



# Technical Appendix 9.1

## Ornithology Technical Report



## Introduction

- 1.1. This report details the ornithological survey work undertaken at the site of the proposed Euchanhead Renewable Energy Development (hereafter referred to as the 'proposed Development') by Natural Research (Projects) Ltd (NRP) and Rural Planning Services (RPS) between March 2019 and July 2020. One breeding season and one non-breeding season have been completed.
- 1.2. 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 1979 (the Birds Directive) or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)(WCA).
  - ◆ Quantify the level of bird flight activity by breeding and foraging birds of potential conservation importance; and
  - ◆ Record the presence and abundance of other birds of conservation importance (those listed in Biodiversity Action Plans (BAPs) or on the Red List of Birds of Conservation Concern (BoCC) (Eaton *et al.* (2015)) throughout the year.
- 1.3. This report is supported by **Confidential Appendix 9.2**.

## Desk Study and Consultation

- 1.4. The site is not statutorily designated at international or national levels for ornithological interests. The nearest Special Protection Area (SPA) is the Muirkirk and North Lowther Uplands SPA which lies approximately 9 Kilometres (km) north-east of the closest currently proposed turbine location. This SPA is noted for breeding hen harrier, golden plover, merlin, peregrine, short-eared owl and non-breeding hen harrier.
- 1.5. Consultation was made with Scottish Natural Heritage (SNH), Royal Society for the Protection of Birds (RSPB), Dumfries & Galloway Raptor Study Group (DGRSG) for information to inform surveys, along with considering the survey results from previous work on the area.

## Study Areas and Survey Periods

- 1.6. Surveys were devised following the SNH Guidance on recommended survey methods (SNH, 2017).
- 1.7. The study area is situated in an area of mainly closed canopy plantation forestry and grass moorland, with areas of clear-fell and pre-thicket plantation forest, rough grazing and short heath/bog vegetation. Several small watercourses run through the site. There is a maximum elevation of 643 m AOD. The existing Hare Hill Windfarm borders the site

to the north-west and the Sanquhar Windfarm borders to the north. Other surrounding areas consist of commercial forestry, rough grazing land and short heath/bog vegetation and some small water courses.

- 1.8. Some birds range over large areas and are therefore potentially vulnerable to the effects of windfarm developments a considerable distance away. Hence the ornithological study area encompassed a series of survey boundaries extending up to 2 km from the site. These boundaries defined the study area for surveys of certain species or for a particular survey method i.e. 500 m for flight activity, for breeding passerines, waders, and for wintering birds; 1 km for breeding barn owl and goshawk; 1.5 km for black grouse; 2 km for other breeding raptors and short-eared owl (**Figure 9.1**)
- 1.9. The site was divided in to two sections, a northern section known as Euchanhead and a southern section known as Polskeoch. NRP carried out all surveys at Euchanhead and RPS carried out all surveys at Polskeoch (**Figure 9.1**).

### **Field Survey Methods**

- 1.10. The NRP surveyors used at the Euchanhead part of the site were Bob Stakim (BS), Alex Ash (AA), Colin Nisbet (CN) and Ross Ahmed (RA). RPS surveyors used at Polskeoch were Andrew Russell (AR), Daniel Plunkett (DP), Gus McNab (GM), Gerry Palmer (GP), Pete Carroll (PC) and Tony Bowman (TB).
- 1.11. Field surveyors received training prior to survey work. Training included the various survey methods, techniques to minimise fieldworker effects on bird detection, and the classification of bird behaviour. Training was provided irrespective of surveyors' previous experience. 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

- 1.12. Information on bird flight activity was collected during timed watches from strategic Generic Vantage Points (GVPs) using the methods described by Band *et al.* (2007). GVPs were selected through a mix of GIS analysis and field trials, with the aim of maximising ground visibility within the 500 m flight activity survey area using the minimum number of vantage points (**Figure 9.2**).
- 1.13. Nine vantage point locations were used in total with four over the Euchanhead area (1, 2, 3 & 4) and five over the Polskeoch area (19, 28, 32, 33 & 34). The visibility from each GVP drawn at 20m elevation above the ground was derived using a Geographic Information System (GIS). (**Table 2, Figure 9.2**)
- 1.14. In order to select flights for potential inclusion in a Collision Risk Model (CRM) (Band *et al.* 2007), flight activity data were extracted and reported in respect of a 500 m buffer around a polygon formed by the outermost of the eight turbine locations of the proposed Development. This area is termed the Flight Activity Assessment Area (FA). The FA measures 32.89 km<sup>2</sup>.

**Table 2 Generic Vantage Point locations and area visible (km<sup>2</sup>) within the 500 m buffer of the proposed turbines (FA)**

GVP	Grid Reference	Area visible (ha) within 500 m buffer (2 km cutoff)	Combined coverage of 500 m buffer (ha)	Area of 500 m buffer (ha)	% coverage of 500 m buffer
1	NS 69085 06332	241.2	2080.1	3288.9	63.2
2	NS 67491 04469	386.0			
3	NS 65790 05769	341.9			
4	NS 67108 07928	296.2			
19	NS 67098 03450	255.3			
28	NS 67751 00546	337.3			
32	NS 70548 01599	166.4			
33	NS 72667 99988	279.6			
34	NS 70382 00446	191.6			

- 1.15. Observers at GVPs positioned themselves to minimise their effects on bird behaviour. A viewing arc not exceeding 180° was scanned. Watches were undertaken during daylight hours by a single observer in a wide range of weather conditions, mainly in conditions of good ground visibility (>2 km) and when the cloud base was higher than most elevated parts of the survey area.
- 1.16. A minimum of 36 hours of observation has been completed from each GVP for each period (April to August classed as the breeding period and September to March classed as the non-breeding period). For each GVP, between 34.5 and 42 hours were completed between April 2019 and August 2019 and between September 2019 and March 2020 (**Tables 3a, 3b, 3c and 3d**). Thus in total 658.25 hours of observation has been undertaken with 326.75 during the breeding season and 331.5 in the non-breeding season.
- 1.17. When possible observations were stratified across three daylight periods (termed 'early', 'middle' and 'late') to allow for diurnal variation in activity rates. The timing of watches within each period was adjusted each month in accordance with sunrise and sunset times (**Annex 9.1 & 9.2**). A wide range of weather conditions were sampled including rain and snow showers, cloud cover from 0 to 100 % and wind speeds up to Beaufort Force 8 (**Annex 1.3**).

**Table 3a Summary of monthly GVP effort at VPs 1, 2, 3 & 4 in the breeding season with early, middle and late stratification (data are hours of observation).**

GVP	Daylight Period	2019					Total
		Apr	May	Jun	Jul	Aug	
1	E				1.50		1.50
	M	7.25	3.00	6.00	7.50	4.50	28.25
	L	1.75	2.75			1.50	6.00
<b>Total</b>		<b>9.00</b>	<b>5.75</b>	<b>6.00</b>	<b>9.00</b>	<b>6.00</b>	<b>35.75</b>

GVP	Daylight Period	2019					Total
		Apr	May	Jun	Jul	Aug	
2	E						
	M	7.50	3.33	4.50	9.00	4.50	28.83
	L	1.50	2.67	1.50		1.50	7.17
<b>Total</b>		<b>9.00</b>	<b>6.00</b>	<b>6.00</b>	<b>9.00</b>	<b>6.00</b>	<b>36.00</b>
3	E		1.50				1.50
	M	7.50	4.50	6.00	9.00	4.50	31.50
	L	1.50				1.50	3.00
<b>Total</b>		<b>9.00</b>	<b>6.00</b>	<b>6.00</b>	<b>9.00</b>	<b>6.00</b>	<b>36.00</b>
4	E		1.50				1.50
	M	7.50	4.50	6.00	9.00	4.50	31.50
	L	1.50				1.50	3.00
<b>Total</b>		<b>9.00</b>	<b>6.00</b>	<b>6.00</b>	<b>9.00</b>	<b>6.00</b>	<b>36.00</b>

**Table 3b Summary of monthly GVP effort at VPs 19, 28, 32, 33 & 34 in the breeding season with early, middle and late stratification (data are hours of observation).**

GVP.	Daylight Period	2019					Total
		Apr	May	Jun	Jul	Aug	
19	E						
	M	6.00	6.00	9.00	9.00	6.00	36.00
	L						
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>9.00</b>	<b>9.00</b>	<b>6.00</b>	<b>36.00</b>
28	E	0.25			2.00		2.25
	M	5.75	6.00	6.00	10.00	6.00	33.75
	L			3.00			3.00
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>9.00</b>	<b>12.00</b>	<b>6.00</b>	<b>39.00</b>
32	E	0.25	0.58				0.83
	M	5.75	5.42	9.00	9.00	6.00	35.17
	L						
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>9.00</b>	<b>9.00</b>	<b>6.00</b>	<b>36.00</b>
33	E				0.67	0.50	1.17
	M	6.00	6.00	6.00	8.33	8.50	34.83
	L						
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>9.00</b>	<b>9.00</b>	<b>36.00</b>
34	E						
	M	6.00	6.00	9.00	8.67	6.00	35.67
	L				0.33		0.33
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>9.00</b>	<b>9.00</b>	<b>6.00</b>	<b>36.00</b>

**Table 3c Summary of monthly GVP effort at VPs 1, 2, 3 & 4 in the non- breeding season, with early, middle and late stratification (data are hours of observation).**

GVP No.	Daylight Period	2019				2020			Total
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	
1	E	1.50		1.00		1.00		1.00	4.50
	M	4.50	5.00	3.50	3.00	3.00	3.00	5.00	27.00
	L		1.00		1.00		1.00		3.00
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>4.50</b>	<b>4.00</b>	<b>4.00</b>	<b>4.00</b>	<b>6.00</b>	<b>34.50</b>
2	E	1.50		1.00		1.00		1.00	4.50
	M	4.50	5.00	3.50	3.00	3.00	4.50	5.00	28.50
	L		1.00		1.00		1.00		3.00
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>4.50</b>	<b>4.00</b>	<b>4.00</b>	<b>5.50</b>	<b>6.00</b>	<b>36.00</b>
3	E	1.50		1.00				1.50	4.00
	M	4.50	5.00	3.50	3.00	4.00	3.75	5.00	28.75
	L		1.00		1.00		1.25		3.25
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>4.50</b>	<b>4.00</b>	<b>4.00</b>	<b>5.00</b>	<b>6.50</b>	<b>36.00</b>
4	E			1.00	1.00	1.00		1.00	4.0
	M	6.00	5.00	3.50	3.00	3.00	4.00	5.00	29.5
	L		1.00				1.50		2.5
<b>Total</b>		<b>6.00</b>	<b>6.00</b>	<b>4.50</b>	<b>4.00</b>	<b>4.00</b>	<b>5.50</b>	<b>6.00</b>	<b>36.00</b>

**Table 3d Summary of monthly GVP effort at VPs 19, 28, 32, 33 & 34 in the non- breeding season, with early, middle and late stratification (data are hours of observation).**

GVP	Daylight Period	2019				2020			Total
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	
19	E				0.33				0.33
	M	2.75	4.77	6.00	5.17	3.00	6.00	6.00	33.69
	L	0.25	1.23		0.50				1.98
<b>Total</b>		<b>3.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>3.00</b>	<b>6.00</b>	<b>6.00</b>	<b>36.00</b>
28	E								
	M	3.00	4.00	4.50	4.08	3.00	5.00	5.50	29.08
	L		2.00	1.50	1.92		1.00	0.5	6.92
<b>Total</b>		<b>3.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>3.00</b>	<b>6.00</b>	<b>6.00</b>	<b>36.00</b>
32	E								
	M	3.00	6.00	6.00	4.83	1.67	3.83	11.50	36.83
	L				1.17	1.33	2.17	0.50	5.17
<b>Total</b>		<b>3.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>3.00</b>	<b>6.00</b>	<b>12.00</b>	<b>42.00</b>
33	E				0.50				0.5
	M	3.00	5.50	7.00	4.50	3.00	5.17	6.00	34.17
	L		0.50	2.00	1.00		0.83		4.33
<b>Total</b>		<b>3.00</b>	<b>6.00</b>	<b>9.00</b>	<b>6.00</b>	<b>3.00</b>	<b>6.00</b>	<b>6.00</b>	<b>39.00</b>
34	E								
	M	3.00	5.5	5.83	4.17	1.92	3.83	5.75	30.00
	L		0.5	0.17	1.83	1.08	2.17	0.25	6.00
<b>Total</b>		<b>3.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>3.00</b>	<b>6.00</b>	<b>6.00</b>	<b>36.00</b>

1.18. During each watch three hierarchical recording methods were used, as follows:

- ◆ Focal bird sampling – timed. The viewing arc was scanned constantly until a *Target A species*<sup>1</sup> was detected in flight. Once detected, the bird was followed until it ceased flying or was lost from view, with the duration of the flight recorded to the nearest second. The route followed by the bird was plotted in the field onto a 1:25,000 scale map, with the direction of flight indicated regardless of whether or not the bird was within the survey area. The bird's flying elevation above the ground was estimated at the point of detection and at 15 second intervals thereafter, using a countdown timer with an audible alarm. At GVPs 1, 2, 3 and 4 flying elevation was classified as less than 10 m, 10 m to 30 m, 30 m to 50 m, 50 m to 100 m, 100 m to 150 m and greater than 150 m and at GVPs 19, 28, 32, 33 & 34 was classified at less than 20 m, 20 to 40 m, 40 to 100 m, 100 to 150 m, 150 to 250 m and greater than 250 m.
- ◆ Where simultaneous flight activity by a number of birds was observed and it was not possible to plot individual flight lines, areas of flight activity were plotted on the field maps.
- ◆ Focal bird sampling – untimed. The same scanning procedure as described above was used. However flights of *Target B species*<sup>2</sup> were not timed, instead the flight path was mapped and flying elevation was recorded at the start and when it changed during the recorded bout. Where a flock was observed a central flight line representative of the route was estimated.
- ◆ Activity Summaries. At the end of each five minute period flight activity within the survey area by species of lesser conservation importance (*Target C species*)<sup>3</sup> was summarised. The number of birds recorded in any one period was the minimum number of individuals that could account for the activity observed. The height, direction and number of individuals involved in notable bird movements (e.g. gull flights) were recorded.

1.19. Data were entered in the field onto recording sheets and later transferred to Microsoft Excel spreadsheets. Maps of flight activity by Target Species were compiled for each watch. Each flying bout was numbered and cross-referenced to the relevant flight path on the map.

### **Scarce Breeding Birds**

1.20. Priority was given to detecting the species considered most likely to breed in the area: hen harrier (*Circus cyaneus*), red kite (*Milvus milvus*) merlin (*Falco columbarius*), peregrine (*Falco peregrinus*), goshawk (*Accipiter gentilis*), short-eared owl (*Asio flammeus*) and barn owl (*Tyto alba*). To avoid disturbance the DGRSG was consulted on any potential raptors breeding in the area, particularly goshawk.

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<sup>1</sup> *Target A species* were drawn from those listed in Annex 1 of the Birds Directive and Schedule 1 of the WCA. See Annex 1.4 for a full list.

<sup>2</sup> *Target B species* were migratory birds of conservation importance, in this instance geese and certain waders. See Annex 1.4 for a full list.

<sup>3</sup> See Annex 1.4

- 1.21. In addition to the survey effort on GVP watches and the breeding birds of open ground, 114 hours were spent searching for evidence of scarce breeding birds (including barn owl) (**Table 4**).
- 1.22. Surveys were undertaken within suitable habitat which was located within the 2 km survey boundary for hen harrier, merlin, peregrine and short-eared owl and the 1 km survey boundary for goshawk and barn owl.

*Hen harrier*

- 1.23. Survey methods in Hardey *et al.* (2013) were followed, with emphasis given to any stands of tall heather or rank vegetation.

*Red kite*

- 1.24. Survey methods in Hardey *et al.* (2013) were followed, with emphasis given to areas of mature woodland and forestry, particularly woodland edges and rides.

*Merlin*

- 1.25. Survey methods in Hardey *et al.* (2013) were followed, with emphasis given to any stands of tall heather, boulders, hummocks, bushes and trees including old crows nests (which could be re-used by merlin) were checked for signs of occupation (e.g. plucked prey, moulted feathers, pellets and faeces).

*Peregrine*

- 1.26. Survey methods in Hardey *et al.* (2013) were followed. All potential nests sites were visited and checked for occupation. All crags and steep banks identified from OS maps and ground searches were checked. Surveyors looked for birds or signs of occupation (e.g. faecal splash, fresh plucks).

*Goshawk*

- 1.27. Survey methods in Hardey *et al.* (2013) were followed. Emphasis was given to stands of mature conifers, particularly stands of European larch (*Larix decidua*). Following observations of territorial adults in February and March 2020 additional surveys were carried out in April, May, June and July 2020. Walkovers through suitable areas of mature forestry were completed in an attempt to locate an active nest with signs of presence (plucked feathers, faecal splash, vocalisations etc.) searched for.

*Short-eared owl*

- 1.28. Survey methods in Hardey *et al.* (2013) were followed. Emphasis was given to stands of tall heather.

*Barn owl*

- 1.29. One suitable nest and roost location at Dunsdie was searched for signs of occupancy following methodology found in Hardey *et al.* (2013).

