk	Whimbrel	Oystercatcher
Merlin	Wood sandpiper	Snipe
Peregrine	Terns	Woodcock
Hobby	Arctic skua	Herring gull
Curlew	Great skua	Cuckoo
Barn owl		Ring ouzel
Short-eared owl		Raven
Black grouse		
Capercaillie		
Nightjar		
Chough		

A.2 Distribution and abundance surveys – additional species list

Species	
Other wildfowl	Tree sparrow
Marsh tit	Yellow wagtail
Willow tit	Grey wagtail
Grasshopper warbler	Tree pipit
Wood warbler	Hawfinch
Starling	Linnet
Ring ouzel	Twite
Song thrush	Lesser redpoll
Mistle thrush	Crested tit
Spotted flycatcher	Yellowhammer
Pied flycatcher	Corn bunting
Whinchat	Reed bunting
Stonechat	Bullfinch
House sparrow	Crossbill

Appendix B
Tables

Table B.1: Flight activity survey dates and start finish times

Session_ID	Date	Start time	Finish time	Duration	Surveyor
210430_1	30/04/2021	10:45	13:45	03:00	MO
210430_2	30/04/2021	14:30	17:30	03:00	MO
210527_1	27/05/2021	11:45	14:45	03:00	MO
210527_2	27/05/2021	15:15	18:15	03:00	MO
210608_1	08/06/2021	09:20	12:20	03:00	MO
210608_2	08/06/2021	12:50	15:50	03:00	MO
210630_1	30/06/2021	09:15	12:15	03:00	MO
210630_2	30/06/2021	12:45	15:45	03:00	MO
210716_1	16/07/2021	08:30	11:30	03:00	AS
210716_2	16/07/2021	12:00	15:00	03:00	AS
210817_1	17/08/2021	09:10	12:10	03:00	AS
210817_2	17/08/2021	12:40	15:40	03:00	AS

Table B.2: Weather recorded during flight activity survey sessions (*Precipitation codes: 0 – dry; 1 – intermittent light rain; 2 intermittent heavy rain; 3 – continuous light rain; 4 – continuous heavy rain)

SESSION_ID	VP HOUR	CLOUD COVER (10ths)	CLOUD HEIGHT (m)	WIND FORCE	WIND DIRECTION	VISIBILIITY (km)	PRECIP.*
210430_1	Start	6	600	3	NE	5	0
210430_1	1st hour	4	800	3	NE	5	0
210430_1	2nd hour	2	800	3	NE	5	0
210430_1	3rd hour	1	800	3	NE	5	0
210430_2	Start	2	800	3	ENE	5	0
210430_2	1st hour	2	800	3	ENE	5	0
210430_2	2nd hour	3	800	3	NE	5	0
210430_2	3rd hour	4	800	3	ENE	5	0
210527_1	Start	7	500	2	W	5	0
210527_1	1st hour	6	600	2	SW	5	0

SESSION_ID	VP HOUR	CLOUD COVER (10ths)	CLOUD HEIGHT (m)	WIND FORCE	WIND DIRECTION	VISIBILIITY (km)	PRECIP.*
210527_1	2nd hour	6	600	2	W	5	0
210527_1	3rd hour	6	600	2	W	5	0
210527_2	Start	6	600	2	S	5	0
210527_2	1st hour	5	700	2	S	5	0
210527_2	2nd hour	5	700	2	S	5	0
210527_2	3rd hour	6	700	2	S	5	0
210608_1	Start	10	500	2	S	5	0
210608_1	1st hour	10	500	3	S	5	0
210608_1	2nd hour	9	600	3	S	5	0
210608_1	3rd hour	9	600	3	S	5	0
210608_2	Start	10	600	3	S	5	0
210608_2	1st hour	9	700	3	S	5	0
210608_2	2nd hour	9	600	3	S	5	0
210608_2	3rd hour	9	700	3	S	5	0
210630_1	Start	8	600	2	SW	5	0
210630_1	1st hour	8	600	3	SW	5	0
210630_1	2nd hour	7	600	3	SW	5	0
210630_1	3rd hour	7	600	3	SW	5	0
210630_2	Start	6	600	3	SW	5	0
210630_2	1st hour	5	600	2	SW	5	0
210630_2	2nd hour	6	700	3	SW	5	0
210630_2	3rd hour	5	700	3	SW	5	0
210716_1	Start	1	1000	2	N	5	0
210716_1	1st hour	1	1000	2	N	5	0
210716_1	2nd hour	2	1000	2	N	5	0
210716_1	3rd hour	4	1000	2	N	5	0
210716_2	Start	3	1000	3	N	5	0
210716_2	1st hour	7	600	3	N	5	0
210716_2	2nd hour	9	600	3	N	5	0
210716_2	3rd hour	9	600	3	N	5	0

