

APPENDIX V2-5.2 – ORNITHOLOGY TECHNICAL REPORT APRIL 2016 TO DECEMBER 2018

2019

Report on Ornithological Surveys for Section 5 of the Skye Reinforcement Project

April 2016 to December 2018

n r p NATURAL RESEARCH
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Introduction

1. This report details the ornithological survey work undertaken on the route of Section 5 of the Skye Reinforcement Project (hereafter referred to as the Proposed Development) by Natural Research (Projects) Ltd (NRP) between April 2016 and December 2018.
2. The objectives of the study were to:
 - Map the distribution of breeding birds, including scarce breeding species listed in Annex 1 of the EU Birds Directive (2009/147/EEC) on the Conservation of Wild Birds ('the Birds Directive') or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA).
 - Quantify the level of bird flight activity by selected breeding and foraging birds of high conservation importance; and
 - Record the presence and abundance of selected other birds of conservation importance (those listed on the Red List of Birds of Conservation Concern (Eaton *et al.*, 2015) or in Biodiversity Action Plans (BAPs)).

Desk Study and Consultation

Desk Based Research and Data Sources

3. A desk study was undertaken to collate existing bird records/data. Distribution and abundance data were collected from the following published sources and consultees:
 - Scottish Natural Heritage (SNH), including Sitelink (online information about designated sites);
 - UK Biodiversity Action Plan (BAP);
 - Birds of Conservation Concern (BoCC) (Eaton *et al.*, 2015);
 - International Union for Conservation of Nature (IUCN) red list of threatened species;
 - Scottish Biodiversity List (Scottish Biodiversity Forum, 2013);
 - National Biodiversity Network (NBN) Gateway website;
 - The Royal Society for the Protection of Birds (RSPB);
 - Local Raptor Study Group members; and
 - Other surveyors working in the vicinity (Ellendale Environmental, 2018)
4. The Proposed Development intersects between some of the component lochs of the West Inverness-shire Lochs Special Protection Area (SPA) across moorland and areas of commercial

forestry that are outwith the SPA. The SPA is classified for breeding black-throated diver and common scoter (on average 6.6 pairs and 7.8 pairs respectively).

Study Areas and Survey Periods

5. The study area for ornithological surveys relevant to the Proposed Development is situated in open upland moorland, rough grazing and commercial conifer plantation, which contains the existing 132 kV transmission line and is adjacent to some of the component waterbodies of the SPA (Figures 1 & 2).
6. Two overlapping survey areas were used for ornithology surveys. Surveys over the first area (SA1) were completed between April and September 2016 (Figure 1) whilst the second year of surveys was completed over the second area (SA2) (Figure 2) between March 2018 and December 2018.
7. Both SPA species of bird are only present during the breeding season (April to August) and hence the risks of disturbance, displacement and collision are confined to this period. Furthermore, birds may fly between the component lochs of the SPA and are theoretically vulnerable to collision. SA1 was designed specifically to focus on the SPA species. Watches were continued into September to potentially allow for observations of birds lingering after breeding exploring potential breeding locations for the next year. Access to areas around the SPA was not possible therefore a programme of surveys from publicly accessible areas was designed to collect data on how these species used the main lochs of the SPA. As flights by these species are more likely to occur where the intervening topography is lowest, as these species follow the lowest topography to minimise effort, and they will also fly along the glens and lochs to reach other large waterbodies in the area and the sea then use of publicly accessible areas did not affect the quality or quantity of data collected.
8. As some bird species range over large areas and are therefore potentially vulnerable to the effects of a development a considerable distance away, the SA2 encompassed a series of survey boundaries extending up to 6 km from the Proposed Development to allow data gathering for a number of species identified as present and potentially vulnerable. These boundaries defined the study area for surveys of certain species or for a particular survey method i.e. 500 m for flight activity and breeding waders; 1.5 km for black grouse; 2 km for breeding raptors; and, 6 km for golden eagle breeding sites (Figure 2).

Field Survey Methods

9. The field surveyors were A. Ash (AA), S. Bentall (SB), D. Cameron (DJC), J. Clarke (JAC), G. Connelly (GC), B. Dunlop (BJD), P. Espin (PE), F. Leckie (FL), A. MacCormick (AMC), D. Moloney (DM), M. Moloney (MM), R. Stakim (RAS), and E. Weston (EDW). Field surveyors received training prior to and during survey work which included the various survey methods, techniques to minimise fieldworker effects on bird detection and the classification of bird behaviour. Emphasis was placed on the importance of carrying out surveys in a systematic and standardised way to enable direct comparison of data from different survey periods and sites.

Flight Activity

10. In both survey periods information on flight activity was collected during timed watches from focal vantage points (FVPs). These FVP watches were based on the standard guidance for onshore wind farms (Band *et al.*, 2007; SNH, 2014).

SA1 April to September 2016

11. For SA1 three FVPs were selected to collect data on the use of Loch Garry (FVP 1, 2 and 3, east, middle and west respectively) (Figure 1, Table 2).

Table 2. Location of Focal Vantage Points used for SA1 in April to September 2016.	
FVP	Grid Reference
1	NH 26700 02610
2	NH 22460 02360
3	NH 17860 01570

12. To ensure the best opportunities to observe flights, when weather conditions allowed, watches were completed early in the morning or in the late afternoon / evening when these species are known to be more active. Approximately 6 hours were completed from each FVP per month (Table 3; Annex 1 & 3).
13. Where possible watches were paired to allow surveyors to work in tandem, located at 'adjacent' FVPs along the loch. It was hoped that this would allow surveyors to communicate any birds sighted to the adjacent surveyor to potentially obtain more information on the flights.
14. The airspace visible from the FVP was scanned by the observer for flying birds. Flight lines were mapped and the height above water level estimated in height bands, < 10 m, 10-30 m, 30-50 m, 50-100 m, 100-150 m and > 150 m.

15. Birds seen on the water during watches were recorded on a map and their behaviour noted. If not continually in view, then attempts were made to re-locate these birds every 15 minutes.

Table 3. Watch effort from FVPs in April to September 2016 split into early morning (E) and late afternoon (L) watch periods.

FVP	Watch Period	April	May	June	July	August	September	Total
1	E	3.00	3.00	3.00	-	3.00	3.00	15.00
	L	3.00	3.00	3.00	6.00	3.00	3.00	21.00
	Total	6.00	6.00	6.00	6.00	6.00	6.00	36.00
2	E	3.00	3.00	3.00	-	3.00	3.00	15.00
	L	3.00	3.00	3.00	6.00	3.00	3.00	21.00
	Total	6.00	6.00	6.00	6.00	6.00	6.00	36.00
3	E	3.00	3.00	3.00	-	3.00	3.00	15.00
	L	3.00	3.00	3.00	6.00	3.00	3.00	21.00
	Total	6.00	6.00	6.00	6.00	6.00	6.00	36.00

SA2 March 2018 to August 2018

16. For SA2 three different FVPs (Table 4) were selected to collect data on the flight activity of certain species considered potentially susceptible to collision, over the route of the Proposed Development plus a 500 m buffer. Data were collected for Target A species (species drawn from those listed on Annex 1 of the Birds Directive and Schedule 1 of the WCA) with surveys targeted to areas identified in previous survey work and desk studies as being possibly used by species of conservation concern, with an emphasis on black-throated diver, common scoter and golden eagle. The watches were also useful to help identify any areas of critical foraging habitat for species susceptible to displacement.

Table 4. Location of Focal Vantage Points used for SA2 from March 2018.

FVP	Grid Reference
6	NH 13158 01688
7	NH 18310 03420
8	NH 28781 03171

17. These FVP watches followed the standard guidance for onshore wind farms (Band *et al.*, 2007; SNH, 2014). FVPs were selected using a mixture of GIS analysis and field trials, with the aim of maximising ground visibility within the 500 m survey buffer of the preferred alignment.
18. For golden eagle the FVP selection was based on data provided by SNH of territories identified as active during the national survey of golden eagles in 2015. One territory was identified as

potentially having part of its range which might be used regularly and which lies within an approximate 2 km radius of the Proposed Development, so FVP 6 was located to overlook part of the Proposed Development within this radius (Figure 1).

19. For black-throated diver and common scoter FVPs were located to overlook potential crossing points over the Proposed Development by these species, in the vicinity of the SPA lochs. Based on information from the desk study, consultation and the surveys in 2016 two FVP locations were identified (FVP 7 between Loch Garry and Loch Loyne, FVP 8 between Loch Garry and Loch Lundie) (Figure 1).
20. Flight direction, flight height and flight length were drawn on a map and flight height change recorded to the nearest second along with total flight duration. Flight height bands for elevation above ground level were used (< 10 m, 10-30 m, 30-50 m, 50-100 m, 100-150 m and > 150 m).
21. For FVP 6 approximately 6 hours of watches were completed each month whilst for FVP 7 and FVP 8 approximately 27 hours of watches were undertaken from each FVP between April and August (Table 5; Annex 2 & 4). For FVP 6 surveys were scheduled for a 12-month period to cover the breeding and non-breeding season as golden eagles are present on their territories all year. Whilst FVP 7 and FVP 8 were scheduled for April to August only, as common scoter and black-throated divers are only present during the breeding season.

Table 5. Survey effort from FVPs 6 & 7 March 2018 to August 2018 and FVP 6 to December 2018.							
FVP	March	April	May	June	July	August	Total
6	3.00	6.00	6.00	9.00	6.00	9.00	39.00
7	-	6.00	6.00	3.00	3.00	8.83	26.83
8	-	-	12.00	6.00	3.00	6.00	27.00
FVP	September	October	November	December			Total
6	3.00	4.50	5.50	6.00			19.00

Breeding Wader Survey - 2018

22. Surveys targeted open ground habitats within the 500 m buffer of the Proposed Development with the potential to support breeding waders. This was identified as the area around Loch Lundie (Figure 1). Due to the presence of breeding black-throated divers in the area walkover surveys were curtailed to avoid disturbance, thus three visits were undertaken between June and July (Table 6). However, as FVP 8 overlooked the survey area any records of wader species present on territories prior to this were included. Where possible all areas of suitable habitat

were approached to within around 100 m following the Brown & Shepherd (1993) method for surveying upland waders.

Table 6. Survey effort and conditions during surveys for breeding waders in 2018.