**Table 4 Details of survey effort searching for Scarce Breeding Birds plus associated weather.**

Date	Obs	Start	Finish	Duration	Weather						Additional information	Site
					Cloud	Cloud base (m)	Wind Direction	Wind Force	Precip*	Visibility (km)		
22/03/2019	AA	0735	1155	4.33	10/10	600	SW	6	CLR	10		EUC
05/04/2019	RAS	1030	1230	2.00	7/10	900	SE	5	nil	5		EUC
09/04/2019	RAS	1200	1300	1.00	2/10	900	SE	5	nil	5		EUC
17/04/2019	RA	0730	1315	5.75	6/10	800	ENE	4	nil	8		EUC
17/04/2019	AA	0745	1300	5.25	2/10	1000	ENE	3	nil	10		EUC
29/04/2019	TB	0900	1700	8.00	5/8	>500	SE	3	nil	2		POL
09/05/2019	RAS	0830	1300	5.00	10/10	900	ENE	4	ILS	5	Including barn owl check at Dunsdie	EUC
10/05/2019	GM	1035	1650	6.25	6/8	>500	SE	2	nil	2		POL
14/05/2019	RAS	0800	1500	7.00	4/10	1000	S	3	nil	5		EUC
24/05/2019	TB	0930	1530	6.00	6/8	>500	W	4	nil	2		POL
10/06/2019	GP	1515	1815	3.00	6/8	>500	N	3	nil	2		POL
10/06/2019	TB	1630	1930	3.00	6/8	>500	NE	2	nil	2		POL
17/06/2019	TB	0820	1420	6.00	7/8	>500	S	4	ILS	2		POL
17/06/2019	AA	0940	1600	6.33	5/10	1000	SW	6	nil	20		EUC
15/07/2019	RAS	1345	1445	1.00	8/10	1000	S	4	nil	5	Including barn owl check at Dunsdie	EUC
16/07/2019	RAS	0900	1500	6.00	10/10	800	SW	3	IHR	4		EUC
31/07/2019	AR	0900	1545	6.75	8/8	>500	N	2	ILS	2		POL
31/07/2019	GP	0900	1230	3.50	7/8	>500	N	3	nil	2		POL
28/02/2020	RAS	0900	1200	3.00	10/10	900	S	5	nil	5	Dedicated goshawk survey	EUC
05/03/2020	AA	0745	1145	4.00	0/10	na	nil	0	nil	20	Dedicated goshawk survey	EUC
10/03/2020	RAS	1030	1330	3.00	10/10	600	SW	6	IHR	4	Dedicated goshawk survey	EUC
11/03/2020	RAS	0930	1230	3.00	9/10	700	WSW	5	IHR	5	Dedicated goshawk survey	EUC
08/05/2020	RAS	0930	1230	3.00	8/10	800	W	3	nil	5	Dedicated goshawk survey	EUC
29/05/2020	RAS	0915	1400	4.75	3/10	1000	SSE	4	nil	5	Dedicated goshawk survey	EUC
29/05/2020	RAS	1415	1515	1.00	1/10	1000	SSE	4	nil	5	Dedicated goshawk survey	EUC
20/06/2020	RAS	1030	1700	6.50	4/10	900	S	4	nil	5	Dedicated goshawk survey	EUC

\*Precipitation codes: Continuous/Intermittent + Light/Heavy + Rain/SHail/Fog

**Table 5 Details of survey effort searching for black grouse plus associated weather.**

Date	Obs	Start	Finish	Duration	Weather						Results	Site
					Cloud 10 <sup>ths</sup>	Cloud base (m)	Wind Direction	Wind Force	Precip*	Visibility (km)		
16/04/2019	CN	0500	0800	3.00	10/10	700	NE	2	nil	2	Nil Result	EUC
16/04/2019	AA	0525	0815	2.83	10/10	900	SE	1	nil	10	Nil Result	EUC
16/04/2019	RAS	0530	0830	3.00	10/10	600	ENE	2	nil	5	Nil Result	EUC
28/04/2019	AR	0515	0815	3.00	8/8	150-500	E	2	Drizzle	1-3	Nil Result	POL
28/04/2019	GP	0515	0815	3.00	8/8	150-500	NW	1	nil	1-3	Nil Result	POL
09/05/2019	RAS	0530	0830	3.00	10/10	800	ENE	3	nil	5	Nil result	EUC
10/05/2019	RAS	0530	0630	1.00	3/10	900	SE	1	nil	5	Nil Result	EUC
14/05/2019	RAS	0500	0800	3.00	5/10	1000	S	1	nil	5	Nil Result	EUC

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

**Table 6 Survey effort for breeding birds of open ground and associated weather.**

Date	Obs	Start	Finish	Duration	Weather						Results	Site
					Cloud 10 <sup>ths</sup>	Cloud base (m)	Wind Direction	Wind Force	Precip*	Visibility (km)		
16/04/2019	CN	0800	1130	3.50	10/10	700	NE	2	nil	2	Visit 1	EUC
16/04/2019	AA	0815	1115	3.00	10/10	900	SE	2	nil	10	Visit 1	EUC
16/04/2019	RA	0830	1115	2.75	10/10	700	ENE	3	nil	5	Visit 1	EUC
18/04/2019	TB	0830	1600	7.50	6/8	>500	E	3	nil	>3	Visit 1	POL
19/04/2019	TB	0700	1030	3.50	3/8	>500	E	1	nil	>3	Visit 1	POL
23/05/2019	CN	0850	1445	5.92	1/10	1500	NNW	3	nil	2	Visit 2	EUC
27/05/2019	TB	1000	1715	7.25	8/8	>500	W	2	nil	>3	Visit 2	POL
28/05/2019	TB	0800	1130	3.50	7/8	>500	NW	2	nil	>3	Visit 2	POL
18/06/2019	AA	0550	1205	6.25	4/10	1000	SW	4	nil	10	Visit 3	EUC

Date	Obs	Start	Finish	Duration	Weather						Results	Site
					Cloud 10 <sup>ths</sup>	Cloud base (m)	Wind Direction	Wind Force	Precip*	Visibility (km)		
19/06/2019	TB	0915	1545	6.50	6/8	>500	SW	2	nil	>3	Visit 3	POL
20/06/2019	TB	0840	1435	5.92	7/8	>500	SW	3	ILR	>3	Visit 3	POL
15/07/2019	RAS	0745	1345	6.00	5/10	1000	S	3	nil	5	Visit 4	EUC
17/07/2019	TB	0935	1605	6.50	8/8	>500	S	4	ILR	>3	Visit 4	POL
18/07/2019	TB	0945	1505	5.33	8/8	>500	SW	2	IHR	>3	Visit 4	POL

\*Precipitation codes: Continuous/Intermittent + Light/Heavy + Rain/SHail/Fog

### Black Grouse

- 1.30. Methods followed those in Gilbert *et al.* (1998) and SNH (2017). Areas of suitable habitat within a 1.5 km survey boundary were visited to search for signs of occupation (droppings, feathers) and to locate and count any displaying (lekking) males. Spring visits were made within two hours of dawn from mid-April in dry, calm weather with good visibility. Surveyors listened and scanned carefully for lekking males. In total 22 hours were spent searching for black grouse (**Table 5**).

### Breeding Birds of Open Ground

- 1.31. Surveys were completed using a four visit adapted Brown & Shepherd (1993) method for upland waders. These visits were completed between mid-April and July 2019 within a 500 m survey boundary of the proposed turbines. Selected bird species were surveyed, namely those included on Annex 1 of the Birds Directive, Schedule 1 of the WCA, Red-listed BoCC and those listed on the UK and local BAPs together with selected other species (see **Annex 1.5** for a full list). Following SNH (2017) areas of conifer plantation were not surveyed.
- 1.32. Surveys were completed four times between April and July to allow for differences in detection rate between early and late breeding species. Fieldwork was not undertaken in conditions considered likely to affect bird detection, for example, strong winds (greater than Beaufort Force 5), persistent precipitation, poor visibility (less than 300 m) or in unusually hot or cold temperatures. Surveys were undertaken for a total of 68 hours (**Table 6**).
- 1.33. The survey aimed to cover the ground systematically with a constant search effort. All points within the survey areas were approached closely typically to within 100 m. Patches of scrub, isolated trees, rocky outcrops and streams were investigated closely and surveyors paused at regular intervals to scan and listen for calling and singing birds. Careful attention was given to recording behaviour indicative of breeding with care taken to avoid counting the same individual more than once.
- 1.34. The location and activity of birds were mapped onto enlarged 1:25000 scale OS maps using standard BTO codes (Marchant 1983). The position of each bird was mapped at the point of first detection and flight lines recorded. At the end of each visit, a summary map was compiled showing the locations of each identified territory or breeding pair. The following evidence was considered diagnostic of breeding: song, courtship or territorial display; territorial dispute; nest building and hole excavation; agitated behaviour by adult bird(s) indicative of the presence of a nearby nest or young (e.g. repetitive alarm calling, distraction display); adult(s) carrying food; presence of newly fledged young; adult(s) removing faecal sac.
- 1.35. Where a number of breeding individuals were present and it was not possible to determine the exact number of breeding pairs, a method was devised to allow the number of discrete territories to be estimated. Registrations of individual birds were deemed to represent discrete breeding territories / pairs if the distance between them was more than 250 m (500 m for curlew, 200 m for small passerines). Whilst it is recognised that these distances are arbitrary and the territory size varies both inter-

and intra- specifically, this approach produces a standardised index of abundance based on the distance that members of a breeding pair are likely to move during the survey period. In cases where two individuals were considered to constitute a pair of birds, the location of the pair was placed centrally by convention.

- 1.36. Population estimates were derived by comparing the summary maps for the four survey visits. Again a method was devised whereby discrete territories could be estimated. Territories plotted during each visit were considered to be separate from one another if they were located more than 1000 m apart (500 m for snipe, common sandpiper and skylark, 300 m for other small passerines). These distances were chosen to reflect the distances birds could plausibly move between survey dates. The locations of territories mapped in more than one survey period were plotted centrally.

## Field Survey Results

- 1.37. The Risk Height Band (RHB) of the proposed turbines is given by the lower and upper limits of the recorded flight height bands which encompass the heights swept by the rotating turbine blades. The tip height of the largest proposed turbine is 230 m with a hub height of 155 m; therefore a RHB of 80 to 230 m is used. To accommodate the different height bands used by NRP and RPS, flights at potential risk height are presumed to be between the height bands 50 -100 m and over 150 m for VPs 1, 2, 3 and 4 and between 40-100m and 150m- 250 m for VPs 19, 28, 32, 33 and 34. Hence the presented amount of time spent flying at RHB is greater than that spent at collision risk height.

### Wildfowl

#### *Occurrence and Status*

- 1.38. Greylag goose (*Anser anser*) and pink-footed goose (*Anser brachyrhynchus*) were recorded (**Tables 7 & 8**). Greylag goose and pink-footed goose are regular winter migratory species and as such are afforded protection under the Birds Directive.

#### *Abundance and Distribution*

- 1.39. A single greylag goose flight involving two birds was recorded in late May, the date indicating that these birds were likely to be from the British greylag population. (**Figure 9.4**).
- 1.40. During all surveys four flights of pink-footed goose were recorded in April, May and October totalling 455 birds (**Figure 9.4**).

#### *Flight Activity recorded during GVP watches within the FA 500 m buffer – September to March*

- 1.41. Three pink-footed goose flights involving a total of 153 birds (33, 40 and 80 individuals) flew at least partially through the FA at the RHB of the turbines (**Table 7, Figure 9.4**).

*Flight Activity recorded during GVP watches within the FA 500 m buffer – April to August*

- 1.42. One greylag goose flight involving two birds flew through the FA at the RHB of the turbines. (**Table 8, Figure 9.4**).
- 1.43. One pink-footed goose flight of 300 birds flew at least partially through the FA at the RHB of the turbines. (**Table 8, Figure 9.4**).

**Table 7 Flight activity and elevation by goose species from VPs 1, 2, 3 & 4 which occurred at least partly within the 500 m buffer of the proposed turbines (FA) recorded during GVP watches.**

Species	Season	GVP	Flight ID	No. of birds	Height class					
					<10 m	10 - 30 m	30 - 50 m	50 - 100 m	100 - 150 m	>150 m
Pink-footed goose	Sep-Mar	2	PG_1	33					✓	✓
		4	PG_2	40					✓	✓
			PG_3	80				✓	✓	

**Table 8 Flight activity and elevation by goose species from VPs 19, 28, 32, 33 & 34 which occurred at least partly within the 500 m buffer of the proposed turbines (FA) recorded during GVP watches.**

Species	Season	GVP	Flight ID	No. of birds	Height class					
					<20 m	20-40 m	40-100 m	100-150 m	150-250 m	>250m
Greylag goose	Apr-Aug	34	GJ_1	2	✓	✓				
Pink-footed goose	Apr-Aug	33	PG_4	300					✓	

Raptors and Owls

*Occurrence and Status*

- 1.44. Sightings of osprey (*Pandion haliaetus*), golden eagle (*Aquila chrysaetos*), goshawk, hen harrier, red kite (*Milvus milvus*), merlin and peregrine were recorded. All these species (except goshawk) are listed on Annex 1 of the Birds Directive and all are listed on Schedule 1 of the WCA. Hen harrier and merlin are Red-listed Birds of Conservation Concern.

*Abundance and distribution*

- 1.45. A pair of adult goshawks were observed displaying within the study area in February and March 2020. (**Figure 9.3**)
- 1.46. No further sightings of goshawk were made between April and July 2020 despite dedicated searches in suitable habitat.

- 1.47. A pair of peregrines were present at a historic nest location within the 2 km study area in 2019 but breeding was not proven to have occurred (**Confidential Figure**).
- 1.48. A single osprey flight was recorded in April from a GVP within the FA (**Figure 3**).
- 1.49. A juvenile golden eagle was seen in January and March; one flight was recorded from a GVP within the FA (**Figures 9.3 & 9.5**).
- 1.50. Goshawk was recorded in January, February, March, April, May, June and December. Fourteen flights were seen from GVPs, thirteen of which were over the FA. Male and female plus immature birds were seen (**Figures 9.3 & 9.5**).
- 1.51. Hen harrier was recorded in January and August. An adult male was recorded outside the FA from a GVP in January with an incidental record of a female/immature in August (**Figures 9.3 & 9.5**).
- 1.52. Red kite was recorded in January, March, May, June, July, August, October and November. Ten flights were recorded from GVPs involving ten birds, six of which were within the FA. All flights recorded during GVPs were recorded in the Polskeoch section of the site; two flights were recorded during Scarce Breeding Bird surveys (**Figures 9.3 & 9.5**).
- 1.53. Merlin was seen in April, May, August, October, November and December. Six flights, involving seven birds were seen from GVPs, all of which were within the FA (**Figures 9.3 & 9.5**).
- 1.54. Peregrine was seen during July, August and November. Eight flights involving ten birds were recorded from GVPs all of which were within the FA (**Figures 9.3 & 9.5**).

*Flight Activity within the FA from GVPs – Breeding Season (April to August)*

*Goshawk*

- 1.55. During flight activity surveys two flights by goshawk were recorded within the FA for a total duration of 108 seconds, of which 23 seconds (21%) was within the height bands encompassing the RHB of the proposed turbines (**Tables 9 & 10, Figure 9.3**).

*Red Kite*

- 1.56. During flight activity surveys four red kite flights were recorded within the FA for a total duration of 585 seconds, of which 120 seconds (21%) was within the height bands encompassing the RHB of the proposed turbines (**Table 10, Figure 9.3**).

*Osprey*

- 1.57. During flight activity surveys one osprey flight was recorded within the FA for a total duration of 101 seconds, all of which was within the height bands encompassing the RHB of the proposed turbines (**Table 10, Figure 9.3**).

*Merlin*

- 1.58. During flight activity surveys one merlin flight was recorded within the FA for a duration of 81 seconds, though none of these seconds were within the height bands encompassing the RHB of the proposed turbines (**Table 9, Figure 9.3**).

*Peregrine*

- 1.59. During flight activity surveys seven flights by peregrine involving nine birds were recorded within the FA for a total duration of 1123 seconds, of which 345 seconds (31%) was within the height bands encompassing the RHB of the proposed turbines (**Tables 9 & 10, Figure 9.3**).

*Flight Activity within the FA from GVPs – Non-Breeding Season (September to March)*

*Golden Eagle*

- 1.60. During flight activity surveys one flight by golden eagle was recorded within the FA for a total duration of 91 seconds, of which 82 seconds (90%) was within the height bands encompassing the RHB of the proposed turbines (**Table 10, Figure 9.3**).

*Goshawk*

- 1.61. During flight activity surveys twelve flights by goshawk were recorded within the FA for a total duration of 874 seconds, of which 248 seconds (28%) was within the height bands encompassing the RHB of the proposed turbines (**Tables 9 & 10, Figure 9.3**).

*Red Kite*

- 1.62. During flight activity surveys two red kite flights were recorded within the FA for a total duration of 59 seconds, of which 55 seconds (93%) was within the height bands encompassing the RHB of the proposed turbines (**Table 10, Figure 9.3**).

*Merlin*

- 1.63. During flight activity surveys five merlin flights involving six birds were recorded within the FA for a total duration of 238 seconds, of which 144 seconds (61%) was within the height bands encompassing the RHB of the proposed turbines (**Tables 9 & 10, Figure 9.3**).

*Peregrine*

- 1.64. During flight activity surveys one flight by peregrine was recorded within the FA for a total duration of 153 seconds, all of which was within the height bands encompassing the RHB of the proposed turbines (**Table 10, Figure 9.3**).

**Table 9 Flight activity and elevation by raptor species, clipped to within 2 km radius of source VP and within the 500 m buffer of the proposed turbines recorded during GVP watches from VPs 1, 2, 3 & 4. Data are multiplied by the number of birds involved in each flight where necessary.**

Species	Period	GVP	No. of flights	No. of birds	Total fly time (s)	Height class					
						<10 m	10-30 m*	30-50 m*	50-100 m	100-150 m	>150 m
Goshawk	Apr-Aug	1	1	1	79	79	0	0	0	0	0
	Total		1	1	79	79	0	0	0	0	0
	Sep-Mar	1	6	6	238	3	186	21	28	0	0
		2	1	1	32	0	32	0	0	0	0
		3	1	1	29	0	29	0	0	0	0
		4	1	1	101	101	0	0	0	0	0
	Total		9	9	400	104	247	21	28	0	0
<b>Total</b>			<b>10</b>	<b>10</b>	<b>479</b>	<b>183</b>	<b>247</b>	<b>21</b>	<b>28</b>	<b>0</b>	<b>0</b>
Merlin	Apr-Aug	3	1	1	81	49	32	0	0	0	0
	Total		1	1	81	49	32	0	0	0	0
	Sep-Mar	3	1	1	33	0	0	16	16	0	0
		4	1	1	42	0	6	18	18	0	0
	Total		2	2	74	0	6	34	34	0	0
<b>Total</b>			<b>3</b>	<b>3</b>	<b>154</b>	<b>49</b>	<b>38</b>	<b>34</b>	<b>34</b>	<b>0</b>	<b>0</b>
Peregrine	Apr-Aug	3	1	1	101	53	24	18	6	0	0
		4	1	1	79	0	0	0	0	35	44
	Total		2	2	180	53	24	18	6	35	44
<b>Total</b>			<b>2</b>	<b>2</b>	<b>180</b>	<b>53</b>	<b>24</b>	<b>18</b>	<b>6</b>	<b>35</b>	<b>44</b>

**Table 10 Flight activity and elevation by raptor species, clipped to within 2 km radius of source VP and within the 500 m buffer of the proposed turbines recorded during GVP watches from VPs 19, 28, 32, 33 & 34. Data are multiplied by the number of birds involved in each flight where necessary.**

Species	Period	VP	No. of flights	No. of birds	Total flight time (s)	Height class					
						<20 m	20-40 m	40-100 m	100-150 m	150-250 m	>250 m
Golden eagle	Sep-Mar	28	1	1	91	0	0	0	19	63	9
	Total		1	1	91	0	0	0	19	63	9
<b>Total</b>			<b>1</b>	<b>1</b>	<b>91</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>63</b>	<b>9</b>
Goshawk	Apr-Aug	19	1	1	29	2	4	6	8	9	0
	Total		1	1	29	2	4	6	8	9	0
	Sep-Mar	28	1	1	352	68	125	113	45	0	0
		34	1	1	122	37	24	37	24	0	0
<b>Total</b>			<b>2</b>	<b>2</b>	<b>474</b>	<b>105</b>	<b>149</b>	<b>150</b>	<b>70</b>	<b>0</b>	<b>0</b>
<b>Total</b>			<b>3</b>	<b>3</b>	<b>502</b>	<b>107</b>	<b>153</b>	<b>156</b>	<b>77</b>	<b>9</b>	<b>0</b>
Merlin	Sep-Mar	19	3	4	164	90	15	45	15	0	0
	Total		3	4	164	90	15	45	15	0	0
<b>Total</b>			<b>3</b>	<b>4</b>	<b>164</b>	<b>90</b>	<b>15</b>	<b>45</b>	<b>15</b>	<b>0</b>	<b>0</b>
Osprey	Apr-Aug	33	1	1	101	0	0	101	0	0	0
	Total		1	1	101	0	0	101	0	0	0
<b>Total</b>			<b>1</b>	<b>1</b>	<b>101</b>	<b>0</b>	<b>0</b>	<b>101</b>	<b>0</b>	<b>0</b>	<b>0</b>
Peregrine	Apr-Aug	19	3	3	614	78	73	117	51	80	215
		28	1	2	162	58	92	12	0	0	0
		32	1	2	167	167	0	0	0	0	0
	Total		5	7	943	303	165	129	51	80	215
	Sep-Mar	33	1	1	153	0	0	0	92	61	0
	Total		1	1	153	0	0	0	92	61	0
<b>Total</b>			<b>6</b>	<b>8</b>	<b>1096</b>	<b>303</b>	<b>165</b>	<b>129</b>	<b>143</b>	<b>141</b>	<b>215</b>

Species	Period	VP	No. of flights	No. of birds	Total flight time (s)	Height class					
						<20 m	20-40 m	40-100 m	100-150 m	150-250 m	>250 m
Red kite	Apr-Aug	28	3	3	435	55	260	120	0	0	0
		33	1	1	150	105	45	0	0	0	0
	Total		4	4	585	160	305	120	0	0	0
	Sep-Mar	28	1	1	23	0	9	2	4	4	4
		33	1	1	36	0	0	18	7	11	0
	Total		2	2	59	0	9	20	11	15	4
<b>Total</b>			<b>6</b>	<b>6</b>	<b>644</b>	<b>160</b>	<b>314</b>	<b>140</b>	<b>11</b>	<b>15</b>	<b>4</b>

### Black grouse

#### *Occurrence and Status*

- 1.65. This species was not recorded during any surveys.

