Appendix 15.2

Baseline Bird Reports

Coolglass Wind Farm EIAR Volume 3

Coolglass Wind Farm Limited

SLR Project No.: 501.V00727.00006

27 June 2023

Winter 2017/18 bird survey data

1.0 Introduction

Fehily Timoney and Company (FT) were commissioned by Coolglass Wind Farm Ltd to carry out a bird survey programme for the proposed Coolglass Wind Farm, Co. Laois (hereafter 'the Project') during the non-breeding bird period in 2017/18.

The results of these surveys were supplied to SLR Consulting Ireland Ltd (hereafter 'SLR') in the format of an Excel spreadsheet and GIS shapefiles showing flight lines and vantage point locations. None of these results have been reported on.

As SLR did not carry out the work, only a brief description of the methods and results have been described insofar as can be inferred from the raw data.

1.1 Background to the Project

No previous planning permission has been sought on the application site (hereafter 'the Project Site') for the development of a wind farm by Coolglass Wind Farm Ltd or any other party. Breeding and non-breeding bird surveys were carried out by FT from 2012 to 2018 while the Project was in gestation. These surveys included flight activity, breeding wader, barn owl and merlin surveys.

1.2 Project Site Description

The Project Site is located within the townlands of Brennanshill, Coolglass, Crissard, Fallowbeg Upper, Coolglass Upper, Gorreelagh, Kylenabehy and Scotland in Co. Laois. The dominant habitats within the boundaries of the Project Site are conifer plantation and improved agricultural grassland. There are also numerous eroding/upland rivers including the Fallowbeg Upper, Owveg [Nore], Clogh 15 and Brennanshill. The north of the Project Site is focused on Fossy Mountain, which is a small hill, 323 m above sea level in height.

1.3 Scope of Work

The scope of survey work was largely based on NatureScot (NS) (formerly Scottish Natural Heritage; SNH) guidance[1]. This survey methods guidance is recognised as standard best practice guidance throughout the UK and Ireland for surveying birds to inform impact assessment for onshore wind farms. The scope of survey work undertaken is provided in **Table 1-1**. Further details are provided in Sections 2.2.2 to 2.2.5.

Table 1-1
Scope of Ornithological Survey Work, Non-breeding Season 2017/18

Survey Type	Summary Methodology (see Section 2 for further details)
Vantage Point (VP) surveys	At least 36 hours of survey were carried out from VPs 1-3 and 6, 32 hours at VP4, 24 hours at VP5 and 30 hours at VP7, from September 2017 to March 2018.

[1] Scottish Natural Heritage (2017). Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms V2. Scottish Natural Heritage, Inverness.

Survey Type	Summary Methodology (see Section 2 for further details)
Winter Transect surveys	Nine visits were conducted across two transects between November 2017 to February 2022.

1.4 Target Species

Target species for the surveys were defined by legal and/or conservation status and vulnerability to impacts caused by wind turbines, as defined in NS guidance. Note that all species were recorded as primary target species at the time of surveys and are shown as such in Appendices; however, for the figures, the definition of primary and secondary target species as outlined below has been retrospectively applied. This reflects any updates to conservation status since the time of surveys.

1.4.1 Primary Target Species

Primary target species was limited to species upon which effects are most likely to be potentially significant in EIA and Appropriate Assessment (AA) terms e.g., species forming qualifying features for nearby Special Protection Areas (SPAs) or species listed on Annex 1 of the Birds Directive[2].

This distinction should enable recording to focus on the species of greatest importance without the distraction of having to record detailed flight data for a larger number of more common species. This approach was not undertaken for the 2017/18 surveys and so some species that were recorded as primary targets have been relegated to secondary status (details shown below).

Primary target species included the following bird species:

- All Annex 1 raptor/owl species;
- Qualifying interest species for nearby SPAs[3]; and
- Other raptors, waders or wildfowl red-listed on the latest Birds of Conservation Concern in Ireland (BoCCI)[4] scheme.

1.4.2 Secondary Species

Local circumstances may indicate that survey information should also be acquired on other species, especially those of regional conservation concern. Such species are termed secondary species. Recording of secondary species is subsidiary to recording of primary target species.

[2] Annex 1 of the Birds Directive (Directive 2009/147/EC)

[3] The relevant SPAs are listed in SLR baseline reports: SLR (2022a). Coolglass Wind Farm. Breeding 2021 and non-breeding 2021/22 bird survey report; SLR (2022b). Coolglass Wind Farm. Breeding 2022 bird survey report.

[4] Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 2020–2026. Irish Birds 43: 1–22

Secondary target species included:

- Any other wildfowl and wader species;
- Common buzzard *Buteo buteo;*
- Eurasian sparrowhawk *Accipiter nisus*;
- Northern raven *Corvus corax*;
- Grey heron *Ardea cinerea;*
- Great cormorant *Phalacrocorax carbo;* and
- Gulls *Larus* and *Chroicocephalus sp*.

Carrion crow *Corvus corrone*, common buzzard, Eurasian sparrowhawk, lesser black-backed gull *Larus fuscus* and grey heron were all originally recorded as primary target species; however, as none of these species fulfil the criteria for primary targets listed above, they have been considered as secondary species for the purposes of this Appendix.

1.5 Terminology

For this report, "flight line" refers to the line drawn to record avian movement during a VP survey. A single flight line may be used indicate the collective movement of a flock of birds. Each individual bird moving within the same flight line is referred to as "a flight". Note that the "cumulative number of flights" reflects the occupancy of the study area by a particular species. It is not equivalent to the total number of unique individuals and should not be used to infer abundance.

1.6 Purpose of the report

These data will be used to inform a separate ecological impact assessment for the Project. The assessment of potential impacts is beyond the scope of this Appendix.

2.0 Methodology

No information on the desk-based review undertaken by FT to inform these surveys is available.

2.1 Flight Activity Surveys

Seven vantage point (VP) locations were used for surveys during the 2017/18 non-breeding seasons. Following this survey seasons, the Project Site was reduced in size. Consequently, only five vantage point (VP) locations are now required to provide visibility of the remaining optioned lands and a 500 m buffer surrounding the same; however, for transparency, the full set of seven VPs is shown in the figures and results. The adequacy of these VPs was checked by carrying out a desk-based viewshed analysis using a bespoke GIS tool for calculating the visible area from each vantage point (VP). The Zones of Theoretical Visibility (ZTV) from each VP were calculated using ArcMAP 10.5.1 Spatial Analyst using a terrain model derived from EU-DEM data with a vertical accuracy of ± 7 m. The ZTVs have been calculated using a surface offset of 30 m, to match the lowest point swept by the rotors of the proposed turbines. The ZTVs are based on a viewing height of 1.8 m above ground level. VP locations, viewing arcs and viewsheds are shown in **Figure 1**.

During the non-breeding season (monthly visits September-March inclusive), a total of 36 hours minimum of watches were undertaken at VPs 1-3 and 6-7. Survey effort was less at VPs 4 and 5 (see Section 2.3). The VP survey effort undertaken during the non-breeding season of 2017/18 is summarised in **Table 2-1** with full details of survey dates, times and observers provided in Appendix 01 and details of weather conditions during the surveys provided in Appendix 02.

Table 2-1
VP survey effort undertaken at the Project Site from October 2017 to March 2018

Month	Survey duration (hh:mm)						
	VP1	VP2	VP3	VP4	VP5	VP6	VP7
September	15	6	0	0	6	0	6
October	6	6	0	0	0	0	0
November	6	0	6	6	6	12	6
December	6	6	9	8:30	6	6	6
January	6	13:34	16	12	6	6	6
February	0	0	0	6	6	6	0
March	12	12	9	0	0	6	12
Total hrs	**51:00**	**43:34**	**40:00**	**32:30**	**30:00**	**36:00**	**36:00**
VP Locations ITM (**Figure 1**)	654401, 690069	656779, 690605	654861, 687912	656794, 685742	655853, 683303	658449, 683337	659971, 680602

VP surveys aimed to quantify the flight activity of primary target species (as defined in Section 1.4) within the study area.

The main purpose of VP watches is to collect data on primary target species that will enable estimates to be made of:

- The time spent flying over the site;
- The relative use by birds of different parts of the site;
- The proportion of flying time spent within the provisional upper and lower risk height limits as determined by the potential rotor diameter and rotor hub height; and
- Ultimately, the analysis of the potential risk of collision of birds with rotating turbines.

For each primary target species observation, the following details were recorded:

- Time of observation;
- Duration of flying bout;
- Species, age and sex (where determinable);
- Time spent within each height band and;
- Notes on observation.

In the absence of detailed information regarding turbine specifications at the time of commencing surveys, a precautionary approach was taken in relation to recording height bands. Height bands were determined allowing for the maximum rotor tip height of 180 m and a lowest rotor swept height of 30 m. Flight heights were attributed to five distinct height bands as follows:

- 1 = < 30 m (below the likely rotor swept area);
- 2 = 30 m to 40m (within the likely rotor swept area);
- 3 = 40 m to 50 m (within the likely rotor swept area);
- 4 = 50 m to 170 m (within the likely rotor swept area); and
- 5 = >170 m (above the likely rotor swept area, at least in part).

2.2 Winter Transect Surveys

These surveys are not part of NS guidance; however, they were used to provide information on the assemblage of winter birds using the Project Site.

The methodology involved walking a pre-defined transect and recording the number of species detected according to three distance categories, approximately following the Countryside Bird Survey (CBD) methodology[5]. The distance categories are as follows:

- 1 = out to 25 m on either side of transect line;
- 2 = between 25 m and 100 m either side of the transect line;
- 3 = more than 100 m either side of the transect line; and
- F = birds flying over (but not landing).

[5] https://birdwatchireland.ie/app/uploads/2019/03/CBS_Manual_June2012_web_resolution.pdf Accessed 24/11/2022

Two transects were used in the northern turbine cluster and another two in an area that has now been dropped from the Project. For transparency, both sets of transects are shown in **Figure 3** as are both sets of results.