Date	Observer	Start Time	Duration (hours)	Weather						Notes
				Cloud Cover (10ths)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)	
08/06/18	FL	1300	2.00	2	1500	W	2	nil	20	Visit 1
25/06/18	BD	0950	5.92	0	NA	N	3	nil	20	Visit 2
17/07/18	AA	1015	4.50	6	800	W	3	nil	10	Visit 3

*Precipitation Codes: Continuous / Intermittent + Light / Hheavy + Rain / Snow / Hail / Fog

Black grouse lek survey - 2018

23. Areas of suitable habitat within 1.5 km of the Proposed Development (Figure 1) were searched in April and May to look for displaying male black grouse. Surveys followed the methods in Gilbert *et al.* (1998). Surveys were conducted on calm mornings and surveyors walked quietly listening and scanning for calling birds from first light (Table 7). Survey areas were identified using information provided by the RSPB which indicated the presence of black grouse on the north shore of Glen Garry and around Loch Lundie. To avoid unnecessary disturbance as surveys around Loch Lundie were being carried out for another project by other surveyors, data collected by these surveyors were shared with this project.

Table 7. Survey effort for displaying black grouse in 2018.

Date	Observer	Start Time	Duration (hours)	Weather					
				Cloud Cover (10ths)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
21/04/18	EW	0530	3.00	7	2000	SW	2	nil	10
21/04/18	PE	0535	2.33	7	2000	SW	1	nil	10
16/05/18	BD	0430	1.00	0	NA	NW	1	nil	10
16/05/18	EW	0400	3.58	2	2000	Nil	0	nil	20

*Precipitation Codes: Continuous / Intermittent + Light / Hheavy + Rain / Snow / Hail / Fog

Scarce Breeding Birds

SA1 - 2016

24. Observations of waterbodies in Glen Garry made from public roads and accessible footpaths were carried out for feeding black-throated diver, red-throated diver and common scoters.

These were completed with the aim to gain information on the use of the area by these species

and possible breeding territories. Any birds seen were watched until lost from view and their location and behaviour was recorded. Twenty-five searches were completed during the period April to September (Table 8).

Table 8. Observation effort and survey conditions for surveys for black-throated divers, common scoters and red-throated divers on Glen Garry waterbodies in 2016.

Date	Observer	Start Time	Duration (hours)	Weather						Notes
				Cloud Cover (10ths)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation *	Visibility (km)	
20/04/16	DJC	1025	2.33	6	1000	WNW	3	Nil	6	Lochs Garry & Poulary
25/04/16	DJC	1400	2.00	8	1000	WNW	5	ILS	6	Lochs Garry & Poulary
25/04/16	DJC	1900	1.00	6	1000	WNW	5	ILS	6	Lochs Garry & Poulary
26/04/16	GC	0845	2.25	7	700	NW	3	ILS	5	Lochs Garry & Poulary
26/04/16	DJC	1400	2.00	10	1000	NW	4	CLS	2	Loch Garry
10/05/16	DJC	1200	2.00	0	-	SE	3	Nil	6	Lochs Garry & Poulary
11/05/16	DJC	1025	2.25	0	-	E	6	Nil	6	Lochs Garry & Poulary
24/05/16	GC	0900	3.00	9	1000	ESE	3	Nil	5	Loch Garry
26/05/16	GC	0915	2.00	10	600	N	3	Nil	5	Lochs Garry & Poulary
26/05/16	RAS	0930	2.00	8	600	NE	4	Nil	5	Loch Garry
07/06/16	DJC/ JAC	1100	1300	2	1000	W	2	nil	6	Lochs Garry & Poulary
08/06/16	JAC	1130	2.50	7	1000	NE	2	Nil	10	Lochs Garry & Poulary
09/06/16	JAC	1530	1.00	7	1200	NE	1	Nil	10	Lochs Garry & Poulary

Table 8. Observation effort and survey conditions for surveys for black-throated divers, common scoters and red-throated divers on Glen Garry waterbodies in 2016.

Date	Observer	Start Time	Duration (hours)	Weather						Notes
				Cloud Cover (10ths)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation *	Visibility (km)	
12/06/16	GC	1530	1.50	9	1000	SE	2	Nil	5	Lochs Garry & Poulary
13/06/16	DJC	1445	2.25	10	800	W	3	Nil	6	Loch Garry
04/07/16	DJC	1135	2.50	10	500	WSW	3	IHR	6	Lochs Garry & Poulary
05/07/16	DJC	1345	3.00	10	500	SW	3	IHR	3	Lochs Garry & Poulary
07/07/16	GC	1100	1.50	10	500	W	4	ILR	4	Loch Garry
02/08/16	DJC	1330	0.50	10	800	E	4	Nil	6	Lochs Garry & Poulary
03/08/16	DJC	1045	0.75	10	300	W	3	CLR	1	Loch Garry
05/08/16	JAC	1100	0.50	9	1000	Nil	0	Nil	10	Lochs Garry & Poulary
17/08/16	DJC RAS	1035	1.83	6	1000	ENE	3	Nil	6	Lochs Garry & Poulary
18/08/16	DJC	1350	0.50	3	1000	E	1	Nil	6	Lochs Garry & Poulary
11/09/16	DJC	1215	1.50	8	1000	SE	4	Nil	6	Lochs Garry & Poulary
12/09/16	JAC	1130	1.50	10	300	SW	4	IHR	2	Lochs Garry & Poulary

*Precipitation Codes: Continuous / Intermittent + Light / Heavy + Rain / Snow / Hail / Fog

SA2 - 2018

25. Targeted surveys to locate the presence of potential breeding attempts by scarce breeding birds were undertaken in suitable habitats up to a distance of 2 km from the Proposed Development. The species included red-throated diver, black-throated diver, common scoter, white-tailed eagle, hen harrier, golden eagle, osprey, merlin, peregrine, barn owl and short-eared owl

(Table 9). Surveys followed the species methods set out in Hardey *et al.* (2013) and Gilbert *et al.* (1998) and were informed by consultation with RSPB, SNH and local raptor workers, along with incidental data collected during other surveys and in 2016.

Table 9. Survey effort and conditions for surveys for scarce breeding birds in 2018.									
Date	Observer	Start Time	Duration (hours)	Weather					
				Cloud Cover (10ths)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
15/05/18	BD	0920	5.83	8	2000	SW	1	nil	3
20/05/18	AA	1105	6.42	10	500	SE	3	ILR	5
08/06/18	FL	0855	5.83	2	1500	W	3	nil	20
26/06/18	BD	0945	6.08	0	NA	NA	0	nil	5
29/06/18	DM	1050	3.00	0	NA	E	1	nil	5
29/06/18	DM	1415	3.00	0	NA	E	1	nil	5
30/06/18	DM	0900	4.75	7	800	W	1	nil	3
30/06/18	BD	0930	6.25	7	800	W	1	nil	4
19/07/18	AM	0800	8.00	4	400	SW	2	nil	20

*Precipitation Codes: Continuous / Intermittent + Light / Heavy + Rain / Snow / Hail / Eog

Field Survey Results

SPA Species - Black-throated diver and common scoter

Abundance and distribution

26. Both these species were seen in areas of the SPA component lochs suitable for breeding during 2016 and 2018 (Figure 3, Table 10). Up to 11 individuals were seen of common scoter and three of black-throated diver (including an immature bird) so the likelihood is that potentially three pairs of scoter (based on the count of females seen together at one time) and one pair of diver attempted to breed on Loch Garry in 2016 and 2018. One pair of black-throated divers also attempted to breed on Loch Lundie in 2016 and 2018 but were unsuccessful (Ellendale Environmental, 2018).

Table 10. Sightings of common scoter and black-throated diver in 2016 and 2018.						
Species	Date	No. of birds	Time	Sex	Age	Notes
Common scoter	19/04/16	5	0825	4M 1F		Display
	20/04/16	4	1055	3M 1F		Flew at 1058 after intimidation from Canada goose. Flew over wires and bird flight deflectors
	25/04/16	8	1950	5M 3F		Feeding within 5 m of shore for 10 min

Table 10. Sightings of common scoter and black-throated diver in 2016 and 2018.

Species	Date	No. of birds	Time	Sex	Age	Notes
Common scoter	26/04/16	8	1535	5M 3F		Feeding, territorial
		2	1015	MF	2A	
	10/05/16	2	1218	MF		Territorial. Pair appeared interested in island continued diving in area to east of this island
	11/05/16	2	1149	MF		Territorial
	13/05/16	1	0547	M		Feeding
	13/05/16	4	0646	2M2F		2 pairs nest prospecting. Both pairs lost from view @ 0702
	26/05/16	1	0930	M	A	Territorial
		2	1145	MF	2A	Copulation observed
	07/06/16	3	1100	2M 1F		1 male territorial towards 2nd male
	08/06/16	1	1145	M	A	feeding
		2	1200	MF	2A	Pair feeding
	09/06/16	4	1600	2M 2F	4A	Feeding, all 4 birds together diving regularly
		1	1716	M	A	feeding
	12/06/16	5	1555	2F 3M	5A	
		2	1620	MF	2A	Feeding
	13/06/16	1	1505	M		Territorial
		1	1549	M		Territorial
	21/04/18	3	1220	3M	3A	Feeding
		1	1220	F	A	Feeding
		2	1220	2M	2A	Feeding
		2	1220	2F	2A	Feeding
		1	1220	M	A	Feeding
		1	1220	F	A	Feeding
15/05/18	3	1404	MF	A		
20/05/18	4	1649	3M 1F	4A	3 males courting a female	
	2	1701	MF	2A		
	5	1717	3M 2F	5A	Displaying	
29/06/18	2	1611	MF	2A		
Black-throated diver	20/04/16	2	1055	MF		Territorial near raft
	25/04/16	2	1449	MF		Territorial
		1	1935			Territorial diver was next to island, attacked by 3 Canada geese
	28/04/16	2	0639	MF	2A	Near raft at 0733 Female boarded raft & sat in hollow for 14min

Table 10. Sightings of common scoter and black-throated diver in 2016 and 2018.

