Technical Appendix 8.4

Bloch Wind Farm: Wintering Bird Survey 2021-22

Report to Renewable Energy Systems Ltd

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BLOCH WIND FARM: WINTERING BIRD SURVEYS 2021-22

Introduction

1. This report presents the results of a second winter of ornithological work carried out for the proposed Bloch Wind Farm, Dumfries and Galloway. This comprised a wintering bird survey to provide ornithological baseline data, repeating the surveys carried out in 2020-21 (Percival *et al.* 2021). It provides a second winter's baseline data on the bird populations, activity and flight paths within the vicinity of the proposed wind farm site, to inform subsequent ornithological impact assessment.
2. The surveys were designed to take into account NatureScot (SNH 2017) guidance on bird surveys for wind farms. The surveys were undertaken by Tom Lowe and Stuart Piner, both highly experienced bird surveyors.

Study Area

3. The site is located 5.5km south-west of Langholm, in Dumfries and Galloway. The wintering bird survey area was chosen to include all areas within the possible zone of ornithological influence of the proposed wind farm. This included the wind farm site, plus a 500m buffer, as used for the main breeding bird surveys (following NatureScot guidance, SNH 2017). The main survey area covered a total area of 17.8km^2. It comprised predominantly upland moorland habitat, currently used mainly for grazing sheep, with the operational Solwaybank wind farm adjacent to the west (within an area of extensive conifer plantation).

Wintering Bird Survey Methods

4. The aim of the autumn/winter field survey work was to obtain data on the ornithological importance of the proposed wind farm site and its surrounds at that time of year, and on the flight lines of key target species. It included walkover surveys of the site and vantage point surveys of bird flight activity. Wider area surveys for wintering waterfowl were not undertaken as there was no important waterfowl habitat within 2km.

Autumn/Winter Walkover Surveys

5. Walkover mapping surveys of the wintering birds within the site and a 500m buffer took place in accordance with NatureScot guidance. The survey focused on key target species, which included all EU Birds Directive Annex 1 species, Wildlife & Countryside Act (1981) Schedule 1 species and Red-listed birds of Conservation Concern (Stanbury *et al*. 2021), as per NatureScot (SNH 2017).
6. As well as counting and mapping each species, the behaviour of each flock was also recorded, e.g. feeding/roosting. The surveys included work at dawn and dusk to check the area specifically for roosting hen harriers and other important raptors. Seven surveys were undertaken at approximately monthly intervals between September

2021 and March 2022 on the following dates: 3 September, 1 October, 4 November, 13 December 2021, 18/19 January, 3/4 February and 21/22 March 2022.

Vantage point surveys

7. Vantage point (VP) surveys were carried out to quantify the bird numbers that could potentially be at risk of collision. Target species were the same as those set out above for the walkover surveys. Forty-two hours' surveys were undertaken between September 2021 and March 2022 from each vantage point (six hours per VP per month). Two vantage points were required to cover the proposed wind farm site (the layout had been reduced since the previous winter when three VPs were used). The computer-generated viewsheds (using Global Mapper v21) are shown in Figure 1 of this report. Details of the survey times and conditions are given in Appendix 1.

8. The specific aim of the VP surveys was to collect data on key target species flight activity to enable estimates to be made of:

   - The time spent flying over the survey area
   - The relative use made of different parts of the survey area
   - The proportion of flying time spent at different elevations above the ground.

9. All key target species flights (and any other species of specific nature conservation interest) were recorded, irrespective of their distance from the vantage point. Observations were carried out throughout daylight hours but not in periods of severely reduced visibility (<3km).

10. During the VP surveys all key target species flights were mapped and cross-referenced to a standard recording form using a numbering system, and the flight height of each recorded. To estimate flight height as accurately as possible available reference structures were used. Heights were estimated as accurately as possible recorded as a raw estimate, rather than being summarised to height classes. Below 10m estimates were made to 1m, between 10m and 20m to 2m, between 20m and 50m to 5m, and above 50m to 10m. When birds were observed over an extended period, estimates of flight height were recorded every 30 seconds. The activity during each flight was also recorded. Particular attention was paid to any observations of birds at rotor height crossing the proposed wind farm that would be at risk of collision.

Wintering Bird Surveys 2021-22: Results

Autumn/winter walkover survey results

11. The bird populations found within the survey area during each of the monthly walkover surveys are summarised in Table 1a. The Table shows the numbers recorded during each survey, and the overall mean and peak counts. Overall, only low numbers of birds were recorded using the site during these surveys. Table 1b shows the results of the previous 2020-21 surveys for comparison – as in 2021-22, only low numbers were recorded.

Table 1a. Autumn/winter bird populations recorded in the Bloch Wind Farm survey area during the September 2021 - March 2022 walkover surveys.

Species	Sep 3	Oct 1	Nov 4	Dec 13	Jan 18/19	Feb 3/4	Mar 21/22	Mean 21-22	Peak 21-22
*Pink-footed Goose**	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0.1*	*1*
Greylag Goose	0	0	0	0	0	18	0	2.6	18
Mallard	3	0	2	0	0	3	2	1.4	3
Goosander	1	0	0	0	0	0	0	0.1	1
Red Grouse	0	3	2	0	8	2	1	2.3	8
Grey Heron	1	1	0	0	0	0	0	0.3	1
Hen Harrier	3	0	0	1	0	0	0	0.6	3
Sparrowhawk	1	1	1	0	0	0	0	0.4	1
Buzzard	3	7	2	5	7	5	5	4.9	7
Kestrel	2	3	0	0	0	1	0	0.9	3
Merlin	0	1	0	0	0	0	0	0.1	1
Peregrine	0	0	0	0	0	1	0	0.1	1
Golden Plover	1	0	0	0	1	3	0	0.7	3
Lapwing	12	0	0	0	0	0	14	3.7	14
Jack Snipe	0	0	1	1	0	0	0	0.3	1
Snipe	3	7	5	7	4	9	23	8.3	23
Woodcock	0	0	0	0	0	2	0	0.3	2
Curlew	0	0	0	0	0	0	3	0.4	3
Common Gull	0	0	0	89	0	0	0	12.7	89
Lesser Black-backed Gull	1	0	1	0	0	0	2	0.6	2
Herring Gull	0	0	0	4	0	0	0	0.6	4
Great Black-backed Gull	2	0	1	0	0	0	0	0.4	2
Barn Owl	0	0	1	0	0	0	0	0.1	1

** The single pink-footed goose record was of a bird over-flying.*

Table 1b. Autumn/winter bird populations recorded in the Bloch Wind Farm survey area during the November 2020 - March 2021 walkover surveys.