Nine surveys were undertaken between November 2017 and February 2022 with details shown in Appendices 01 and 02.

2.3 Survey Limitations

The majority of VP surveys were undertaken in optimal weather conditions. However, during such an extensive series of surveys carried out it was inevitable that some surveys were completed in suboptimal conditions. There were 2 out of the total of 89.7 no. 3-hour surveys with weather data during which the visibility was recorded as "moderate", i.e. 1-2 km. This comprises 0.7% of the total survey effort but in almost all cases all of the relevant 2 km viewing arc was visible and this is not considered to significantly affect the validity of the data collected. Visibility fell below 1 km for 10 out of 89.7 no. 3-hour surveys (3.7% of data), but it is likely that visibility was better than this for part of the relevant survey. As such, given the low proportion of surveys affected this is not considered to significantly affect the validity of the data collected. Further details regarding weather conditions during surveys are provided in Appendix 02.

VP survey effort fell below the 36 hours required per season for VPs 4 and 5. While the level of effort for VPs 4 and 5 is slightly lower than that recommended by NS guidance, it is not considered to significantly affect the survey results for the purposes of impact assessment. This is because there is still a good spread of survey hours throughout the winter season and for other VP locations, survey effort was at least (and sometimes in exceedance) of the recommended 36 hours. Furthermore, any collision risk model will account for the level of survey hours, so the resulting levels of collision risk will not be affected.

Some areas of the 500 m buffer surrounding the northern cluster and a small area of the southern were not visible according to the viewshed analyses (**Figure 1**). This is not thought to have a significant effect on the results, as all the habitats outside the viewsheds are found throughout the areas that are covered.

3.0 Results

3.1 Breeding Season Flight Activity Surveys

Flight lines of primary target species recorded throughout the 2017/18 non-breeding season are presented in **Figures 2.1** to **2.2** and a summary of the survey findings are provided in Sections 3.1.1 and 3.1.2 for primary and secondary target species, respectively. Flight data for both primary and secondary target species are provided in Appendix 03 (note that all species were classified as primary during the surveys and the raw data are provided in this format; however, for the results below some species have been relegated to secondary status).

3.1.1 Primary Target Species

In total, seven primary target species were recorded flying within the study area on and around the Project Site during the survey period. Flight activity recorded for primary target species is summarised in **Table 3-1**.

Table 3-1
Number of Primary Target Species Flights from the Project Site for All VPs Combined – October 2017 to March 2018

Species	Number of flight lines by month							Total number of flight lines	Time at risk height* (s)	Cumulative number of flights
	Sep	Oct	Nov	Dec	Jan	Feb	Mar			
Common kestrel *Falco tinnunculus*	12	0	12	17	6	2	12	61	3,170	61
Common snipe *Gallinago gallinago*	0	0	5	5	2	3	0	15	155	34
European golden plover *Pluvialis apricaria*	0	0	4	4	0	9	0	17	2,860	838
Hen harrier *Circus cyaneus*	1	0	0	0	3	0	0	4	0	4
Merlin *Falco columbarius*	0	0	0	1	0	2	0	3	112	3
Northern lapwing *Vanellus vanellus*	0	0	0	0	0	0	1	1	93	1
Peregrine falcon *Falco peregrinus*	1	0	0	2	0	0	1	4	249	4
Total	**13**	**0**	**21**	**29**	**11**	**16**	**14**	**105**	**6,549**	**945**
* precautionary risk height assumed to be between 30 m – 180 m										

A summary of flight activity by species is presented below.

Common kestrel

Sixty-one common kestrel flights were recorded over the same number of flight lines during the flight activity surveys. The maximum number of flight lines was recorded in December 2017 (n=17). This species was recorded in all survey months except for October 2017.

Common snipe

Thirty-four common snipe flights were recorded over 15 flight lines during the flight activity surveys. Most flight lines consisted of single flights but there was one flight line consisting of 17 flights. The maximum number of flight lines was recorded in November and December 2017 (n=5 per month). This species was recorded in all survey months except for October 2017 and March 2019.

European golden plover

838 European golden plover flights were recorded over 17 flight lines during the flight activity surveys. The maximum number of flight lines was recorded in November and December 2017 (n=5 per month). Most of the flight lines were recorded from VP6 outside of the 500 m buffer. Flocks were up to 100 birds in size but again, these were outside the 500 m buffer. Only a few flight lines were inside this buffer and consisted typically of 2-3 flights per flight line.

Hen harrier

Four hen harrier flights were recorded over three flight lines during flight activity surveys. All flights were below potential collision heights and were of birds commuting over the forestry.

Merlin

Three merlin flight lines were recorded from VP6, consisting of one flight line in December 2017 and two in February 2018. All flight lines comprised of one flight per flight line. All observations were of birds commuting. None of these flight lines are within 500 m of the current Project site.

Northern lapwing

Only a single flight line of a single northern lapwing was recorded from VP3 in March 2018.

Peregrine falcon

Peregrine falcons were recorded in September and December 2017, and March 2019 only, with four flights recorded over four flight lines. Two of these flight lines were recorded from VP6 in areas now outside of the 500 m buffer surrounding the Project Site.

3.1.2 Secondary Species

Secondary species activity at the Project Site is summarised in **Table 3.3**. There were five secondary species recorded throughout the non-breeding season. Common buzzard was the most frequently recorded secondary species (in 66 five-minute periods out of a possible 3,228). It was also the most was the most numerous of the recorded secondary species, with three birds seen circling together.

Table 3-2
Secondary Species Activity Summary for All VPs Combined – September 2017 to March 2018

Species	Number of 5 min periods recorded	Peak count of birds recorded in any 5 min period	Comments
Carrion crow	1	1	
Common buzzard	66	3	
Grey heron	1	1	
Lesser black-backed gull	3	1	
Eurasian sparrowhawk	33	2	

3.2 Winter Transect Surveys

Table 3.3 shows the peak count for each species recorded during winter transect surveys split by month. It was not possible to distinguish between species recorded at different transects based on the raw data. Therefore, the species recorded include those both within and outside the survey area for the current Project Site.

Across all surveys there were 35 species recorded. Of these, the species with largest peak count in any given month was fieldfare (n=102 birds). Of particular interest are species red- or amber-listed under the current BoCCI scheme. These include common snipe, goldcrest *Regulus regulus*, common linnet *Linaria cannabina*, meadow pipit *Anthus pratensis*, redwing *Turdus iliacus*, common starling *Sturnus vulgaris* and Eurasian woodcock *Scolopax rusticola*.

Table 3-3
Peak Count of Species Recorded at Winter Transects by Month, October 2017 to March 2018

Species	Peak count			
	Nov	Dec	Jan	Feb
Common blackbird *Turdus merula*	17	10	10	10

Species	Peak count			
	Nov	Dec	Jan	Feb
Eurasian blue tit *Cyanistes caeruleus*	0	6	1	0
Eurasian bullfinch *Pyrrhula pyrrhula*	5	3	1	0
Common chaffinch *Fringilla coelebs*	1	1	2	4
Coal tit *Periparus ater*	4	18	20	15
Common snipe	0	5	14	2
Red crossbill *Loxia curvirostra*	23	49	6	2
Dunnock *Prunella modularis*	2	15	8	5
Fieldfare *Turdus pilaris*	2	0	102	30
Goldcrest	22	18	23	12
European goldfinch *Carduelis carduelis*	0	0	0	1
Great tit *Parus major*	0	0	2	1
Hooded crow *Corvus cornix*	4	7	4	1

Species	Peak count			
	Nov	Dec	Jan	Feb
Western jackdaw *Coloeus monedula*	7	0	0	0
Jack snipe *Lymnocryptes minimus*	0	1	2	0
Eurasian jay *Garralus glandarius*	0	1	0	0
Lesser redpoll *Acanthis cabaret*	0	24	0	0
Common linnet	0	1	2	0
Long-tailed tit *Aegithalos caudatus*	0	21	18	1
Eurasian magpie *Pica pica*	2	1	1	0
Meadow pipit	2	1	6	11
Mistle thrush *Turdus viscivorus*	2	2	4	0
White wagtail *Motacilla alba*	0	0	1	0
Northern raven	0	0	4	0
Redwing	1	15	4	5
Common reed bunting *Emberiza schoeniculus*	0	0	1	0

Species	Peak count			
	Nov	Dec	Jan	Feb
European robin *Erithacus rubecula*	25	27	44	19
Rook *Corvus frugilegus*	48	20	35	0
Eurasian siskin *Spinus spinus*	0	0	17	0
Song thrush *Turdus philomelos*	3	2	8	1
Common starling	60	5	100	0
Eurasian treecreeper *Certhia familiaris*	0	3	0	1
Eurasian woodcock	1	1	1	0
Common wood pigeon *Columba palumbus*	0	27	6	0
Eurasian wren *Troglodytes troglodytes*	10	28	16	10

4.0 Conclusions and Summary

A range of ornithology surveys were carried out at the Project Site during the 2017/18 non-breeding season. These were:

- Flight activity (VP) surveys; and
- Winter transect surveys.

The following primary target species were recorded during flight activity surveys at the Project Site:

- Common kestrel*;*
- Northern lapwing*;*
- Peregrine falcon;
- Hen harrier;
- Merlin;
- Common snipe; and
- Eurasian woodcock.

The most frequent flight activity during the breeding season was by common kestrel (61 flight lines), with other target species activity less frequent. The next most frequently recorded species was European golden plover (17 flight lines). Most of the European golden plover flight lines were recorded in an area that is no longer within the 500 m survey buffer surrounding the Project Site. The same is true for all merlin flight lines recorded.

Thirty-five species were recorded during winter transect surveys. Those of conservation concern included:

- Common linnet;
- Common snipe;
- Common starling;
- Eurasian woodcock;
- Goldcrest;
- Meadow pipit; and
- Redwing.