Species	Date	No. of birds	Time	Sex	Age	Notes
Black-throated diver	25/05/16	1	1820		A	Feeding
	09/06/16	1	1741		A	Feeding
	12/06/16	1	1635		A	Feeding
	13/06/16	0	1530			Raft not occupied
	03/07/16	1	1430	F	A	Feeding
	04/07/16	1	1218	F		Territorial pair feeding – no chicks present
	04/07/16	1	1218	M		Territorial pair feeding – no chicks present
	05/07/16	1	1722	F		
	07/07/16	1	1155		A	Feeding
	18/07/16	1	1730		A	Feeding for duration of watch
	20/07/16	2	1340			Feeding
		1	1357			Feeding
	05/08/16	1	0853	M	A	Feeding
		3	1120		2A + IMM	Seen by fisherman previous day
	17/08/16	1	1137		A	Territorial, feeding
		1	1201		A	Territorial, feeding
	18/08/16	2	1638	MF		Territorial
	21/04/18	0	1210			Raft empty
		0	1245			Raft 3 empty
		0	1255			Raft 2 empty, Canada goose on nest
	01/05/18	2	0823	MF	2A	Feeding
	15/05/18	1	1251	M	A	
		1	1412		A	
		1	1603		A	Flew into land on Loch Poulary
	16/05/18	1	0548		A	Loafing
	20/05/18	2	1620		2A	
		1	1726		A	
	26/06/18	1	1433		A	
		1	1503		A	
	29/06/18	1		M	A	Feeding
30/06/18	2			A		
19/07/18	1	0720		A	interacting with great northern diver	

Flight Activity

27. Three flights by common scoter and one by black-throated diver were recorded during the 108 hours of observation from the three FVPs in 2016. These were short flights along the lochs and were all at less than 10 m elevation above the water level (Table 11).

28. In 2018 no flights were recorded during the 54 hours of observation from the two FVPs (7 & 8) which were set up to watch areas where birds might cross the Proposed Development when moving between lochs. A flight along Loch Poulary was recorded incidentally.

Table 11. Flight activity of common scoter and black-throated diver observed during FVP watches in 2016.

Species	FVP No.	Date	No. Birds	Time	<10m	10-30m	30-50m	50-100m	100-150m	>150m
Common scoter	3	25/05/16	2	1804	*					
			1	1939	*					
		09/06/16	1	1757	*					
Black-throated diver	1	20/07/16	2	1450	*					

Non-SPA species - Golden eagle*Abundance and Distribution*

29. Ornithological information obtained from SNH, the RSPB and local raptor group workers indicated that up to three active golden eagle territories lie within 6 km of the Proposed Development (Confidential Figure). One territory was identified as potentially having part of its range which might be used regularly within an approximate 2 km radius of the Proposed Development.

30. Of these, two territories were checked in 2018 and both were judged to be active.

Flight Activity

31. Four flights of golden eagle were recorded during the 58 hours of observation from FVP 6 between March and December 2018, and three were along the ridge well outside the Proposed Development 500 m buffer whilst one crossed the buffer well above the elevation of the conductors in the Proposed Development (Figure 4, Table 12). A fifth flight was noted incidentally in April crossing south at approximately 350 m in height.

Table 12. Flight activity of golden eagle observed during FVP watches in 2018.

Species	FVP No.	Date	ID on figure	No. of Birds	Time	Flying Duration (s)	Duration in height bands (s)					
							<10m	10-30m	30-50m	50-100m	100-150m	>150m
Golden eagle	6	19/07/18	1	1	1020	361		150	45	166		
			2	1	1031	118			34	84		
		31/10/18	3	1	1127	172			78	47	47	
			4	1	1135	178						178

Non-SPA species - Other divers*Abundance and Distribution*

32. Red-throated diver and great northern diver were both recorded during the survey periods. No breeding records for red-throated diver were confirmed within either survey period, with individuals being recorded feeding on Loch Garry on five occasions during April, July and August 2016. The great northern diver was seen once, on 19 July 2018 interacting with the black-throated divers on Loch Garry (Figure 5).

Flight activity

33. Four flights by red-throated divers were recorded from FVPs 1, 2 and 3 during 2016 (Table 13; Figure 5). All the flights were seen at the eastern end of Loch Garry and flight directions appeared to suggest that some birds were possibly nesting in the hills north of the loch. No flights by red-throated diver were observed from the FVPs during 2018.

Table 13. Flight activity of red-throated diver observed during FVP watches in 2016.

Species	FVP	Date	No. of Birds	Time	<10m	10-30m	30-50m	50-100m	100-150m	>150m	Notes
Red-throated diver	1	20/04/16	1	0759						*	Very high. Bird seen from FVP 2 earlier
		10/05/16	1	0740							Heard only from behind observer and over loch
		20/07/16	1	1320		*	*	*	*		Initially circling and gaining height
	2	20/04/16	1	0750					*		Seen later from FVP 1

Non-SPA species - Other scarce raptors

Abundance, distribution and flight activity

34. Osprey, merlin and white-tailed eagle were present in the survey area. Osprey was observed carrying prey and was confirmed as attempting to breed in one location within the survey buffer during 2016 and 2018. Merlin and white-tailed eagle were seen each only on one day in August. No signs of breeding were found within the survey buffer (Figure 5).
35. Three osprey flights were recorded from the FVPs during 2018, within the 500m buffer, with a total duration of 556 seconds. Of this total 45 seconds was between 10 - 30 m elevation, 212 seconds between 30 - 50 m and the remaining 300 seconds above 50 m.

Non-SPA species - Waders of conservation concern

Abundance and Distribution

36. Greenshank and whimbrel were present in the survey area. Greenshank attempted to breed in the vicinity of Loch Lundie and also on pools north of Loch Garry, neither location was within the 500 m buffer of the Proposed Development.
37. The breeding wader survey found no breeding waders of conservation concern in the area surveyed. Common sandpipers were found on territory on Loch Lundie. Three flights by greenshank were recorded in April, one in May and one in June and the whimbrel once in May (Figure 6).

Non-SPA species - Black grouse

Abundance and distribution

38. Small numbers of black grouse were found lekking in the area north and west of Loch Garry (Table 14; Figure 7). The terrain made it difficult to observe the birds and thus an estimate of the number of birds is between 4 and 7 males displaying in the afforested area north of the Proposed Development. There are probably a further 2 males displaying on the open ground at the western end of the Proposed Development. These birds were seen flying into the trees in May and were separated by approximately 2.5 km from any locations of black grouse in the forestry further north. Of these records only three individuals were within 1.5 km of the Proposed Development.
39. During watches from FVP 6 in November and December male black grouse were observed feeding in birch trees within the buffer of the Proposed Development. Three males were seen in December whilst at the same time another two males were observed in flight passing through

the buffer (Table 14; Figure 7). There is a possibility that up to five males may be foraging in the area and may also potentially display in the vicinity.

40. In addition, eight male black grouse were found lekking by the other surveyors at the eastern end of the Proposed Development, on a lek site at the north end of Loch Lundie (Stagfire Ecological Services Ltd (SES), pers. comm.). This lek was approximately 1.5 km from the Proposed Development and was also attended by two female black grouse (Table 14; Figure 7).

Table 14. Black grouse records during 2018.					
Date	Time	Count	Sex	ID on figure	Notes
21/04/18	0540	2	M	1	Vocalise, not seen
	0625	1	M	2	Vocalise, not seen
	0643	2	M	3	Vocalise, not seen
	0715	1	M	4	Vocalise, not seen. Within the survey buffer.
	0720	1	M	5	Minimum one bird. Not seen. Called and landed in trees
16/05/18	0650	1	M		Flying to land in trees. Within the survey buffer.
	0710	1	M		Flying to land in trees. Within the survey buffer.
2018		10	8M, 2F	8	SES summary of spring surveys.
21/11/18	1250	2	M	6	Feeding on birch, fly from tree into dense ground cover.
12/12/18	0910	3	M	7	Feeding on birch, roosting, until 1408 when move to ground out of view.
	1002	2	M		Flew through above existing OHL to land in birch trees out of view.

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Appendix 1. Focal Vantage Point Survey Information, 2016.

Date	Observer	FVP	Start	End	Duration	Watch ID*
19/04/2016	DJC	3	0600	0900	3.00	SKY_160419_001
20/04/2016	FL	1	0600	0900	3.00	SKY_160420_001
20/04/2016	DJC	2	0600	0900	3.00	SKY_160420_002
25/04/2016	GC	3	1600	1900	3.00	SKY_160425_001
26/04/2016	GC	1	1630	1930	3.00	SKY_160426_001
26/04/2016	DJC	2	1600	1900	3.00	SKY_160426_002
10/05/2016	FL	1	0555	0855	3.00	SKY_160510_001
10/05/2016	DJC	2	0600	0900	3.00	SKY_160510_002
13/05/2016	DJC	3	0550	0850	3.00	SKY_160513_001
24/05/2016	GC	1	1700	2000	3.00	SKY_160524_001
24/05/2016	RAS	2	1700	2000	3.00	SKY_160524_002
25/05/2016	GC	3	1710	2010	3.00	SKY_160525_001
08/06/2016	JAC	1	0600	0900	3.00	SKY_160608_001
08/06/2016	DJC	2	0545	0845	3.00	SKY_160608_002
09/06/2016	JAC	3	1700	2000	3.00	SKY_160609_001
14/06/2016	GC	1	1650	1950	3.00	SKY_160614_001
14/06/2016	DJC	2	1650	1950	3.00	SKY_160614_002
16/06/2016	DJC	3	0525	0825	3.00	SKY_160616_001
05/07/2016	DJC	3	1645	1945	3.00	SKY_160705_001
18/07/2016	RAS	1	1730	2030	3.00	SKY_160718_001
18/07/2016	DJC	2	1730	2030	3.00	SKY_160718_002
18/07/2016	GC	3	1730	2030	3.00	SKY_160718_003
20/07/2016	RAS	1	1300	1600	3.00	SKY_160720_001
20/07/2016	DJC	2	1300	1600	3.00	SKY_160720_002
05/08/2016	DJC	3	0600	0900	3.00	SKY_160805_001
15/08/2016	RAS	1	1710	2010	3.00	SKY_160815_001
15/08/2016	DJC	2	1710	2010	3.00	SKY_160815_002
18/08/2016	DJC	1	0940	1240	3.00	SKY_160818_001
18/08/2016	RAS	2	0945	1245	3.00	SKY_160818_002
18/08/2016	DJC	3	1615	1915	3.00	SKY_160818_003
05/09/2016	RAS	1	1630	1930	3.00	SKY_160905_001
05/09/2016	GC	2	1630	1930	3.00	SKY_160905_002
07/09/2016	RAS	1	1015	1315	3.00	SKY_160907_001
07/09/2016	GC	2	1015	1315	3.00	SKY_160907_002
13/09/2016	JAC	3	1000	1300	3.00	SKY_160913_001
13/09/2016	DJC	3	1450	1750	3.00	SKY_160913_002

*Watch ID relates to Appendix 3 Weather Details, 2016.

Appendix 2. Focal Vantage Point Survey Information, 2018.