Species	Nov 16/17	Dec 14/15	Jan 19/21	Feb 23	Mar 22/23	Mean 2020-21	Peak 2020-21
*Pink-footed Goose**	*0*	*0*	*0*	*75*	*0*	*15**	*75**
Mallard	0	3	2	2	4	2.2	4
Red Grouse	6	1	6	9	2	4.8	9
Red Kite	0	0	0	1	0	0.2	1
Hen Harrier	1	1	0	3	0	1	3
Goshawk	0	0	0	3	1	0.8	3

Species	Nov 16/17	Dec 14/15	Jan 19/21	Feb 23	Mar 22/23	Mean 2020-21	Peak 2020-21
Sparrowhawk	0	0	0	1	1	0.4	1
Buzzard	6	10	11	7	11	9	11
Kestrel	2	2	1	0	2	1.4	2
Merlin	0	2	0	0	1	0.6	2
Oystercatcher	0	0	0	2	2	0.8	2
Golden Plover	23	0	0	0	2	5	23
Lapwing	0	0	0	2	3	1	3
Jack Snipe	1	1	0	1	0	0.6	1
Snipe	7	59	15	7	3	18.2	59
Woodcock	0	0	1	0	0	0.2	1
Curlew	0	0	0	0	6	1.2	6
Common Gull	7	0	0	0	0	1.4	7
Great Black-backed Gull	0	0	1	0	0	0.2	1
Black-headed Gull	3	0	0	0	0	0.6	3

** Pink-footed goose records were all of over-flying migrant flocks.*

Vantage Point Survey Results: Autumn/Winter 2021-22

12. The rates of bird flight movement observed across the survey area during the vantage point surveys are summarised in Table 2a. This gives the flight rate per hour recorded in each month and the total number of flights recorded. Flight rates over the survey area were generally low, though did include occasional records of several key raptors (red kite, hen harrier, goshawk, merlin and peregrine), and occasional flocks of migrating whooper swans, pink-footed geese and barnacle geese. Table 2b gives the results from the previous 2020-21 surveys for comparison. Similar low levels of flight activity were recorded then too (Percival *et al.* 2021).

13. Table 2a and 2b also gives the percentage of flights of each species that were recorded at rotor height (taking rotor height conservatively as between 21m and 200m above ground level).

Table 2a. Bird flight rates recorded over the Bloch Wind Farm survey area during the September 2021 - March 2022 vantage point surveys. N = 42 hours total observation from each of two VPs.

Species	Flight rate (birds/hour)							Total number of birds overflying	% flights at rotor height
	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Whooper Swan	0	0	0	0	1.00	0	0	6	100%
Pink-footed Goose	0	43.3	6.50	8.00	17.5	9.67	0	510	56%
Greylag Goose	0	0	0	0	1.50	0	0	9	100%
Barnacle Goose	0	20.2	0	0	0	0.17	0	122	75%

Species	Flight rate (birds/hour)							Total number of birds overflying	% flights at rotor height
	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Mallard	0	0.17	0.33	0	1.00	1.00	1.17	22	11%
Goosander	0.17	0	0	0	0	0	0	1	100%
Cormorant	0.17	0	0	0	0	0	0	1	100%
Grey Heron	0.17	0	0	0	0	0.17	0	2	50%
Red Kite	0	0	0	0	0	0	0.17	1	100%
Hen Harrier	0.83	0.33	0.33	0.17	0.50	0.33	0.50	18	11%
Goshawk	0	0	0	0.17	0	0	0.17	2	0%
Sparrowhawk	0	0	0	0.17	0.17	0.17	0	3	33%
Buzzard	0	0.67	3.17	1.00	0.50	1.00	1.00	44	60%
Kestrel	0	0	0	0.17	0.33	0	0	3	33%
Merlin	0.17	0.17	0	0.17	0	0	0	3	33%
Peregrine	0.50	0	0	0	0	0.33	0	5	40%
Golden Plover	0	0.17	0	0	0.33	2.00	0.17	16	100%
Lapwing	0	0	0	0	0	1.33	4.50	35	11%
Dunlin	0.17	0	0	0	0	0	0	1	100%
Snipe	1.00	0.33	0	0	0	1.83	0	19	40%
Curlew	0	0	0	0	0	0	1.33	8	0%
Common Gull	2.83	0	48.2	18.0	0	0	0	414	33%
Lesser Black-backed Gull	1.17	0.17	1.83	0.17	0	0.33	0.33	24	62%
Herring Gull	0	0	2.00	0	0.83	0.67	0	21	100%
Great Black-backed Gull	0.67	0.17	0.17	0	0.17	0.17	0	8	100%
Black-headed Gull	0	0	0	0.17	0	0	0	1	0%

Table 2b. Bird flight rates recorded over the Bloch Wind Farm survey area during the November 2020 - March 2021 vantage point surveys. N = 36 hours total observation from each of three VPs.

Species	Flight rate (birds/hour)					Total number of birds overflying	% flights at rotor height
	Nov	Dec	Jan	Feb	Mar		
Pink-footed Goose	18.7	4.50	1.44	6.10	15.4	1025	90%
Greylag Goose	0	0.09	0	0	0	2	100%
Mallard	0	0	0.05	0	0	1	0%
Red Grouse	0	0.27	0	0	0	6	0%
Grey Heron	0.04	0	0	0	0.11	3	33%
Red Kite	0	0	0	0.05	0	1	0%
Hen Harrier	0.15	0.18	0.09	0.10	0.11	14	21%
Goshawk	0	0.05	0	0.25	0.22	10	40%
Sparrowhawk	0.19	0	0	0.05	0.17	9	29%
Buzzard	0.49	0.32	1.63	0.50	0.33	71	35%
Kestrel	1.13	0.59	0.70	0.55	0.11	71	10%
Merlin	0.04	0.05	0.05	0.05	0	4	25%
Oystercatcher	0	0	0	0	0.06	1	0%
Lapwing	0	0	0.19	0.55	0.22	19	29%
Jack Snipe	0	0.05	0	0	0	1	0%
Snipe	0	0.14	0	0	0	3	0%

Species	Flight rate (birds/hour)					Total number of birds overflying	% flights at rotor height
	Nov	Dec	Jan	Feb	Mar		
Woodcock	0	0	0	0	0.06	3	0%
Curlew	0	0	0	0	0.78	14	50%
Common Gull	0	1.55	2.74	3.90	0	171	100%
Lesser Black-backed Gull	0	0	0.09	0	0.06	3	100%
Iceland Gull	0	0	0	0.05	0	1	100%
Herring Gull	0	0.05	10.2	29.9	0.22	822	76%
Great Black-backed Gull	0.08	0.05	0.51	0.45	0.06	24	75%
Barn Owl	0	0	0.05	0.05	0	2	0%

14. Figures 2 - 5 show the flight lines observed for key species during the VP surveys and records from the walkover surveys. Flights for all of the species shown in the Figures were widely distributed across the survey area, with no particularly notable concentrations of flight activity within any specific areas of the site.

