

Technical Appendix 6-1; Annex E

Woolfords Wind Farm

Ornithology Surveys

Wind 2

December 2021



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1 Introduction

1.1 Terms of Reference

This report presents the results of the ornithology desk study, survey and collision risk modelling work carried out in support of the Proposed Development in South Lanarkshire.

This report details the results of ornithology survey work carried out between August 2020 – September 2021.

1.2 Site Description

The proposed Woolfords Wind Farm (hereafter referred to as the Proposed Development) is located approximately 4km northeast of Forth in South Lanarkshire centred on National Grid Reference (NGR) 299380, 657570.

The Proposed Development lies between 250 - 314m AOD and is located south of the operational Pates Hill Wind Farm. The site consists of agricultural land that slopes down to Woolfords Cottages and the main road to the south. Conifer plantations form boundaries to the site on the east and west. Access is proposed to be taken via the northeast of the site.

1.3 Objectives

The aims of the report are to:

- Describe the desk study undertaken in support of the Ecology and Ornithology Report Technical Appendix 6-1;
- Describe the methodology used for site surveys and the data gathered as a result of those site surveys; and
- Describe the collision risk methodology in detail and present the results of that collision risk modelling.

2 Methodology

2.1 Desk study

2.1.1 Site designations

A desktop search of designated sites in proximity to the Proposed Development was undertaken using the following criteria:

- Any nationally/internationally designated site with an avian designation (e.g., Natura sites, Sites of Special Scientific Interest (SSSIs)) within 10km of the Proposed Development boundary; and
- Any internationally designated site with geese as a qualifying feature within 20km of the Proposed Development.

Criteria were chosen based upon likely connectivity of selected receptors (SNH , 2016).

2.2 Vantage point surveys

The Proposed Development is covered by one vantage point (VP1) (Figure 6-4). Vantage point surveys commenced in September 2020 and were carried out at the frequencies indicated in Table 1. Details of VPs times and dates is shown in Appendix A.

Standard VP methodology has been used as per SNH guidance (SNH, 2013, revised 2014). This has subsequently been re-issued, but it was the 2014 version which was extant at the time surveys commenced.

Table 1: Hours of VP observation

Month	Dawn	Diurnal	Dusk
Sep-20		6	
Oct-20		6	
Nov-20		3	3
Dec-20		6	
Jan-21		6	
Feb-21	3	3	
Mar-21		6	
Apr-21		6	
May-21		6	
Jun-21		6	
Jul-21		6	
Aug-21		6	

2.2.1 Limitations

There were no noted limitations during this survey period.

2.3 Breeding bird surveys

Table 2 shows the dates and times of breeding bird surveys, which were carried out using a modified Brown and Shepherd methodology, following the modifications suggested in SNH 2018.

In 2021, surveys were carried out at approximately monthly intervals between April – August, with all areas of the site approached to a distance of approximately 100m. Breeding bird surveys (BBS) surveys were carried out across the entire red line boundary and to those areas within the 500m buffer to which we had access, therefore excluding the forestry to the west, south and east and the land to the south-east of the railway and to the east of the main road which passes through Woolfords village (Figure 6-5).

Where full access was not available, public access was used where possible and watches were carried out from the nearest accessible land. All birds seen or heard were recorded using BTO codes on dedicated survey maps.

Table 2: Dates and times of breeding bird surveys

Visit number	Date	Start time	Duration (hrs)	Surveyor
1	12/04/2021	10:30	5:30	Michael Christie
2	17/05/2021	13:30	4:15	Laura Shelbourn
	18/05/2021	13:05	2:25	Laura Shelbourn
3	09/06/2021	09:30	4:07	Laura Shelbourn
	17/06/2021	09:00	6:10	Roisin McGrory
4	05/07/2021	12:30	5:20	Andrew Francis
5	03/08/2021	10:30	5:05	Roisin McGrory

The behaviour and location of species were recorded on 1:10,000 scale maps, using standard BTO codes and nomenclature.