It is likely that the linnet and redwing use the rough grasslands, hedgerow and scrub habitats for foraging. Common snipe, common starling and meadow pipit are likely to use improved agricultural grassland for foraging, with Eurasian woodcock and goldcrest favouring the conifer plantations present.

It was not possible to separate the transect survey results according to survey area and one of the survey areas relates to an area that is no longer part of the Project Site; therefore, the peak counts obtained will likely overestimate abundance for the current Project Site.

5.0 Legal and Conservation Status

Table 4-1 summarises the legal and conservation status of the primary and secondary target species recorded during the range of ornithology surveys mentioned above, along with any other red- or amber-listed passerines. All Irish bird species are afforded general protection by the Wildlife Acts 2000 (as amended).

Table 5-1
Legal and Conservation Status of Target Species

Primary or Secondary Target	Species (BTO code)	Legal & Conservation Status in Ireland
Primary	Common kestrel	BoCCI4 Red
	Northern lapwing	BoCCI4 Red
	Peregrine falcon	Annex 1; BoCCI4 Green
	Eurasian woodcock	BoCCI4 Red
	Common snipe	BoCCI4 Red
	Merlin	Annex 1; BoCCI4 Amber
	Hen harrier	Annex 1; BoCCI4 Amber
Secondary	Carrion crow	BoCCI4 Green
	Common buzzard	BoCCI4 Green
	Grey heron	BoCCI4 Green
	Lesser black-backed gull	BoCCI4 Amber
	Eurasian sparrowhawk	BoCCI4 Green
Red- or amber-listed passerines	Common linnet	BoCCI4 Amber
	Common starling	BoCCI4 Amber
	Goldcrest	BoCCI4 Amber
	Meadow pipit	BoCCI4 Red
	Redwing	BoCCI4 Red
	Key	Annex 1 – the species is listed in Annex 1 of the EC Birds Directive; and
		BoCCI4 status (green, amber or red) – indicates the current Birds of Conservation Concern in Ireland[4] status category.

6.0 Figures

650000 655000 660000

690000 685000

N

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13

1 2 3 4 5 6 7

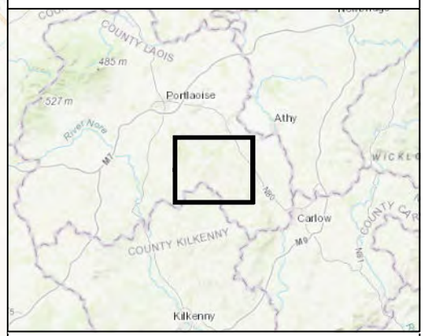
0 1 2
Kilometres

NOTES

1. The ZTV is calculated with a surface offset 30m & from a viewing height of 1.8m above ground level. The terrain model is derived from EU-DEM data with a vertical accuracy of ± 7m. The ZTV was calculated using ArcMAP 10.5.1 software.
2. Vantage Points 5 & 6 Cover an area of the site which was included as part of a previous design iteration but has since been removed.

LEGEND

- Wind Farm Site Boundary
- Wind Farm Site Boundary 500 m Buffer
- Proposed Turbine Layout
- Vantage Point
- Vantage Point 2 km Viewing Arc
- Area Visible from VP1
- Area Visible from VP2
- Area Visible from VP3
- Area Visible from VP4
- Area Visible from VP5
- Area Visible from VP6
- Area Visible from VP7



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SLR
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN D14 N2Y7
IRELAND
T: 0129 64667
www.slrconsulting.com

COOLGLASS WIND FARM

BIRD SURVEY REPORT
NON-BREEDING SEASON 2017/18

VANTAGE POINT LOCATIONS & VIEWING ARCS

FIGURE 1

Scale 1:45,000 @ A3

Date NOVEMBER 2022

02036.00787.0120.0 Vantage Point Locations and Viewing Arcs

655000

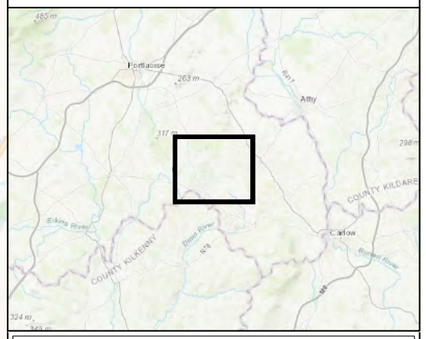
660000

685000

N

LEGEND

- Wind Farm Site Boundary
- Wind Farm Site Boundary 500 m Buffer
- Proposed Turbine Layout
- Vantage Point
- Dropped Cluster Transect Route
- North Cluster Transect Route



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SLR
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN D14 N2Y7
IRELAND
T: 0129 64667
www.slrconsulting.com

COOLGLASS WIND FARM

BIRD SURVEY REPORT
NON-BREEDING SEASON 2017/18

WINTER TRANSECT SURVEY

FIGURE 2

Scale 1:30,000 @ A3

Date NOVEMBER 2022

0 1 2

Kilometres

02036.00787.0134.0 Winter Transect Surveys

650000 655000 660000

690000 685000

N

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13

1 2 3 4 5 6 7

0 1 2

Kilometres

LEGEND

- Wind Farm Site Boundary
- Wind Farm Site Boundary 500 m Buffer
- Proposed Turbine Layout
- Vantage Point

Species

- Hen Harrier
- Kestrel
- Merlin
- Peregrine

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SLR
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN D14 N2Y7
IRELAND
T: 0129 64667
www.slrconsulting.com

COOLGLASS WIND FARM

BIRD SURVEY REPORT
NON-BREEDING SEASON 2017/18

FLIGHT LINES RAPTORS

FIGURE 3.1

Scale 1:45,000 @ A3

Date NOVEMBER 2022

02036.00787.0121.0 Flight Lines Raptors

650000 655000 660000

690000 685000

N

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13

1 2 3 4 5 6 7

0 1 2
Kilometres

LEGEND

- Wind Farm Site Boundary
- Wind Farm Site Boundary 500 m Buffer
- Proposed Turbine Layout
- Vantage Point

Species

- Golden Plover
- Lapwing
- Snipe

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SLR
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN D14 N2Y7
IRELAND
T: 0129 64667
www.slrconsulting.com

COOLGLASS WIND FARM

BIRD SURVEY REPORT
NON-BREEDING SEASON 2017/18

FLIGHT LINES WADERS

FIGURE 3.2

Scale 1:45,000 @ A3

Date NOVEMBER 2022

02036.00787.0122.0 Flight Lines Waders

APPENDIX I

Survey dates, times and observers[6]

[6] Surveyor initials: BOD = Ben O'Dwyer, BP = Brian Porter, DOH = Donna O'Halloran, SR = Seán Ronayne, JK = Jon Kearney

Table AI-1
Details of flight activity surveys undertaken from Vantage Point 1

Date	Surveyor	Start	End	Survey Duration (hrs : mins)	Comments
07/09/2017	JK	11:02	14:02	03:00	
07/09/2017	JK	14:30	17:30	03:00	
07/09/2017	JK	11:02	14:02	03:00	
15/09/2017	BOD	09:20	12:20	03:00	
15/09/2017	BOD	12:20	15:20	03:00	
25/10/2017	BOD	12:00	15:00	03:00	
25/10/2017	BOD	15:00	18:00	03:00	
21/11/2017	BOD	09:30	13:25	03:00	09:30-10:30, 11:00-11:30, 11:45-12:20, 12:30-13:35, Interrupted due to bad weather.
21/11/2017	BOD	13:25	16:25	03:00	
08/12/2017	BOD	09:55	12:55	03:00	
08/12/2017	BOD	12:55	15:55	03:00	
19/01/2018	BOD	09:45	12:45	03:00	
19/01/2018	BOD	12:45	15:45	03:00	
07/03/2018	BP	14:40	17:40	03:00	
08/03/2018	BP	07:25	10:25	03:00	
29/03/2018	BOD	10:00	13:00	03:00	
29/03/2018	BOD	07:00	10:00	03:00	
Total Hours				**51:00**	

Table AI-2
Details of flight activity surveys undertaken from Vantage Point 2

Date	Surveyor	Start	End	Survey Duration (hrs : mins)	Comments
08/09/2017	JK	10:23	13:23	03:00	
08/09/2017	JK	14:05	17:05	03:00	
26/10/2017	BOD	10:00	13:00	03:00	
26/10/2017	BOD	13:00	16:00	03:00	
05/12/2017	DOH	09:16	12:16	03:00	New site.
05/12/2017	DOH	12:45	15:45	03:00	New site.
10/01/2018	DOH	10:00	16:30	06:30	Sunrise: 08:31, Sunset: 16:35. Time includes 30-minute break
23/01/2018	DOH	09:23	15:57	06:34	Time includes 30-minute break.
07/03/2018	BP	11:00	14:00	03:00	
09/03/2018	BP	11:40	14:40	03:00	
27/03/2018	BP	07:40	10:40	03:00	
27/03/2018	BP	14:50	17:50	03:00	
Total Hours				**43:04**	Excluding break

Table AI-3
Details of flight activity surveys undertaken from Vantage Point 3

Date	Surveyor	Start	End	Survey Duration (hrs : mins)	Comments
02/11/2017	BP	12:20	15:20	03:00	
03/11/2017	BP	12:50	15:50	03:00	
01/12/2017	DOH	10:00	13:00	03:00	
01/12/2017	DOH	13:15	16:15	03:00	
19/12/2017	DOH	10:30	13:30	03:00	30 minutes surveyable due to fog.
11/01/2018	DOH	10:00	16:30	06:30	Due to low lying cloud, only 3 hours surveyable. Sunset: 16:35.
18/01/2018	BOD	10:40	13:40	03:00	
22/01/2018	DOH	10:30	17:00	06:30	Including 30 minute break. Sunset: 4:55.
08/03/2018	BP	11:10	14:10	03:00	
24/03/2018	BP	15:00	18:00	03:00	
24/03/2018	BP	11:20	14:20	03:00	
Total Hours				**39:00**	Excluding breaks