Conservation Evaluation of Wintering Bird Populations

15. The conservation value of the wintering bird populations was determined using the criteria specified in Table 3 (from Percival 2007) and is summarised in Table 4. This includes the criteria adopted by NatureScot in Guidelines for Selection of Biological SSSIs (Drewitt *et al.* 2020), using 1% of the resource to define international and national importance (Frost *et al*. 2021). An additional category of regional importance was assigned for species approaching the threshold for national importance and those for which the survey area held a notable concentration in a county context. A further category of 'local importance' was used for species that did not reach regional importance but were still of some ecological value. This included all species on the red or amber lists of the 'Birds of Conservation Concern' (Stanbury *et al.* 2021) that did not reach national or regional importance at the development site. National (GB) and International wintering waterfowl baseline populations have been taken from the most recently published population figures (Frost *et al.* 2021) from the national Wetland Birds Survey and other species from Woodward *et al*. (2020). In addition, listing on Annex 1 of the EU Birds Directive, Schedule 1 of the Wildlife and Countryside, UK Biodiversity Action Plan [BAP] priority species and Scottish BAP species were all considered in the evaluation process.

Table 3. Definition of terms relating to the sensitivity of the ornithological receptors at the site.

Conservation Value	Definition
VERY HIGH	Cited interest of SPAs, SACs and SSSIs. Cited means mentioned in the citation text for the site as a species for which the site is designated (SPAs/SACs) or notified (SSSIs).
HIGH	Other species that contribute to the integrity of an SPA or SSSI. A local population of more than 1% of the national population of a species. EU Birds Directive Annex 1, EU Habitats Directive priority habitat/species and/or W&C Act Schedule 1 species. Ecologically sensitive species, e.g. large birds of prey or rare birds (<300 breeding pairs in the UK).
MEDIUM	Regionally important population of a species, either because of population size or distributional context. UK BAP priority species (if not covered above).
LOW	Any other species of conservation interest, e.g. species listed on the Birds of Conservation Concern not covered above. Scottish BAP species (if not covered above).

16. The conservation value of the wintering bird populations observed in the Bloch Wind Farm survey area during the wintering bird surveys has been summarised in Table 4 below. This included ten high sensitivity species (whooper swan, barnacle goose, red kite, hen harrier, goshawk, peregrine, merlin, golden plover, dunlin and barn owl) that are EU Birds Directive Annex 1/Wildlife and Countryside Act Schedule 1 species, four medium sensitivity species (UK BAP priority/red listed species of conservation concern; red grouse, lapwing, curlew and herring gull), and 13 low sensitivity species.

Table 4. Conservation evaluation of the wintering bird populations in the Bloch Wind Farm survey area.

Species	Peak count 2020-21	Peak count 2021-22	EU Birds Dir Ann 1	W and C Act Sch 1	Red [R]/ Amber [A] List	UK BAP priority sp	Scottish BAP sp	Conservation Value
Whooper Swan	*0*	*6*	✓	✓	A		✓	*High*
Pink-footed Goose	*495*	*145*			A			*Low*
Greylag Goose	2	18			A			Low
Barnacle Goose	*0*	*90*	✓		A		✓	*High*
Mallard	4	3			A			Low
Goosander	0	1						Nil
Red Grouse	9	8				✓		Medium
Cormorant	*0*	*1*						*Nil*
Grey Heron	1	1						Nil
Red Kite	1	1	✓	✓			✓	High
Hen Harrier	3	3	✓	✓	R		✓	High
Goshawk	3	1		✓				High
Sparrowhawk	1	1			A			Low
Buzzard	11	7						Nil
Kestrel	2	3			A		✓	Low
Merlin	2	1	✓	✓	R		✓	High
Peregrine	0	1	✓	✓			✓	High
Oystercatcher	2	0			A			Low
Golden Plover	23	15	✓				✓	High
Lapwing	3	14			R	✓	✓	Medium
Jack Snipe	1	1						Nil
Dunlin	*0*	*1*	✓				✓	*High*

Species	Peak count 2020-21	Peak count 2021-22	EU Birds Dir Ann 1	W and C Act Sch 1	Red [R]/ Amber [A] List	UK BAP priority sp	Scottish BAP sp	Conservation Value
Snipe	59	23			A			Low
Woodcock	1	2			R		✓	Low
Curlew	6	3			R	✓	✓	Medium
Common Gull	7	89			A			Low
Lesser Black-backed Gull	2	2			A			Low
Iceland Gull	1	0			A			Low
Herring Gull	126	4			R	✓	✓	Medium
Great Black-backed Gull	1	2			A			Low
Black-headed Gull	3	1			A			Low
Barn Owl	1	1		✓			✓	High

Note: species in italics seen over-flying only.

Conclusions

17. The 2021-22 wintering bird surveys found a range of wintering bird populations of conservation importance but with generally only low numbers within/in proximity to the proposed wind farm site in numerical terms and/or in the context of their regional (NHZ) populations (as had been found in the previous 2020-21 winter surveys). Key wintering bird populations recorded included:

- **Over-flying pink-footed geese** - pink-footed geese were occasionally seen over-flying, with nine flocks observed (Figure 2). In the previous winter 10 flocks in total were observed in November and in March. None were seen on the ground during any of the surveys in either winter. The only impact of the development on this species would be collision risk, which, given the numbers observed, would be unlikely to be significant.
- **Other over-flying geese and swans** – whooper swans and barnacle geese were both observed over-flying the site during the 2021-22 winter (though neither had been seen in the previous winter). The only whooper swan record was a single flock of 6 birds flying over on 14/1/22. Four barnacle goose flocks were seen, with three of these on 13/10/21 (flocks of 10, 21 and 90 - migratory birds arriving into the Solway for the winter) and a single bird over-flying with pink-footed geese in January. As for pink-footed geese, any risk from the wind farm to these species would be of collision, which, given the low numbers observed would be very unlikely to be significant.
- **Hen Harrier** - this species was regularly seen hunting over the site through the winter, with 18 flights in total seen during the 2021-22 VP surveys (Figure 3) (14 flights had been observed in the previous winter). No evidence was found in either winter of any night roost in the survey area, and most flights seen were below rotor height (so collision risk would be low).
- **Goshawk** - this species was seen less regularly in 2021-22 than it had been in the previous winter, with only two sightings (compared with 10 sightings in 2020-21). Overall, it was seen mainly in the afforested habitats around the site, with occasional flights over the site (Figure 4).