Once surveys were complete, analysis of territories was undertaken. This involved of assessment of bird records across all five surveys. Four categories were recognised and are summarised from BTO breeding evidence codes:

- Confirmed territory – a nest with eggs or young was found, adults were seen carrying food (unless raptors) or nesting materials or juvenile birds were present on site and sufficiently young that they were unlikely to have come in from elsewhere;
- Probable territory – pairs of birds were seen in suitable breeding habitat, singing bird was observed on more than one occasion, or other territorial behaviour (e.g., courtship, display territorial disputes or anxiety calls) were observed at least once;
- Possible territory – birds were observed in suitable breeding habitat and if singing did so on no more than one occasion; and
- Non-breeding – birds were observed flying over, potentially on migration or with no evidence of breeding behaviour as discussed above.

2.3.1 Limitations

Due to access restrictions survey was mainly limited to the wider site boundary with some coverage from roads.

2.4 Breeding raptor surveys

Breeding raptor surveys were carried out on an approximately monthly basis between April – August 2021. These used a walkover methodology within areas with access, where all parts of the site were approached to a distance of approximately 250m. No access was possible in part of the 2km buffer, and these locations were viewed from publicly accessible land where mini-VPS were undertaken.

Table 3 shows the dates and times of surveys.

Table 3: Dates and times of breeding raptor surveys

Visit number	Date	Time	Duration (hrs)	Surveyor
1	13/04/2021	11:00	5:30	Michael Christie
2	06/05/2021	09:40	4:58	Laura Shelbourn
3	29/06/2021	09:30	6:30	Michael Christie
4	04/08/2021	10:45	5:26	Roisin McGrory

2.4.1 Limitations

The weather was suitable through the survey period, however on visit 4, visibility was hindered in the east of the site by smoke from a nearby wildfire.

Access was not available to all areas of buffer out with the wider site boundary; in these areas, access was limited to publicly accessible land only. This does mean that less obvious species within the buffer areas may have gone undetected.

3 Results

3.1 Desk study

3.1.1 Designated Sites

The results of this search are shown in Table 4. The designated sites, which also includes non-ornithology nature conservation designations are shown on Figure 6-6.

Table 4: Designated site search results

Site name	Distance from Site boundary	Designation ¹	Reason for designation
Westwater	11.6 km	Westwater SPA/Ramsar/SSSI	Pink-footed Goose, Non-breeding. Wildfowl Assemblage.

¹ – Special Protection Area/Site of Special Scientific Interest

3.2 Vantage point surveys

Table 5 shows the target species observed during VPs and the number of bird seconds observed at collision risk height. A list of all flights is shown in Appendix B and Figures 6-7a-c shows how this flight activity was distributed over the Survey Area. Collision risk modelling (CRM) was carried out for the three species that showed highest levels of flight activity over the Proposed Development during the first year of survey.

Table 5: Results from vantage point surveys September 2020 – August 2021

Species	Min. No. of Birds	Max. No. of Birds	No. of Flights	Total Bird Seconds	At Risk Bird Seconds	Corrected Annual Risk	No. of years per single collision	No. of birds colliding over 25 years
Curlew <i>Numenius arquata</i>	1	3	13	323	293	0.025	39.9	0.627
Dunlin <i>Calidris alpina</i>	1	1	1	16	16			
Golden plover <i>Pluvialis apricaria</i>	3	44	9	24,558	24,065	1.559	0.6	38.963
Goshawk <i>Accipiter gentilis</i>	1	1	1	61	0			
Greylag goose <i>Anser anser</i>	2	12	3	480	62			
Hen harrier <i>Circus cyaneus</i>	1	1	1	90	5			

Species	Min. No. of Birds	Max. No. of Birds	No. of Flights	Total Bird Seconds	At Risk Bird Seconds	Corrected Annual Risk	No. of years per single collision	No. of birds colliding over 25 years
Herring gull <i>Larus argentatus</i>	2	2	1	142	142			
Pink-footed goose <i>Anser brachy- rynchus</i>	19	70	7	24,334	9,666	0.074	13.6	1.842

The highest flight activity was associated with non-breeding flocks of gregarious birds, namely golden plover, and pink-footed geese. Golden plover is on the Scottish Biodiversity List. pink-footed geese are on the amber list of birds of conservation concern.