Table AI-4
Details of flight activity surveys undertaken from Vantage Point 4

Date	Surveyor	Start	End	Survey Duration (hrs : mins)	Comments
01/11/2017	BP	12:00	15:00	03:00	
02/11/2017	BP	08:30	11:30	03:00	
04/12/2017	BOD	10:20	13:20	03:00	
04/12/2017	BOD	13:20	16:20	03:00	
18/12/2017	SR	09:30	12:00	02:30	
10/01/2018	JK	10:15	13:15	03:00	
10/01/2018	JK	13:45	16:45	03:00	
24/01/2018	DOH	09:10	12:10	03:00	
24/01/2018	DOH	12:50	15:50	03:00	
27/02/2018	BOD	10:05	13:05	03:00	
27/02/2018	BOD	13:20	16:20	03:00	
Total Hours				**32:30**	

Table AI-5
Details of flight activity surveys undertaken from Vantage Point 5

Date	Surveyor	Start	End	Survey Duration (hrs : mins)	Comments
28/09/2017	BOM	10:00	16:00	06:00	
23/11/2017	SR	07:50	10:50	03:00	Sunrise: 08:05
23/11/2017	SR	11:20	14:20	03:00	Sunset: 16:24
06/12/2017	SR	12:55	15:55	03:00	Sunset: 16:14
06/12/2017	SR	09:25	12:25	03:00	Sunrise: 08:27
24/01/2018	SR	08:30	11:30	03:00	Sunrise: 08:24
24/01/2018	SR	12:00	15:00	03:00	Sunset: 16:58
06/02/2018	SR	08:00	11:00	03:00	Sunrise: 08:04
06/02/2018	SR	11:30	14:30	03:00	Sunset: 17:21
Total Hours				**30:00**	

Table AI-6
Details of flight activity surveys undertaken from Vantage Point 6

Date	Surveyor	Start	End	Survey Duration (hrs : mins)	Comments
01/11/2017	BP	08:10	11:10	03:00	
03/11/2017	BP	09:00	12:00	03:00	
21/11/2017	SR	09:00	12:00	03:00	Sunrise: 08:04
21/11/2017	SR	12:30	15:30	03:00	Sunset: 16:26
07/12/2017	SR	08:40	11:40	03:00	Sunrise: 08:28
07/12/2017	SR	12:10	15:10	03:00	Sunrise: 16:13
23/01/2018	SR	09:30	12:30	03:00	Sunrise: 08:25
23/01/2018	SR	13:00	16:00	03:00	Sunset: 16:56
05/02/2018	SR	12:00	15:00	03:00	Sunset: 17:19
05/02/2018	SR	08:30	11:30	03:00	Sunrise: 08:06
28/03/2018	BOD	09:50	12:50	03:00	
28/03/2018	BOD	13:30	16:30	03:00	Brief hail showers.
Total Hours				**36:00**	

Table AI-7
Details of flight activity surveys undertaken from Vantage Point 7

Date	Surveyor	Start	End	Survey Duration (hrs : mins)	Comments
29/07/2017	BOM	09:00	15:00	06:00	
20/11/2017	BOD	10:30	13:30	03:00	
20/11/2017	BOD	13:30	16:30	03:00	
07/12/2017	BOD	10:15	13:15	03:00	
07/12/2017	BOD	13:15	16:15	03:00	
18/01/2018	BOD	14:00	17:00	03:00	
30/01/2018	BOD	11:20	14:20	03:00	
07/03/2018	BP	07:30	10:30	03:00	
09/03/2018	BP	08:05	11:05	03:00	
24/03/2018	BP	07:50	10:50	03:00	
27/03/2018	BP	11:15	14:15	03:00	
Total Hours				**36:00**	

Table AI-8
Details of winter bird transect surveys undertaken during the winter 2017/18 season

Date	Surveyor	Transect	Start	End	Survey Duration (hrs : mins)	Comments
22/11/2017	SR	No location on survey sheet	14:10	14:50	00:40	Second half of survey cancelled due to heavy rain, completed on the 23/11/2017.
22/11/2017	SR	No location on survey sheet	10:12	12:51	02:39	
23/11/2017	SR	No location on survey sheet	11:45	12:20	00:35	Completed the second half of survey from the 22/11/2017 that was cancelled due to heavy rain.
08/12/2017	SR	Southern Site	11:00	12:15	01:15	
08/12/2017	SR	Northern Site	08:40	10:05	01:25	
25/01/2018	SR	1	08:30	09:45	01:15	
25/01/2018	SR	2	10:30	11:30	01:00	
07/02/2018	SR	1	Not recorded	Not recorded	Not recorded	
07/02/2018	SR	2	Not recorded	Not recorded	Not recorded	
	Total Hours				**08:49**	

APPENDIX II

Weather Data[7]

[7] Surveyor initials: BOD = Ben O'Dwyer, BP = Brian Porter, DOH = Donna O'Halloran, SR = Seán Ronayne, JK = Jon Kearney

Table AII-1
Weather data collected during flight activity surveys undertaken at VP1

Date	Surveyor	Start	End	Wind Direction	Wind Speed (Beaufort)	Rain	Cloud Cover (%)	Visibility
07/09/2017	JK	11:02	14:02	N/A	2	2	66-100	5
07/09/2017	JK	14:30	17:30	N/A	3	2	66-100	5
07/09/2017	JK	11:02	14:02	N/A	2	2	87.5	5
15/09/2017	BOD	09:20	12:20	N	2-3	1	33-100	5
15/09/2017	BOD	12:20	15:20	N	2-3	1	33-100	5
25/10/2017	BOD	12:00	15:00	NW	1-2	1	33-66	5
25/10/2017	BOD	15:00	18:00	W	1-2	1-2	66	5
21/11/2017	BOD	09:30	13:25	SW	5-6	3	100	3-5
21/11/2017	BOD	13:25	16:25	SW	4-5	1	100	3-5
08/12/2017	BOD	09:55	12:55	W	0-2	1	0-33	5
08/12/2017	BOD	12:55	15:55	NW	1-2	1	0-100	5
19/01/2018	BOD	09:45	12:45	W	3-4	1-2	50-100	5
19/01/2018	BOD	12:45	15:45	W	3-4	1-3	33-66	5
07/03/2018	BP	14:40	17:40	SW	2	1	0-100	5
08/03/2018	BP	07:25	10:25	SW	2-3	1	33-100	5
29/03/2018	BOD	10:00	13:00	SE	0-1	3	25-100	5
29/03/2018	BOD	07:00	10:00	SE	1-2	1-2	66-100	3-4

Rain/ Precipitation

None	1
Drizzle mist	2
Light showers	3
Heavy showers	4

Visibility

Poor (<1km)	3
Moderate (1-2km)	4
Good (>2km)	5

Table AII-2
Weather data collected during flight activity surveys undertaken at VP2

Date	Surveyor	Start	End	Wind Direction	Wind Speed (Beaufort)	Rain	Cloud Cover (%)	Visibility
08/09/2017	JK	10:23	13:23	SW	1	1-3	66-100	5
08/09/2014	JK	14:05	17:05	SW	1	1-3	66-100	5
26/10/2017	BOD	10:00	13:00	NW	0-1	1-2	100	4-5
26/10/2017	BOD	13:00	16:00	Various	0-1	2	100	3-5
05/12/2017	DOH	09:16	12:16	SW	0-1	1	100	5
05/12/2017	DOH	12:45	15:45	SW	0-2	2	100	5
10/01/2018	DOH	10:00	16:30		0	1	33-100	5
23/01/2018	DOH	09:23	15:57	SW	4	1-2	66-100	5
07/03/2018	BP	11:00	14:00	SW	2-3	1	0-100	5
09/03/2018	BP	11:40	14:40	E	1-2	1	100	5
27/03/2018	BP	07:40	10:40	W	3-4	1	66-100	5
27/03/2018	BP	14:50	17:50	WNW	3-4	1-2	66-100	5

Rain/ Precipitation

None	1
Drizzle mist	2
Light showers	3
Heavy showers	4

Visibility

Poor (<1km)	3
Moderate (1-2km)	4
Good (>2km)	5

Table AII-3
Weather data collected during flight activity surveys undertaken at VP3

Date	Surveyor	Start	End	Wind Direction	Wind Speed (Beaufort)	Rain	Cloud Cover (%)	Visibility
02/11/2017	BP	12:20	15:20	NW-W	0-1	1	100	5
03/11/2017	BP	12:50	15:50	SW	1-2	1	100	5
01/12/2017	DOH	10:00	13:00	N	1	1	0-33	5
01/12/2017	DOH	13:15	16:15	N	2	1	0-100	5
19/12/2017	DOH	10:30	13:30	W-NW	1	1	0-33	5
11/01/2018	DOH	10:00	16:30	Not observed	0-1		0-33	5
18/01/2018	BOD	10:40	13:40	Not observed	3-4	1	33-100	5
22/01/2018	DOH	10:30	17:00	Not observed	2-3	1-2	100	5
08/03/2018	BP	11:10	14:10	WSW	2	1	66-100	5
24/03/2018	BP	15:00	18:00	N	0-2	1	33-100	5
24/03/2018	BP	11:20	14:20	NNW-NW	1-2	1	33-66	5

Rain/ Precipitation

None	1
Drizzle mist	2
Light showers	3
Heavy showers	4

Visibility

Poor (<1km)	3
Moderate (1-2km)	4
Good (>2km)	5

Table AII-4
Weather data collected during flight activity surveys undertaken at VP4