Date	Observer	FVP	Start	End	Duration	Watch_ID*
28/03/2018	FL	6	1455	1755	3.00	SKY_180328_002
16/04/2018	EDW	6	1410	1710	3.00	SKY_180416_002
20/04/2018	FL	7	0730	1030	3.00	SKY_180420_001
21/04/2018	EDW	6	0900	1200	3.00	SKY_180421_002
21/04/2018	PE	7	0755	1055	3.00	SKY_180421_003
01/05/2018	AA	8	0655	0955	3.00	SKY_180501_001
11/05/2018	EDW	6	1645	1815	1.50	SKY_180511_001
15/05/2018	BJD	6	1510	1810	3.00	SKY_180515_004
16/05/2018	EDW	6	0810	0940	1.50	SKY_180516_001
16/05/2018	BJD	7	0530	0830	3.00	SKY_180516_002
17/05/2018	BJD	8	0655	0955	3.00	SKY_180517_004
23/05/2018	EDW	7	1645	1945	3.00	SKY_180523_001
23/05/2018	AA	8	1640	1940	3.00	SKY_180523_002
24/05/2018	AA	8	0655	0955	3.00	SKY_180524_001
08/06/2018	FL	8	0555	0855	3.00	SKY_180608_001
09/06/2018	EDW	6	1110	1410	3.00	SKY_180609_002
09/06/2018	EDW	6	0700	1000	3.00	SKY_180609_003
25/06/2018	BJD	8	1545	1845	3.00	SKY_180625_001
26/06/2018	BJD	6	1850	2150	3.00	SKY_180626_002
27/06/2018	BJD	7	0640	0940	3.00	SKY_180627_002
17/07/2018	AA	8	0650	0950	3.00	SKY_180717_001
19/07/2018	AA	6	0920	1220	3.00	SKY_180719_001
20/07/2018	AMC	6	1340	1640	3.00	SKY_180720_004
21/07/2018	AMC	7	0725	1025	3.00	SKY_180721_001
07/08/2018	SB	6	1715	2015	3.00	SKY_180807_001
12/08/2018	SB	7	1835	2035	2.00	SKY_180812_001
14/08/2018	SB	6	0550	0850	3.00	SKY_180814_001
15/08/2018	SB	7	1420	1710	2.83	SKY_180815_001
15/08/2018	SB	7	1710	1810	1.00	SKY_180815_002
22/08/2018	SB	8	1505	1805	3.00	SKY_180822_002
23/08/2018	SB	6	1700	2000	3.00	SKY_180823_001
23/08/2018	SB	7	0630	0930	3.00	SKY_180823_002
23/08/2018	SB	8	1130	1430	3.00	SKY_180823_003
21/09/2018	SB	6	1305	1605	3.00	SKY_180921_001
31/10/2018	SB	6	0840	1140	3.00	SKY_181031_001
31/10/2018	SB	6	1210	1340	1.50	SKY_181031_002
21/11/2018	SB	6	0920	1220	3.00	SKY_181121_001
21/11/2018	SB	6	1250	1515	2.42	SKY_181121_002
12/12/2018	SB	6	0850	1150	3.00	SKY_181212_001
12/12/2018	SB	6	1220	1520	3.00	SKY_181212_002

*Watch ID relates to Appendix 4 Weather details, 2018.

Appendix 3. Weather Details, 2016.

Watch ID	Hour	Cloud Cover (10 th)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
SKY_160419_001	0	4	1000	-	0	nil	6
SKY_160419_001	1	7	1000	-	0	ILR	6
SKY_160419_001	2	8	1000	-	0	nil	6
SKY_160419_001	3	7	1000	SSE	1	nil	6
SKY_160420_001	0	10	900	nil	0	nil	10
SKY_160420_001	1	10	900	-	0	nil	10
SKY_160420_001	2	9	900	-	0	nil	10
SKY_160420_001	3	9	900	-	0	nil	10
SKY_160420_002	0	9	1000	W	1	nil	6
SKY_160420_002	1	10	1000	W	1	nil	6
SKY_160420_002	2	10	1000	W	1	nil	6
SKY_160420_002	3	10	1000	W	1	nil	6
SKY_160425_001	0	4	700	NW	3	nil	5
SKY_160425_001	1	6	700	NW	3	IHS	5
SKY_160425_001	2	6	700	NW	3	ILS	5
SKY_160425_001	3	4	700	NW	3	nil	5
SKY_160426_001	0	6	700	NW	2	ILR	5
SKY_160426_001	1	5	700	NW	1	nil	5
SKY_160426_001	2	5	700	NW	1	nil	5
SKY_160426_001	3	8	700	NW	1	ILR	5
SKY_160426_002	0	9	1000	SSE	3	ILS	6
SKY_160426_002	1	7	1000	SSE	3	ILS	6
SKY_160426_002	2	5	1000	SSE	3	ILS	6
SKY_160426_002	3	5	1000	SSE	3	ILS	6
SKY_160510_001	0	0	-	-	0	nil	10
SKY_160510_001	1	0	-	-	0	nil	10
SKY_160510_001	2	0	-	-	0	nil	10
SKY_160510_001	3	0	-	E	1	nil	10
SKY_160510_002	0	0	-	SE	1	nil	6
SKY_160510_002	1	0	-	SE	1	nil	6
SKY_160510_002	2	0	-	SE	2	nil	6
SKY_160510_002	3	0	-	SE	3	nil	6
SKY_160513_001	0	10	400	SE	4	nil	6
SKY_160513_001	1	10	400	SE	4	nil	6
SKY_160513_001	2	10	400	SE	4	nil	6
SKY_160513_001	3	10	400	SE	5	nil	6
SKY_160524_001	0	3	1000	ESE	3	nil	5
SKY_160524_001	1	2	1000	ESE	3	nil	5
SKY_160524_001	2	1	1000	ESE	2	nil	5
SKY_160524_001	3	2	1000	ESE	2	nil	5
SKY_160524_002	0	5	1200	ESE	4	nil	5
SKY_160524_002	1	4	1200	ESE	4	nil	5
SKY_160524_002	2	3	1200	ESE	4	nil	5
SKY_160524_002	3	2	1200	ESE	3	nil	5
SKY_160525_001	0	9	1000	E	4	nil	5
SKY_160525_001	1	10	1000	E	4	nil	5
SKY_160525_001	2	10	1000	E	4	nil	5
SKY_160525_001	3	10	1000	E	4	nil	5

Watch ID	Hour	Cloud Cover (10 th)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
SKY_160608_001	0	10	0	-	0	CHF	0.1
SKY_160608_001	1	10	0	-	0	CHF	0.5
SKY_160608_001	2	10	100	-	0	nil	2
SKY_160608_001	3	10	100	-	0	nil	2
SKY_160608_002	0	10	100	SE	2	CLF	1
SKY_160608_002	1	10	100	SE	2	CLF	1
SKY_160608_002	2	10	100	SE	2	CLF	2
SKY_160608_002	3	10	100	SE	3	ILF	3
SKY_160609_001	0	8	1200	NE	1	nil	10
SKY_160609_001	1	9	1200	NE	1	nil	10
SKY_160609_001	2	9	1000	NE	1	ILR	10
SKY_160609_001	3	10	1000	NE	1	ILR	10
SKY_160614_001	0	10	800	NE	1	CHR	3
SKY_160614_001	1	10	800	N	1	IHR	3
SKY_160614_001	2	10	600	N	1	IHR	4
SKY_160614_001	3	10	600	N	1	IHR	4
SKY_160614_002	0	10	500	SE	3	CLR	4
SKY_160614_002	1	10	600	SE	3	CLR	6
SKY_160614_002	2	10	600	SE	3	ILR	6
SKY_160614_002	3	10	500	SE	5	nil	6
SKY_160616_001	0	10	500	SE	3	CLR	3
SKY_160616_001	1	10	600	SE	2	CLR	3
SKY_160616_001	2	10	500	ESE	1	ILR	3
SKY_160616_001	3	10	600	ESE	1	ILR	3
SKY_160705_001	0	8	800	W	4	nil	6
SKY_160705_001	1	6	1000	W	4	nil	6
SKY_160705_001	2	6	1000	W	4	ILR	6
SKY_160705_001	3	8	1000	W	4	ILR	6
SKY_160718_001	0	10	300	WSW	3	ILR	3
SKY_160718_001	1	10	300	WSW	2	nil	3
SKY_160718_001	2	10	400	SW	2	nil	4
SKY_160718_001	3	9	600	SW	1	nil	5
SKY_160718_002	0	10	300	WSW	3	ILR	3
SKY_160718_002	1	10	300	WSW	2	ILR	3
SKY_160718_002	2	10	300	W	1	nil	4
SKY_160718_002	3	9	400	W	1	nil	5
SKY_160718_003	0	10	500	SE	1	ILR	4
SKY_160718_003	1	10	500	SE	1	nil	4
SKY_160718_003	2	10	500	SE	1	nil	4
SKY_160718_003	3	10	500	SE	1	nil	4
SKY_160720_001	0	10	300	SE	1	ILR	3
SKY_160720_001	1	10	300	SE	1	IHR	3
SKY_160720_001	2	10	400	WSW	3	IHR	3
SKY_160720_001	3	10	400	WSW	3	IHR	3
SKY_160720_002	0	10	500	SE	3	nil	4
SKY_160720_002	1	10	500	SE	3	IHR	3
SKY_160720_002	2	10	400	SW	4	IHR	3
SKY_160720_002	3	10	400	SW	4	ILR	3
SKY_160805_001	0	6	1000	E	1	nil	6
SKY_160805_001	1	5	1000	E	1	nil	6
SKY_160805_001	2	6	1000	nil	0	nil	6