### Waders

#### *Occurrence and Status*

- 1.66. Sightings of golden plover (*Pluvialis apricaria*), curlew (*Numenius arquata*), common sandpiper (*Actitis hypoleucos*), woodcock (*Scolopax rusticola*), snipe (*Gallinago gallinago*) and jack snipe (*Lymnocryptes minimus*) were recorded. Golden plover is listed on Annex 1 of the Birds Directive and woodcock and curlew are both Red-listed Birds of Conservation Concern. Curlew is also listed on IUCN ‘Red list – ‘Near Threatened’ (IUCN 2019).

#### *Abundance and Distribution*

- 1.67. Three snipe territories and four common sandpiper territories were located within the 500 m buffer of the turbines (**Table 11, Figure 9.6**)
- 1.68. Curlew was recorded during April and June with territorial birds noted outside the survey area in the vicinity of Hare Hill Windfarm. Two flights involving two individuals were recorded from GVPs. Both flights were over the FA (**Figures 9.4 & 9.5**).
- 1.69. Golden plover was recorded during April, July and November. Three flights involving 78 birds (flock sizes ranged from 18 to 30) were recorded from GVPs. All flights were within the FA (**Figures 9.4 & 9.5**).
- 1.70. One woodcock was recorded during November.
- 1.71. Two jack snipe were recorded during an MBS survey in April.

#### *Flight Activity from GVPs – Breeding Season (April to August)*

- 1.72. Two curlew flights involving two birds in total flew at least partially through the FA at the RHB of the turbines. One golden plover flock of eighteen birds flew through the FA at the RHB of the turbines. (**Table 12, Figure 9.4**).

#### *Flight Activity from GVPs and MWPs – Non-breeding season (September to March)*

- 1.73. Two golden plover flights involving 60 birds (the same flock of 30 birds on two occasions) passed at least partially through the FA at the RHB of the turbines (**Table 12, Figure 9.4**).

**Table 11 Territory abundance of selected species recorded during the breeding bird surveys of open ground within the 500 m study area**

Species	BTO code	No. of Territories
Snipe	SN	3
<i>Red grouse</i>	RG	3
Common sandpiper	CS	4
<i>Skylark</i>	S.	54
<i>Whinchat</i>	WC	3
Grey wagtail	GL	4
Common names of birds listed in Annex 1 of the Birds Directive or Schedule 1 of the WCA are shown in bold, red-listed birds of Conservation Concern and Biodiversity Action Plan (BAP) species are shown in italic.		

**Table 12 Flight activity and elevation by wader species which occurred at least partly within the 500 m buffer of the proposed turbines (FA) recorded during GVP watches from VPs 1, 2, 3 & 4. Data are multiplied by the number of birds involved in each flight where necessary.**

Species	Season	GVP	Flight ID	No. of birds	Total fly time (s)	Height class					
						<10 m	10 - 30 m	30 - 50 m	50-100 m	100 - 150 m	>150 m
Curlew	Apr-Aug	3	CU_2	1					✓		
		4	CU_1	1					✓	✓	
Golden plover	Apr-Aug	3	GP_1	18							
	Sep-Mar	2	GP_2	30							
			GP_3	30							

#### Other Species of Interest

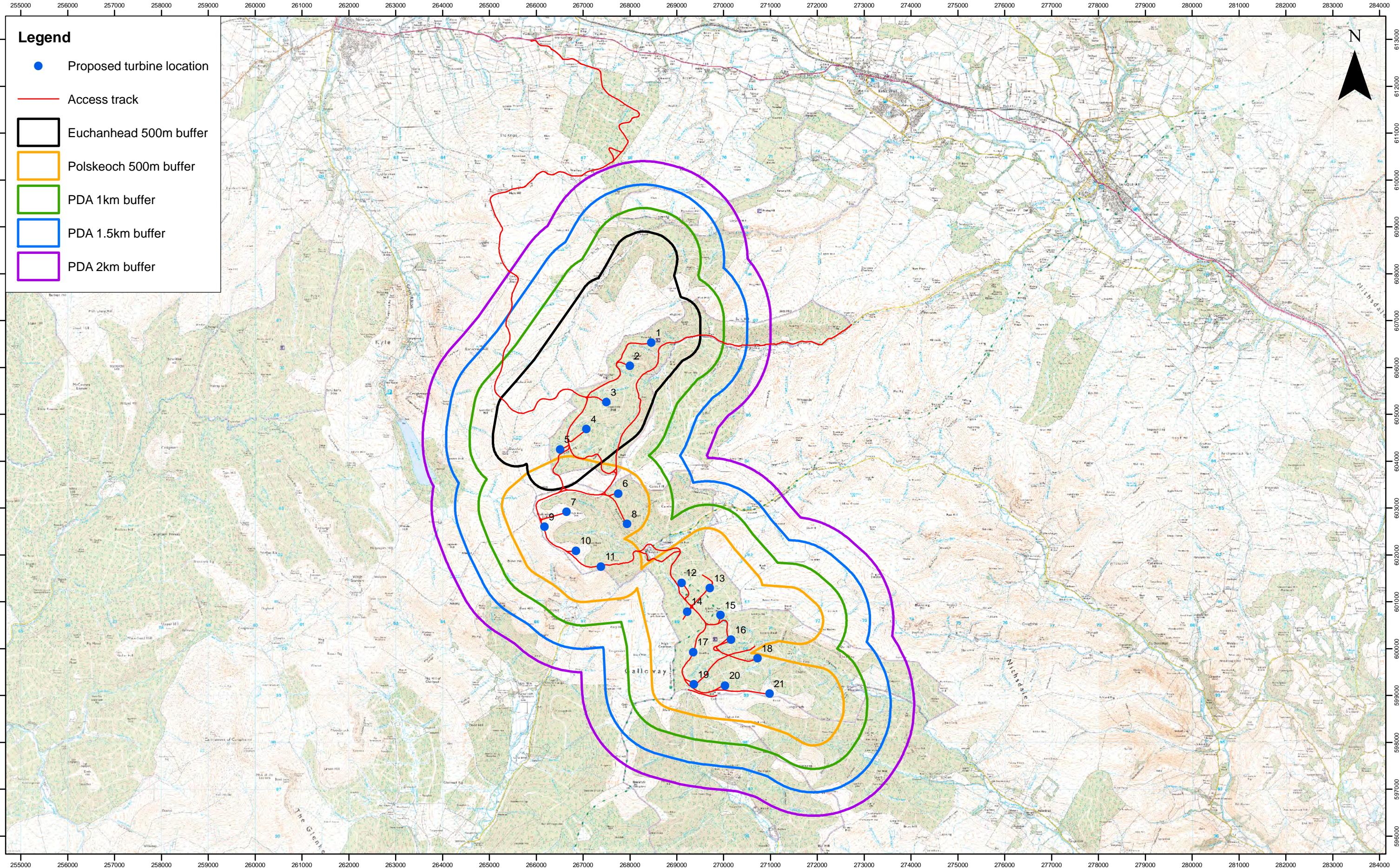
- 1.74. The moorland bird surveys located 2 red grouse (*Lagopus lagopus*), 54 skylark (*Alauda arvensis*), 3 whinchat (*Saxicola rubetra*) and 3 grey wagtail (*Motacilla cinerea*) territories (**Table 13, Figure 6**). Raven (*Corvus corax*), buzzard (*Buteo buteo*) kestrel (*Falco tinnunculus*) and herring gull (*Larus arge*) were the species recorded most often during the GVP watches from VPs 1, 2, 3 and 4 (**Table 13**).

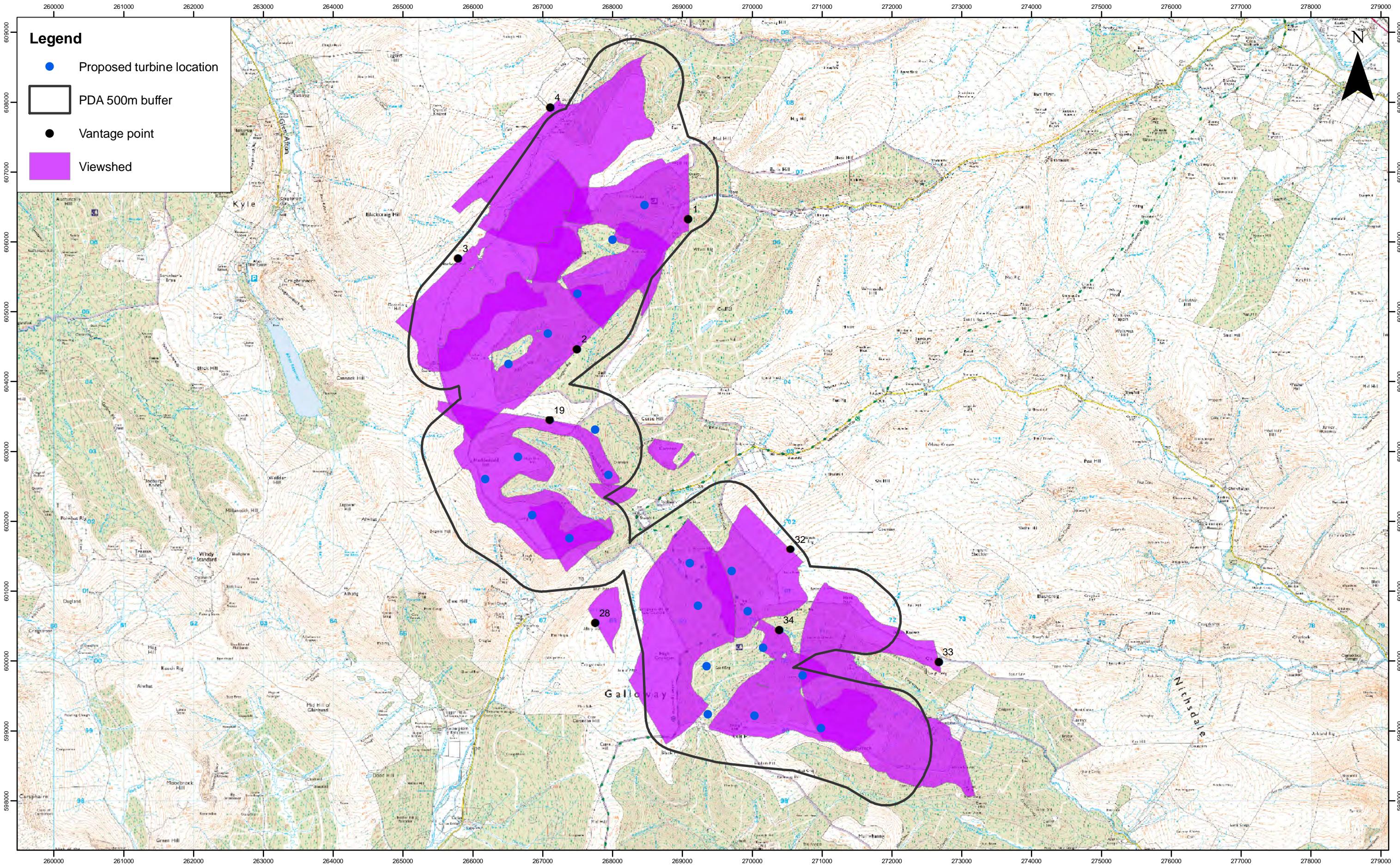
**Table 13 The percentage of five-minute recording periods in which each species was encountered during watches from GVPs 1, 2, 3 & 4. Total number of 5 minute recording intervals was 3,435.**

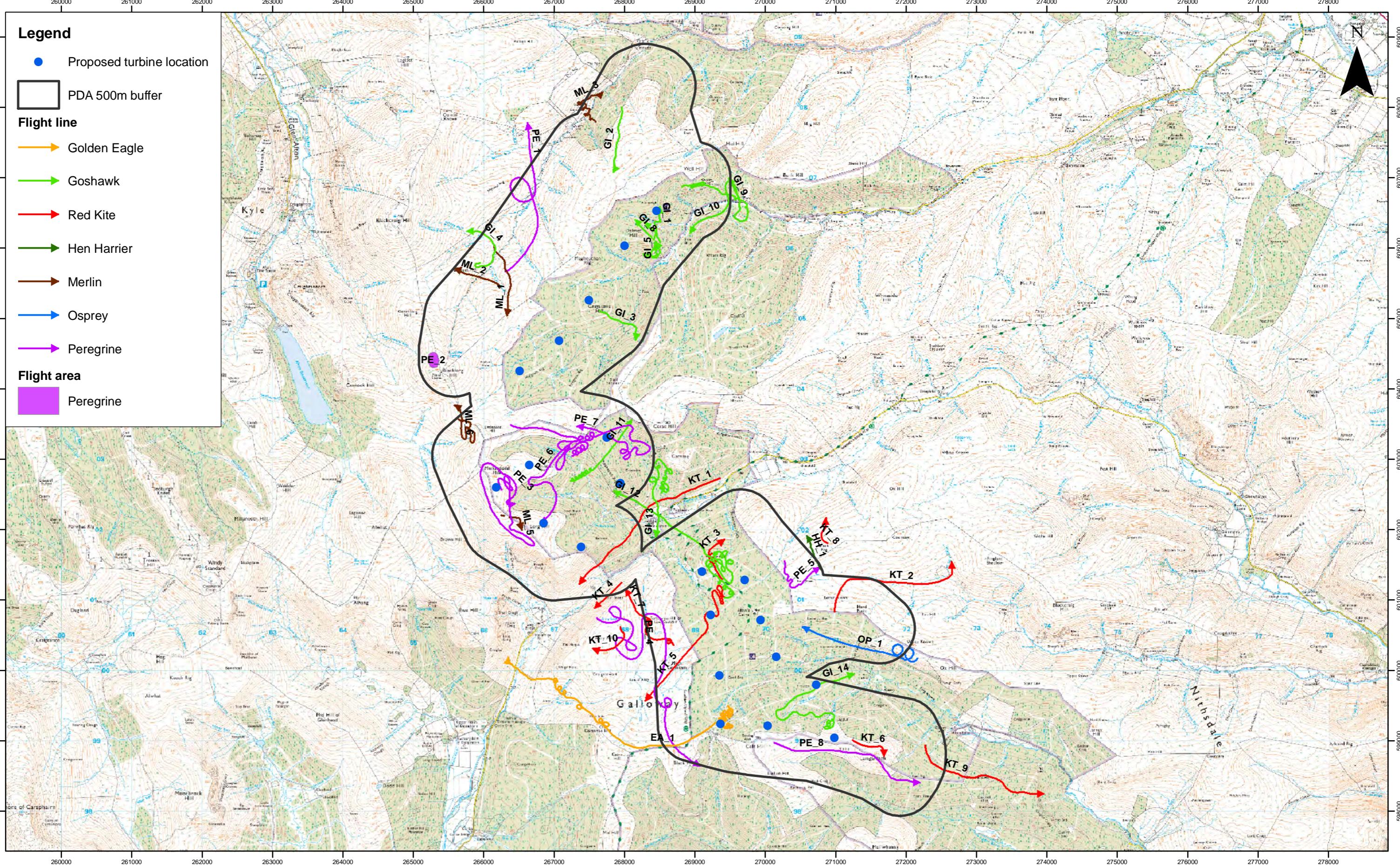
Species	Total	%
Raven	182	5.298
Buzzard	154	4.483
Kestrel	34	0.990
<i>Herring gull</i>	12	0.349
<b>Goshawk</b>	10	0.291
Sparrowhawk	9	0.262
Common sandpiper	5	0.146
Pink-footed goose	4	0.116
Red grouse	3	0.130
<b>Merlin</b>	3	0.087
<b>Golden plover</b>	3	0.087
<i>Curlew</i>	2	0.058
Grey heron	2	0.058
<b>Peregrine</b>	2	0.058
Lesser black-backed gull	1	0.029
<i>Woodcock</i>	1	0.029
Snipe	1	0.029
<i>Cuckoo</i>	1	0.029
Carriion crow	1	0.029
Goosander	1	0.029
Birds listed in Annex 1 of the Birds Directive or Schedule 1 of the WCA are shown in bold. Red-listed birds of Conservation Concern and Biodiversity Action Plan (BAP) species are shown in italic. Other species are of ornithological interest		