Date	Surveyor	Start	End	Wind Direction	Wind Speed (Beaufort)	Rain	Cloud Cover (%)	Visibility
01/11/2017	BP	12:00	15:00	SSW-SW	1	1	0-66	5
02/11/2017	BP	08:30	11:30	N-NW	0-1	1	66-100	5
04/12/2017	BOD	10:20	13:20	N	0-1	2	66-100	4-5
04/12/2017	BOD	13:20	16:20	N	1	1	100	5
18/12/2017	SR	09:30	12:00	S	1	1	33-66	5
10/01/2018	JK	10:15	13:15	Not observed	1	1	66-100	5
10/01/2018	JK	13:45	16:45	Not observed	1	1	66-100	5
24/01/2018	DOH	09:10	12:10	S-SW	3-5	1-2	0-100	5
24/01/2018	DOH	12:50	15:50	S-SW	3-5	1-2	0-100	5
27/02/2018	BOD	10:05	13:05	NNE	3-4		33-100	4-5
27/02/2018	BOD	13:20	16:20	NNE	3-5		0-100	3-5

Rain/ Precipitation

None	1
Drizzle mist	2
Light showers	3
Heavy showers	4

Visibility

Poor (<1km)	3
Moderate (1-2km)	4
Good (>2km)	5

Table AII-5
Weather data collected during flight activity surveys undertaken at VP5

Date	Surveyor	Start	End	Wind Direction	Wind Speed (Beaufort)	Rain	Cloud Cover (%)	Visibility
28/09/2017	BOM	10:00	16:00	SW	3	1	N/A	5
23/11/2017	SR	07:50	10:50	WSW	4	4	33-66	5
23/11/2017	SR	11:20	14:20	WNW	3	4	0-33	5
06/12/2017	SR	12:55	15:55	SSW	4	2	66-100	5
06/12/2017	SR	09:25	12:25	S	5	2	66-100	5
24/01/2018	SR	08:30	11:30	WNW	4	2	66-100	5
24/01/2018	SR	12:00	15:00	SW	4	1	33-66	5
06/02/2018	SR	08:00	11:00	Not observed	1-2	1	33-66	5
06/02/2018	SR	11:30	14:30	Not observed	2-3	1	33-66	5

Rain/ Precipitation

None	1
Drizzle mist	2
Light showers	3
Heavy showers	4

Visibility

Poor (<1km)	3
Moderate (1-2km)	4
Good (>2km)	5

Table AII-6
Weather data collected during flight activity surveys undertaken at VP6

Date	Surveyor	Start	End	Wind Direction	Wind Speed (Beaufort)	Rain	Cloud Cover (%)	Visibility
01/11/2017	BP	08:10	11:10	S	0-1	1	66-100	5
21/11/2017	SR	09:00	12:00	Not observed	2	2-3	100	5
21/11/2017	SR	12:30	15:30	Not observed	3	1	100	4
07/12/2017	SR	08:40	11:40	W	3	1	0-33	5
07/12/2017	SR	12:10	15:10	W	3	1	33-66	5
23/01/2018	SR	09:30	12:30	SW	4	1-3	66-100	5
23/01/2018	SR	13:00	16:00	SW	3-4	1	33-66	5
05/02/2018	SR	12:00	15:00	Not observed	1	1	66-100	5
05/02/2018	SR	08:30	11:30	Not observed	1	1	66-100	5
28/03/2018	BOD	09:50	12:50	NW	1-3	1	66-100	5
28/03/2018	BOD	13:30	16:30	NW	2-3	1	33-66	4-5
03/11/2017	BP	09:00	12:00	SW	0-1	1	87.5-100	5

Rain/ Precipitation

None	1
Drizzle mist	2
Light showers	3
Heavy showers	4

Visibility

Poor (<1km)	3
Moderate (1-2km)	4
Good (>2km)	5

Table AII-7
Weather data collected during flight activity surveys undertaken at VP7

Date	Surveyor	Start	End	Wind Direction	Wind Speed (Beuafort)	Rain	Cloud Cover (%)	Visibility
29/09/2017	BOM	09:00	15:00	SW	3	1	N/A	5
20/11/2017	BOD	10:30	13:30	W	3	1	100	4-5
20/11/2017	BOD	13:30	16:30	W	2-3	2	100	3-5
07/12/2017	BOD	10:15	13:15	W	0-5	1-3	33-66	5
07/12/2017	BOD	13:15	16:15	W	5-6		33	5
18/01/2018	BOD	14:00	17:00	Not observed	4-5	1-2	66-100	5
30/01/2018	BOD	11:20	14:20	W	1-3	1	33-100	5
07/03/2018	BP	07:30	10:30	SW	2	1	0-100	5
09/03/2018	BP	08:05	11:05	E	0-1	1	66-100	5
24/03/2018	BP	07:50	10:50	NNW	2	1	0-66	5
27/03/2018	BP	11:15	14:15	W	3-4	1-2	66-100	5

Rain/ Precipitation

None	1
Drizzle mist	2
Light showers	3
Heavy showers	4

Visibility

Poor (<1km)	3
Moderate (1-2km)	4
Good (>2km)	5

Table AII-8
Weather data collected during winter bird transect surveys during the winter 2017/18 season

Date	Surveyor	Transect	Start	End	Wind Direction	Wind Speed	Rain	Cloud Cover (%)	Visibility
22/11/2017	SR	No location on survey sheet.	14:10	14:50	Not observed	2	3	100	4-5
22/11/2017	SR	No location on survey sheet.	10:12	12:51	Not observed	5	3	100	3-5
23/11/2017	SR	No location on survey sheet.	11:45	12:20	Not observed	2	1	33-66	5
08/12/2017	SR	Southern Site	11:00	12:15	Not observed	2-5	1-3	33	5
08/12/2017	SR	Northern Site	08:40	10:05	Not observed	3	1	66-100	5
25/01/2018	SR	1	08:30	09:45	Not observed	3-5	3	33-100	5
25/01/2018	SR	2	10:30	11:30	Not observed	3-5	1	0-100	5
07/02/2018	SR	1	Not recorded	Not recorded	Not observed	2-3	1	66-100	5
07/02/2018	SR	2	Not recorded	Not recorded	Not observed	2-3	1	0-66	5

Rain/ Precipitation

None	1
Drizzle mist	2
Light showers	3
Heavy showers	4

Visibility

Poor (<1km)	3
Moderate (1-2km)	4
Good (>2km)	5

APPENDIX III

Flight activity survey data[8]

[8] BTO codes: BZ = common buzzard, K. = common kestrel, SH = Eurasian sparrowhawk, LB = lesser black-backed gull, C. = carrion crow, GP = European golden plover, HH = hen harrier, SN = common snipe, L. = northern lapwing, H. = grey heron, PE = peregrine falcon and ML = merlin.

Table AIII-1
Target species recorded during flight activity surveys undertaken at VP1

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
07/09/2017	JK	2	K.	1	15:05			205	205				
15/09/2017	BOD	2	HH	1	11:31	Y	Y	3 (IN), 19 (OUT)	3 (IN), 19 (OUT)				
25/10/2017	BOD	1	BZ	1	13:59		Y	136	136				
25/10/2017	BOD	2	BZ	1	14:08		Y	24	24				
25/10/2017	BOD	3	BZ	1	16:25		Y	37	37				
25/10/2017	BOD	4	BZ	2	16:27		Y	208	187	21			
25/10/2017	BOD	5	BZ	2	17:15		Y	30	30				
21/11/2017	BOD	1	BZ	1	09:31		Y	5	5				
21/11/2017	BOD	2	BZ	1	09:40	Y	Y	23 (IN), 23 (OUT)	23 (IN), 23 (OUT)				
21/11/2017	BOD	3	K.	1	12:53		Y	10	10				
21/11/2017	BOD	4	BZ	1	13:37		Y	18	18				
21/11/2017	BOD	5	BZ	1	13:51		Y	16	16				
21/11/2017	BOD	6	BZ	1	14:01		Y	7	7				
21/11/2017	BOD	7	K.	1	15:09		Y	145	130	15			
21/11/2017	BOD	8	K.	1	15:51		Y	270	270				
21/11/2017	BOD	9	K.	1	16:03		Y	75	75				
08/12/2017	BOD	1	BZ	2	13:21	Y	Y	16 (IN), 20 (OUT)	16 (IN), 20 (OUT)				
08/12/2017	BOD	2	BZ	1	14:37	Y		50	50				
08/12/2017	BOD	3	BZ	2	14:41	Y		32	32				
08/12/2017	BOD	4	BZ	1	15:13		Y	18	18				
08/12/2017	BOD	5	BZ	1	15:16		Y	15	15				
19/01/2018	BOD	1	SH	1	10:10		Y	7	7				
19/01/2018	BOD	2	BZ	1	11:10		Y	18	18				
19/01/2018	BOD	3	BZ	1	11:35		Y	3	3				
19/01/2018	BOD	1	BZ	1	12:52		Y	52	52				

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
19/01/2018	BOD	2	BZ	1	13:15		Y	4	4				
08/03/2018	BP	13	BZ	1	08:52	Y	Y	47 (IN), 34 (OUT)	34 (IN)	13 (IN), 10 (OUT)	24 (IN)		
08/03/2018	BP	14	LB	1	09:47		Y	45			10	35	
29/03/2018	BOD	1	BZ	1	11:35		Y	7	7				
29/03/2018	BOD	2	BZ	1	11:37		Y	12	12				
29/03/2018	BOD	3	BZ	3	12:35		Y	445		44	45	222	134

Table AIII-2
Target species recorded during flight activity surveys undertaken at VP2