There were three greylag goose flights, 12 on the 10th December 2020, and two birds together on the 22nd March 2021 and 10th May 2021. It is possible that greylags may have bred close to, but outside of the survey area.

High flight activity of pairs of curlew was observed in June 2021 included birds mobbing corvids, frequently associated with nest defence. This supports the results of the breeding bird surveys (section 3.3) in substantiating that they bred on site. However, they are a wide-ranging species, and it is hard to localise territories without finding nests or witnessing agitated birds close to presumed nests and the collision risk attributed to curlew is very low given the small numbers involved.

Single flights of locally uncommon species included, a single male hen harrier was observed on site on the 17th November 2020, a single goshawk on the 22nd March 2021, a dunlin on the 25th of September 2020 and a herring gull on the 13th October 2020. Hen Harriers and goshawks are Schedule 1 protected species, it is possible that goshawks may have bred locally. Dunlin and herring gull are on the amber and red lists of birds of conservation concern respectively.

3.3 Breeding bird surveys

Table 6 shows the results of the breeding bird surveys. Figure 6-8 shows how these territories are distributed spatially.

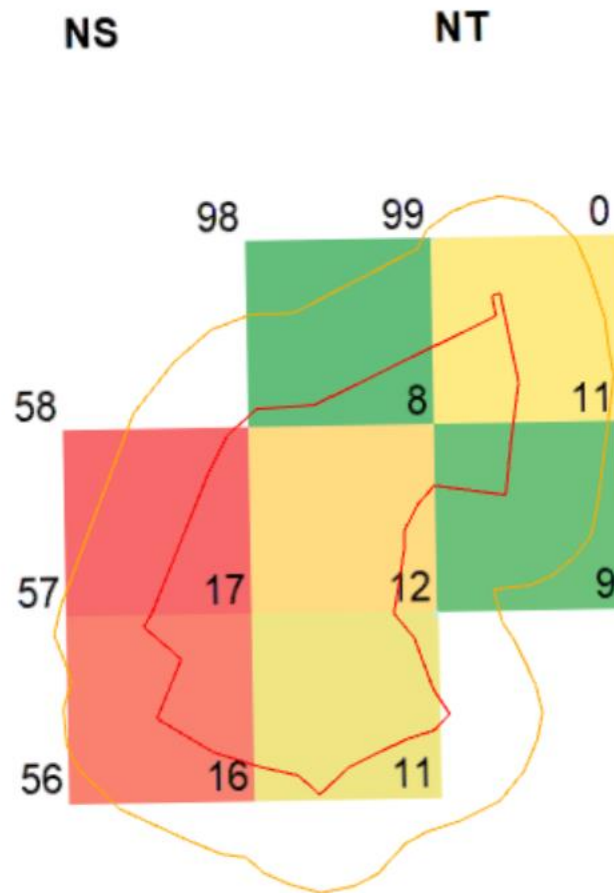
Table 6: Breeding bird results April 2021 – August 2021

Species	Scientific name	Status ¹	Confirmed	Probable	Possible
Blackbird	<i>Turdus merula</i>		0	0	4
Blue Tit	<i>Cyanistes caeruleus</i>		1		2
Buzzard	<i>Buteo buteo</i>		0	1	
Chiffchaff	<i>Phylloscopus collybita</i>		0	0	1
Chaffinch	<i>Fringilla coelebs</i>			7	9
Cuckoo	<i>Cuculus canorus</i>	Scottish Biodiversity List,	0	0	1