- **Merlin** - there were occasional records of this species (three during the VP surveys and one during the walkover surveys, Figure 4). There had been four during the 2020-21 VP surveys and three during the walkover surveys in that winter), including flights over the site, but no evidence that the site was of particular importance.
- **Peregrine** – this species was not recorded at all during the 2020-21 surveys, but there were five sightings during the 2021-22 VP surveys, mostly over the eastern part of the site (Figure 4). There was no evidence that the site is of particular importance to this species.
- **Golden Plover** - there were occasional records through the winter, but numbers recorded were very low (peak 12 – the peak in the previous winter had been 15) (Figure 5).
- **Other scarce raptors and owls** - red kite (a single record during the VP survey and one during the walkover in 2021-22) and barn owl (a single walkover survey record in 2021-22) were both recorded during both winters' surveys, but only infrequently in low numbers (Figure 4 shows the single red kite flight line observed during the 2021-22 VP surveys). There was no indication that the survey area was important to either of these species.

18. Overall, the wintering bird survey results did not indicate any specific ornithological issues that would require taking into account in the design process, or which would be likely to result in any significant impact from a wind farm at this location.

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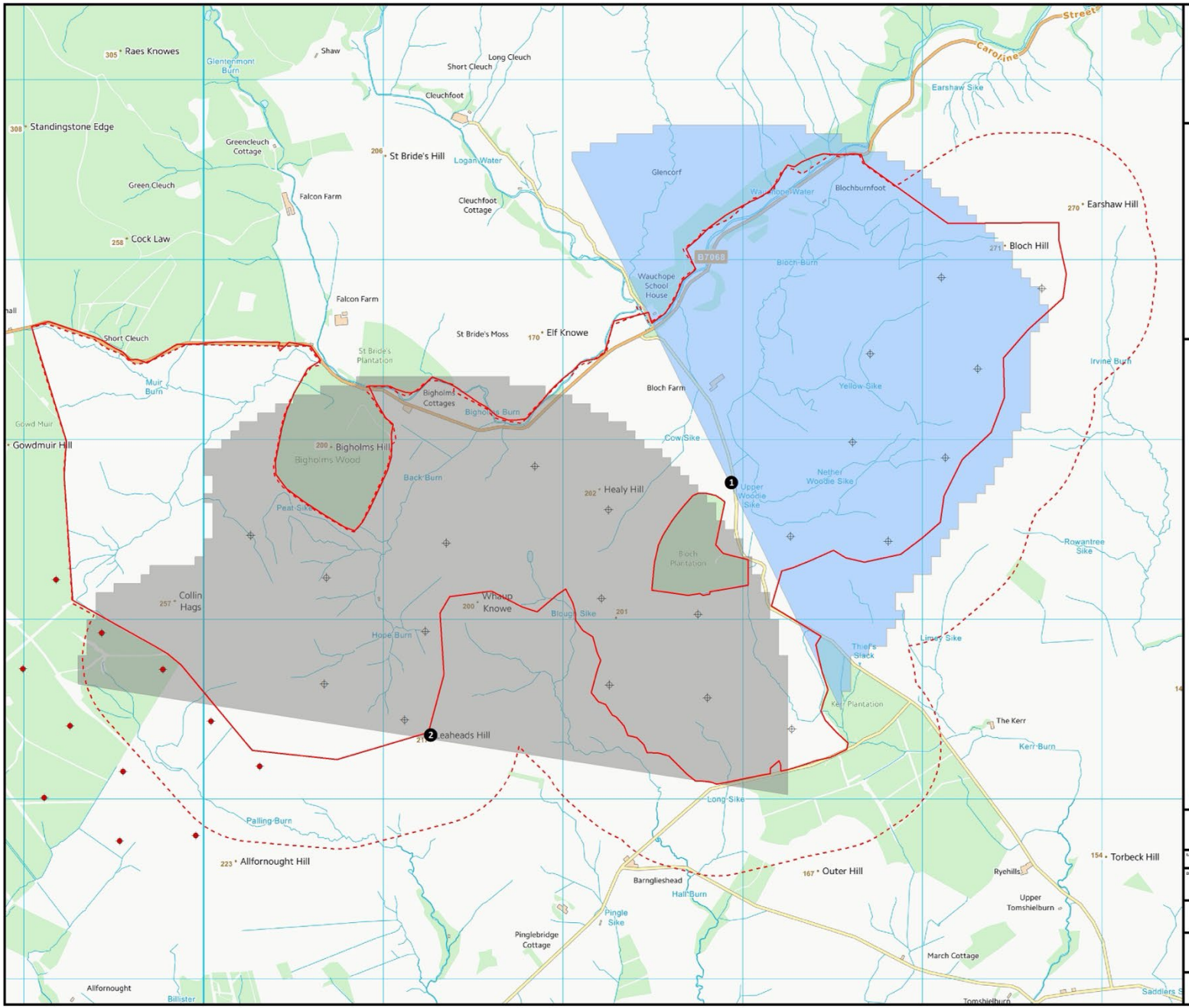

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FIGURE 1

Wintering Bird Survey Areas, 2021-22

KEY:

- Proposed Turbines
- Vantage Point (VP) Locations
- Site Boundary
- Winter bird survey area
- VP2 Viewshed
- VP1 Viewshed
- Solwaybank Turbines

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LAYOUT DWG	N/A	T LAYOUT NO.	N/A