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
08/09/2014	JK	1	K.	1	12:14	Y		40	40				
26/10/2017	BOD	1	BZ	1	10:42		Y	1	1				
26/10/2017	BOD	2	BZ	1	10:43		Y	30	30				
26/10/2017	BOD	3	BZ	1	10:45		Y	10	10				
26/10/2017	BOD	4	BZ	1	11:16		Y	71	71				
05/12/2017	DOH	1	BZ	1	13:33	Y		48	48				
10/01/2018	DOH	2	SH	1	14:06	Y	Y	55	55				
10/01/2018	DOH	3	SH	1	14:06	Y	Y	45	45				
10/01/2018	DOH	1	SH	1	10:57		Y	10	10				
07/03/2018	BP	10	BZ	1	12:04	Y		110			5	105	
07/03/2018	BP	11	BZ	1	12:55	Y	Y	273 (IN), 46 (OUT)				62 (IN), 21 (OUT)	211 (IN), 25 (OUT)
07/03/2018	BP	12	K.	1	13:02		Y	112			18	94	
09/03/2018	BP	13	BZ	1	11:47	Y		284		4	28	251	
27/03/2018	BP	55	BZ	1	14:50	Y		63	63				
27/03/2018	BP	48	K.	1	09:04	Y		0					

Table AIII-3
Target species recorded during flight activity surveys undertaken at VP3

Date	Surveyor	Obs. No	Species	Num.	Obs. Time	Inside site	Outside	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
02/11/2017	BP	10	SN	1	14:36	N/A	N/A						
02/11/2017	BP	7	SN	1	12:56	Y	27	2	1	1	23		
02/11/2017	BP	11	C.	1	14:48	Y	Y	96 (IN), 92 (OUT)	70 (IN), 8 (OUT)	5 (IN), 2 (OUT)	5 (IN), 2 9OUT)	16 (IN), 80 (OUT)	
02/11/2017	BP	12	K.	1	14:49	Y		32	32				
03/11/2017	BP	19	GP	2	14:58	Y		42	22	10	10		
03/11/2017	BP	20	K.	1	15:16	Y		16	16				
01/12/2017	DOH	1	BZ	1	11:46	Y		3	3				
19/12/2017	DOH	1	BZ	1	11:46	Y		5	5				
11/01/2018	DOH	1	HH	1	15:33	Y		35	35				
11/01/2018	DOH	2	HH	1	15:38	Y	Y	20 (IN), 10 (OUT)	20 (IN), 10 (OUT)				
22/01/2018	DOH	1	SN	1	12:53	Y		6	6				
22/01/2018	DOH	2	BZ	1	14:08	Y		39	39				
22/01/2018	DOH	3	BZ	1	14:39	Y		77	46	31			
08/03/2018	BP	15	K.	1	12:12		Y	282	5	1	107	169	
08/03/2018	BP	17	K.	1	13:27		Y	210	194	16			
08/03/2018	BP	18	BZ	1	14:06	Y		114				114	
08/03/2018	BP	19	L.	1	14:54		Y	93				93	
08/03/2018	BP	21	BZ	1	15:10		Y	172		14	39	119	
08/03/2018	BP	20	SH	1	15:08		Y	38	38				
08/03/2018	BP	22	K.	1	16:07		Y	296					
08/03/2018	BP	23	K.	1	16:23		Y	238	2	1	1	234	
08/03/2018	BP	24	BZ	1	16:47		Y	417	274	40	40	63	
08/03/2018	BP	43	K.	1	15:09		Y	193					
24/03/2018	BP	44	BZ	2	15:29	Y	Y	220 (IN), 155 (OUT)				220 (IN), 25 (OUT)	130 (OUT)
24/03/2018	BP	45	K.	1	15:54		Y	73				73	
24/03/2018	BP	46	K.	1	16:23	Y		38			4	34	
24/03/2018	BP	47	BZ	1	16:27		Y	146				146	

Date	Surveyor	Obs. No	Species	Num.	Obs. Time	Inside site	Outside	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
24/03/2018	BP	37	BZ	3	11:32		Y	185	24	15	15	131	
24/03/2018	BP	38	BZ	1	11:44		Y	90				90	
24/03/2018	BP	39	SH	1	11:50		Y	410				56	354
24/03/2018	BP	41	SH	1	13:57		Y	132			11	121	
24/03/2018	BP	42	K.	1	14:09		Y	48				48	

Table AIII-4
Target species recorded during flight activity surveys undertaken at VP4

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
01/11/2017	BP	3	K.	1	12:50		Y	22	22				
02/11/2017	BP	5	K.	1	08:38		Y	34	34				
04/12/2017	BOD	1	BZ	1	12:30		Y	95	95				
18/12/2017	SR	1	GP	24	11:55			106					106
10/01/2018	JK	1	BZ	1	11:40	Y		320	320				
10/01/2018	JK	2	BZ	1	14:02		Y	180	180				
10/01/2018	JK	3	BZ	1	14:03	Y	Y	120 (IN), 260 (OUT)	120 (IN),260 (OUT)	30 (IN)			
24/01/2018	DOH	1	H.	1	09:16		Y	30	30				
24/01/2018	DOH	2	HH	1	12:56		Y	10	10				
24/01/2018	DOH	3	BZ	1	12:59	Y	Y	27	7 (IN), 20 (OUT)				
24/01/2018	DOH	4	BZ	1	12:45	Y		4260	4260				
24/01/2018	DOH	5	BZ	1	13:56	Y		32	32				
24/01/2018	DOH	6	K.	1	14:29	Y		17	17				
27/02/2018	BOD	3	K.	1	14:04		Y	5	5				
27/02/2018	BOD	1	BZ	1	10:39		Y						
27/02/2018	BOD	2	BZ	1	11:44		Y	11	11				

Table AIII-5
Target species recorded during flight activity surveys undertaken at VP5

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
28/09/2017	BOM	2	K.	1	13:23		Y	32	32				
28/09/2017	BOM	3	PE	1	13:25		Y	118	50	42	6	20	
23/11/2017	SR	1	K.	1	13:46		Y	176	5	10	5	156	
23/11/2017	SR	2	SN	1	14:23		Y	5	5				
23/11/2017	SR	3	K.	1	14:49		Y	236	5	5	20	206	
23/11/2017	SR	4	K.	1	14:56		Y	41			41		
23/11/2017	SR	5	K.	1	15:00		Y	209	25		184		
06/12/2017	SR	1	SN	1	10:29		Y	15	15				
06/12/2017	SR	2	K.	1	10:45		Y	50			50		
06/12/2017	SR	3	K.	1	10:59		Y	5	5				
06/12/2017	SR	4	K.	1	11:02		Y	112			112		
06/12/2017	SR	5	GP	11	11:02		Y	20				20	
06/12/2017	SR	6	SN	2	11:06		Y	5	5				
06/12/2017	SR	7	K.	1	11:10		Y	171	121	50			
06/12/2017	SR	8	K.	1	11:13		Y	179	20	159			
06/12/2017	SR	9	K.	1	12:02		Y	65	65				
06/12/2017	SR	10	K.	1	12:08		Y	27	27				
06/12/2017	SR	11	K.	1	12:14		Y	128			128		
06/12/2017	SR	12	K.	1	13:25	Y		100				100	
06/12/2017	SR	13	K.	1	13:29		Y	127	87	40			
06/12/2017	SR	14	K.	1	13:30		Y	30	30				
06/12/2017	SR	15	K.	1	13:44		Y	28	28				
06/12/2017	SR	16	K.	1	13:46		Y	71		71			
06/12/2017	SR	17	SH	1	13:53		Y	45	45				
06/12/2017	SR	18	K.	1	13:58		Y	204		80	124		
06/12/2017	SR	19	K.	1	15:07		Y	20	20				
06/12/2017	SR	20	K.	1	15:24		Y	180		180			
24/01/2018	SR	1	SN	1	08:41		Y	5	5				
24/01/2018	SR	2	BZ	1	10:41	Y		55			55		

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
24/01/2018	SR	3	SH	1	13:42	Y		101		101			
24/01/2018	SR	4	K.	1	13:43		Y	960	960				
06/02/2018	SR	1	SN	3	08:50		Y	15	15				
06/02/2018	SR	2	LB	1	09:30		Y	93		93			
06/02/2018	SR	3	K.	1	12:51		Y	26	26				

Table AIII-6
Target species recorded during flight activity surveys undertaken at VP6

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
01/11/2017	BP	1	GP	33	09:32	Y	Y	196 (IN), 155 (OUT)		74 (IN)		122 (IN), 155 (OUT)	
03/11/2017	BP	14	GP	42	09:03	Y		19	19				
03/11/2017	BP	15	GP	42	09:08	Y	Y	285 (IN), 710 (OUT)				285 (IN), 710 (OUT)	
03/11/2017	BP	16	BZ	1	10:01	Y	Y	37 (IN), 26 (OUT)	37 (IN), 26 (OUT)				
21/11/2017	SR	1	SN	1	11:45		Y	14					
21/11/2017	SR	2	SN	1	11:50		Y	68					
21/11/2017	SR	3	SN	17	11:55	Y	Y	131					30 (IN), 101 (OUT)
21/11/2017	SR	4	BZ	1	13:49	Y		26	26				
21/11/2017	SR	5	BZ	1	15:25		Y	125	125				
07/12/2017	SR	1	SN	2	08:41		Y	5	5				
07/12/2017	SR	2	PE	1	09:58	Y	Y	110 (IN), 10 (OUT)			110 (IN), 10 (OUT)		
07/12/2017	SR	3	PE	1	10:04	Y	Y	13 (IN), 17 (OUT)	13 (IN), 17 (OUT)				
07/12/2017	SR	4	SH	2	10:11	Y		54		54			
07/12/2017	SR	5	SH	1	10:54	Y	Y	3 (IN), 12 (OUT)	3 (IN), 12 (OUT)				
07/12/2017	SR	6	SH	1	13:37	Y	Y	16 (IN), 23 (OUT)	16 (IN), 23 (OUT)				
07/12/2017	SR	7	SN	1	13:38		Y	7	7				
07/12/2017	SR	8	BZ	1	13:42	Y		109		20	89		
07/12/2017	SR	9	BZ	1	13:47		Y	19		19			