Species	Scientific name	Status ¹	Confirmed	Probable	Possible
		Red List			
Coal Tit	<i>Parus ater</i>		1	1	5
Curlew	<i>Numenius arquata</i>	Scottish Biodiversity List, Red List	0	2	1
Dunnock	<i>Prunella modularis</i>	Scottish Biodiversity List, Amber List	0	0	1
Goldfinch	<i>Carduelis carduelis</i>		0	0	6
Great Tit	<i>Parus major</i>		0	0	3
Jay	<i>Garrulus glandarius</i>		1	0	0
Kestrel	<i>Falco tinnunculus</i>	Scottish Biodiversity List, Amber List	1	0	0
Lapwing	<i>Vanellus vanellus</i>	Scottish Biodiversity List, Red List	0	1	
Linnet	<i>Linaria cannabina</i>	Scottish Biodiversity List, Red List	0	0	1
Lesser Redpoll	<i>Carduelis flammea cabaret</i>	Scottish Biodiversity List, Red List	0		1
Meadow Pipit	<i>Anthus pratensis</i>	Amber List	Analysis not performed, no confirmed territories, the most numerous bird on site.		
Oystercatcher	<i>Haematopus ostralegus</i>	Amber List	0	0	2
Pied Wagtail	<i>Motacilla alba yarrellii</i>		0	0	1
Robin	<i>Erithacus rubecula</i>		0	1	2
Reed Bunting	<i>Emberiza schoeniclus</i>	Scottish Biodiversity List, Amber List	0	0	2
Rook	<i>Corvus frugilegus</i>		0	1	2
Skylark	<i>Alauda arvensis</i>	Scottish Biodiversity List, Red List	0	28	36
Stonechat	<i>Saxicola torquata</i>		1	1	
Spotted Flycatcher	<i>Muscicapa striata</i>	Scottish Biodiversity List, Red List	1	0	0
Common Snipe	<i>Gallinago gallinago</i>	Amber List	0	1	1
Song Thrush	<i>Turdus philomelos</i>	Red List	0	0	4
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>		0	1	2
Wheatear	<i>Oenanthe Oenanthe</i>		0	0	2
Wood pigeon	<i>Columba palumbus</i>		0	0	1
Wren	<i>Troglodytes troglodytes</i>		0	0	3
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber List	0	7	9

¹ Sch1 – listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); SBL – listed on Scottish Biodiversity List; Red - categorised as 'red' on Birds of

Conservation Concern; Amber - categorised as 'amber' on Birds of Conservation Concern



This figure shows average densities of meadow pipit records observed per km² of surveyed land (see Section 2.3), per visit during Breeding Bird Surveys.

Table 7: Non-breeding records

Species	Scientific name	Conservation status	Likelihood of breeding	Comments
Carrion Crow	<i>Corvus coone</i>		High	Corvids in general are under-recorded because they lack conservation status and tend to breed either in proximity to houses or potentially in trees in dense woodland.
Common Sandpiper	<i>Actitis hypoleucos</i>	Amber List	Very Low	One sighting in late summer, probably a migrant.
Fieldfare	<i>Turdss pilaris</i>		Very Low	Extremely rare breeder and common winter visitor in the UK (Schedule 1), single sighting in early spring lingering from winter.
Greylag Goose	<i>Anser anser</i>	Amber List	Very Low	No suitable breeding habitat.
Golden Plover	<i>Pluvialis apricaria</i>	Scottish Biodiversity List	Very Low	Habitat probably not suitable, hard to miss as a breeding bird.
Herring Gull	<i>Larus argentatus</i>	Red List, Scottish Biodiversity	Very Low	Frequently breed more in coastal areas or, when inland, on flat roofs as found in urban areas, no