DRAWING NUMBER: SB2022-1

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WINTER BIRD SURVEYS 2021-22

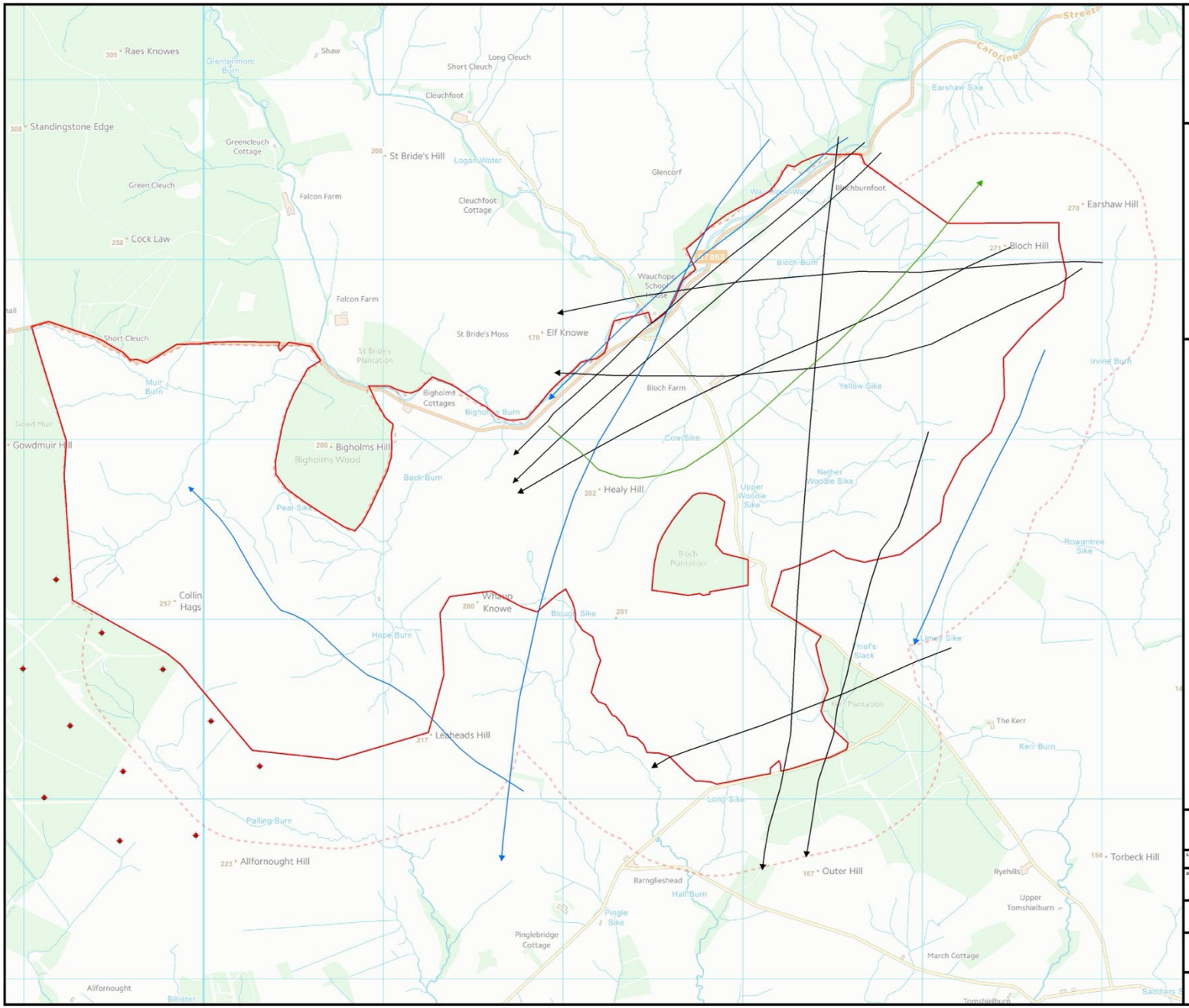

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FIGURE 2

Goose and Swan Flight Lines, 2021-22

KEY:

Species

- Barnacle Goose
- Pink-footed Goose
- Whooper Swan
- Site Boundary
- Winter Bird Survey Area
- SolwaybankTurbines

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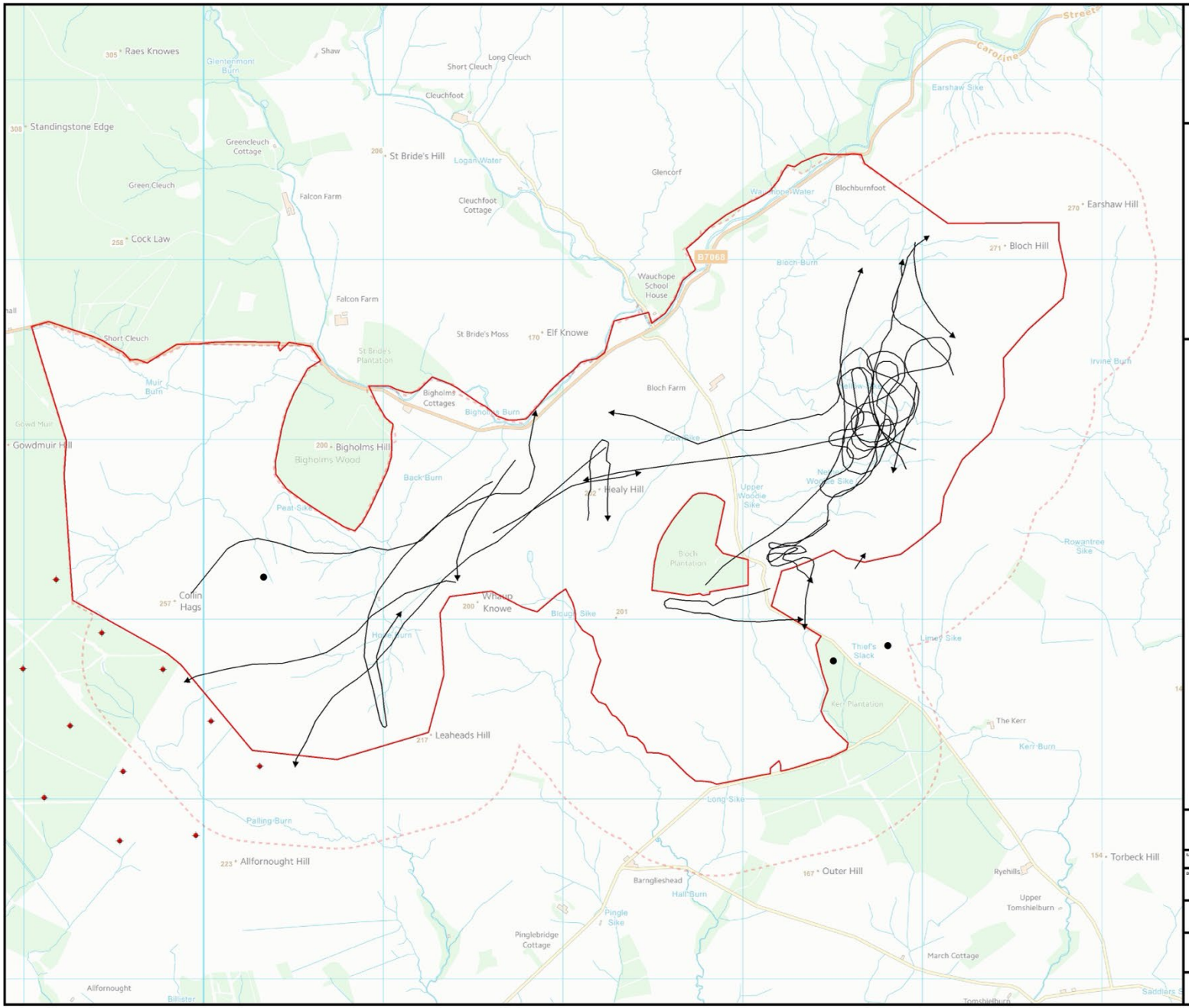