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
07/12/2017	SR	10	SN	1	14:09		Y	12	12				
07/12/2017	SR	11	ML	1	14:55	Y	Y	20 (IN), 32 (OUT)		20 (IN), 32 (OUT)			
23/01/2018	SR	1	BZ	1	09:46		Y	14	14				
23/01/2018	SR	2	BZ	1	09:55	Y	Y	15 (IN), 15 (OUT)	15 (IN), 15 (OUT)				
23/01/2018	SR	3	SH	1	10:50	Y	Y	70 (IN), 8 (OUT)	70 (IN), 8 (OUT)				
23/01/2018	SR	4	SH	1	11:27	Y		31	31				
23/01/2018	SR	5	K.	1	13:06		Y	150	100	50			
23/01/2018	SR	6	K.	1	13:18		Y	45	45				
23/01/2018	SR	7	SH	1	15:05	Y		5	5				
05/02/2018	SR	14	SH	1	14:43			31	31				
05/02/2018	SR	1	SH	1	09:28		Y	34	34				
05/02/2018	SR	2	GP	100	10:08	Y	Y	70 (IN), 110 (OUT)	5	5	150		
05/02/2018	SR	3	GP	100	10:43	Y	Y	250 (IN), 250 (OUT)					50 (IN), 50 (OUT)
05/02/2018	SR	4	GP	50	10:59		Y	78	8	20	20	30	
05/02/2018	SR	5	SH	1	12:19	Y	Y	32 (IN), 20 (OUT)	10	42			
05/02/2018	SR	6	GP	70	12:24	Y	Y	5 (IN), 153 (OUT)	2	2	2	2	150
05/02/2018	SR	7	GP	100	13:03		Y	240	5	5	10	200	20
05/02/2018	SR	8	GP	100	13:31		Y	351	5	5	10	10	321
05/02/2018	SR	9	GP	100	13:46		Y	171	5	5	10	10	141
05/02/2018	SR	10	ML	1	13:48	Y	Y	20 (IN), 40 (OUT)		20 (IN), 40 (OUT)			
05/02/2018	SR	11	ML	1	13:49		Y	2460	2460				

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
05/02/2018	SR	12	GP	40	14:05		Y	43					
05/02/2018	SR	13	GP	20	14:22		Y	128		128			
28/03/2018	BOD	1	BZ	1	10:42		Y	52					52

Table AIII-7
Target species recorded during flight activity surveys undertaken at VP7

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
29/09/2017	BOM	3	K.	1	11:00	Y	Y	60 (IN), 77 (OUT)	12 (IN), 20 (OUT)	4 (IN)	44 (IN), 77 (OUT)		
29/09/2017	BOM	1	K.	1	1:45	Y		257	257				
29/09/2017	BOM	2	K.	1	10:51	Y		28			28		
29/09/2017	BOM	4	K.	1	11:07	Y		21	21				
29/09/2017	BOM	5	K.	1	12:07		Y	6	6				
29/09/2017	BOM	6	K.	1	13:18	Y		8	8				
29/09/2017	BOM	7	K.	1	13:49		Y	126		126			
29/09/2017	BOM	10	K.	1	14:11		Y	84			84		
29/09/2017	BOM	11	K.	1	14:18	Y	Y	55 (IN), 3 (OUT)			55 (IN), 3 (OUT)		
20/11/2017	BOD	1	BZ	1	10:48	Y		5	5				
07/12/2017	BOD	1	K.	1	12:53		Y	105	105				
07/12/2017	BOD	1	SH	1	13:53		Y	5	5				
07/12/2017	BOD	2	GP	1	15:16		Y	45	30	15			
07/12/2017	BOD	3	SH	1	15:45		Y	9	9				
07/12/2017	BOD	4	SH	1	15:48		Y	4	4				
07/12/2017	BOD	5	GP	3	16:00		Y	25	25	7			
18/01/2018	BOD	1	SH	1	14:20		Y	6	6				
18/01/2018	BOD	2	SH	1	15:04		Y	8	8				
30/01/2018	BOD	1	K.	1	11:56		Y	360	360				
30/01/2018	BOD	2	K.	1	12:26		Y	35	35				
07/03/2018	BP	1	SH	1	09:04	Y		370		195		175	
07/03/2018	BP	2	SH	1	09:14	Y		132	24	5	5	98	
07/03/2018	BP	3	K.	1	09:20	Y	Y	133 (IN), 110 (OUT)				88 (IN)	45 (IN), 110 (OUT)
07/03/2018	BP	4	BZ	1	09:26	Y		885		8	26	851	

Date	Surveyor	Obs. No	Species	Num. Birds	Obs. Time	Inside site	Outside site	Flight duration	Band 1 (0 – 30m)	Band 2 (30 – 40m)	Band 3 (40 – 50m)	Band 4 (50 – 170m)	Band 5 (>170m)
07/03/2018	BP	5	SH	1	09:50	Y	Y	405 (IN), 16 (OUT)			10 (IN), 5 (OUT)	359 (IN), 11 (OUT)	36 (IN)
07/03/2018	BP	6	BZ	1	10:05	Y	Y	7 (IN), 91 (OUT)				7 (IN), 91 (OUT)	
07/03/2018	BP	8	BZ	1	10:16	Y	Y	404 (IN), 63 (OUT)	14 (IN)	40 (IN)	30 (IN)	320 (IN), 63 (OUT)	
07/03/2018	BP	9	BZ	1	10:27	Y	Y	68 (IN), 23 (OUT)	37 (IN), 23 (OUT)	31 (IN)			
09/03/2018	BP	26	SH	1	09:00	Y	Y	68 (IN), 71 (OUT)	18 (OUT)	11 (IN), 53 (OUT)	57 (IN)		
09/03/2018	BP	27	BZ	1	09:08	Y	Y	157 (IN), 15 (OUT)	117 (IN), 15 (OUT)	20 (IN)	20 (IN)		
09/03/2018	BP	28	BZ	1	10:09	Y		133	107	26			
09/03/2018	BP	29	SH	1	10:14	Y		37	28	9			
09/03/2018	BP	30	PE	1	10:45	Y	Y	18 (IN), 88 (OUT)	45 (OUT)	22 (OUT)	7 (IN), 21 (OUT)	11 (IN)	
24/03/2018	BP	32	SH	2	08:27	Y		304		304			
24/03/2018	BP	34	SH	2	10:10	Y		243		138		104	
24/03/2018	BP	35	BZ	1	10:16		Y	33		33			
24/03/2018	BP	36	SH	2	10:22	Y	Y	237 (IN), 44 (OUT)		10 (IN)	10 (IN)	134 (IN)	83 (IN), 44 (OUT)
27/03/2018	BP	49	K.	1	11:28		Y	17	17				
27/03/2018	BP	50	BZ	1	11:31	Y		34	34				
27/03/2018	BP	51	SH	1	11:55		Y	148		23		125	
27/03/2018	BP	52	BZ	2	12:11	Y	Y	87 (IN), 167 (OUT)	43 (IN)	2 (IN)	2 (IN)	40 (IN), 167 (OUT)	
27/03/2018	BP	53	BZ	1	13:20	Y	Y	168 (IN), 175 (OUT)	12 (IN), 20 (OUT)	5 (IN), 7 (OUT)	12 (IN), 1 (OUT)	139 (IN), 147 (OUT)	

BIRD SURVEY REPORT BREEDING AND NON-BREEDING SEASON 2021/2022

Coolglass Wind Farm

Prepared for: Coolglass Wind Farm Ltd

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BASIS OF REPORT

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APPENDICES

1.0 Introduction

SLR Consulting Ireland (SLR) was commissioned by Coolglass Wind Farm Ltd in April 2021 to carry out a bird survey programme for the proposed Coolglass Wind Farm, Co. Laois (hereafter 'the Project') during the breeding bird period in 2021 and non-breeding bird period in 2021/22. A further breeding season has been completed in 2022 and a winter 2022/23 season is currently underway. These reports will be provided at a later date.

1.1 Background to the Commission

No previous planning permission has been sought on the application site (hereafter 'the Project Site') for the development of a wind farm by Coolglass Wind Farm Ltd or any other party. Breeding and non-breeding bird surveys were previously carried out by Fehily Timoney and Company on the Project Site from 2012 to 2018 while the Project was in gestation. These surveys included flight activity, breeding wader, barn owl, and merlin surveys. This data is available in raw format but has not been reported on. For the purposes of impact assessment, the 2017/18 winter season will be used.

1.2 Project Site Description

The Project Site is located within the townlands of Brennanshill, Coolglass, Crissard, Fallowbeg Upper, Coolglass Upper, Gorreelagh Kylenabehy and Scotland in Co. Laois. The dominant habitats within the boundaries of the Project Site are conifer plantation and improved agricultural grassland. There are also numerous eroding/upland rivers including the Fallowbeg Upper, Owveg [Nore], Clogh 15 and Brennanshill. The north of the Project Site is focused on Fossy Mountain, which is a small hill, 323 m above sea level in height.

1.3 Scope of Work

The scope of survey work was based on existing knowledge of the area and took into account current NatureScot (NS) (formerly Scottish Natural Heritage; SNH) guidance[1]. This survey methods guidance is recognised as standard best practice guidance throughout the UK and Ireland for surveying birds to inform impact assessment for onshore wind farms. The scope of survey work undertaken is provided in **Table 1-1**. Further details are provided in Sections 2.2.2 to 2.2.5.

Table 1-1
Scope of Ornithological Survey Work, Breeding Season 2021 and Non-breeding Season 2021/22

Survey Type	Summary Methodology (see Section 2 for further details)
Vantage Point (VP) surveys	Six hours of survey per month were carried out from each of the 7 VPs between April 2021 to September 2021 (breeding) and 6 hours per month from October 2021 to April 2022 (non-breeding) inclusive (see section 2.5 on limitations).

[1] Scottish Natural Heritage (2017). *Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms V2.* Scottish Natural Heritage, Inverness.