Watch ID	Hour	Cloud Cover (10 th)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
SKY_160805_001	3	9	1000	nil	0	nil	6
SKY_160815_001	0	7	1000	S	3	nil	5
SKY_160815_001	1	8	1000	S	2	nil	5
SKY_160815_001	2	7	1000	S	3	nil	5
SKY_160815_001	3	7	1000	S	3	nil	5
SKY_160815_002	0	6	1000	SW	3	nil	6
SKY_160815_002	1	6	1000	SW	3	nil	6
SKY_160815_002	2	6	1000	SW	3	nil	6
SKY_160815_002	3	5	1000	SW	3	nil	6
SKY_160818_001	0	8	500	SE	1	ILF	3
SKY_160818_001	1	6	1000	nil	0	nil	6
SKY_160818_001	2	4	1000	nil	0	nil	6
SKY_160818_001	3	6	1000	SE	2	nil	6
SKY_160818_002	0	7	900	E	2	ILF	3
SKY_160818_002	1	6	900	E	2	nil	4
SKY_160818_002	2	5	900	nil	0	nil	5
SKY_160818_002	3	6	900	E	1	nil	5
SKY_160818_003	0	5	1000	SE	3	nil	6
SKY_160818_003	1	5	1000	SE	3	nil	6
SKY_160818_003	2	8	1000	SE	2	nil	6
SKY_160818_003	3	5	1000	SE	1	nil	6
SKY_160905_001	0	9	600	SW	3	nil	5
SKY_160905_001	1	8	600	SW	4	nil	5
SKY_160905_001	2	9	600	WSW	3	nil	5
SKY_160905_001	3	9	600	WSW	3	nil	5
SKY_160905_002	0	9	500	SW	3	nil	5
SKY_160905_002	1	8	600	SW	3	nil	5
SKY_160905_002	2	8	600	SW	3	nil	5
SKY_160905_002	3	8	600	SW	2	nil	5
SKY_160907_001	0	10	200	SE	1	CLR	1
SKY_160907_001	1	10	200	SE	1	ILR	2
SKY_160907_001	2	10	300	E	2	nil	3
SKY_160907_001	3	10	300	E	2	nil	3
SKY_160907_002	0	10	200	SE	1	CLR	2
SKY_160907_002	1	10	200	ESE	2	ILR	2
SKY_160907_002	2	10	200	ESE	2	ILR	2
SKY_160907_002	3	10	200	ESE	1	ILR	2
SKY_160913_001	0	10	300	-	0	ILR	2
SKY_160913_001	1	10	300	-	0	ILR	2
SKY_160913_001	2	9	500	-	0	ILR	5
SKY_160913_001	3	9	700	SW	1	nil	10
SKY_160913_002	0	10	700	W	1	nil	4
SKY_160913_002	1	10	700	W	1	nil	6
SKY_160913_002	2	10	700	W	1	nil	6
SKY_160913_002	3	10	300	E	1	CLR	1

*Precipitation Codes: Continuous / Intermittent + Light / Heavy + Rain / Snow / Hail / Fog

Appendix 4. Weather Details, 2018.

Watch ID	Hour	Cloud Cover (10 th)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
SKY_180328_002	0	7	1000	SW	1	nil	20
SKY_180328_002	1	7	1000	SW	1	nil	20
SKY_180328_002	2	9	1000	SW	1	nil	20
SKY_180328_002	3	9	1000	SW	1	nil	20
SKY_180416_002	0	10	1000	S	5	nil	10
SKY_180416_002	1	10	1000	S	5	nil	10
SKY_180416_002	2	10	1000	S	5	nil	10
SKY_180416_002	3	10	1000	S	5	nil	10
SKY_180420_001	0	7	900	SW	2	nil	20
SKY_180420_001	1	8	900	SW	2	nil	20
SKY_180420_001	2	9	700	SW	3	ILR	5
SKY_180420_001	3	9	700	SW	3	ILR	5
SKY_180421_002	0	7	1500	SW	1	nil	10
SKY_180421_002	1	7	1500	SW	1	nil	10
SKY_180421_002	2	7	1500	SW	1	nil	10
SKY_180421_002	3	7	1500	SW	1	nil	10
SKY_180421_003	0	9	800	SW	1	nil	20
SKY_180421_003	1	8	1000	SW	1	nil	20
SKY_180421_003	2	9	1500	SW	1	nil	20
SKY_180421_003	3	9	1500	SW	3	nil	20
SKY_180501_001	0	7	1000	S	1	nil	10
SKY_180501_001	1	8	1000	S	1	nil	10
SKY_180501_001	2	9	1000	S	1	nil	10
SKY_180501_001	3	9	1000	S	1	nil	10
SKY_180511_001	0	10	1000	SW	3	CLR	5
SKY_180511_001	1	10	1000	SW	3	CLR	5
SKY_180511_001	2	10	1000	SW	3	CLR	5
SKY_180515_004	0	10	1000	NW	5	nil	3
SKY_180515_004	1	8	1000	NW	5	nil	3
SKY_180515_004	2	6	1000	NW	4	nil	3
SKY_180515_004	3	6	1000	NW	4	nil	5
SKY_180516_001	0	0	-	-	0	nil	20
SKY_180516_001	1	4	2000	S	4	nil	20
SKY_180516_001	2	6	2000	S	4	nil	20
SKY_180516_002	0	0	-	NW	1	nil	3
SKY_180516_002	1	0	-	nil	0	nil	3
SKY_180516_002	2	0	-	N	1	nil	5
SKY_180516_002	3	2	2000	N	2	nil	5
SKY_180517_004	0	0	-	E	1	nil	5
SKY_180517_004	1	0	-	E	2	nil	5
SKY_180517_004	2	0	-	E	2	nil	5
SKY_180517_004	3	0	-	E	2	nil	5
SKY_180523_001	0	1	2000	W	2	nil	20
SKY_180523_001	1	2	2000	W	1	nil	20
SKY_180523_001	2	2	2000	W	1	nil	20
SKY_180523_001	3	2	2000	W	1	nil	20
SKY_180523_002	0	2	1000	SW	1	nil	20
SKY_180523_002	1	3	1000	SW	1	nil	20

Ornithology Technical Report

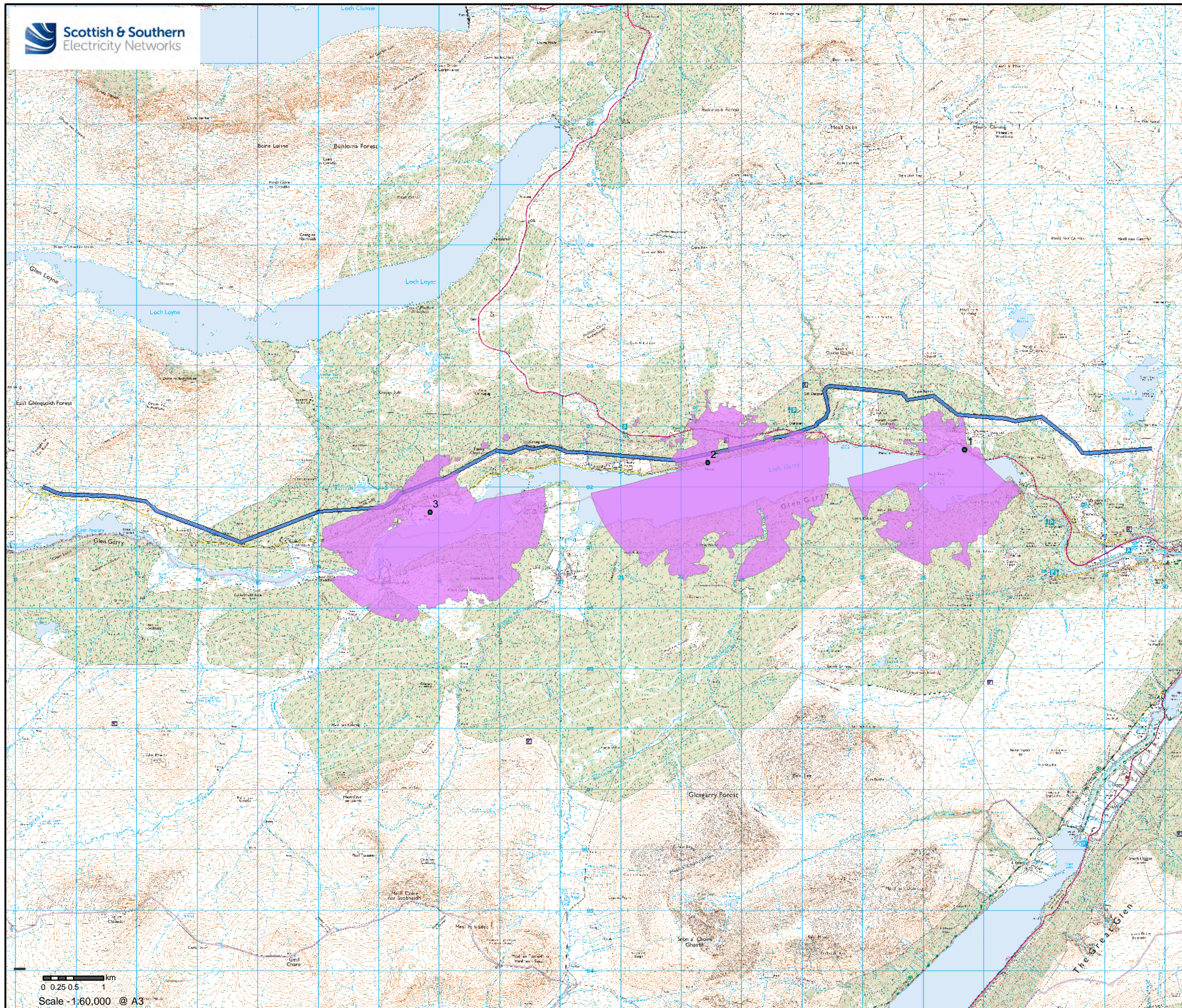
Watch ID	Hour	Cloud Cover (10 th)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
SKY_180523_002	2	3	1000	SW	1	nil	20
SKY_180523_002	3	3	1000	SW	1	nil	20
SKY_180524_001	0	0	-	SE	1	nil	20
SKY_180524_001	1	0	-	-	0	nil	20
SKY_180524_001	2	0	-	-	0	nil	20
SKY_180524_001	3	0	-	-	0	nil	20
SKY_180608_001	0	10	700	-	0	nil	20
SKY_180608_001	1	10	800	NE	1	nil	20
SKY_180608_001	2	10	900	NE	1	nil	20
SKY_180608_001	3	7	1000	NE	1	nil	20
SKY_180609_002	0	7	1000	SW	2	nil	20
SKY_180609_002	1	8	1000	SW	2	IHR	20
SKY_180609_002	2	7	1000	SW	3	nil	20
SKY_180609_002	3	7	1000	SW	2	nil	20
SKY_180609_003	0	10	300	-	0	nil	20
SKY_180609_003	1	10	300	-	0	nil	20
SKY_180609_003	2	10	300	SW	2	nil	20
SKY_180609_003	3	10	300	SW	1	nil	20
SKY_180625_001	0	0	-	N	3	nil	5
SKY_180625_001	1	0	-	N	3	nil	5
SKY_180625_001	2	0	-	N	3	nil	5
SKY_180625_001	3	0	-	N	3	nil	5
SKY_180626_002	0	10	2000	N	1	nil	3
SKY_180626_002	1	10	2000	S	1	nil	3
SKY_180626_002	2	4	3000	S	2	nil	3
SKY_180626_002	3	0	-	S	3	nil	3
SKY_180627_002	0	0	-	-	0	nil	5
SKY_180627_002	1	0	-	E	1	nil	5
SKY_180627_002	2	0	-	E	1	nil	5
SKY_180627_002	3	0	-	E	1	nil	5
SKY_180717_001	0	10	600	W	1	nil	10
SKY_180717_001	1	10	600	W	1	nil	10
SKY_180717_001	2	9	600	W	1	nil	10
SKY_180717_001	3	5	600	W	1	nil	10
SKY_180719_001	0	5	1000	W	2	nil	10
SKY_180719_001	1	8	1000	W	3	nil	10
SKY_180719_001	2	10	1000	W	3	nil	10
SKY_180719_001	3	10	1000	W	3	nil	10
SKY_180720_004	0	10	600	SW	3	nil	15
SKY_180720_004	1	10	600	SW	3	nil	15
SKY_180720_004	2	10	600	SW	2	nil	15
SKY_180720_004	3	10	600	SW	2	ILR	15
SKY_180721_001	0	10	600	W	2	nil	15
SKY_180721_001	1	9	600	W	3	nil	15
SKY_180721_001	2	10	900	W	3	nil	20
SKY_180721_001	3	9	900	W	4	nil	20
SKY_180807_001	0	8	1000	S	2	nil	15
SKY_180807_001	1	9	1000	S	3	nil	15
SKY_180807_001	2	10	800	S	3	nil	15
SKY_180807_001	3	10	800	S	3	nil	12
SKY_180812_001	0	10	600	NE	1	nil	5