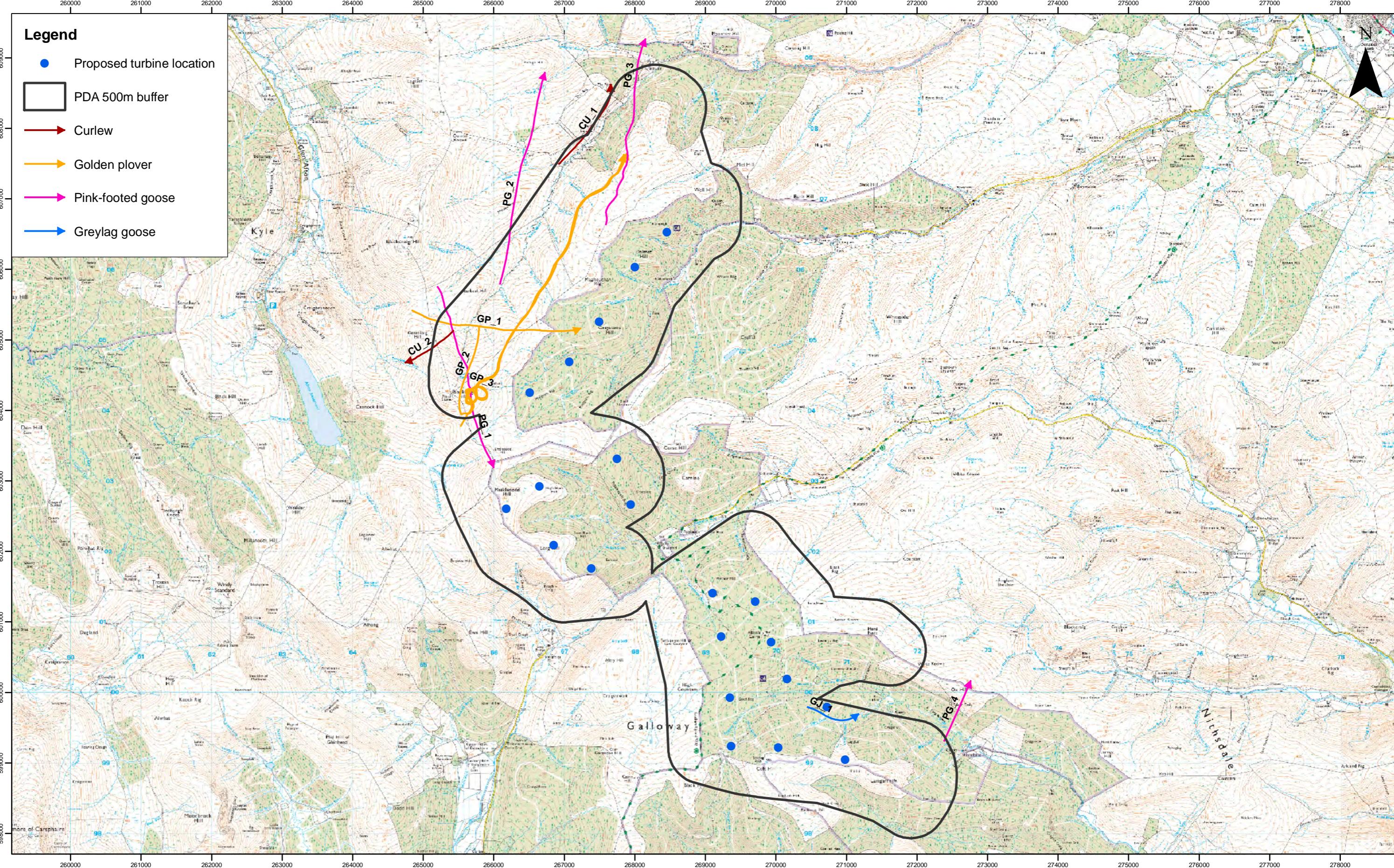
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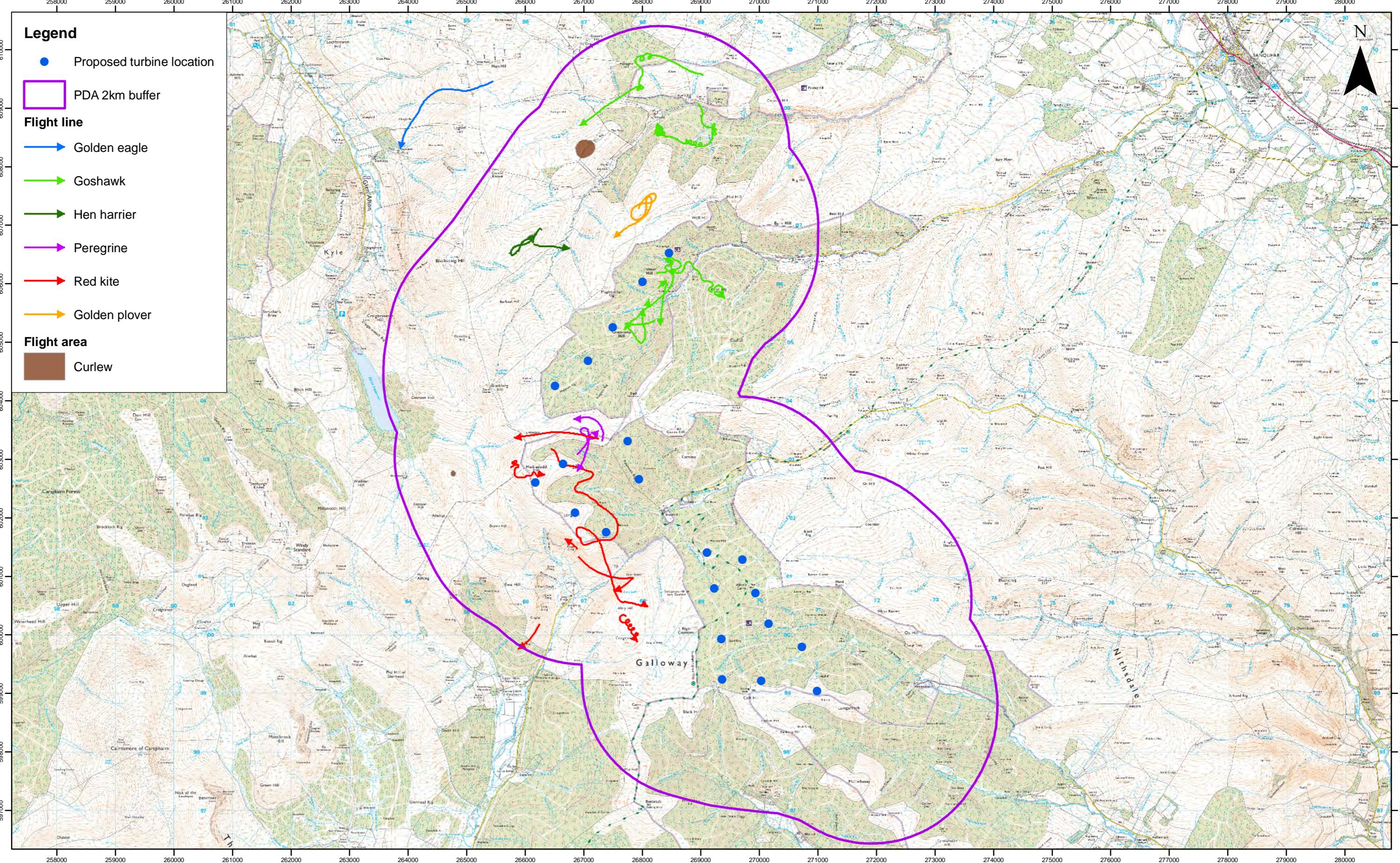
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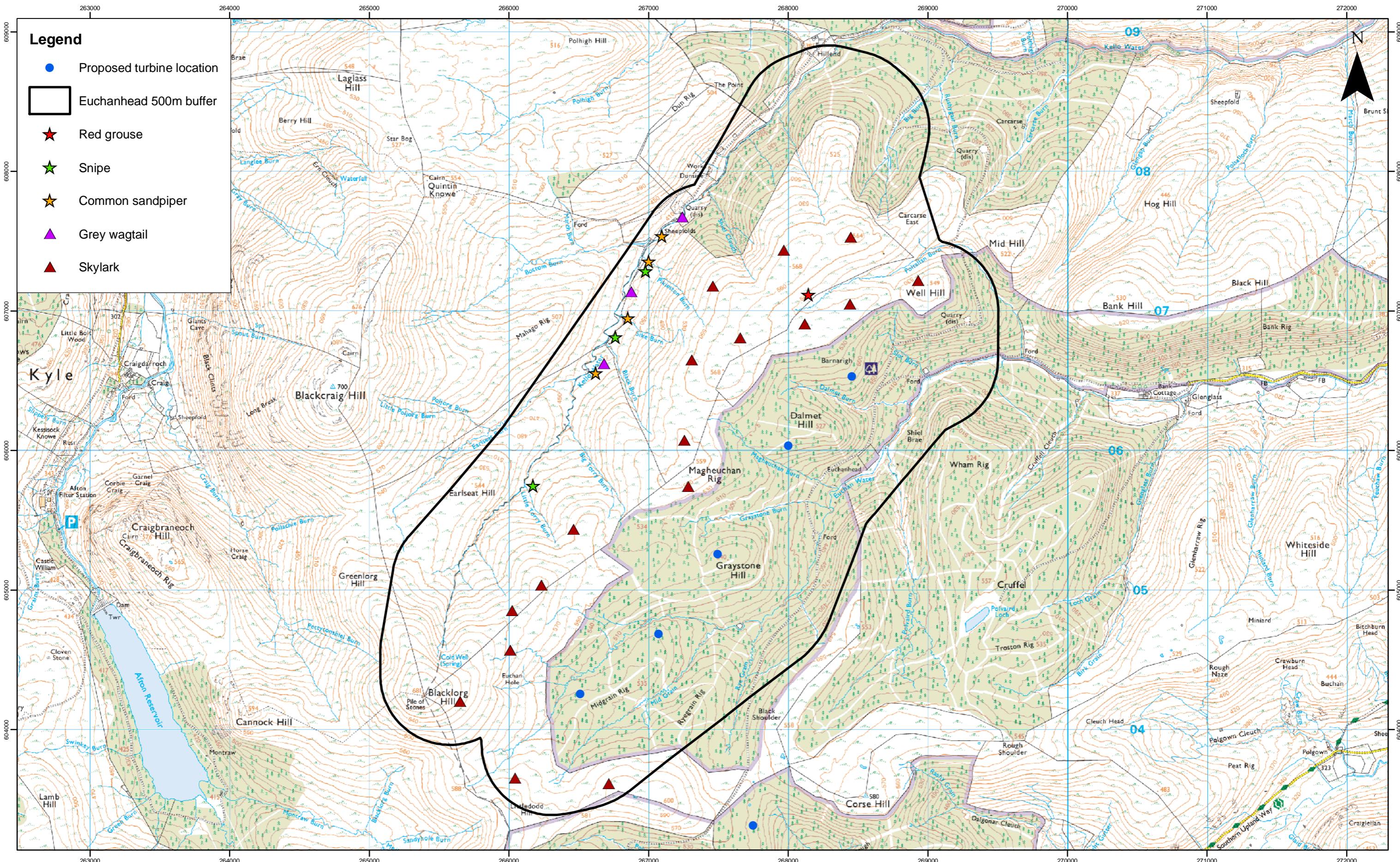


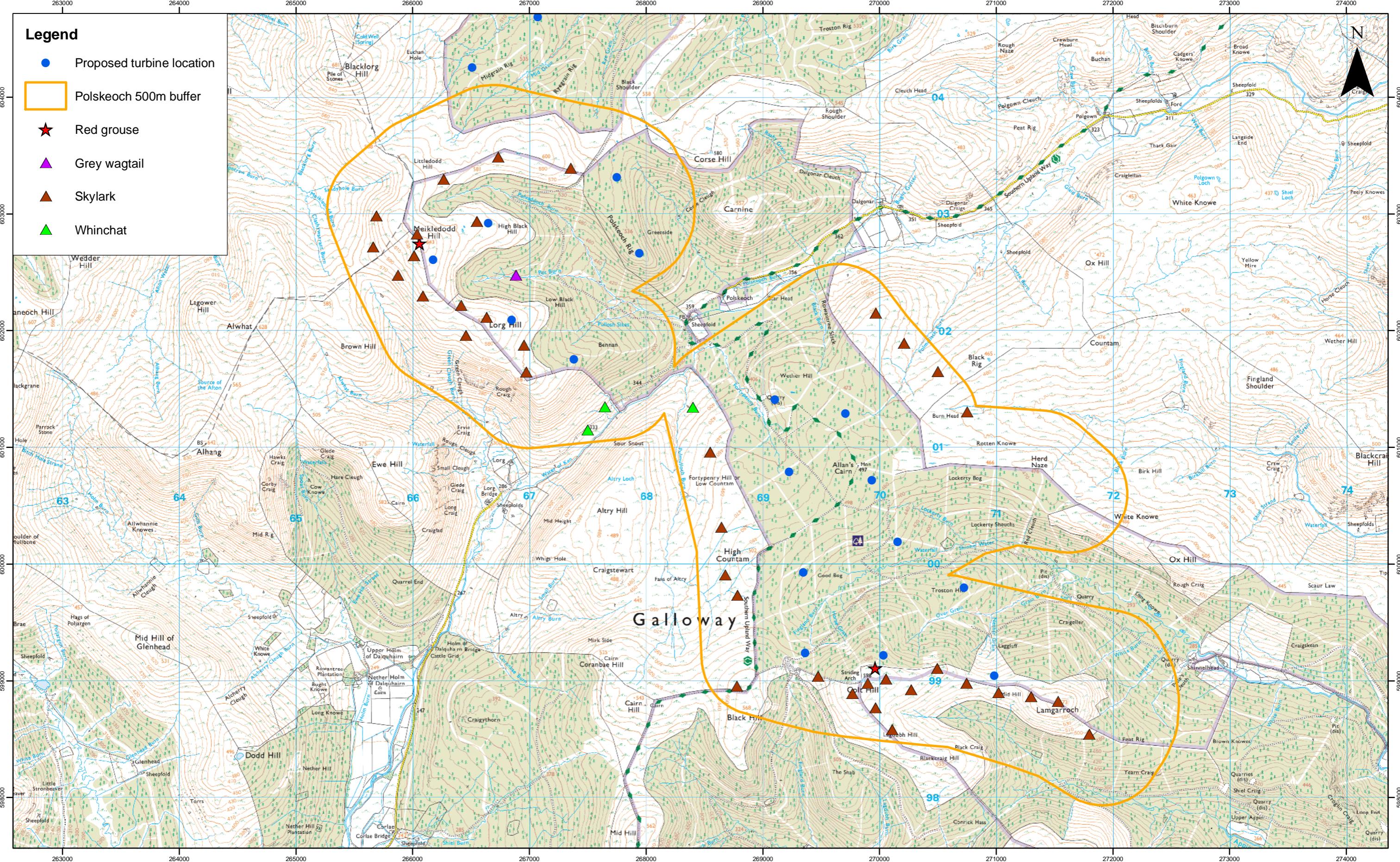


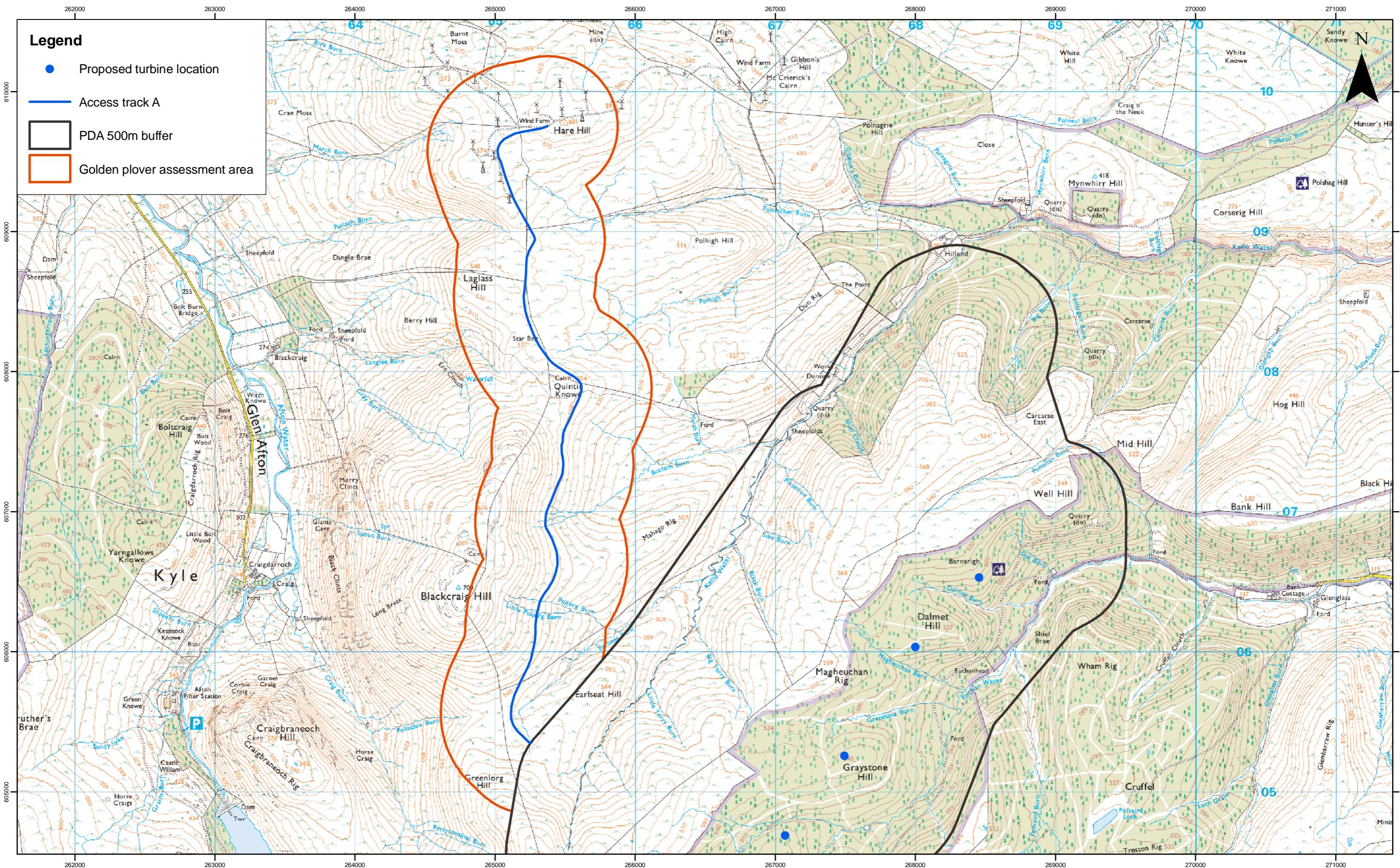




Rev	Date	By	Comment
B	10/09/20	FL	Second Issue.
A	25/08/20	FL	First Issue.