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FIGURE 3

Hen Harrier Flight Lines, 2021-22

KEY:

- Flight Lines 2021-22
- Winter Walkover Records
- Site Boundary
- Winter Bird Survey Area
- SolwaybankTurbines

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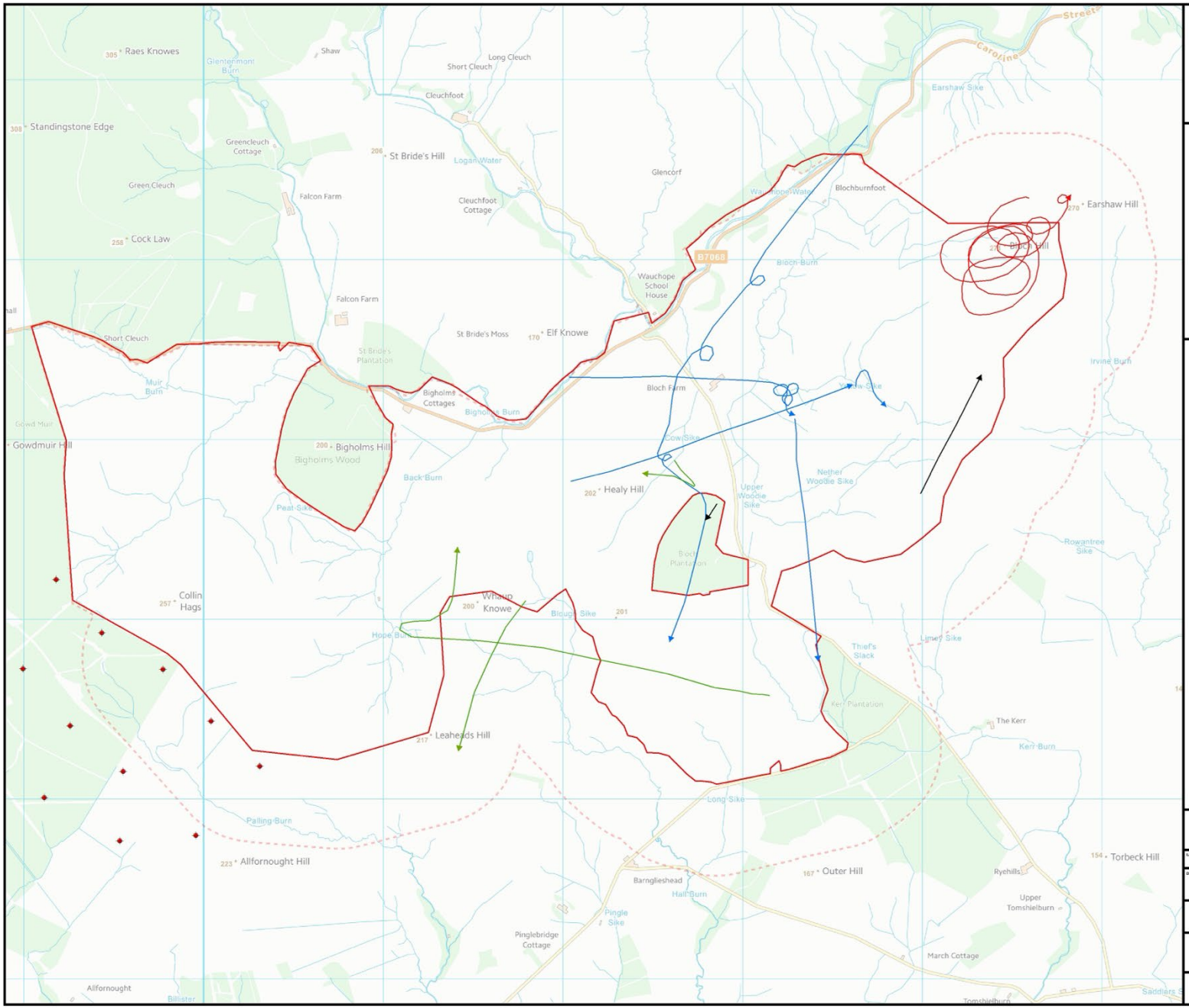
LAYOUT DWG	T-LAYOUT NO.
N/A	N/A

DRAWING NUMBER: SB2022-1

SCALE - 1:20,000 @ A3

WINTER BIRD SURVEYS 2021-22



res
power for good

Bloch Wind Farm

FIGURE 4

Other Scarce Raptor Flight Lines, 2021-22

KEY:

Species

- Goshawk
- Red Kite
- Merlin
- Peregrine
- Site Boundary
- Winter Bird Survey Area
- Solwaybank Turbines