SESSION_ID	VP HOUR	CLOUD COVER (10ths)	CLOUD HEIGHT (m)	WIND FORCE	WIND DIRECTION	VISIBILIITY (km)	PRECIP.*
210817_1	Start	9	500	3	NW	5	0
210817_1	1st hour	9	550	4	NW	5	0
210817_1	2nd hour	9	600	3	NW	5	0
210817_1	3rd hour	10	600	4	NW	5	1
210817_2	Start	10	500	2	NW	3	3
210817_2	1st hour	10	500	3	W	3	1
210817_2	2nd hour	9	600	3	NW	5	0
210817_2	3rd hour	8	700	3	NW	5	0

Table B.3: Weather recorded during breeding bird survey sessions (*Precipitation codes: 0 – dry; 1 – intermittent light rain; 2 intermittent heavy rain; 3 – continuous light rain; 4 – continuous heavy rain)

Session_ID	Survey type	CLOUD COVER (10ths)	CLOUD HEIGHT (m)	WIND FORCE	WIND DIRECTION	VISIBILITY (km)	PRECIP.*
220413_1	Breeding bird survey	10	1000	3	WNW	5	0
220510_1	Breeding bird survey	7	600	3	SSW	5	2
220614_1	Breeding bird survey	10	900	2	SE	5	0

Table B.4: Flight activity by target species between April and August 2021. Height bands after 360 seconds are summarised for one flight in the final column.

Date	SESSION_ID	FLIGHT_ID	Species	Number	Age	Time	Duration (s)	Height band at 15 second interval (1 = <10m; 2 = 10-30m; 3 = >30m)																									
								0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	360	375+
30/04/2021	210430_1	1	Osprey	1	Ad	11:15	60	2	2	2	2	2																					
30/04/2021	210430_1	2	Osprey	1	Ad	12:23	45	2	2	2	1																						
30/04/2021	210430_1	3	Osprey	1	Ad	12:57	135	2	2	2	2	2	2	2	2	2	2																
30/04/2021	210430_1	4	Osprey	1	Ad	13:04	140	2	2	2	2	2	2	2	2	2	2	2															
30/04/2021	210430_2	2	Red kite	1	Ad	16:10	1140	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	All 3
30/04/2021	210430_2	1	Osprey	1	Ad	15:13	60	2	2	2	2	2																					
16/07/2021	210716_1	1	Osprey	1	Ad	09:50	60	2	2	2	2	2																					
16/07/2021	210716_2	1	Red kite	1	ad	12:10	135	3	3	3	3	3	3	3	3	3	3																
16/07/2021	210716_2	3	Red kite	1	ad	14:22	345	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	3	3		
16/07/2021	210716_2	2	Osprey	1	ad	13:02	10	2																									
16/07/2021	210716_2	4	Osprey	1	ad	14:48	45	2	2	1	1																						
17/08/2021	210817_1	2	Red kite	1	ad	10:30	15	1	1																								
17/08/2021	210817_1	3	Red kite	1	ad	11:34	60	2	2	2	2	2																					
17/08/2021	210817_1	1	Osprey	1	ad	10:00	300	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	2	2	1	1	2	2					
17/08/2021	210817_2	1	Osprey	1	ad	13:13	45	2	2	2	2																						
17/08/2021	210817_2	2	Osprey	1	ad	13:31	15	1	1																								
17/08/2021	210817_2	3	Osprey	1	ad	15:24	30	2	2	2																							