## Annexes

### Annex 1.1 Recording Periods used in Diurnal Stratification of Watches

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Early GVPs finish by / Middle GVPs begin from	0930	0900	0830*	0830	0745	0730	0800	0830	0900	0930**	0900	0930
Middle GVPs finish by / Late GVPs begin from	1500	1600	1630*	1800	1900	1900	1900	1830	1730	1630**	1500	1430
	GMT	GMT	GMT	BST	GMT	GMT						

\*This time is GMT, when the clocks changed time was kept in line with this, within the month.

\*\* This time is BST, when the clocks changed time was kept in line with this, within the month.

## Annex 1.2 Generic Vantage Point Survey Information for all GVPs

\*Watch ID relates to Appendix 1.3 Weather Details

Date	Obs	GVP	Start	Finish	Duration	Watch ID*
14/04/2019	RA	GVP1	1300	1600	3.00	EUC2_190414_001
14/04/2019	AA	GVP1	1645	1945	3.00	EUC2_190414_002
15/04/2019	RA	GVP1	1320	1620	3.00	EUC2_190415_001
14/04/2019	AA	GVP2	1315	1615	3.00	EUC2_190414_003
14/04/2019	RA	GVP2	1630	1930	3.00	EUC2_190414_004
15/04/2019	RA	GVP2	0935	1235	3.00	EUC2_190415_002
04/04/2019	RAS	GVP3	1630	1800	1.50	EUC2_190404_001
04/04/2019	RAS	GVP3	1800	1930	1.50	EUC2_190404_002
05/04/2019	RAS	GVP3	1230	1530	3.00	EUC2_190405_001
15/04/2019	AA	GVP3	1345	1645	3.00	EUC2_190415_003
04/04/2019	RAS	GVP4	0900	1200	3.00	EUC2_190404_003
05/04/2019	RAS	GVP4	1630	1800	1.50	EUC2_190405_002
05/04/2019	RAS	GVP4	1800	1930	1.50	EUC2_190405_003
15/04/2019	AA	GVP4	1010	1310	3.00	EUC2_190415_004
24/04/2019	AR	GVP19	1000	1300	3.00	POL_190424_5
24/04/2019	AR	GVP19	1330	1630	3.00	POL_190424_6
28/04/2019	AR	GVP28	1145	1445	3.00	POL_190428_11
28/04/2019	AR	GVP28	0815	1115	3.00	POL_190428_12
28/04/2019	GP	GVP32	0815	1115	3.00	POL_190428_9
28/04/2019	GP	GVP32	1145	1445	3.00	POL_190428_10
19/04/2019	TB	GVP33	1100	1400	3.00	POL_190419_3
19/04/2019	TB	GVP33	1430	1730	3.00	POL_190419_4
24/04/2019	GP	GVP34	1015	1315	3.00	POL_190424_7
24/04/2019	GP	GVP34	1345	1645	3.00	POL_190424_8
22/05/2019	CN	GVP1	1545	1845	3.00	EUC2_190522_001
22/05/2019	CN	GVP1	1915	2200	2.75	EUC2_190522_002
23/05/2019	CN	GVP2	1510	1810	3.00	EUC2_190523_001
23/05/2019	CN	GVP2	1840	2140	3.00	EUC2_190523_002
03/05/2019	RAS	GVP3	1015	1315	3.00	EUC2_190503_001
10/05/2019	RAS	GVP3	0615	0745	1.50	EUC2_190510_001
10/05/2019	RAS	GVP3	0745	0915	1.50	EUC2_190510_002
03/05/2019	RAS	GVP4	0615	0745	1.50	EUC2_190503_002
03/05/2019	RAS	GVP4	0745	0915	1.50	EUC2_190503_003
10/05/2019	RAS	GVP4	1015	1315	3.00	EUC2_190510_003
23/05/2019	GP	GVP19	1340	1640	3.00	POL_190523_15
23/05/2019	GP	GVP19	1010	1310	3.00	POL_190523_16
28/05/2019	TB	GVP28	1145	1445	3.00	POL_190528_19
28/05/2019	TB	GVP28	1515	1815	3.00	POL_190528_20
29/05/2019	TB	GVP32	1040	1340	3.00	POL_190529_21
29/05/2019	TB	GVP32	0710	1010	3.00	POL_190529_22
10/05/2019	TB	GVP33	1350	1650	3.00	POL_190510_13
10/05/2019	TB	GVP33	1020	1320	3.00	POL_190510_14
23/05/2019	TB	GVP34	0935	1235	3.00	POL_190523_17
23/05/2019	TB	GVP34	1305	1605	3.00	POL_190523_18

Date	Obs	GVP	Start	Finish	Duration	Watch ID*
06/06/2019	RAS	GVP1	1400	1700	3.00	EUC2_190606_001
19/06/2019	CN	GVP1	0800	1100	3.00	EUC2_190619_001
06/06/2019	RAS	GVP2	1730	1900	1.50	EUC2_190606_002
06/06/2019	RAS	GVP2	1900	2030	1.50	EUC2_190606_003
19/06/2019	CN	GVP2	1130	1430	3.00	EUC2_190619_002
20/06/2019	CN	GVP3	0800	1100	3.00	EUC2_190620_001
20/06/2019	CN	GVP3	1130	1430	3.00	EUC2_190620_002
21/06/2019	CN	GVP4	0830	1130	3.00	EUC2_190621_001
21/06/2019	CN	GVP4	1200	1500	3.00	EUC2_190621_002
10/06/2019	GP	GVP19	1145	1445	3.00	POL_190610_25
16/06/2019	GP	GVP19	0815	1115	3.00	POL_190616_23
28/06/2019	GP	GVP19	1550	1850	3.00	POL_190628_34
13/06/2019	TB	GVP28	1530	1830	3.00	POL_190613_27
13/06/2019	TB	GVP28	1900	2200	3.00	POL_190613_28
20/06/2019	TB	GVP28	1450	1750	3.00	POL_190620_36
17/06/2019	GP	GVP32	1130	1430	3.00	POL_190617_29
17/06/2019	GP	GVP32	1500	1800	3.00	POL_190617_30
27/06/2019	TB	GVP32	1000	1300	3.00	POL_190627_31
28/06/2019	GP	GVP33	1150	1450	3.00	POL_190628_33
28/06/2019	GP	GVP33	0820	1120	3.00	POL_190628_35
10/06/2019	TB	GVP34	0945	1245	3.00	POL_190610_24
10/06/2019	TB	GVP34	1315	1615	3.00	POL_190610_26
27/06/2019	TB	GVP34	1345	1645	3.00	POL_190627_32
17/07/2019	RAS	GVP1	0630	0800	1.50	EUC2_190717_001
17/07/2019	RAS	GVP1	0800	0930	1.50	EUC2_190717_002
17/07/2019	RAS	GVP1	1000	1300	3.00	EUC2_190717_003
18/07/2019	RAS	GVP1	1245	1545	3.00	EUC2_190718_001
18/07/2019	RAS	GVP2	0915	1215	3.00	EUC2_190718_002
29/07/2019	CN	GVP2	0830	1130	3.00	EUC2_190729_001
29/07/2019	CN	GVP2	1200	1500	3.00	EUC2_190729_002
25/07/2019	RAS	GVP3	1050	1350	3.00	EUC2_190725_001
25/07/2019	RAS	GVP3	1420	1720	3.00	EUC2_190725_002
30/07/2019	CN	GVP3	0900	1200	3.00	EUC2_190730_001
30/07/2019	CN	GVP4	1250	1550	3.00	EUC2_190730_002
31/07/2019	CN	GVP4	0810	1110	3.00	EUC2_190731_001
31/07/2019	CN	GVP4	1140	1440	3.00	EUC2_190731_002
25/07/2019	TB	GVP19	1015	1315	3.00	POL_190725_41
25/07/2019	TB	GVP19	1345	1645	3.00	POL_190725_43
26/07/2019	TB	GVP19	1425	1725	3.00	POL_190726_50
18/07/2019	TB	GVP28	1520	1820	3.00	POL_190718_37
26/07/2019	TB	GVP28	0700	1000	3.00	POL_190726_46
26/07/2019	TB	GVP28	1030	1330	3.00	POL_190726_48
25/07/2019	GP	GVP32	1010	1310	3.00	POL_190725_40
25/07/2019	GP	GVP32	1340	1640	3.00	POL_190725_42
31/07/2019	AR	GVP32	1115	1415	3.00	POL_190731_51
26/07/2019	GP	GVP33	0650	0950	3.00	POL_190726_44
26/07/2019	GP	GVP33	1020	1320	3.00	POL_190726_47

Date	Obs	GVP	Start	Finish	Duration	Watch ID*
31/07/2019	GP	GVP33	1320	1620	3.00	POL_190731_52
22/07/2019	TB	GVP34	1250	1550	3.00	POL_190722_38
22/07/2019	TB	GVP34	1620	1920	3.00	POL_190722_39
26/07/2019	GP	GVP34	1415	1715	3.00	POL_190726_49
12/08/2019	RAS	GVP1	1330	1630	3.00	EUC2_190812_001
26/08/2019	RAS	GVP1	1700	1830	1.50	EUC2_190826_001
26/08/2019	RAS	GVP1	1830	2000	1.50	EUC2_190826_002
12/08/2019	RAS	GVP2	1700	1830	1.50	EUC2_190812_002
12/08/2019	RAS	GVP2	1830	2000	1.50	EUC2_190812_003
26/08/2019	RAS	GVP2	1330	1630	3.00	EUC2_190826_003
28/08/2019	RAS	GVP3	1700	1830	1.50	EUC2_190828_001
28/08/2019	RAS	GVP3	1830	2000	1.50	EUC2_190828_002
31/08/2019	RAS	GVP3	1300	1600	3.00	EUC2_190831_001
28/08/2019	RAS	GVP4	1245	1545	3.00	EUC2_190828_003
31/08/2019	RAS	GVP4	1700	1830	1.50	EUC2_190831_002
31/08/2019	RAS	GVP4	1830	2000	1.50	EUC2_190831_003
27/08/2019	PC	GVP19	0935	1235	3.00	POL_190827_61
27/08/2019	PC	GVP19	1305	1605	3.00	POL_190827_63
15/08/2019	AR	GVP28	1000	1300	3.00	POL_190815_57
15/08/2019	AR	GVP28	1330	1630	3.00	POL_190815_59
27/08/2019	AM	GVP32	0905	1205	3.00	POL_190827_60
27/08/2019	AM	GVP32	1235	1535	3.00	POL_190827_62
13/08/2019	GP	GVP33	0800	1100	3.00	POL_190813_53
13/08/2019	GP	GVP33	1130	1430	3.00	POL_190813_54
14/08/2019	GP	GVP33	1400	1700	3.00	POL_190814_55
15/08/2019	GP	GVP34	0945	1245	3.00	POL_190815_56
15/08/2019	GP	GVP34	1315	1615	3.00	POL_190815_58
09/09/2019	RAS	GVP1	1100	1330	2.50	EUC2_190909_001
11/09/2019	RAS	GVP1	0730	0900	1.50	EUC2_190911_001
11/09/2019	RAS	GVP1	0900	1100	2.00	EUC2_190911_002
09/09/2019	RAS	GVP2	0730	0900	1.50	EUC2_190909_002
09/09/2019	RAS	GVP2	0900	1030	1.50	EUC2_190909_003
11/09/2019	RAS	GVP2	1115	1415	3.00	EUC2_190911_003
10/09/2019	RAS	GVP3	0730	0900	1.50	EUC2_190910_001
10/09/2019	RAS	GVP3	0900	1030	1.50	EUC2_190910_002
11/09/2019	AA	GVP3	0905	1205	3.00	EUC2_190911_004
10/09/2019	RAS	GVP4	1130	1430	3.00	EUC2_190910_003
11/09/2019	AA	GVP4	1300	1600	3.00	EUC2_190911_005
24/09/2019	DP	GVP19	1600	1720	1.33	POL_190924_75
28/09/2019	DP	GVP19	1605	1745	1.67	POL_190928_78
24/09/2019	DP	GVP28	1200	1500	3.00	POL_190924_74
26/09/2019	DP	GVP32	1415	1715	3.00	POL_190926_77
28/09/2019	DP	GVP33	1155	1455	3.00	POL_190928_79
26/09/2019	DP	GVP34	1000	1300	3.00	POL_190926_76
01/10/2019	RAS	GVP1	1100	1400	3.00	EUC2_191001_001
04/10/2019	RAS	GVP1	1430	1630	2.00	EUC2_191004_001
04/10/2019	RAS	GVP1	1630	1730	1.00	EUC2_191004_002

Date	Obs	GVP	Start	Finish	Duration	Watch ID*
01/10/2019	RAS	GVP2	1430	1630	2.00	EUC2_191001_002
01/10/2019	RAS	GVP2	1630	1730	1.00	EUC2_191001_003
04/10/2019	RAS	GVP2	1100	1400	3.00	EUC2_191004_003
03/10/2019	RAS	GVP3	1430	1630	2.00	EUC2_191003_001
03/10/2019	RAS	GVP3	1630	1730	1.00	EUC2_191003_002
09/10/2019	RAS	GVP3	1030	1330	3.00	EUC2_191009_001
03/10/2019	RAS	GVP4	1030	1330	3.00	EUC2_191003_003
09/10/2019	RAS	GVP4	1430	1630	2.00	EUC2_191009_002
09/10/2019	RAS	GVP4	1630	1730	1.00	EUC2_191009_003
15/10/2019	DP	GVP19	1114	1414	3.00	POL_191015_64
15/10/2019	DP	GVP19	1444	1744	3.00	POL_191015_65
16/10/2019	DP	GVP28	1200	1500	3.00	POL_191016_66
16/10/2019	DP	GVP28	1530	1830	3.00	POL_191016_67
28/10/2019	DP	GVP32	1045	1345	3.00	POL_191028_72
28/10/2019	DP	GVP32	1415	1715	3.00	POL_191028_73
29/10/2019	DP	GVP33	1030	1330	3.00	POL_191029_70
29/10/2019	DP	GVP33	1400	1700	3.00	POL_191029_71
24/10/2019	DP	GVP34	1030	1330	3.00	POL_191024_68
24/10/2019	DP	GVP34	1400	1700	3.00	POL_191024_69
26/11/2019	RAS	GVP1	0800	0900	1.00	EUC2_191126_001
26/11/2019	RAS	GVP1	0900	1030	1.50	EUC2_191126_002
27/11/2019	RAS	GVP1	1015	1215	2.00	EUC2_191127_001
26/11/2019	RAS	GVP2	1045	1315	2.50	EUC2_191126_003
27/11/2019	RAS	GVP2	0800	0900	1.00	EUC2_191127_002
27/11/2019	RAS	GVP2	0900	1000	1.00	EUC2_191127_003
21/11/2019	RAS	GVP3	0800	0900	1.00	EUC2_191121_001
21/11/2019	RAS	GVP3	0900	1030	1.50	EUC2_191121_002
28/11/2019	RAS	GVP3	1100	1300	2.00	EUC2_191128_001
21/11/2019	RAS	GVP4	1130	1400	2.50	EUC2_191121_003
28/11/2019	RAS	GVP4	0800	0900	1.00	EUC2_191128_002
28/11/2019	RAS	GVP4	0900	1000	1.00	EUC2_191128_003
18/11/2019	DP	GVP19	1010	1310	3.00	POL_191118_80
18/11/2019	DP	GVP19	1340	1640	3.00	POL_191118_81
28/11/2019	DP	GVP28	1000	1300	3.00	POL_191128_86
28/11/2019	DP	GVP28	1330	1630	3.00	POL_191128_87
27/11/2019	DP	GVP32	0940	1240	3.00	POL_191127_84
27/11/2019	DP	GVP32	1310	1410	1.00	POL_191127_85
30/11/2019	DP	GVP32	0900	1100	2.00	POL_191130_91
29/11/2019	DP	GVP33	0930	1230	3.00	POL_191129_88
29/11/2019	DP	GVP33	1300	1600	3.00	POL_191129_89
29/11/2019	DP	GVP33	1300	1600	3.00	POL_191129_90
22/11/2019	DP	GVP34	0940	1240	3.00	POL_191122_82
22/11/2019	DP	GVP34	1310	1610	3.00	POL_191122_83
18/12/2019	RAS	GVP1	1330	1430	1.00	EUC2_191218_001
18/12/2019	RAS	GVP1	1430	1530	1.00	EUC2_191218_002
19/12/2019	RAS	GVP1	1115	1315	2.00	EUC2_191219_001
18/12/2019	RAS	GVP2	1125	1325	2.00	EUC2_191218_003

Date	Obs	GVP	Start	Finish	Duration	Watch ID*
19/12/2019	RAS	GVP2	1330	1430	1.00	EUC2_191219_002
19/12/2019	RAS	GVP2	1430	1530	1.00	EUC2_191219_003
11/12/2019	RAS	GVP3	1330	1430	1.00	EUC2_191211_001
11/12/2019	RAS	GVP3	1430	1530	1.00	EUC2_191211_002
17/12/2019	RAS	GVP3	1030	1230	2.00	EUC2_191217_001
11/12/2019	RAS	GVP4	1030	1230	2.00	EUC2_191211_003
17/12/2019	RAS	GVP4	1330	1430	1.00	EUC2_191217_002
17/12/2019	RAS	GVP4	1430	1530	1.00	EUC2_191217_003
03/12/2019	DP	GVP19	0910	1110	2.00	POL_191203_96
15/12/2019	DP	GVP19	1020	1120	1.00	POL_191215_92
15/12/2019	DP	GVP19	1250	1550	3.00	POL_191215_93
17/12/2019	DP	GVP28	0955	1255	3.00	POL_191217_97
17/12/2019	DP	GVP28	1325	1625	3.00	POL_191217_98
18/12/2019	DP	GVP32	1000	1300	3.00	POL_191218_99
30/12/2019	DP	GVP32	1240	1540	3.00	POL_191230_100
31/12/2019	DP	GVP33	1230	1530	3.00	POL_191231_101
31/12/2019	DP	GVP33	0900	1200	3.00	POL_191231_102
16/12/2019	DP	GVP34	0950	1250	3.00	POL_191216_94
16/12/2019	DP	GVP34	1320	1620	3.00	POL_191216_95
08/01/2020	RAS	GVP1	1045	1245	2.00	EUC2_200108_001
09/01/2020	RAS	GVP1	0830	0930	1.00	EUC2_200109_001
09/01/2020	RAS	GVP1	0930	1030	1.00	EUC2_200109_002
08/01/2020	RAS	GVP2	0830	0930	1.00	EUC2_200108_002
08/01/2020	RAS	GVP2	0930	1030	1.00	EUC2_200108_003
09/01/2020	RAS	GVP2	1045	1245	2.00	EUC2_200109_003
10/01/2020	RAS	GVP3	1130	1330	2.00	EUC2_200110_001
24/01/2020	RAS	GVP3	1100	1300	2.00	EUC2_200124_001
10/01/2020	RAS	GVP4	0830	0930	1.00	EUC2_200110_002
10/01/2020	RAS	GVP4	0930	1030	1.00	EUC2_200110_003
24/01/2020	RAS	GVP4	1400	1600	2.00	EUC2_200124_002
29/01/2020	DP	GVP19	0930	1230	3.00	POL_200129_106
14/01/2020	DP	GVP28	0945	1245	3.00	POL_200114_107
29/01/2020	DP	GVP32	1320	1620	3.00	POL_200129_105
28/01/2020	DP	GVP33	0930	1230	3.00	POL_200128_104
28/01/2020	DP	GVP34	1305	1605	3.00	POL_200128_103
03/02/2020	RAS	GVP1	1500	1600	1.00	EUC2_200203_001
03/02/2020	RAS	GVP1	1600	1700	1.00	EUC2_200203_002
04/02/2020	RAS	GVP1	1245	1445	2.00	EUC2_200204_001
03/02/2020	RAS	GVP2	1245	1445	2.00	EUC2_200203_003
04/02/2020	RAS	GVP2	1500	1600	1.00	EUC2_200204_002
04/02/2020	RAS	GVP2	1600	1700	1.00	EUC2_200204_003
18/02/2020	RAS	GVP2	1015	1145	1.50	EUC2_200218_001
06/02/2020	RAS	GVP3	1200	1400	2.00	EUC2_200206_001
20/02/2020	RAS	GVP3	1315	1615	3.00	EUC2_200220_001
06/02/2020	RAS	GVP4	1500	1600	1.00	EUC2_200206_002
06/02/2020	RAS	GVP4	1600	1700	1.00	EUC2_200206_003
18/02/2020	RAS	GVP4	1300	1530	2.50	EUC2_200218_002