Ecology Consulting

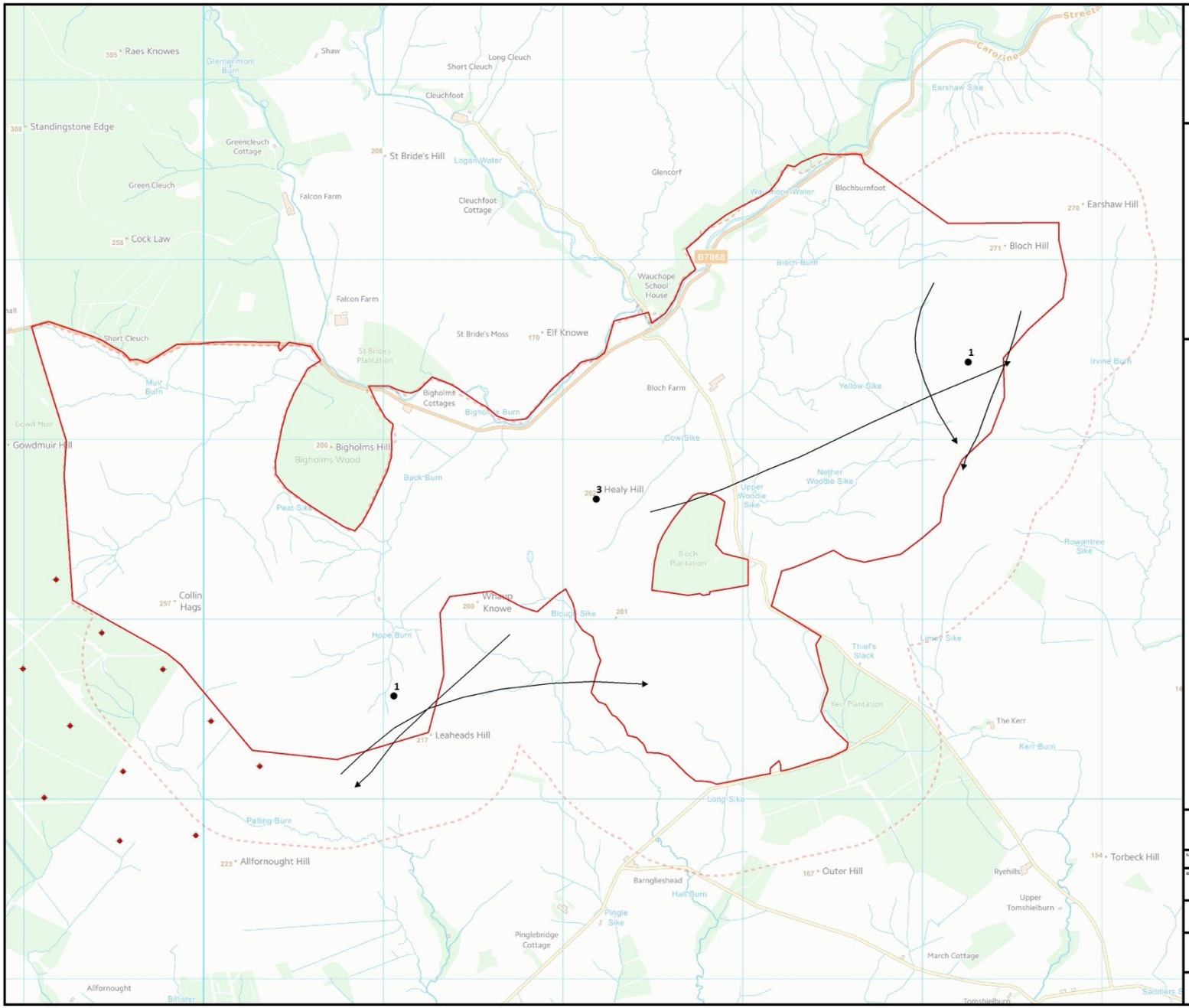
N

LAYOUT DWG	T-LAYOUT NO.
N/A	N/A

DRAWING NUMBER: SB2022-1

SCALE - 1:20,000 @ A3

WINTER BIRD SURVEYS 2021-22



res
power for good

Bloch Wind Farm

FIGURE 5

Golden Plover Flight Lines, 2021-22

KEY:

- Flight Lines 2021-22
- Winter Walkover Records
- Site Boundary
- Winter Bird Survey Area
- SolwaybankTurbines

Ecology Consulting

N

LAYOUT DWG	T-LAYOUT NO.
N/A	N/A

DRAWING NUMBER: SB2022-1

SCALE - 1:20,000 @ A3

WINTER BIRD SURVEYS 2021-22

APPENDIX 1. VANTAGE POINT SURVEY DATA

Survey Information

Date	Vantage Point No	Start time	Finish time	Obs Time	Weather
08/09/2021	3	16:30	19:30	03:00	2-4/8 cloud, 2-3 S wind, excellent vis, 27 to 22C
14/09/2021	3	09:00	12:00	03:00	8/8 cloud, 1-2 ESE wind, very good vis, 12 to 14C, light rain until 10:30
14/09/2021	2	12:30	15:30	03:00	8/8 cloud, 1-2 E wind, very good vis, 14 to 16C
14/09/2021	2	16:10	19:10	03:00	8/8 cloud, 1-2 E wind, very good vis
07/10/2021	3	16:00	19:00	03:00	8/8 cloud, 2-3 SSW wind, ok - good vis
13/10/2021	3	07:10	10:10	03:00	8/8 cloud, 1-3 SW wind, good - very good vis
13/10/2021	2	12:15	15:15	03:00	6-8/8 cloud, 2-3 W wind, excellent vis
13/10/2021	2	15:45	18:45	03:00	3-8/8 cloud, 2-3 WSW wind, excellent vis, light showers
17/11/2021	2	07:15	10:15	03:00	8-5/8 cloud, 2-3 WSW wind, very good vis, drizzle during first hour
17/11/2021	2	07:45	08:15	00:30	8-5/8 cloud, 2-3 WSW wind, very good vis, drizzle during first hour
17/11/2021	2	10:45	13:45	03:00	6-8/8 cloud, 3 WSW wind, very good vis, light rain showers
26/11/2021	3	10:00	13:00	03:00	0-3/8 cloud, 3-4 NNW-NW wind, excellent vis, brief light rain shower
26/11/2021	3	13:30	16:30	03:00	4-8/8 cloud, 3-5 NW wind, excellent vis
13/12/2021	3	08:00	11:00	03:00	8/8 cloud, 1-2 SSW wind, very good vis, 3 to 4C
14/12/2021	3	12:50	15:50	03:00	8/8 cloud, 2-3 SW wind, very good vis
15/12/2021	2	08:00	11:00	03:00	8/8 cloud, 3 SW wind, good vis
15/12/2021	2	12:40	15:40	03:00	8/8 cloud, 2-4 SW wind, good - ok vis, light rain and drizzle
13/01/2022	3	11:50	14:20	02:30	cloud 8/8, wind WSW 2, 6C, vis excellent
13/01/2022	3	14:50	16:50	02:00	cloud 8/8, wind WSW 2, 6C, vis excellent
14/01/2022	3	07:50	09:20	01:30	cloud 8/8, wind SW 1, 5C, vis very good
14/01/2022	2	09:50	12:50	03:00	cloud 8/8, wind 0, 5C, vis very good
14/01/2022	2	13:20	16:20	03:00	cloud 8/8, wind 0, 5C, vis very good
19/02/2022	3	08:00	11:00	03:00	8/8 cloud, 4-2 SW wind, very good vis
23/02/2022	2	08:00	11:00	03:00	8/8 cloud, 4-5 WSW wind, very good vis, brief showers
23/02/2022	2	11:30	14:30	03:00	8/8 cloud, 5 SW wind, very good vis, brief showers
23/02/2022	3	15:00	18:00	03:00	8/8 cloud, 4-5 SW wind, very good vis, steady rain periods on and off
04/03/2022	2	06:25	09:25	03:00	8/8 cloud, 0-1 variable wind, very good vis, very light rain then fine
04/03/2022	2	09:55	12:55	03:00	8/8 cloud, 1 variable wind. Very good vis
04/03/2022	3	12:55	15:55	03:00	7-8/8 cloud, 2 N wind, very good vis
04/03/2022	3	15:55	16:55	01:00	7-8/8 cloud, 1 N wind, very good vis
21/03/2022	3	05:40	06:40	01:00	0/8 cloud, 1 N wind, excellent vis, ground frost
22/03/2022	2	16:45	18:45	02:00	2-4/8 cloud, 2 E wind, excellent vis