Species	Scientific name	Conservation status	Likelihood of breeding	Comments
		ty List		suitable habitat.
Pheasant	<i>Phasianus colchicus</i>		High	Numerous introduced bird of negligible conservation status, often captive reared and hard to assess breeding likelihood.
House Martin	<i>Delichon urbica</i>	Red List	High	Typically associated with human habitation where expediency curtails the use of binoculars by bird surveyors.
Magpie	<i>Pica pica</i>		High	Single record in suitable breeding habitat far to the east of buffer, probably under-recorded.
Jackdaw	<i>Corvus monedula</i>		High	(See house martin)
Raven	<i>Corvus corax</i>		Low	Whilst they prefer cliff faces they may nest in trees and could be associated with the plantation that for practical reasons was not surveyed in detail.
Starling	<i>Sturnus vulgaris</i>	Red List	High	(See house martin)
Swift	<i>Apus apus</i>	Red List, Scottish Biodiversity List	Low	(See house martin) but also a rarer breeder and typically associated with taller buildings.
Swallow	<i>Hirundo rustica</i>		High	(See house martin)
Siskin	<i>Carduelis spinus</i>		High	Likely under-recorded, generally a very common bird in conifer plantations to which we did not access for health and safety reasons.

3.4 Breeding raptor surveys

A small number of species were recorded during breeding raptor surveys, however multiple flights of these species were observed during visits.

Table 8 lists the raptor territories identified in 2021.

Table 8: Summary of raptor territories

Species	Scientific name	Within development boundary			Outwith development boundary but within survey area		
		Conf	Prob	Poss	Conf	Prob	Poss
Buzzard	<i>Buteo buteo</i>	0	1	0	0	0	1
Kestrel	<i>Falco tinnunculus</i>	0	0	0	0	0	1

A concentration of buzzard *Buteo buteo* activity was observed in a copse in the north of the site, where it is probable there was a nest. Regular activity from this species was observed across the site.

One possible territory of kestrel *Falco tinnunculus*, an amber list species and considered at risk from wind farm development, was observed, with frequent hunting activity from multiple individuals across the site.

On June 29th, 2021, a goshawk, *Accipiter gentilis*, a schedule 1 species, was observed in the west of the site carrying prey towards a conifer plantation and potential breeding habitat.

4 Collision risk modelling

CRM was carried out for the three species that showed highest levels of flight activity over the Proposed Development during the first year of survey: golden plover, curlew, and pink-footed goose. Four species were not included in the collision risk model because their total at-risk bird seconds were very low. These were dunlin with 15 seconds of flight, greylag goose with 62 seconds, hen harrier with 5 seconds and herring gull with 142 seconds.

A model (Forsyth *et al.* 1995) was used to calculate the daytime length as a function of latitude (55° 11' 11" N for the centre of the Proposed Development area. Table 9 presents the turbine parameters used for this model.

Table 9: Turbine Parameters

Parameter		Unit
Number of turbines	3	turbine
Blades per turbine	3	blades
Hub height	105	metres
Rotor radius	75	metres
Maximum chord	4.2	metres
Pitch	15	degrees
Rotation period	4	seconds
Proportion operational	0.85	-

4.1 Random Collision Risk Model

The random CRM was used for the three species as they exhibit more random flight patterns as opposed to regular linear flightpaths. An argument could have been made for including Pink-footed goose in a linear flight path model, but all flights appeared to be migratory flights and not regular movements to and from the goose roosts. It was felt that this activity did not fulfil the requirement for 'regularity' set out in the SNH guidance (SNH, 2000) regarding the use the linear movements model.

The general methodology used to predict collision risk for birds using the wind farm airspace is provided by SNH (SNH, 2000b).

In summary, the following steps were followed for random bird movements (as assumed for all three species) in this assessment:

- Digitise all flight lines and record relevant characteristics (including species, number of birds, start time of flight and time within each height band) in a database;
- Review the flight line data, which in this instance indicated that a random collision analysis should be conducted for each species;
- Identify all flights for each species that are at any point within the 'at risk' height band and sum the total 'at risk' flight duration for each VP, multiplying any flight at risk time by the number of birds observed, where more than one bird is recorded per flight line;
- Calculate an 'occupancy rate' for the VP, defined as the observed 'at risk' activity levels divided by total observation time and area observed, giving the occupancy per unit time and unit area for each VP;

- Apply the average occupancy rate to the wind development site, based on the site area, risk volume and total turbine rotor volume, applying a factor to estimate the total time that the birds could theoretically be active during the year, based on an algorithm for calculating day length (Forsythe et al. 1995); thus determining the total predicted time spent by the individual species within air space that could be swept by turbine blades;
- Run the collision model with relevant turbine and ornithological parameters to calculate the theoretical probability of transits resulting in a collision assuming no avoiding action; and
- multiply the number of transits by the collision rate, avoidance factor and operating parameters of the proposed wind farm to estimate the theoretical number of collisions per year.