Ornithology Technical Report

Watch ID	Hour	Cloud Cover (10 th)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
SKY_180812_001	1	10	500	NE	1	nil	5
SKY_180812_001	2	10	500	NE	2	ILR	5
SKY_180814_001	0	10	400	SW	1	nil	4
SKY_180814_001	1	10	600	SW	2	ILR	5
SKY_180814_001	2	10	500	SW	2	CLR	5
SKY_180814_001	3	10	700	SW	2	nil	10
SKY_180815_001	0	10	800	W	2	CLR	8
SKY_180815_001	1	10	800	SW	1	CLR	6
SKY_180815_001	2	10	800	SW	2	CLR	6
SKY_180815_001	3	10	800	SW	2	CLR	6
SKY_180815_002	0	10	800	SW	3	ILR	7
SKY_180815_002	1	10	800	SW	3	ILR	7
SKY_180822_002	0	3	1000	W	4	nil	20
SKY_180822_002	1	5	1000	W	3	nil	20
SKY_180822_002	2	5	1000	W	3	nil	20
SKY_180822_002	3	7	1000	W	3	nil	20
SKY_180823_001	0	8	1200	W	3	ILR	10
SKY_180823_001	1	7	1200	W	2	nil	10
SKY_180823_001	2	5	1000	SW	3	nil	10
SKY_180823_001	3	7	1000	SW	2	nil	10
SKY_180823_002	0	10	800	W	2	nil	4.5
SKY_180823_002	1	10	800	SW	1	nil	6
SKY_180823_002	2	10	1000	SW	2	nil	10
SKY_180823_002	3	9	1000	SW	3	nil	10
SKY_180823_003	0	7	1400	SW	3	nil	15
SKY_180823_003	1	5	1400	W	4	nil	15
SKY_180823_003	2	4	1400	W	4	nil	15
SKY_180823_003	3	5	1400	W	4	nil	15
SKY_180921_001	0	10	1000	W	4	ILR	10
SKY_180921_001	1	8	1000	W	4	ILR	10
SKY_180921_001	2	6	1000	W	2	ILR	10
SKY_180921_001	3	6	1000	W	2	ILR	10
SKY_181031_001	0	6	1000	SW	2	nil	16
SKY_181031_001	1	7	1000	S	2	nil	16
SKY_181031_001	2	9	900	S	3	nil	16
SKY_181031_001	3	10	800	S	3	nil	16
SKY_181031_002	0	10	700	S	2	ILR	9
SKY_181031_002	1	10	600	SW	3	CLR	4
SKY_181031_002	2	10	600	SW	3	CHR	3
SKY_181121_001	0	10	800	NE	5	nil	12
SKY_181121_001	1	10	800	NE	4	nil	12
SKY_181121_001	2	10	800	E	5	ILR	9
SKY_181121_001	3	10	800	E	5	ILR	10
SKY_181121_002	0	9	900	E	4	nil	12
SKY_181121_002	1	7	900	E	4	nil	12
SKY_181121_002	2	10	800	NE	5	CLR	5
SKY_181121_002	3	10	800	NE	5	CHR	1.5
SKY_181212_001	0	10	800	E	2	nil	12
SKY_181212_001	1	10	800	E	2	nil	12
SKY_181212_001	2	7	800	E	2	nil	12
SKY_181212_001	3	8	800	E	2	nil	12

Ornithology Technical Report

Watch ID	Hour	Cloud Cover (10 th)	Cloud Base (m)	Wind Direction	Wind Force	Precipitation*	Visibility (km)
SKY_181212_002	0	9	800	E	2	nil	12
SKY_181212_002	1	8	800	E	3	nil	12
SKY_181212_002	2	8	800	SE	3	nil	12
SKY_181212_002	3	10	800	SE	3	nil	9
*Precipitation Codes: <u>C</u> ontinuous / <u>I</u> ntermittent + <u>L</u> ight / <u>H</u> eavy + <u>R</u> ain / <u>S</u> now / <u>H</u> ail / <u>F</u> og							



Legend

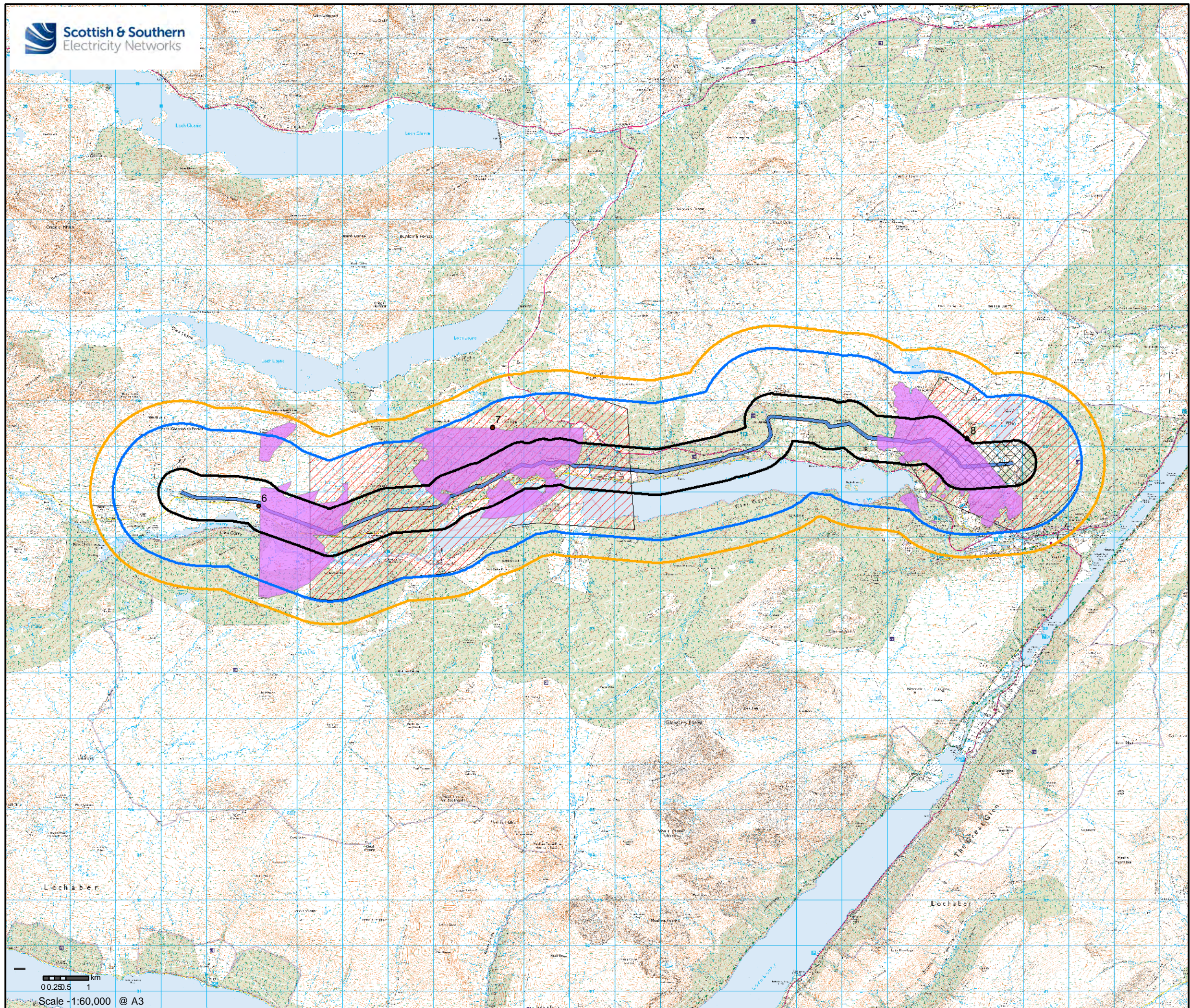
- Proposed Overhead Line (OHL)
- Vantage point
- Viewshed

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Project No: LT200
Project: Proposed Quoch to Aberchalder 132 kV
Woodpole Overhead Line

Title: Figure 1
SA1 2016 Vantage points
and visibility

Drawn by: DS Date: 18/01/2019
Drawing: 1



- Legend**
- Proposed Overhead Line (OHL)
 - 500m buffer
 - 1.5km buffer
 - 2km buffer
 - Vantage point
 - Viewshed
 - Moorland bird survey area
 - Black grouse survey area