Date	Obs	GVP	Start	Finish	Duration	Watch ID*
18/02/2020	RAS	GVP4	1530	1630	1.00	EUC2_200218_003
10/02/2020	DP	GVP19	0930	1230	3.00	POL_200210_108
10/02/2020	DP	GVP19	1300	1600	3.00	POL_200210_109
25/02/2020	DP	GVP28	1030	1330	3.00	POL_200225_110
25/02/2020	DP	GVP28	1400	1700	3.00	POL_200225_111
27/02/2020	DP	GVP33	1020	1320	3.00	POL_200227_114
27/02/2020	DP	GVP33	1350	1650	3.00	POL_200227_115
26/02/2020	DP	GVP34	1140	1440	3.00	POL_200226_112
26/02/2020	DP	GVP34	1510	1810	3.00	POL_200226_113
03/03/2020	RAS	GVP1	1045	1345	3.00	EUC2_200303_001
10/03/2020	RAS	GVP1	0730	0830	1.00	EUC2_200310_001
10/03/2020	RAS	GVP1	0830	1030	2.00	EUC2_200310_002
03/03/2020	RAS	GVP2	0730	0830	1.00	EUC2_200303_002
03/03/2020	RAS	GVP2	0830	1030	2.00	EUC2_200303_003
11/03/2020	RAS	GVP2	1245	1545	3.00	EUC2_200311_001
04/03/2020	RAS	GVP3	1130	1430	3.00	EUC2_200304_001
05/03/2020	RAS	GVP3	0700	0830	1.50	EUC2_200305_001
05/03/2020	RAS	GVP3	0830	1030	2.00	EUC2_200305_002
04/03/2020	RAS	GVP4	0730	0830	1.00	EUC2_200304_002
04/03/2020	RAS	GVP4	0830	1030	2.00	EUC2_200304_003
05/03/2020	RAS	GVP4	1120	1420	3.00	EUC2_200305_003
18/03/2020	DP	GVP19	0930	1230	3.00	POL_200318_120
18/03/2020	DP	GVP19	1330	1630	3.00	POL_200318_121
19/03/2020	DP	GVP28	1030	1330	3.00	POL_200319_122
19/03/2020	DP	GVP28	1400	1700	3.00	POL_200319_123
04/03/2020	DP	GVP32	1030	1330	3.00	POL_200304_116
04/03/2020	DP	GVP32	1400	1700	3.00	POL_200304_117
20/03/2020	DP	GVP32	0945	1245	3.00	POL_200320_124
20/03/2020	DP	GVP32	1315	1615	3.00	POL_200320_125
23/03/2020	DP	GVP33	0945	1245	3.00	POL_200323_126
23/03/2020	DP	GVP33	1315	1615	3.00	POL_200323_127
05/03/2020	DP	GVP34	1015	1315	3.00	POL_200305_118
05/03/2020	DP	GVP34	1345	1645	3.00	POL_200305_119

**Annex 1.3a Weather details for GVP Watches from VPs 1, 2, 3 and 4.**

\*Precipitation Codes: Continuous / Intermittent + Light / Heavy + Rain / SHail / Fog

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_190414_001	0	8	700	SE	4	nil	10
EUC2_190414_001	1	10	700	SE	4	nil	10
EUC2_190414_001	2	10	700	SE	4	nil	10
EUC2_190414_001	3	10	700	SE	4	nil	10
EUC2_190414_002	0	10	800	SE	5	nil	10
EUC2_190414_002	1	10	800	SE	5	nil	10
EUC2_190414_002	2	10	800	SE	5	nil	10
EUC2_190414_002	3	10	800	SE	5	nil	10
EUC2_190415_001	0	10	700	ESE	5	nil	8
EUC2_190415_001	1	10	700	ESE	5	nil	10
EUC2_190415_001	2	10	700	ESE	5	nil	10
EUC2_190415_001	3	10	700	ESE	5	nil	10
EUC2_190414_003	0	10	800	SE	5	nil	10
EUC2_190414_003	1	10	800	SE	5	nil	10
EUC2_190414_003	2	10	800	SE	5	nil	10
EUC2_190414_003	3	10	800	SE	5	nil	10
EUC2_190414_004	0	10	700	SE	4	nil	10
EUC2_190414_004	1	10	700	SE	4	nil	10
EUC2_190414_004	2	10	700	SE	4	nil	10
EUC2_190414_004	3	10	700	SE	4	nil	10
EUC2_190415_002	0	10	700	ESE	5	nil	8
EUC2_190415_002	1	10	700	ESE	5	nil	8
EUC2_190415_002	2	10	700	ESE	5	nil	8
EUC2_190415_002	3	10	700	ESE	5	nil	8
EUC2_190404_001	0	8	900	E	4	nil	5
EUC2_190404_001	1	7	900	E	4	nil	5
EUC2_190404_002	0	5	900	E	5	nil	5
EUC2_190404_002	1	4	900	E	5	nil	5
EUC2_190405_001	0	7	900	SE	5	nil	5
EUC2_190405_001	1	9	900	SE	5	nil	5
EUC2_190405_001	2	10	900	SE	5	nil	5
EUC2_190405_001	3	9	900	SE	5	nil	5
EUC2_190415_003	0	10	1000	SE	6	nil	10
EUC2_190415_003	1	10	1000	SE	6	nil	10
EUC2_190415_003	2	10	1000	SE	6	nil	10
EUC2_190415_003	3	10	1000	SE	6	nil	10
EUC2_190404_003	0	10	400	NE	3	CLS	0.3
EUC2_190404_003	1	10	500	NE	3	IHF	1
EUC2_190404_003	2	10	400	NE	3	CHF	0.3
EUC2_190404_003	3	10	500	E	3	IHS	1
EUC2_190405_002	0	10	900	E	4	nil	5
EUC2_190405_002	1	10	900	E	4	nil	5
EUC2_190405_003	0	10	900	ENE	4	nil	5

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_190405_003	1	10	900	ENE	4	nil	5
EUC2_190415_004	0	10	800	SE	5	nil	10
EUC2_190415_004	1	10	800	SE	6	nil	10
EUC2_190415_004	2	10	800	SE	6	nil	10
EUC2_190415_004	3	10	800	SE	6	nil	10
EUC2_190522_001	0	4	1000	NW	3	nil	2
EUC2_190522_001	1	5	1000	NW	4	nil	2
EUC2_190522_001	2	5	1000	NW	4	nil	2
EUC2_190522_001	3	3	1000	NW	4	nil	2
EUC2_190522_002	0	4	1000	NW	4	nil	2
EUC2_190522_002	1	4	1000	NW	3	nil	2
EUC2_190522_002	2	5	1000	NW	3	nil	2
EUC2_190522_002	3	4	1000	NW	3	nil	2
EUC2_190523_001	0	4	1500	NW	2	nil	2
EUC2_190523_001	1	3	1500	NW	3	nil	2
EUC2_190523_001	2	3	1500	NW	3	nil	2
EUC2_190523_001	3	3	1500	NW	2	nil	2
EUC2_190523_002	0	3	1500	NW	3	nil	2
EUC2_190523_002	1	3	1500	NW	3	nil	2
EUC2_190523_002	2	5	1500	NW	3	nil	2
EUC2_190523_002	3	6	1500	NW	3	nil	2
EUC2_190503_001	0	10	900	N	3	nil	5
EUC2_190503_001	1	9	900	N	3	nil	5
EUC2_190503_001	2	8	900	N	3	nil	5
EUC2_190503_001	3	9	900	N	4	nil	5
EUC2_190510_001	0	3	900	SE	2	nil	5
EUC2_190510_001	1	3	900	SE	3	nil	5
EUC2_190510_002	0	3	1000	SE	3	nil	5
EUC2_190510_002	1	4	900	SE	4	nil	5
EUC2_190503_002	0	10	800	NE	1	nil	5
EUC2_190503_002	1	10	900	NE	2	nil	5
EUC2_190503_003	0	10	900	N	3	nil	5
EUC2_190503_003	1	9	900	N	3	nil	5
EUC2_190510_003	0	5	900	SE	4	nil	5
EUC2_190510_003	1	7	900	SE	4	nil	5
EUC2_190510_003	2	7	900	SE	4	nil	5
EUC2_190510_003	3	7	900	SSE	4	nil	5
EUC2_190606_001	0	6	900	S	4	nil	5
EUC2_190606_001	1	6	900	S	4	nil	5
EUC2_190606_001	2	5	900	S	4	nil	5
EUC2_190606_001	3	6	900	S	4	nil	5
EUC2_190619_001	0	4	1200	SW	3	nil	2
EUC2_190619_001	1	4	1200	SW	3	nil	2
EUC2_190619_001	2	5	1200	SW	4	nil	2
EUC2_190619_001	3	7	1200	SW	3	ILR	2
EUC2_190606_002	0	5	900	S	4	nil	5

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_190606_002	1	5	900	S	4	nil	5
EUC2_190606_003	0	4	900	S	4	nil	5
EUC2_190606_003	1	3	900	S	4	nil	5
EUC2_190619_002	0	8	1200	SW	3	ILR	2
EUC2_190619_002	1	6	1200	SW	3	nil	2
EUC2_190619_002	2	5	1200	SW	3	ILR	2
EUC2_190619_002	3	7	1200	SW	3	nil	2
EUC2_190620_001	0	3	1500	W	2	nil	2
EUC2_190620_001	1	4	1500	SW	3	nil	2
EUC2_190620_001	2	5	1500	WSW	3	nil	2
EUC2_190620_001	3	5	1500	SW	3	nil	2
EUC2_190620_002	0	5	1500	SW	3	nil	2
EUC2_190620_002	1	5	1500	SW	3	nil	2
EUC2_190620_002	2	6	1500	SW	3	nil	2
EUC2_190620_002	3	5	1500	SW	3	nil	2
EUC2_190621_001	0	5	1000	NW	2	nil	2
EUC2_190621_001	1	8	1000	NW	3	nil	2
EUC2_190621_001	2	10	1000	NW	2	nil	2
EUC2_190621_001	3	10	1000	NW	2	nil	2
EUC2_190621_002	0	10	1000	NW	2	nil	2
EUC2_190621_002	1	10	1000	NW	3	nil	2
EUC2_190621_002	2	10	1000	NW	2	nil	2
EUC2_190621_002	3	10	1000	NW	3	nil	2
EUC2_190717_001	0	10	400	SSW	3	CHF	0.2
EUC2_190717_001	1	10	500	SSW	3	CLF	1
EUC2_190717_002	0	10	500	SSW	4	ILR	5
EUC2_190717_002	1	10	500	SSW	4	nil	5
EUC2_190717_002	2	10	500	SSW	4	nil	5
EUC2_190717_003	0	10	600	SSW	4	nil	5
EUC2_190717_003	1	10	600	SSW	4	ILR	5
EUC2_190717_003	2	10	600	SSW	3	ILR	5
EUC2_190717_003	3	10	600	SSW	3	ILR	4
EUC2_190718_001	0	8	700	SW	4	ILR	5
EUC2_190718_001	1	8	800	SW	4	ILR	5
EUC2_190718_001	2	8	700	SW	4	ILR	4
EUC2_190718_001	3	8	900	SW	4	nil	5
EUC2_190718_002	0	10	600	SW	4	nil	5
EUC2_190718_002	1	9	700	SW	4	nil	5
EUC2_190718_002	2	10	900	SW	4	IHR	5
EUC2_190718_002	3	10	500	SW	4	IHR	2
EUC2_190729_001	0	5	1500	SW	3	nil	2
EUC2_190729_001	1	6	1500	SW	2	ILR	2
EUC2_190729_001	2	8	1500	SW	3	nil	2
EUC2_190729_001	3	8	1500	SW	3	ILR	2
EUC2_190729_002	0	10	1500	SW	3	nil	2
EUC2_190729_002	1	8	1500	SW	3	nil	2

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_190729_002	2	10	1500	SW	3	ILR	2
EUC2_190729_002	3	7	1500	SW	3	nil	2
EUC2_190725_001	0	4	1000	SSE	5	nil	5
EUC2_190725_001	1	3	1000	SSE	5	nil	5
EUC2_190725_001	2	5	1000	SSE	6	nil	5
EUC2_190725_001	3	5	1000	SSE	6	nil	5
EUC2_190725_002	0	4	1000	S	6	nil	5
EUC2_190725_002	1	1	1000	S	6	nil	5
EUC2_190725_002	2	3	1000	S	6	nil	5
EUC2_190725_002	3	5	1000	S	5	nil	5
EUC2_190730_001	0	5	1000	SW	3	nil	2
EUC2_190730_001	1	6	1000	SW	3	ILR	2
EUC2_190730_001	2	5	1000	SW	3	nil	2
EUC2_190730_001	3	8	1000	SW	4	ILR	2
EUC2_190730_002	0	10	1000	SW	4	CLR	2
EUC2_190730_002	1	8	1000	SW	4	CLR	2
EUC2_190730_002	2	6	1000	SW	4	nil	2
EUC2_190730_002	3	6	1000	SW	3	nil	2
EUC2_190731_001	0	10	1000	SW	3	ILR	2
EUC2_190731_001	1	8	1000	SW	3	nil	2
EUC2_190731_001	2	10	1000	SW	3	ILR	2
EUC2_190731_001	3	10	1000	SW	4	ILR	2
EUC2_190731_002	0	7	1000	SW	4	ILR	2
EUC2_190731_002	1	5	1000	SW	3	nil	2
EUC2_190731_002	2	8	1000	SW	3	nil	2
EUC2_190731_002	3	10	1000	SW	4	ILR	2
EUC2_190812_001	0	8	900	W	3	nil	5
EUC2_190812_001	1	9	900	W	3	nil	5
EUC2_190812_001	2	9	900	W	3	nil	5
EUC2_190812_001	3	7	900	W	3	nil	5
EUC2_190826_001	0	7	900	SSW	4	nil	5
EUC2_190826_001	1	6	900	SSW	4	nil	5
EUC2_190826_002	0	5	900	SSW	3	nil	5
EUC2_190826_002	1	1	900	SSW	3	nil	5
EUC2_190812_002	0	7	900	W	3	nil	5
EUC2_190812_002	1	7	900	W	3	nil	5
EUC2_190812_003	0	7	900	W	3	nil	5
EUC2_190812_003	1	6	900	W	3	nil	5
EUC2_190826_003	0	7	900	S	4	nil	5
EUC2_190826_003	1	8	900	S	4	nil	5
EUC2_190826_003	2	8	900	S	3	nil	5
EUC2_190826_003	3	9	900	SSW	4	nil	5
EUC2_190828_001	0	7	900	W	4	nil	5
EUC2_190828_001	1	5	900	W	4	nil	5
EUC2_190828_002	0	5	900	W	3	nil	5
EUC2_190828_002	1	4	900	W	3	nil	5

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_190831_001	0	8	800	W	6	ILR	5
EUC2_190831_001	1	8	800	W	6	ILR	5
EUC2_190831_001	2	8	800	W	5	ILR	5
EUC2_190831_001	3	8	900	W	5	nil	5
EUC2_190831_002	0	7	900	W	5	nil	5
EUC2_190831_002	1	6	900	W	5	nil	5
EUC2_190831_003	0	6	900	W	5	nil	5
EUC2_190831_003	1	7	900	W	5	ILR	5
EUC2_190909_001	0	10	500	S	2	CLR	2
EUC2_190909_001	1	10	500	S	3	ILR	2
EUC2_190909_001	2	10	500	S	3	nil	3
EUC2_190911_001	0	9	600	W	5	nil	5
EUC2_190911_001	1	9	600	W	5	nil	5
EUC2_190911_002	0	10	600	WSW	6	ILR	4
EUC2_190911_002	1	8	700	WSW	6	nil	5
EUC2_190911_002	2	9	700	WSW	6	nil	5
EUC2_190909_002	0	10	500	S	5	CLR	1
EUC2_190909_002	1	10	500	S	5	CLR	1
EUC2_190909_003	0	10	500	SSW	1	CLR	1
EUC2_190909_003	1	10	600	S	1	CLR	1
EUC2_190911_003	0	9	800	WSW	5	ILR	5
EUC2_190911_003	1	10	800	WSW	5	nil	5
EUC2_190911_003	2	10	800	WSW	5	ILR	5
EUC2_190911_003	3	10	700	WSW	5	IHR	4
EUC2_190910_001	0	7	600	WNW	4	IHF	4
EUC2_190910_001	1	7	700	WNW	5	ILF	4
EUC2_190910_002	0	6	800	WNW	4	ILF	5
EUC2_190910_002	1	5	800	WNW	4	nil	5
EUC2_190911_004	0	10	800	W	6	nil	10
EUC2_190911_004	1	10	800	W	6	nil	10
EUC2_190911_004	2	8	800	W	6	nil	10
EUC2_190911_004	3	8	800	W	6	ILR	10
EUC2_190910_003	0	6	800	W	3	nil	5
EUC2_190910_003	1	9	800	W	3	nil	5
EUC2_190910_003	2	9	800	SW	3	nil	5
EUC2_190910_003	3	8	800	SSW	3	nil	5
EUC2_190911_005	0	10	800	W	6	nil	20
EUC2_190911_005	1	10	800	W	6	ILR	20
EUC2_190911_005	2	6	800	W	6	nil	20
EUC2_190911_005	3	10	800	W	6	ILR	20
EUC2_191001_001	0	8	800	NE	4	nil	5
EUC2_191001_001	1	6	900	NE	4	nil	5
EUC2_191001_001	2	7	900	NE	5	nil	5
EUC2_191001_001	3	7	900	NE	4	nil	5
EUC2_191004_001	0	10	700	NE	3	nil	5
EUC2_191004_001	1	10	700	NE	3	nil	5