Avoidance rates used were in accordance with SNH guidance on default values (SNH, 2017).

The predicted mortality through collision is dependent on a number of variables, including flight activity within the turbine envelope, the species' physiology, nocturnal flight behaviour and flight velocity, weather conditions, the predicted avoidance rate, the number, rotational speed and dimensions of the turbines, and the proportion of the time that the turbines are operational throughout the year.

The following assumptions were made for the species included for CRM:

- A daylight calculator was used to produce figures for the total daylight period at the Proposed Development area;
- Biometric data (bird length and wingspan) for the various species were obtained from the BTO webpage; and,
- Flight speed data taken from Alerstam et al. (2007).

Table 10 presents a summary of the model data used for all species subject to CRM including biometric parameters and avoidance rates.

Table 10: Random CRM Biometric Parameters

Species	Bird Length (m)	Wingspan (m)	Bird speed (m/s)	Avoidance rate	Months Active	Daylight hours	Night-time hours	Total hours	Assumed activity period	Flapping/ Gliding
Curlew	0.55	0.90	16.3	0.980	the year	4497	0.00	4497	daylight hours only	Flapping
Golden plover	0.28	0.72	13.7	0.980	the year	4497	0.00	4497	daylight hours only	Flapping
Pink-footed goose	0.68	1.52	17.1	0.998	September - March	2054	0.00	2054	daylight hours only	Flapping

Finally, Table 11 presents the results of the CRM for all species.

Table 11: Random CRM results

Species	Random CRM		
	Annual collision risk	Years per collision	Collisions over 25 years
Curlew	0.025	39.9	0.627
Golden plover	1.559	0.6	38.963
Pink-footed goose	0.074	13.6	1.842

It is considered that the collision risk rate for golden plover is over-estimated. It is heavily influenced by one flock of golden plover that used the site briefly during migration. However, the model would then assume that that is a reliable estimate of the frequency such an event occurs at. It is likely that a rarer event has been captured within the survey hours and that a flock of that size would not fly through the site as frequently as this set of data suggests. The collection of data through the second year of surveys should help to make this estimate more accurate.

The collision risk attributed to curlew is very low given the small numbers involved.

For Pink-footed goose, levels of collision risk are considered negligible, especially given the probable migratory provenance of the birds.

5 Conclusions

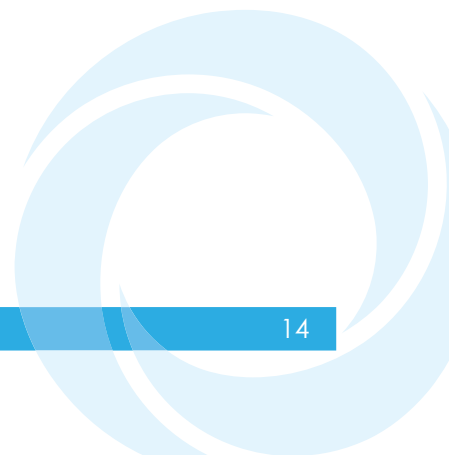
The limited flight activity of pink-footed goose seems to concern migratory birds, probably not associated with the Westwater SPA. Collision risk attributed to all pink-footed geese was estimated at less than two birds in 25 years. As such, we would identify no adverse impacts on the SPA goose population.

There are no statutory or non-statutory designated sites designated for breeding golden plovers in the zone of influence of the Proposed Development. There was some early migrant activity with a flock of up to 52 birds present during spring, recorded during breeding bird and vantage point surveys and which resulted in a moderately high estimate of collision risk for this species however It is considered that the collision risk rate is over-estimated and heavily influenced by one flock of non-breeding golden plover which used the Survey Area briefly during migration.