Key Species Data

VP	Date	Time	Species	Count	Direction of flight	Flight height (m)	Activity	Time bird observed (sec)	Map Ref:	Notes
3	08/09/2021	17:30	PE	1	SW	145		280	1	adult
3	08/09/2021	18:35	PE	1	E	30	hunt	160	4	adult, hunting snipe, landed
3	08/09/2021	18:36	SN	5	SSE	25		120	5	flushed by PE
3	08/09/2021	18:41	PE	1	SSE	20		45	6	flew from ground with prey
3	14/09/2021	09:41	HH	1	SSW	3	hunt	35	2	female dropped from view
3	14/09/2021	09:55	HH	1		6	hunt	2060	3	same as 2
3	14/09/2021	10:35	DN	1	SW	80	call	35	5	
3	14/09/2021	10:49	HH	1	N	3	hunt	210	6	appeared to be same as 2 + 3
3	14/09/2021	11:27	SN	1	NE	8		30	7	flew from ground with prey
2	14/09/2021	18:03	HH	1	SW	8	hunt	270	1	adult male, dropped from view
2	14/09/2021	18:18	HH	1	NE	3	hunt	110	2	adult male, same as 1
2	14/09/2021	19:01	ML	1	WNW	31	hunt	205	3	male
3	07/10/2021	16:18	SN	1	WSW	5		15	2	flew from ground
3	07/10/2021	18:18	HH	1	NE	10		5	5	ringtail, brief view
3	13/10/2021	08:28	GP	1	NE	80		110	2	
3	13/10/2021	08:57	BY	10	SW	135		170	3	
3	13/10/2021	09:10	GP							heard but not located
3	13/10/2021	09:27	SN	1	SSE	1		5	4	seen just prior to landing
3	13/10/2021	09:53	BY	21	SSW	175		210	5	
3	13/10/2021	10:06	PG	145	WSW	170		240	6	
3	13/10/2021	10:06	PG	10	W	145		240	7	
2	13/10/2021	12:16	BY	90	SW	300		420	1	
2	13/10/2021	12:20	PG	105	S	225		360	2	
2	13/10/2021	17:01	HH	1	NE	13		480	5	adult female/1cy male, originally flew N-S and hunted
2	13/10/2021	18:09	ML	1	SSW	5		35	6	female/imm
2	17/11/2021	09:21	PG	39	SSW	300		180	1	
3	26/11/2021	15:21	HH	1	NNW	3		420	14	adult male with female
3	26/11/2021	15:21	HH	1	NNW	8		300	15	female with male
3	13/12/2021	08:56	PG	23	SW	300		180	5	
3	13/12/2021	10:18	GI	1	SW	10		5	7	adult, short flight over wood, mobbed by C
3	13/12/2021	10:34	PG	20	SW	200		210	8	
3	13/12/2021	10:34	PG	5	SW	300		240	9	
3	14/12/2021	15:18	ML	1	SE	7	hunt	20	8	male
2	15/12/2021	09:24	HH	1	W	7	hunt	220	1	male
3	13/01/2022	13:50	HH	1	NNW	3	hunt	80	3	female
3	13/01/2022	13:51	GP	1	SSW	30	flushed	50	4	
3	13/01/2022	15:30	HH	1	S	4	hunt	50	10	male
3	14/01/2022	08:25	PG	105	WSW	120		80	12	
3	14/01/2022	08:34	HH	1	WSW	31	roost	120	14	female
3	14/01/2022	08:51	WS	6	SE	100	migrate	180	16	
2	14/01/2022	10:04	GP	1	NE	90		70	1	
3	19/02/2022	10:07	L	4		15		45	10	
3	19/02/2022	10:13	L	4		10		190	11	
3	19/02/2022	10:38	HH	1	NE	21		360	13	female
3	19/02/2022	10:41	GP	12	SSW	70		90	14	
3	19/02/2022	10:45	PE	1	ENE	15		70	15	2cy, landed with prey
3	19/02/2022	10:52	PE	1	NNE	6		15	17	flushed by BZ, flew up ditch
2	23/02/2022	08:09	SN	11	SSE	32		95	1	
2	23/02/2022	08:52	PG	58	NW	48		140	3	
2	23/02/2022	08:52	BY	1	NW	48		140	3	with PG flock
3	23/02/2022	17:08	HH	1	SW	5	hunt	175	2	adult male
2	04/03/2022	08:17	HH	1	SSW	8	direct flight	65	1	adult male, landed on post
2	04/03/2022	08:26	HH	1	WSW	5	direct flight	190	2	adult male, flew from post
2	04/03/2022	08:28	HH	1	SW	13	direct flight	330	3	adult male, 2nd bird
2	04/03/2022	10:32	GP	1	SW	45		60	4	
3	04/03/2022	11:25	L	4		8		3000	1	from VP start, mobbed BZ
3	04/03/2022	13:10	CU	1	E	3		15	4	flew between fields
3	04/03/2022	13:23	CU	1	ESE	10		40	5	flew between fields
3	04/03/2022	13:44	KT	1		90		480	6	
3	04/03/2022	13:55	L	4		3		350	1	
3	04/03/2022	14:19	L	5		5		120	1	
3	04/03/2022	14:59	L	5		4		360	1	
3	04/03/2022	15:11	L	5		3		1260	1	
3	04/03/2022	15:28	CU	1		3		10	9	flew between fields
3	04/03/2022	16:04	L	1	SSW	35		240	11	landed
3	04/03/2022	16:20	L	3		2		30	1	
3	21/03/2022	05:49	CU	1		8	display	12	1	
3	21/03/2022	05:57	CU	1		13	display	25	1	
3	21/03/2022	06:03	CU	1		8	display	40	1	
3	21/03/2022	06:10	CU	2		15	display	1800	1	displaying almost continuously until VP end
3	21/03/2022	06:19	GI	1	NE	18		30	4	female