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_191004_001	2	10	700	NE	3	nil	5
EUC2_191004_002	0	10	700	NE	3	nil	5
EUC2_191004_002	1	10	700	NE	3	nil	5
EUC2_191001_002	0	6	900	NE	4	nil	5
EUC2_191001_002	1	7	900	NE	4	nil	5
EUC2_191001_002	2	6	900	NE	4	nil	5
EUC2_191001_003	0	6	900	NE	4	nil	5
EUC2_191001_003	1	5	900	NE	4	nil	5
EUC2_191004_003	0	10	600	E	4	ILR	3
EUC2_191004_003	1	10	600	E	3	nil	4
EUC2_191004_003	2	10	600	NE	4	ILF	3
EUC2_191004_003	3	10	700	NE	3	nil	5
EUC2_191003_001	0	10	800	SE	4	ILR	5
EUC2_191003_001	1	10	800	SE	4	nil	5
EUC2_191003_001	2	10	800	SE	6	nil	5
EUC2_191003_002	0	10	800	SE	6	nil	5
EUC2_191003_002	1	10	700	SE	6	ILR	4
EUC2_191003_003	0	10	700	ENE	4	nil	5
EUC2_191003_003	1	8	800	ENE	4	nil	5
EUC2_191003_003	2	10	800	E	5	nil	5
EUC2_191003_003	3	10	800	E	5	nil	5
EUC2_191009_002	0	8	800	W	5	nil	5
EUC2_191009_002	1	8	800	W	6	nil	5
EUC2_191009_002	2	10	700	W	6	IHR	3
EUC2_191009_003	0	10	700	W	5	nil	5
EUC2_191009_003	1	9	800	W	5	IHR	3
EUC2_191126_001	0	10	400	E	2	CLF	0.5
EUC2_191126_001	1	10	400	E	3	CLF	0.5
EUC2_191126_002	0	10	400	E	2	ILR	0.5
EUC2_191126_002	1	10	400	E	3	CLF	1
EUC2_191127_001	0	3	1000	E	1	nil	5
EUC2_191127_001	1	3	1000	E	1	nil	5
EUC2_191127_001	2	3	1000	E	2	ILF	5
EUC2_191126_003	0	10	400	E	3	CLF	0.5
EUC2_191126_003	1	10	400	E	3	ILR	1
EUC2_191126_003	2	10	500	E	4	ILR	2
EUC2_191127_002	0	3	1000	E	2	nil	2
EUC2_191127_002	1	3	1000	E	1	nil	4
EUC2_191127_003	0	3	1000	E	1	nil	5
EUC2_191127_003	1	3	1000	E	1	nil	5
EUC2_191121_001	0	6	1000	SE	5	nil	1
EUC2_191121_001	1	6	1000	SE	5	nil	3
EUC2_191121_002	0	6	1000	SE	5	nil	3
EUC2_191121_002	1	6	900	SE	5	nil	4
EUC2_191128_001	0	7	900	NNE	5	nil	5
EUC2_191128_001	1	6	900	NNE	5	nil	5

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_191128_001	2	6	900	NNE	4	nil	5
EUC2_191121_003	0	8	800	SE	5	nil	4
EUC2_191121_003	1	9	800	SE	6	nil	4
EUC2_191121_003	2	7	700	SE	6	nil	5
EUC2_191128_002	0	10	600	NE	4	nil	1
EUC2_191128_002	1	10	500	NE	4	ILR	1
EUC2_191128_003	0	10	600	NE	4	ILR	2
EUC2_191128_003	1	9	600	NE	5	ILR	3
EUC2_191218_001	0	10	600	S	4	ILF	2
EUC2_191218_001	1	10	500	S	4	ILF	2
EUC2_191218_002	0	10	500	S	4	ILF	1
EUC2_191218_002	1	10	500	S	4	ILF	1
EUC2_191219_001	0	10	700	SSW	3	nil	5
EUC2_191219_001	1	10	700	SSW	3	nil	5
EUC2_191219_001	2	10	600	S	3	ILR	3
EUC2_191218_003	0	10	800	S	4	ILF	3
EUC2_191218_003	1	9	800	S	4	ILF	2
EUC2_191218_003	2	10	600	S	4	ILF	2
EUC2_191219_002	0	10	500	S	3	ILF	2
EUC2_191219_002	1	10	500	S	3	ILR	1
EUC2_191219_003	0	10	500	S	3	ILR	1
EUC2_191219_003	1	10	600	SSE	3	ILF	1
EUC2_191211_001	0	9	800	SW	4	nil	5
EUC2_191211_001	1	8	700	SW	4	ILS	5
EUC2_191211_002	0	9	700	W	4	ILS	5
EUC2_191211_002	1	9	700	W	4	ILS	4
EUC2_191217_001	0	8	700	W	4	nil	4
EUC2_191217_001	1	9	700	W	4	nil	5
EUC2_191217_001	2	10	700	W	4	ILS	3
EUC2_191211_003	0	9	800	SSW	5	nil	5
EUC2_191211_003	1	9	800	SSW	5	ILR	5
EUC2_191211_003	2	8	800	SSW	4	nil	5
EUC2_191217_002	0	10	700	W	4	CLR	1
EUC2_191217_002	1	7	700	W	4	ILR	5
EUC2_191217_003	0	6	700	W	4	nil	5
EUC2_191217_003	1	3	800	W	4	nil	5
EUC2_200108_001	0	7	800	WSW	4	nil	5
EUC2_200108_001	1	7	800	W	4	nil	5
EUC2_200108_001	2	7	800	W	4	nil	5
EUC2_200109_001	0	10	500	E	3	CLS	2
EUC2_200109_001	1	10	500	NE	3	CLS	2
EUC2_200109_002	0	10	500	NE	3	CLS	2
EUC2_200109_002	1	10	500	NE	3	ILF	2
EUC2_200108_002	0	7	800	SW	3	nil	4
EUC2_200108_002	1	7	800	SW	3	nil	5
EUC2_200108_003	0	7	800	SW	4	nil	5

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_200108_003	1	8	800	SW	4	ILR	5
EUC2_200109_003	0	10	500	NE	3	ILF	2
EUC2_200109_003	1	10	500	NE	3	CLF	2
EUC2_200109_003	2	10	500	NE	4	CLF	1
EUC2_200110_001	0	9	1000	SW	4	IHF	4
EUC2_200110_001	1	8	1000	SW	4	IHF	4
EUC2_200110_001	2	9	1000	SW	4	IHF	4
EUC2_200124_001	0	10	400	WSW	3	CLF	0.5
EUC2_200124_001	1	10	500	WSW	3	CLF	0.5
EUC2_200124_001	2	10	400	WSW	3	CLF	0.5
EUC2_200110_002	0	8	600	SW	4	IHF	2
EUC2_200110_002	1	8	600	SW	4	IHF	2
EUC2_200110_003	0	6	600	SW	4	nil	5
EUC2_200110_003	1	5	600	SW	4	nil	5
EUC2_200124_002	0	10	500	WSW	3	CLF	1
EUC2_200124_002	1	10	500	WSW	4	ILF	2
EUC2_200124_002	2	10	500	WSW	3	ILF	2
EUC2_200203_001	0	8	800	W	6	nil	5
EUC2_200203_001	1	8	800	W	6	IHS	5
EUC2_200203_002	0	8	800	W	6	nil	5
EUC2_200203_002	1	6	800	W	6	IHS	4
EUC2_200204_001	0	9	700	NW	4	nil	5
EUC2_200204_001	1	9	700	NW	4	nil	5
EUC2_200204_001	2	9	700	NW	4	nil	5
EUC2_200203_003	0	5	800	W	6	nil	5
EUC2_200203_003	1	7	800	W	6	nil	5
EUC2_200203_003	2	8	800	W	6	IHS	5
EUC2_200204_002	0	10	500	WNW	4	ILF	2
EUC2_200204_002	1	10	500	WNW	4	CLF	1
EUC2_200204_003	0	10	500	WNW	4	CLF	1
EUC2_200204_003	1	9	500	WNW	4	CLF	1
EUC2_200218_001	0	10	800	SW	4	nil	5
EUC2_200218_001	1	10	700	SW	5	nil	5
EUC2_200206_001	0	6	600	SW	4	nil	5
EUC2_200206_001	1	5	700	SW	4	nil	5
EUC2_200206_001	2	5	700	SW	3	nil	5
EUC2_200220_001	0	5	800	W	6	ILS	5
EUC2_200220_001	1	6	800	W	6	nil	5
EUC2_200220_001	2	6	800	W	6	nil	5
EUC2_200220_001	3	7	800	W	6	ILS	5
EUC2_200206_002	0	6	800	SW	3	nil	5
EUC2_200206_002	1	7	800	SW	3	nil	5
EUC2_200206_003	0	7	800	SW	3	nil	5
EUC2_200206_003	1	9	700	SW	4	nil	4
EUC2_200218_002	0	9	800	WSW	5	nil	5
EUC2_200218_002	1	10	800	WSW	5	IHS	5

Watch ID	Hour	Cloud 10ths	Cloud Base	Wind Dir.	Wind Force	Precip*	Vis (km)
EUC2_200218_002	2	10	800	W	6	IHS	4
EUC2_200218_003	0	10	800	W	5	IHS	5
EUC2_200218_003	1	9	800	W	5	IHS	3
EUC2_200303_001	0	10	500	W	3	CHS	1
EUC2_200303_001	1	9	600	W	4	IHS	2
EUC2_200303_001	2	10	500	W	4	ILR	3
EUC2_200303_001	3	10	500	W	4	CLR	2
EUC2_200310_001	0	10	700	WSW	5	nil	5
EUC2_200310_001	1	10	700	WSW	6	nil	5
EUC2_200310_002	0	10	700	WSW	6	nil	5
EUC2_200310_002	1	10	700	WSW	6	nil	5
EUC2_200310_002	2	10	600	WSW	6	IHR	4
EUC2_200303_002	0	9	500	W	2	ILF	2
EUC2_200303_002	1	9	500	W	3	CLF	1
EUC2_200303_003	0	10	500	W	3	CLF	1
EUC2_200303_003	1	7	500	W	3	ILF	2
EUC2_200303_003	2	7	600	NW	4	ILF	3
EUC2_200311_001	0	9	900	WSW	5	nil	5
EUC2_200311_001	1	10	800	SW	5	IHR	3
EUC2_200311_001	2	10	700	SW	5	nil	4
EUC2_200311_001	3	10	800	SW	4	ILS	3
EUC2_200304_001	0	6	900	SW	3	nil	5
EUC2_200304_001	1	7	800	SW	3	nil	5
EUC2_200304_001	2	7	800	SW	3	nil	5
EUC2_200304_001	3	9	700	SW	3	IHS	4
EUC2_200305_001	0	3	900	SW	1	nil	5
EUC2_200305_001	1	2	1000	SW	1	nil	5
EUC2_200305_002	0	2	1000	SW	1	nil	5
EUC2_200305_002	1	4	1000	nil	0	nil	5
EUC2_200305_002	2	8	1000	SW	1	nil	5
EUC2_200304_002	0	6	900	SW	3	nil	5
EUC2_200304_002	1	5	900	SW	3	nil	5
EUC2_200304_003	0	6	900	SW	3	nil	5
EUC2_200304_003	1	8	900	SW	3	nil	5
EUC2_200304_003	2	9	700	SW	3	nil	5
EUC2_200305_003	0	8	900	SW	1	nil	5
EUC2_200305_003	1	9	900	SW	2	nil	5
EUC2_200305_003	2	9	900	WSW	2	nil	5
EUC2_200305_003	3	10	900	W	1	nil	5

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

### Annex 1.3b Weather details for GVP Watches from VPs 19, 28, 32, 33 & 34

\* Precip\* 0=none, 1=Drizzle/Mist, 2= Light showers, 3= Heavy showers, 4= Heavy rain

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_190419_3	1	4	>500	180	3	0	>3
POL_190419_3	2	2	>500	180	4	0	>3
POL_190419_3	3	1	>500	180	3	0	>3
POL_190419_4	1	1	>500	180	3	0	>3
POL_190419_4	2	5	>500	180	4	0	>3
POL_190419_4	3	6	>500	180	3	0	>3
POL_190424_5	1	4	>500	90	2	0	>3
POL_190424_5	2	4	>500	90	2	0	>3
POL_190424_5	3	5	>500	90	3	0	>3
POL_190424_6	1	6	>500	90	3	0	>3
POL_190424_6	2	7	>500	90	4	0	>3
POL_190424_6	3	7	>500	90	3	0	>3
POL_190424_7	1	3	>500	135	3	0	>3
POL_190424_7	2	8	>500	135	3	0	>3
POL_190424_7	3	8	>500	135	3	0	>3
POL_190424_8	1	8	>500	135	3	0	>3
POL_190424_8	2	6	>500	135	3	0	>3
POL_190424_8	3	5	>500	135	3	0	>3
POL_190428_9	1	8	150-500	315	1	0	>3
POL_190428_9	2	8	>500	0	1	0	>3
POL_190428_9	3	7	>500	0	1	0	>3
POL_190428_10	1	8	>500	90	1	0	>3
POL_190428_10	2	8	>500	180	1	0	>3
POL_190428_10	3	8	>500	180	1	0	>3
POL_190428_11	1	5	>500	90	1	0	>3
POL_190428_11	2	6	>500	90	1	0	>3
POL_190428_11	3	6	>500	90	1	0	>3
POL_190428_12	1	8	150-500	90	1	1	1-3
POL_190428_12	2	7	>500	90	1	1	>3
POL_190428_12	3	7	>500	90	1	1	>3
POL_190510_13	1	6	>500	135	2	0	>3
POL_190510_13	2	6	>500	135	2	0	>3
POL_190510_13	3	6	>500	135	2	0	>3
POL_190510_14	1	6	>500	90	2	0	>3
POL_190510_14	2	6	>500	90	2	0	>3
POL_190510_14	3	5	>500	90	2	0	>3
POL_190523_15	1	1	>500	270	4	0	>3
POL_190523_15	2	1	>500	270	4	0	>3

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_190523_15	3	1	>500	315	4	0	>3
POL_190523_16	1	1	>500	270	4	0	>3
POL_190523_16	2	1	>500	270	4	0	>3
POL_190523_16	3	1	>500	270	4	0	>3
POL_190523_17	1	1	>500	270	1	0	>3
POL_190523_17	2	1	>500	315	3	0	>3
POL_190523_17	3	1	>500	315	3	0	>3
POL_190523_18	1	1	>500	315	3	0	>3
POL_190523_18	2	1	>500	315	3	0	>3
POL_190523_18	3	1	>500	270	3	0	>3
POL_190528_19	1	7	>500	270	2	0	>3
POL_190528_19	2	5	>500	270	2	0	>3
POL_190528_19	3	3	>500	315	2	0	>3
POL_190528_20	1	2	>500	315	3	0	>3
POL_190528_20	2	1	>500	315	3	0	>3
POL_190528_20	3	1	>500	315	2	0	>3
POL_190529_21	1	8	150-500	180	2	2	1-3
POL_190529_21	2	8	<150	180	1	2	<1
POL_190529_21	3	8	150-500	180	1	1	1-3
POL_190529_22	1	8	>500	180	1	2	>3
POL_190529_22	2	8	>500	180	2	2	>3
POL_190529_22	3	8	150-500	180	2	2	>3
POL_190616_23	1	3	>500	0	1	0	>3
POL_190616_23	2	3	>500	45	2	0	>3
POL_190616_23	3	4	>500	90	2	0	>3
POL_190610_24	1	4	>500	45	1	0	>3
POL_190610_24	2	5	>500	45	1	0	>3
POL_190610_24	3	5	>500		0	0	>3
POL_190610_25	1	5	>500	45	3	0	>3
POL_190610_25	2	4	>500	0	2	0	>3
POL_190610_25	3	5	>500	0	2	0	>3
POL_190610_26	1	4	>500	45	1	0	>3
POL_190610_26	2	4	>500	45	2	0	>3
POL_190610_26	3	5	>500	0	1	0	>3
POL_190613_27	1	8	>500		0	0	>3
POL_190613_27	2	8	>500	225	1	0	>3
POL_190613_27	3	8	>500	225	2	0	>3
POL_190613_28	1	8	>500	225	2	0	>3
POL_190613_28	2	8	>500	225	1	0	>3
POL_190613_28	3	8	>500	180	1	1	>3
POL_190617_29	1	7	150-500	135	4	2	>3

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_190617_29	2	8	150-500	180	4	0	>3
POL_190617_29	3	8	150-500	180	4	0	>3
POL_190617_30	1	7	150-500	180	4	2	>3
POL_190617_30	2	7	150-500	180	4	2	>3
POL_190617_30	3	8	150-500	180	3	3	>3
POL_190627_31	1	0	<150	90	2	0	>3
POL_190627_31	2	1	>500	135	1	0	>3
POL_190627_31	3	1	>500	135	1	0	>3
POL_190627_32	1	0	<150	135	1	0	>3
POL_190627_32	2	0	<150	135	1	0	>3
POL_190627_32	3	0	<150	135	1	0	>3
POL_190628_33	1	0	<150	180	3	0	>3
POL_190628_33	2	0	<150	135	3	0	>3
POL_190628_33	3	0	>500	135	3	0	>3
POL_190628_34	1	0	>500	135	4	0	>3
POL_190628_34	2	0	>500	135	4	0	>3
POL_190628_34	3	0	>500	135	4	0	>3
POL_190628_35	1	0		180	2	0	>3
POL_190628_35	2	0		180	2	0	>3
POL_190628_35	3	0		135	3	0	>3
POL_190620_36	1	6	>500	270	3	0	>3
POL_190620_36	2	7	>500	270	3	0	>3
POL_190620_36	3	7	>500	270	3	0	>3
POL_190718_37	1	8	>500	225	2	2	>3
POL_190718_37	2	7	>500	225	3	3	>3
POL_190718_37	3	7	>500	225	3	0	>3
POL_190722_38	1	8	>500	135	4	0	>3
POL_190722_38	2	7	>500	225	4	0	>3
POL_190722_38	3	5	>500	225	3	0	>3
POL_190722_39	1	6	>500	225	3	0	>3
POL_190722_39	2	6	>500	225	3	0	>3
POL_190722_39	3	7	>500	225	3	0	>3
POL_190725_40	1	1	>500	135	3	0	>3
POL_190725_40	2	2	>500	135	4	0	>3
POL_190725_40	3	5	>500	135	4	0	>3
POL_190725_41	1	3	>500	135	3	0	>3
POL_190725_41	2	2	>500	135	3	0	>3
POL_190725_41	3	5	>500	135	3	0	>3
POL_190725_42	1	3	>500	180	4	0	>3
POL_190725_42	2	0	>500	180	3	0	>3
POL_190725_42	3	3	>500	180	3	0	>3