The site holds a moderate population of breeding waders, including curlew, lapwing oystercatcher and snipe, with only 3 discovered territories within 1km of turbine locations. One probable curlew territory is centred within 600m of Turbine 3, but this is considered too far to likely be displaced.

Single flights of Hen Harrier and Goshawk contribute negligibly to collision risk at this site although it is possible that the latter breed in forestry to the west of the site.

Further information on potential effects can be viewed in Ecology and Ornithology Report Technical Appendix 6-1.



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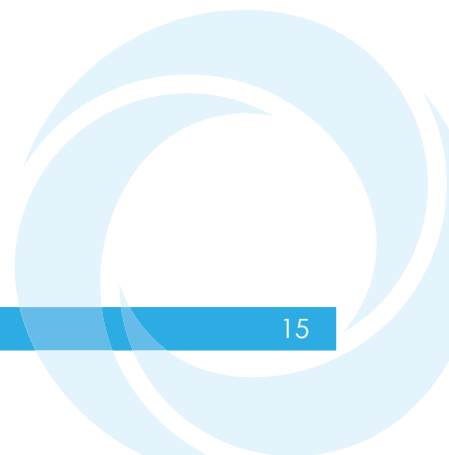
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Appendices

Appendix A. Dates and times of VPs

Table 12: Dates and times of VPs

Survey Date	Start Time	Finish Time	Duration	Surveyor	VP Type	Cloud cover	Visibility	Precipitation	Temp (°C)	W. Speed (Beaufort Scale)	W. Direction
25/09/2020	10:15	13:15	03:00:00	Michael Christie	Diurnal	6	> 2km	None	9	3	N
25/09/2020	13:20	16:20	03:00:00	Michael Christie	Diurnal	6	> 2km	None	10	2	N
13/10/2020	10:00	13:00	03:00:00	Michael Christie	Diurnal	8	> 2km	Light Intermittent	8	4	NE
13/10/2020	13:10	16:10	03:00:00	Michael Christie	Diurnal	7	> 2km	None	8	4	NE
17/11/2020	09:50	12:50	03:00:00	Michael Christie	Diurnal	8	> 2km	None	12	4	SW
17/11/2020	13:00	16:00	03:00:00	Michael Christie	Dusk	8	> 2km	None	13	4	SW
10/12/2020	09:15	12:15	03:00:00	Michael Christie	Diurnal	8	> 2km	None	3	0	SE
10/12/2020	12:20	15:20	03:00:00	Michael Christie	Diurnal	8	> 2km	None	5	1	S
07/01/2021	09:30	12:30	03:00:00	Michael Christie	Diurnal	7	> 2km	None	0	1	W
07/01/2021	12:40	15:40	03:00:00	Michael Christie	Diurnal	5	> 2km	None	1	1	NW
19/02/2021	07:30	10:30	03:00:00	Michael Christie	Dawn	8	> 2km	Light Intermittent	6	5	S
19/02/2021	10:40	13:40	03:00:00	Michael Christie	Diurnal	8	> 2km	None	6	5	S
22/03/2021	10:10	13:10	03:00:00	Michael	Diurnal	8	> 2km	None	8	3	SW