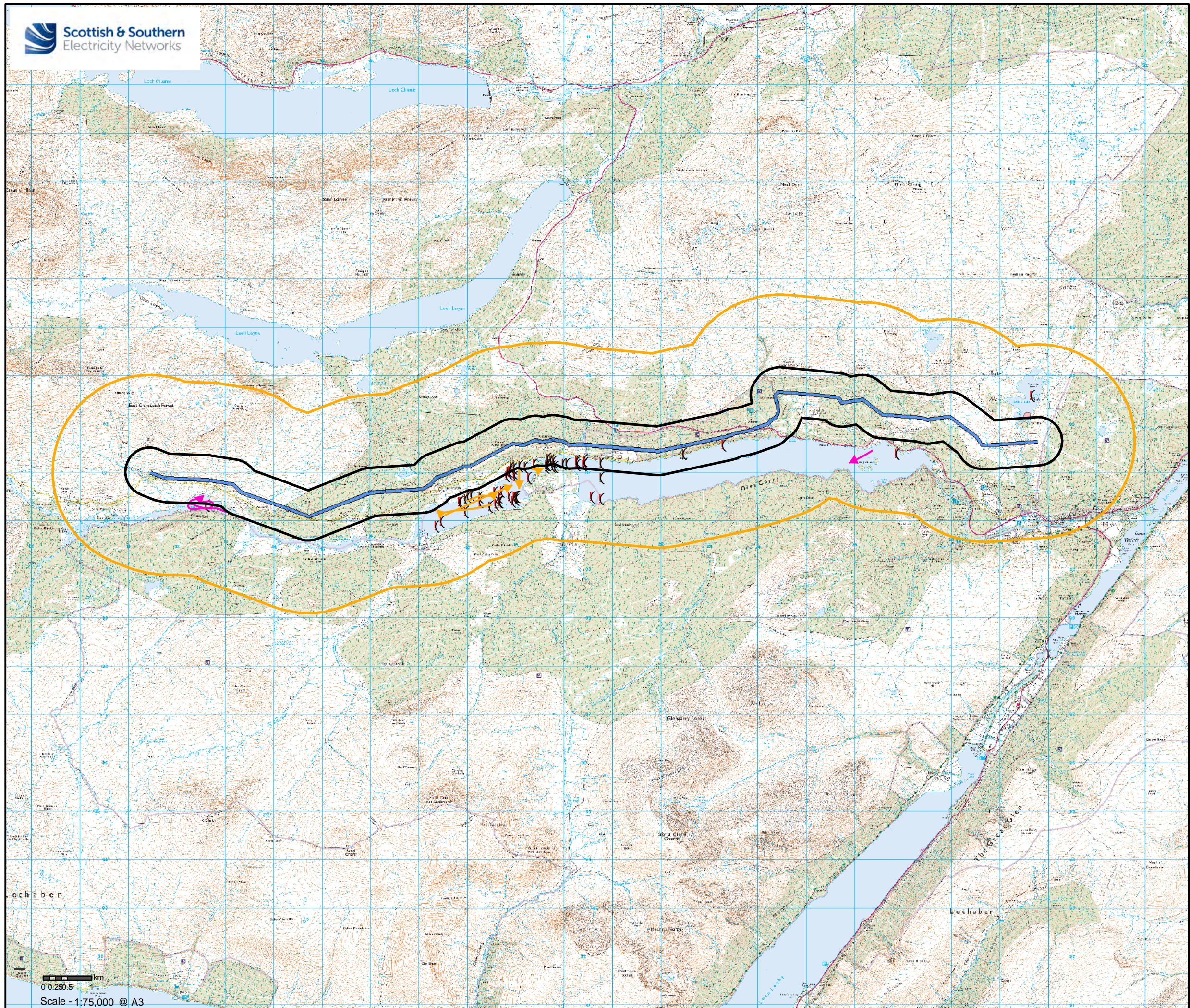
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Project No: LT200
Project: Proposed Quoch to Aberchalder 132 kV
Woodpole Overhead Line

Title: Figure 2
SA2 2018 Ornithological
survey areas

Drawn by: DS Date: 18/01/2019
Drawing: 2

Scale - 1:60,000 @ A3



Legend

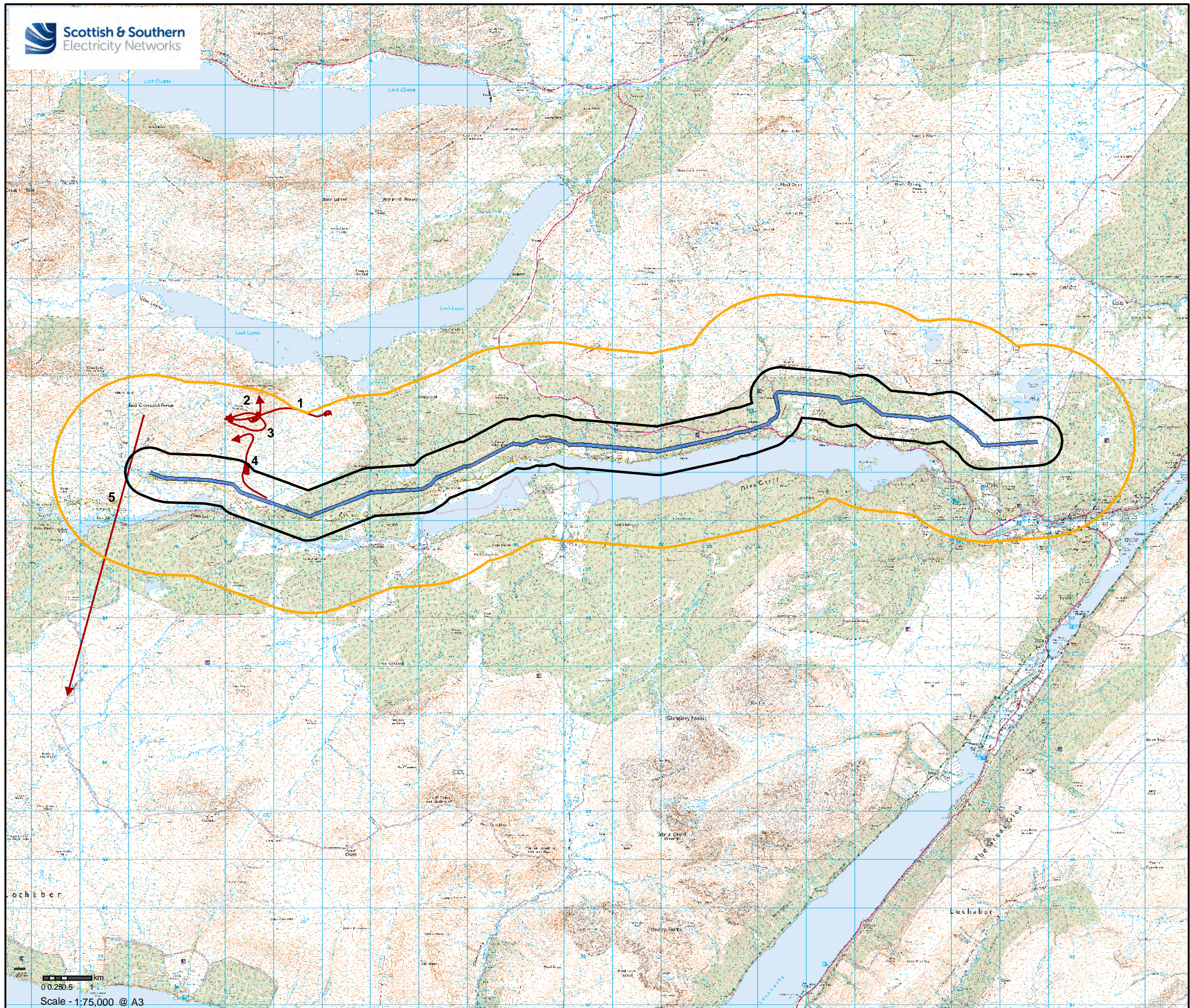
- Proposed Overhead Line (OHL)
- 500m buffer
- 2km buffer
- Flight line**
- Black-throated diver
- Common scoter
- Flight area**
- Black-throated diver
- Observation**
- (Black-throated diver
- (Common scoter

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Project No: LT200
Project: Proposed Quoch to Aberchaldar 132 kV
Woodpole Overhead Line

Title: Figure 3
Black-throated diver and
Common scoter records

Drawn by: DS Date: 18/01/2019
Drawing: 3



Legend

- Proposed Overhead Line (OHL)
- 500m buffer
- 2km buffer
- Flight line**
- Flight line

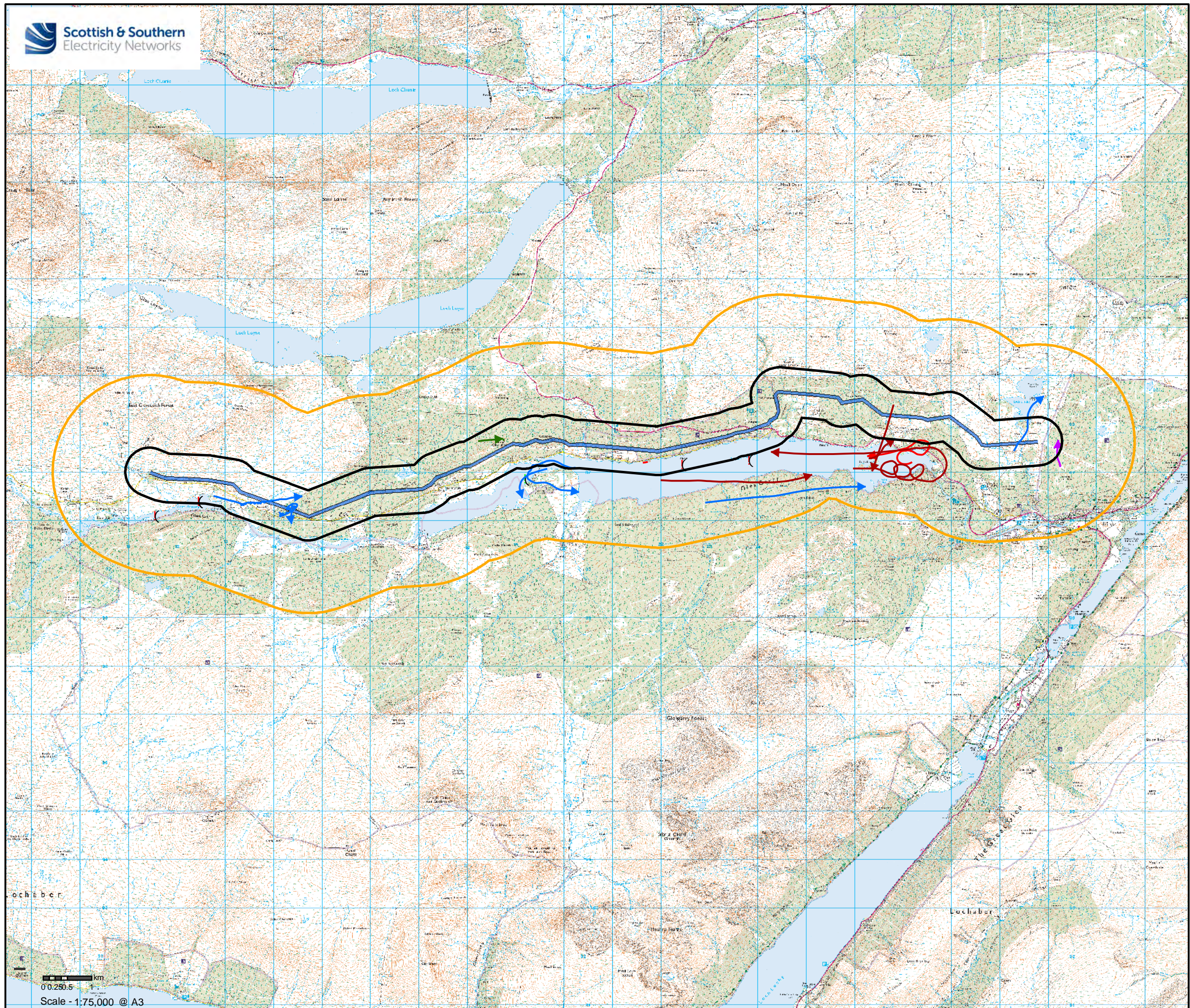
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Project No: LT200
Project: Proposed Quoch to Aberchaldar 132 kV
Woodpole Overhead Line