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_190725_43	1	3	>500	135	3	0	>3
POL_190725_43	2	1	>500	135	3	0	>3
POL_190725_43	3	2	>500	180	3	0	>3
POL_190726_44	1	8	150-500	180	4	0	>3
POL_190726_44	2	8	>500	180	5	0	>3
POL_190726_44	3	8	>500	180	5	0	>3
POL_190726_45	1	8	>500	180	3	0	>3
POL_190726_45	2	8	>500	180	3	0	>3
POL_190726_45	3	8	>500	180	3	0	>3
POL_190726_46	1	8	>500	180	3	0	>3
POL_190726_46	2	8	>500	180	3	0	>3
POL_190726_46	3	8	>500	180	3	0	>3
POL_190726_47	1	8	>500	180	5	0	>3
POL_190726_47	2	8	>500	180	5	0	>3
POL_190726_47	3	8	>500	180	5	0	>3
POL_190726_48	1	8	>500	180	3	0	>3
POL_190726_48	2	7	>500	180	2	0	>3
POL_190726_48	3	7	>500	180	3	0	>3
POL_190726_49	1	8	>500	180	5	0	>3
POL_190726_49	2	8	>500	180	5	0	>3
POL_190726_49	3	8	>500	180	5	0	>3
POL_190726_50	1	7	>500	180	4	0	>3
POL_190726_50	2	5	>500	180	3	0	>3
POL_190726_50	3	6	>500	180	3	0	>3
POL_190731_51	1	6	>500	315	2	0	>3
POL_190731_51	2	6	>500	315	3	0	>3
POL_190731_51	3	7	>500	315	2	1	>3
POL_190731_52	1	8	>500		0	0	>3
POL_190731_52	2	7	>500	270	1	2	>3
POL_190731_52	3	7	>500	270	1	2	>3
POL_190813_53	1	6	>500	270	3	0	>3
POL_190813_53	2	6	>500	270	3	0	>3
POL_190813_53	3	5	>500	270	2	0	>3
POL_190813_54	1	7	>500	270	3	2	>3
POL_190813_54	2	5	>500	270	4	0	>3
POL_190813_54	3	7	>500	270	4	0	>3
POL_190814_55	1	8	>500	315	3	2	>3
POL_190814_55	2	8	>500	315	3	2	>3
POL_190814_55	3	8	>500	315	3	2	>3
POL_190815_56	1	6	>500	315	3	0	>3
POL_190815_56	2	5	>500	315	3	0	>3

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_190815_56	3	6	>500	315	3	0	>3
POL_190815_57	1	5	>500	315	4	0	>3
POL_190815_57	2	5	>500	315	4	0	>3
POL_190815_57	3	4	>500	315	4	0	>3
POL_190815_58	1	5	>500	315	4	0	>3
POL_190815_58	2	6	>500	315	4	0	>3
POL_190815_58	3	5	>500	315	4	0	>3
POL_190815_59	1	4	>500	315	4	0	>3
POL_190815_59	2	4	>500	315	4	0	>3
POL_190815_59	3	5	>500	315	3	0	>3
POL_190827_60	1	8	150-500	180	2	0	1-3
POL_190827_60	2	8	150-500	180	3	0	>3
POL_190827_60	3	6	>500	180	3	0	>3
POL_190827_61	1	8	150-500	135	3	0	>3
POL_190827_61	2	7	>500	135	3	0	>3
POL_190827_61	3	7	>500	180	3	0	>3
POL_190827_62	1	7	>500	180	2	0	>3
POL_190827_62	2	7	>500	180	3	0	>3
POL_190827_62	3	6	>500	180	3	0	>3
POL_190827_63	1	7	>500	180	3	0	>3
POL_190827_63	2	7	>500	180	3	0	>3
POL_190827_63	3	7	>500	180	3	0	>3
POL_190915_64	1	3	>500	315	4	0	>3
POL_190915_64	2	4	>500	315	4	0	>3
POL_190915_64	3	6	>500	315	5	0	>3
POL_190915_65	1	7	>500	315	5	0	>3
POL_190915_65	2	8	150-500	315	5	0	>3
POL_190915_65	3	8	150-500	315	5	1	1-3
POL_190916_66	1	6	>500	270	5	1	>3
POL_190916_66	2	4	>500	270	5	0	>3
POL_190916_66	3	3	>500	270	5	0	>3
POL_190916_67	1	2	>500	270	4	0	>3
POL_190916_67	2	2	>500	270	3	0	>3
POL_190916_67	3	2	>500	270	2	0	>3
POL_190924_68	1	6	150-500	90	3	0	>3
POL_190924_68	2	7	>500	90	3	0	>3
POL_190924_68	3	2	150-500	90	3	1	>3
POL_190924_69	1	7	150-500	90	3	2	>3
POL_190924_69	2	8	150-500		0	1	1-3
POL_190924_69	3	8	150-500		0	1	1-3
POL_190929_70	1	6	>500	225	5	0	>3

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_190929_70	2	6	>500	225	5	0	>3
POL_190929_70	3	5	>500	225	5	0	>3
POL_190929_71	1	6	>500	90	3	2	>3
POL_190929_71	2	5	>500	90	4	2	>3
POL_190929_71	3	5	>500	90	4	0	>3
POL_190928_72	1	0	>500	90	4	0	>3
POL_190928_72	2	1	>500	90	4	0	>3
POL_190928_72	3	2	>500	90	4	0	>3
POL_190928_73	1	2	>500	90	2	0	>3
POL_190928_73	2	1	>500		0	0	>3
POL_190928_73	3	0	>500		0	0	>3
POL_191024_74	1	8	<150	90	2	1	1-3
POL_191024_74	2	8	150-500	90	1	0	>3
POL_191024_74	3	8	>500	90	2	0	>3
POL_191024_75	1	8	150-500		0	2	1-3
POL_191024_75	2	8	<150		0	3	<1
POL_191026_76	1	8	150-500	90	2	3	1-3
POL_191026_76	2	8	150-500	90	0	3	>3
POL_191026_76	3	8	150-500	45	2	2	1-3
POL_191026_77	1	8	<150	45	3	3	1-3
POL_191026_77	2	7	<150	45	5	3	1-3
POL_191026_77	3	7	<150	45	5	3	1-3
POL_191028_78	1	4	>500	90	4	0	>3
POL_191028_78	2	4	>500	90	5	0	>3
POL_191028_79	1	6	>500	90	5	0	>3
POL_191028_79	2	6	>500	90	5	0	>3
POL_191028_79	3	5	>500	90	5	0	>3
POL_191118_80	1	1	>500		0	0	>3
POL_191118_80	2	1	>500		0	0	>3
POL_191118_80	3	1	>500		0	0	>3
POL_191118_81	1	2	>500		0	0	>3
POL_191118_81	2	2	>500		0	0	>3
POL_191118_81	3	2	>500		0	0	>3
POL_191122_82	1	8	150-500	270	4	1	>3
POL_191122_82	2	8	150-500	270	3	1	1-3
POL_191122_82	3	8	150-500	270	3	1	1-3
POL_191122_83	1	8	<150	270	3	1	1-3
POL_191122_83	2	8	<150	270	2	1	1-3
POL_191122_83	3	8	<150	270	2	1	<1
POL_191127_84	1	2	>500		0	0	>3
POL_191127_84	2	2	>500	225	1	0	>3

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_191127_84	3	3	150-500	225	2	0	>3
POL_191127_85	1	8	<150	225	2	1	<1
POL_191128_86	1	5	>500	225	6	0	>3
POL_191128_86	2	6	>500	225	6	0	>3
POL_191128_86	3	6	>500	225	6	0	>3
POL_191128_87	1	5	>500	225	6	0	>3
POL_191128_87	2	4	>500	225	5	0	>3
POL_191128_87	3	2	>500	225	5	0	>3
POL_191129_88	1	1	>500		0	0	>3
POL_191129_88	2	1	>500	225	1	0	>3
POL_191129_88	3	1	>500	225	1	0	>3
POL_191129_89	1	1	>500		0	0	1-3
POL_191129_89	2	0		225	1	0	>3
POL_191129_89	3	0		225	1	0	>3
POL_191129_90	1	1	>500		0	0	>3
POL_191130_91	1	4	150-500	270	2	0	>3
POL_191130_91	2	7	150-500	270	2	0	>3
POL_191215_92	1	7	150-500	225	7	0	>3
POL_191215_93	1	3	>500	315	6	0	>3
POL_191215_93	2	6	150-500	315	5	0	>3
POL_191215_93	3	7	150-500	315	5	0	>3
POL_191216_94	1	6	150-500	90	5	0	>3
POL_191216_94	2	7	150-500	90	5	0	>3
POL_191216_94	3	8	150-500	90	5	0	>3
POL_191216_95	1	7	150-500	90	5	0	>3
POL_191216_95	2	7	150-500	90	5	0	>3
POL_191216_95	3	7	150-500	90	5	0	>3
POL_191203_96	1	6	<150	0	6	1	1-3
POL_191203_96	2	4	<150	0	4	1	1-3
POL_191217_97	1	7	150-500	270	5	1	>3
POL_191217_97	2	8	150-500	270	5	2	>3
POL_191217_97	3	8	150-500	270	5	2	1-3
POL_191217_98	1	3	150-500	270	5	0	>3
POL_191217_98	2	2	150-500	270	6	0	>3
POL_191217_98	3	5	>500	270	6	0	>3
POL_191218_99	1	8	<150	315	5	1	<1
POL_191218_99	2	7	<150	315	6	0	1-3
POL_191218_99	3	8	<150	315	6	0	<1
POL_191230_100	1	8	<150	270	6	1	<1
POL_191230_100	2	7	150-500	270	6	1	>3
POL_191230_100	3	6	150-500	270	6	0	>3

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_191231_101	1	1	>500	315	5	0	>3
POL_191231_101	2	2	>500	315	5	0	>3
POL_191231_101	3	1	>500	315	6	0	>3
POL_191231_102	1	1	>500	270	2	0	>3
POL_191231_102	2	1	>500	270	3	0	>3
POL_191231_102	3	1	>500	270	2	0	>3
POL_200128_103	1	8	150-500	315	3	3	1-3
POL_200128_103	2	8	150-500	315	3	2	1-3
POL_200128_103	3	8	150-500	315	3	3	1-3
POL_200128_104	1	8	150-500	0	4	1	1-3
POL_200128_104	2	8	150-500	0	5	1	1-3
POL_200128_104	3	8	150-500	0	5	1	1-3
POL_200129_105	1	8	150-500	270	5	3	1-3
POL_200129_105	2	8	150-500	270	5	3	1-3
POL_200129_105	3	8	150-500	270	6	3	1-3
POL_200129_106	1	8	150-500	270	7	2	>3
POL_200129_106	2	8	150-500	270	6	2	>3
POL_200129_106	3	8	150-500	270	7	2	>3
POL_200114_107	1	8	<150	45	6	3	<1
POL_200114_107	2	8	150-500	45	5	2	1-3
POL_200114_107	3	8	>500	45	4	0	>3
POL_200210_108	1	8	>500	90	8	1	1-3
POL_200210_108	2	8	>500	90	8	1	1-3
POL_200210_108	3	7	>500	90	8	1	>3
POL_200210_109	1	7	>500	270	9	0	>3
POL_200210_109	2	6	>500	270	8	0	>3
POL_200210_109	3	7	>500	270	8	0	>3
POL_200225_110	1	7	150-500	90	4	2	>3
POL_200225_110	2	8	150-500	90	4	2	>3
POL_200225_110	3	8	150-500	90	5	2	>3
POL_200225_111	1	6	150-500	90	4	0	>3
POL_200225_111	2	8	150-500	90	4	3	>3
POL_200225_111	3	8	150-500	90	5	3	>3
POL_200226_112	1	2	>500	90	0	0	>3
POL_200226_112	2	2	>500	90	0	0	>3
POL_200226_112	3	4	>500	90	0	0	>3
POL_200226_113	1	5	150-500	90	0	3	>3
POL_200226_113	2	7	150-500		0	3	1-3
POL_200226_113	3	7	150-500		0	2	>3
POL_200227_114	1	4	>500	90	7	2	>3
POL_200227_114	2	4	>500	90	7	2	>3

Watch ID	Hour	Cloud 8ths	Cloud Base (m)	Wind Dir.	Wind force	Precip*	Vis. (km)
POL_200227_114	3	2	>500	90	6	0	>3
POL_200227_115	1	4	>500	90	7	2	>3
POL_200227_115	2	4	>500	90	7	2	>3
POL_200227_115	3	4	150-500	90	7	3	>3
POL_200304_116	1	6	>500		0	0	>3
POL_200304_116	2	6	>500	45	2	0	>3
POL_200304_116	3	7	150-500	45	2	0	>3
POL_200304_117	1	7	<150	0	3	2	1-3
POL_200304_117	2	5	150-500	0	1	2	>3
POL_200304_117	3	5	150-500	0	1	0	>3
POL_200305_118	1	6	>500		0	0	>3
POL_200305_118	2	7	>500		0	0	>3
POL_200305_118	3	6	>500		0	0	>3
POL_200305_119	1	7	>500		0	0	>3
POL_200305_119	2	7	>500		0	0	>3
POL_200305_119	3	7	>500		0	0	>3
POL_200318_120	1	8	>500	45	4	0	>3
POL_200318_120	2	8	>500	45	5	0	>3
POL_200318_120	3	8	>500	45	5	0	>3
POL_200318_121	1	8	>500	45	5	2	>3
POL_200318_121	2	7	>500	45	5	0	>3
POL_200318_121	3	6	>500	45	4	0	>3
POL_200319_122	1	6	>500	135	3	2	>3
POL_200319_122	2	6	>500	90	3	0	>3
POL_200319_122	3	5	>500	135	3	0	>3
POL_200319_123	1	4	>500	135	3	2	>3
POL_200319_123	2	4	>500	135	3	0	>3
POL_200319_123	3	4	>500	135	4	2	>3
POL_200320_124	1	5	>500	270	3	2	>3
POL_200320_124	2	5	>500	270	2	0	>3
POL_200320_124	3	2	>500		0	0	>3
POL_200320_125	1	5	>500	270	3	0	>3
POL_200320_125	2	5	>500	270	3	0	>3
POL_200320_125	3	4	>500	270	3	0	>3
POL_200323_126	1	6	>500	0	6	0	>3
POL_200323_126	2	6	>500	0	6	0	>3
POL_200323_126	3	7	>500	0	6	0	>3
POL_200323_127	1	8	>500	0	6	0	>3
POL_200323_127	2	8	>500	0	6	0	>3
POL_200323_127	3	8	>500	0	6	0	>3

Precip\* 0=none, 1=Drizzle/Mist, 2= Light showers, 3= Heavy showers, 4= Heavy rain



#### Annex 1.4 Flight Activity Survey Species Lists and BTO Codes

List A		List B		List C	
Species	BTO Code	Species	BTO Code	Species	BTO Code
Diver spp.	RH/BV	Greylag goose	GJ	Cormorant	CA
Common scoter	CX	Barnacle goose	BY	Heron	H.
White-tailed eagle	WE	White-fronted goose	EW(Euro)/NW(Grld)	Kestrel	K.
Golden eagle	EA	Pink-footed goose	PG	Buzzard	BZ
Hen harrier	HH	Brent goose	DB(Dark)/PB(Pale)	Sparrowhawk	SH
Goshawk	GI	Bean goose	BE	Red grouse	RG
Red kite	KT	Golden plover	GP	Grey partridge	P.
Osprey	OP	Dunlin	DN	Lapwing	L.
Merlin	ML	Greenshank	GK	Redshank	RK
Peregrine	PE	Whimbrel	WM	Common sandpiper	CS
Hobby	HY	Curlew	CU	Oystercatcher	OC
Barn owl	BO	Wood sandpiper	OD	Snipe	SN
Short-eared owl	SE	Tern spp.	AE/CN	Woodcock	WK
Black grouse	BK	Arctic Skua	AC	Herring gull	HG

List A		List B		List C	
Species	BTO Code	Species	BTO Code	Species	BTO Code
Capercaillie	CP	Great Skua	NX	Cuckoo	CK
Nightjar	NJ			Ring ouzel	RZ
Chough	CF			Raven	RN
Whooper swan	WS				
Rare raptors	HZ/MR/RF/ YF				

### Annex 1.5 Other Survey Species Lists and BTO Codes

List A		List C	
Species	BTO Code	Species	BTO Code
Diver sp.	RH/BV	Cormorant	CA
Common scoter	CX	Heron	H.
White tailed eagle	WE	Kestrel	K.
Golden eagle	EA	Buzzard	BZ
Hen harrier	HH	Sparrowhawk	SH
Goshawk	GI	Red grouse	RG
Red kite	KT	Grey partridge	P.
Osprey	OP	Lapwing	L.
Merlin	ML	Redshank	RK
Peregrine	PE	Common sandpiper	CS
Hobby	HY	Oystercatcher	OC
Barn owl	BO	Snipe	SN
Short-eared owl	SE	Woodcock	WK
Black grouse	BK	Herring gull	HG

List A		List C	
Species	BTO Code	Species	BTO Code
Capercaillie	CP	Cuckoo	CK
Nightjar	NJ	Skylark	S.
Chough	CF	Tree pipit	TP
Whooper swan	WS	Dunnock	D.
Rare raptors	HZ/MR/RF/YF	Ring ouzel	RZ
List B		Song thrush	ST
Species	BTO Code	Grasshopper warbler	GH
Greylag goose	GJ	Wood warbler	WO
Barnacle goose	BY	Spotted flycatcher	SF
White-front. goose	EW(Euro)/NW(Grld)	Marsh/Willow tit	MT/WT
Pink-footed goose	PG	Crested tit	CI
Brent goose	DB(Dark)/PB(Pale)	Starling	SG
Bean goose	BE	House/Tree sparrow	HS/TS
Golden plover	GP	Linnet	LI
Dunlin	DN	Twite	TW

List A		List C	
Species	BTO Code	Species	BTO Code
Greenshank	GK	Lesser redpoll	LR
Whimbrel	WM	Crossbill/ Scottish c'bill	CR/CY
Curlew	CU	Bullfinch	BF
Wood sandpiper	OD	Hawfinch	HF
Tern spp.	AE/CN	Yellowhammer	Y.
Skua spp.	AC/NX	Reed bunting	RB
Colonial spp. nests	H./Gull spp.	Corn bunting	CB
		Raven	RN
		Other wildfowl spp.	MS/MA/GD/T.

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