Survey Date	Start Time	Finish Time	Duration	Surveyor	VP Type	Cloud cover	Visibility	Precipitation	Temp (°C)	W. Speed (Beaufort Scale)	W. Direction
				Christie							
22/03/2021	13:30	16:30	03:00:00	Michael Christie	Diurnal	8	> 2km	None	8	3	SW
07/04/2021	09:40	12:40	03:00:00	Michael Christie	Diurnal	6	> 2km	None	1	2	NW
07/04/2021	13:00	16:00	03:00:00	Michael Christie	Diurnal	7	> 2km	None	4	2	NW
10/05/2021	09:20	12:20	03:00:00	Michael Christie	Diurnal	6	> 2km	Light Intermittent	10	1	SE
10/05/2021	12:40	15:40	03:00:00	Michael Christie	Diurnal	7	> 2km	None	11	3	SE
16/06/2021	10:40	13:40	03:00:00	Roisin McGrory	Diurnal	6	> 2km	None	12	3	SW
16/06/2021	14:00	17:00	03:00:00	Roisin McGrory	Diurnal	6	> 2km	None	13	2	SW
14/07/2021	16:43	19:43	03:00:00	Laura Shelbourn	Diurnal	6	> 2km	None	18	4	W
15/07/2021	13:18	16:18	03:00:00	Laura Shelbourn	Diurnal	0	> 2km	None	22	3	W
24/08/2021	10:26	13:26	03:00:00	Laura Shelbourn	Diurnal	2	> 2km	None	20	1	NE
24/08/2021	13:45	16:45	03:00:00	Laura Shelbourn	Diurnal	2	> 2km	None	20	2	NNE

Appendix B. Vantage Point Flights

Table 13: Vantage Point Flights

Date	Species	Time First Observed	No. of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height
25/09/2020	Dunlin	13:49	1	B	16	16
25/09/2020	Pink-footed goose	10:53	35	C	52	0
25/09/2020	Pink-footed goose	10:57	40	C	31	0
25/09/2020	Pink-footed goose	12:08	70	C	91	0
25/09/2020	Pink-footed goose	12:14	20	C	82	0
25/09/2020	Pink-footed goose	13:08	28	C	100	0
13/10/2020	Herring gull	11:36	2	B	71	142
13/10/2020	Pink-footed goose	10:50	19	C	42	0
17/11/2020	Hen harrier	11:20	1	A	65	0
17/11/2020	Hen harrier	11:20	1	A	20	0
17/11/2020	Hen harrier	11:20	1	B	5	5
10/12/2020	Golden plover	10:45	13	B	184	2392
10/12/2020	Golden plover	12:29	16	B	288	4608
10/12/2020	Golden plover	14:34	13	A	21	0
10/12/2020	Greylag goose	09:20	12	C	29	0
07/01/2021	Pink-footed goose	11:40	54	B	179	9666
22/03/2021	Goshawk	12:20	1	A	61	0
22/03/2021	Greylag goose	10:40	2	B	31	62
07/04/2021	Golden plover	09:54	3	B	69	207
07/04/2021	Golden plover	12:03	3	B	11	33
07/04/2021	Golden plover	12:10	22	B	244	5368
07/04/2021	Golden plover	13:02	44	A	5	0
07/04/2021	Golden plover	13:02	44	B	90	3960
07/04/2021	Golden plover	13:51	13	B	51	663
07/04/2021	Golden plover	13:55	34	B	201	6834
10/05/2021	Curlew	09:45	1	A	2	0
10/05/2021	Curlew	09:45	1	B	10	10
10/05/2021	Curlew	09:48	1	A	15	0
10/05/2021	Curlew	12:02	1	A	26	0
10/05/2021	Curlew	12:02	1	B	10	10
10/05/2021	Curlew	15:21	1	A	10	0
10/05/2021	Curlew	15:30	1	A	21	0
10/05/2021	Greylag goose	10:02	2	A	35	0
16/06/2021	Curlew	10:30	2	B	22	44
16/06/2021	Curlew	10:46	3	B	27	81
16/06/2021	Curlew	11:33	2	B	7	14
16/06/2021	Curlew	11:33	3	B	16	48
16/06/2021	Curlew	12:00	1	B	9	9

Date	Species	Time First Observed	No. of Birds	Height Band	Time in Height Band (s)	No. of Bird Seconds at Risk height
16/06/2021	Curlew	12:00	2	B	11	22
16/06/2021	Curlew	12:08	1	A	2	0
16/06/2021	Curlew	12:08	1	B	11	11
16/06/2021	Curlew	12:08	1	B	23	23
16/06/2021	Curlew	14:18	1	B	12	12
16/06/2021	Curlew	14:42	1	B	7	7