Title: Figure 4
Golden eagle flights

Drawn by: DS Date: 18/01/2019
Drawing: 4

Scale - 1:75,000 @ A3



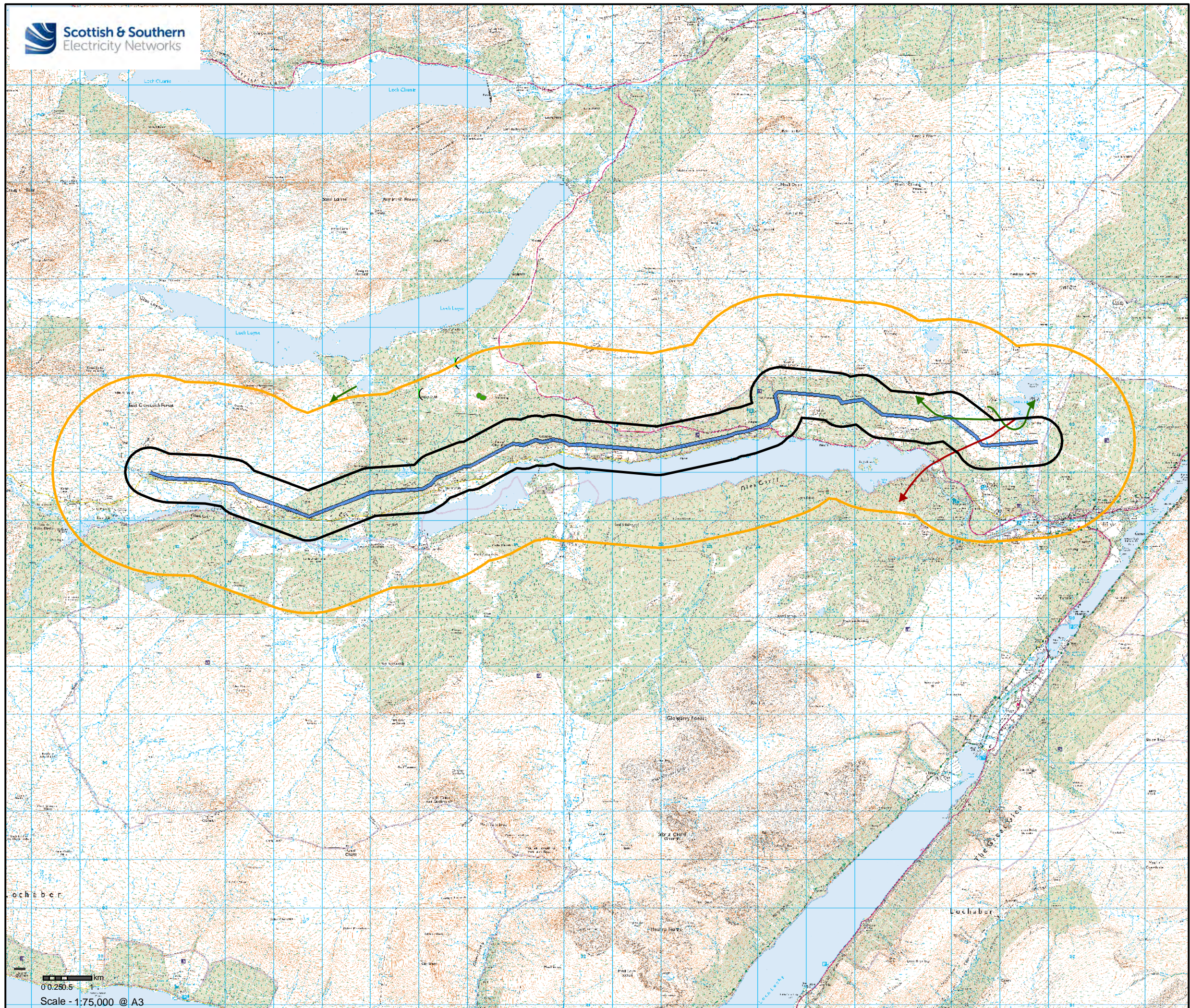
- Legend**
- Proposed Overhead Line (OHL)
 - 500m buffer
 - 2km buffer
 - Flight line**
 - White-tailed eagle
 - Osprey
 - Merlin
 - Red-throated diver
 - Observation**
 - (Great northern diver
 - (Red-throated diver

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Project No: LT200
Project: Proposed Quoch to Aberchalder 132 kV
Woodpole Overhead Line

Title: Figure 5
Other raptor and diver records

Drawn by: DS Date: 18/01/2019
Drawing: 5



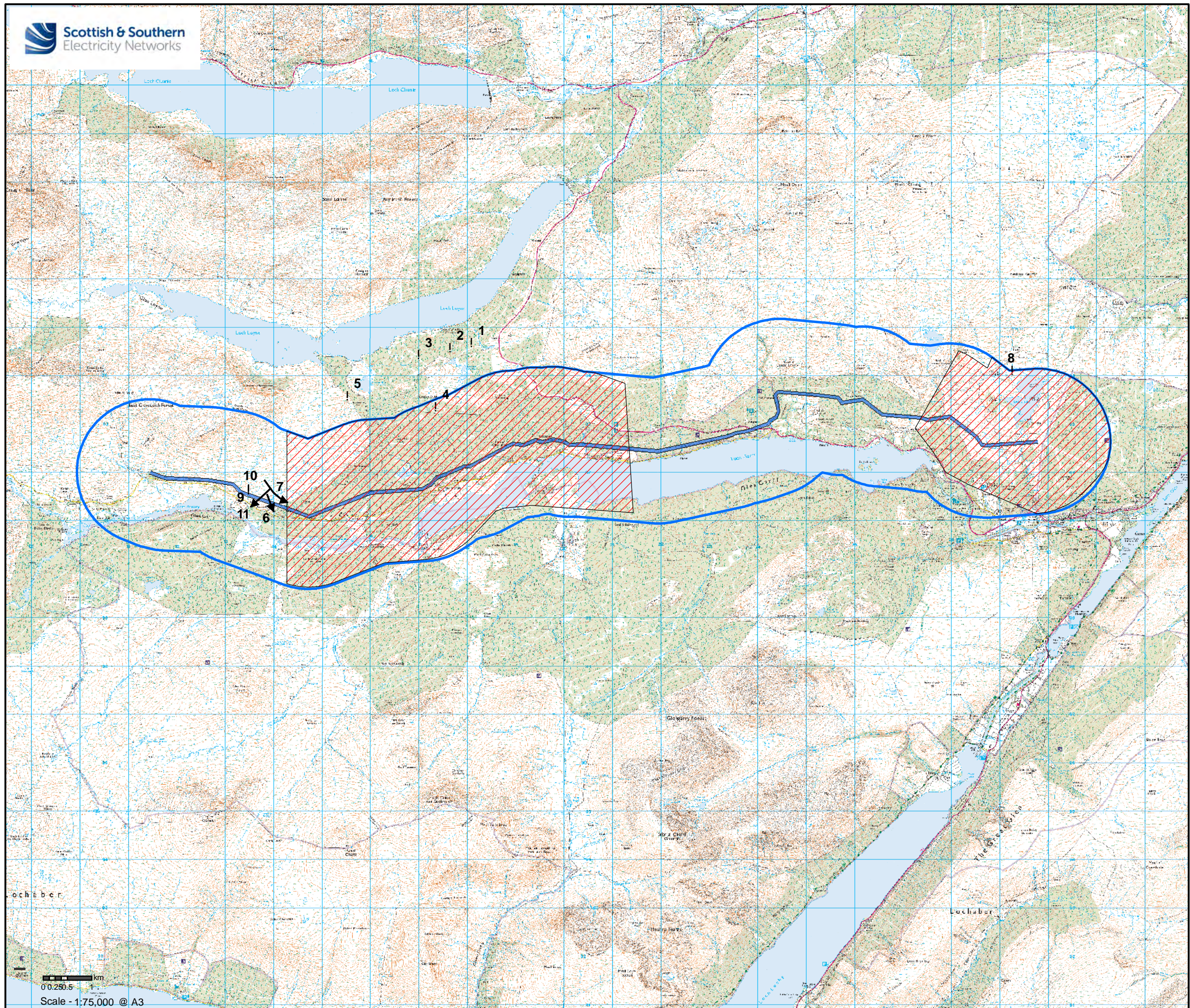
- Legend**
- Proposed Overhead Line (OHL)
 - 500m buffer
 - 2km buffer
 - Flight line
 - Greenshank
 - Whimbrel
 - Flight area
 - Greenshank
 - Observation
 - (Greenshank

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Project No: LT200
Project: Proposed Quoch to Aberchalder 132 kV
Woodpole Overhead Line

Title: Figure 6
Wader records

Drawn by: DS Date: 18/01/2019
Drawing: 6



Legend

- Proposed Overhead Line (OHL)
- 1.5km buffer
- Black grouse survey area
- Flight line
- Observation

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Project No: LT200
Project: Proposed Quoch to Aberchaldar 132 kV
Woodpole Overhead Line

Title: Figure 7
Black grouse records

Drawn by: DS Date: 18/01/2019
Drawing: 7

Scale - 1:75,000 @ A3