Survey Type	Summary Methodology (see Section 2 for further details)
Breeding raptor surveys	Four surveys were undertaken from April to July 2021 to search for any raptors breeding within 2 km of the wind farm boundary.
Feeding distribution surveys	Feeding distribution surveys were carried out on a twice-monthly basis from October 2021 to March 2022 inclusive to search for swans and/or geese using the fields for foraging within 500 m of the wind farm boundary.

1.4 Target Species

Target species for the surveys were defined by legal and/or conservation status and vulnerability to impacts caused by wind turbines, as defined in NS guidance.

1.4.1 Primary Target Species

Primary target species were limited to species upon which effects are most likely to be potentially significant in EIA and Appropriate Assessment (AA) terms e.g., species forming qualifying features for nearby Special Protection Areas (SPAs) or species listed on Annex 1 of the Birds Directive[2]. This enabled recording to focus on the species of greatest importance without the distraction of having to record detailed flight data for a larger number of more common species.

Primary target species included the following bird species:

- All Annex 1 raptor/owl species;
- Qualifying interest species for nearby SPAs[3]; and
- Other raptors, waders or wildfowl red-listed on the latest Birds of Conservation Concern in Ireland (BoCCI)[4] scheme.

1.4.2 Secondary Species

Local circumstances may indicate that survey information should also be acquired on other species, especially those of regional conservation concern. Such species are termed secondary species. Recording of secondary species is subsidiary to recording of primary target species.

Secondary target species included:

- Any other wildfowl and wader species;
- Common buzzard *Buteo buteo;*

[2] Annex 1 of the Birds Directive (Directive 2009/147/EC)
[3] The relevant SPAs are listed in Section 3.1.
[4] Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 2020–2026. Irish Birds 43: 1–22

- Eurasian sparrowhawk *Accipiter nisus*;
- Northern raven *Corvus corax*;
- Grey heron *Ardea cinerea;*
- Great cormorant *Phalacrocorax carbo;* and
- Gulls *Larus* and *Chroicocephalus sp*.

1.5 Terminology

For this report, "flight line" refers to the line drawn to record avian movement during a VP survey. A single flight line may be used indicate the collective movement of a flock of birds. Each individual bird moving within the same flight line is referred to as "a flight". Note that the "cumulative number of flights" reflects the occupancy of the study area by a particular species i.e. the total number of flights for all surveys in a given season added together. It does not reflect the total number of unique individuals and should not be used to infer abundance.

1.6 Purpose of the Report

The aim of this report is to provide robust baseline ornithological survey data for the breeding period in 2021 and non-breeding period in 2021/22. These data will be used to inform a separate ecological impact assessment and appropriate assessment for the Project. The assessment of potential impacts is beyond the scope of this report.

2.0 Methodology

2.1 Desk-based Review

The desk-based review collated available information collected to date on the bird movements in and around the Project Site. The websites of the National Parks and Wildlife Service (NPWS) www.npws.ie, the National Biodiversity Data Centre (NBDC) http://maps.biodiversityireland.ie/#/Map, and the UK and Ireland Bird Atlas 2007-2011 https://app.bto.org/mapstore/StoreServlet were also accessed for information on sites designated for nature conservation in the vicinity of the Project Site and notable bird species in the local area.

2.2 Field Surveys

2.2.1 Field Survey Team: Evidence of Technical Competence and Experience

Jonathon Dunn (JD) – Project Manager and Lead Ornithologist

Jonathon is a Senior Ecologist with SLR and holds a BA (Hons) in Natural Sciences from the University of Cambridge, an MSc in Ecology Evolution and Conservation from Imperial College London and a PhD in Avian Ecology from Newcastle University. He is a Full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Jonathon is a highly skilled and experienced bird surveyor with six years' post graduate experience as a professional consultant ecologist. Jonathon managed this project through liaison with the client, coordination of the survey team, supervision of the health and safety of the team, collating, quality controlling and assessing the survey data.

Paul Connaughton (PC) – Bird Surveyor

Paul has been an active birder for over 30 years and is the current Chairman of the Birdwatch Ireland's West Cork Branch. He holds an ESAS qualification for sea bird survey techniques. Paul carried out flight activity surveys and breeding raptor surveys from April 2021 to April 2022.

Nick Veale (NV) – Bird Surveyor

Nick has over 19 years professional experience as a consulting ecologist/ornithologist and has worked for several environmental / ecological consultancies including Mouchel, RPS Group and Golder Associates. He holds an ESAS qualification for sea bird survey techniques. Nick carried out flight activity surveys and feeding and distribution surveys from April 2021 to March 2022.

2.2.2 Flight Activity Surveys

Seven vantage point (VP) locations were initially chosen to provide visibility of the optioned lands and a 500 m buffer surrounding the same. The adequacy of these VPs was checked by carrying out a desk-based viewshed analysis using a bespoke GIS tool for calculating the visible area from each vantage point (VP). The Zones of Theoretical Visibility (ZTV) from each VP were calculated using ArcMAP 10.5.1 Spatial Analyst using a terrain model derived from EU-DEM data with a vertical accuracy of ± 7 m. The ZTVs have been calculated using a surface offset of 30 m, to match the lowest point swept by the rotors of the proposed turbines. The ZTVs are based on a viewing height of 1.8 m above ground level. VP locations, viewing arcs and viewsheds are shown in **Figure 1**.

Note that since surveys were completed, the layout was refined so that the Project Site is considerably smaller. This updated layout is shown in all figures in this report. For completeness, the results for the larger survey area are presented in this report.

Breeding Season

A total of 36 hours of watches were undertaken at each of seven VP locations during the breeding season (monthly visits April-September inclusive). The VP survey effort undertaken during the breeding season of 2021

is summarised in **Table 2-1** with full details of survey dates, times and observers provided in Appendix 01 and details of weather conditions during the surveys provided in Appendix 02.

Table 2-1
VP survey effort undertaken at the Project Site from April 2021 to September 2021.

Month	VP1 (hours)	VP2 (hours)	VP3 (hours)	VP4 (hours)	VP5 (hours)	VP6 (hours)	VP7 (hours)
April	06:00	06:00	06:00	06:00	03:00	06:00	03:00
May	06:00	06:00	06:00	06:00	09:00	06:00	09:00
June	03:00	03:00	03:00	03:00	06:00	06:00	06:00
July	09:00	09:00	09:00	09:00	06:00	06:00	06:00
August	06:00	06:00	06:00	06:00	06:00	06:00	06:00
September[5]	06:00	06:00	06:00	06:00	06:00	06:00	06:00
Total hrs	**36:00**	**36:00**	**36:00**	**36:00**	**36:00**	**36:00**	**36:00**
VP Locations ITM (**Figure 1**)	654390, 690092	656470, 687421	654877, 687955	657231, 685790	658442, 683352	659975, 680614	655847, 683304

Non-Breeding Season

A total of 36 hours of watches were undertaken at each of seven VP locations during the non-breeding season (monthly visits October-March inclusive). The VP survey effort undertaken during the non-breeding season of 2021/2022 is summarised in **Table 2-2** with full details of survey dates, times and observers provided in Appendix 01 and details of weather conditions during the surveys provided in Appendix 02.

Table 2-2
VP survey effort undertaken at the Project Site from October 2021 to April 2022.

Month	VP1 (hours)	VP2 (hours)	VP3 (hours)	VP4 (hours)	VP5 (hours)	VP6 (hours)	VP7 (hours)
October	-	03:00	06:00	-	06:00	06:00	06:00
November	06:00	06:00	-	06:00	06:00	06:00	06:00
December	12:00	09:00	12:00	12:00	06:00	06:00	03:00
January	-	03:00	-	03:00	06:00	03:00	06:00
February	12:00	09:00	09:00	09:00	06:00	09:00	06:00
March	-	-	03:00	-	06:00	06:00	06:00
April[6]	06:00	06:00	06:00	06:00	-	-	-
Total hrs	**36:00**	**36:00**	**36:00**	**36:00**	**36:00**	**36:00**	**36:00**

[5] While it is unlikely birds were breeding in September, it has been included here as part of the survey effort for the breeding season.
[6] While April does not officially form part of the non-breeding season, weather conditions prevented surveys from being completed in March 2022 and so the March surveys were completed in early April. See section 2.5 for further details.

Month	VP1 (hours)	VP2 (hours)	VP3 (hours)	VP4 (hours)	VP5 (hours)	VP6 (hours)	VP7 (hours)
VP Locations ITM (**Figure 1**)	654390, 690092	656470, 687421	654877, 687955	657231, 685790	658442, 683352	659975, 680614	655847, 683304

VP surveys aimed to quantify the flight activity of primary and secondary target species (as defined in Section 1.4) within the study area.

The main purpose of VP watches is to collect data on primary target species that will enable estimates to be made of:

- The time spent flying over the site;
- The relative use by birds of different parts of the site;
- The proportion of flying time spent within the provisional upper and lower risk height limits as determined by the potential rotor diameter and rotor hub height; and
- Ultimately, the analysis of the potential risk of collision of birds with rotating turbines.

For each primary target species observation, the following details were recorded:

- Time of observation;
- Duration of flying bout;
- Species, age and sex (where determinable);
- Time spent within each height band and;
- Notes on observation.

In the absence of detailed information regarding turbine specifications at the time of commencing surveys, a precautionary approach was taken in relation to recording height bands. Height bands were determined allowing for the maximum rotor tip height of 180 m and a lowest rotor swept height of 30 m. Flight heights were attributed to five distinct height bands as follows:

- 1 = < 15 m (below the likely rotor swept area);
- 2 = 15 m to 30m (below the likely rotor swept area);
- 3 = 30 m to 150 m (within the likely rotor swept area);
- 4 = 150 m to 200 m (within the likely rotor swept area, at least in part);
- 5 = >200 m (above the likely rotor swept area).

In addition, a summary of observations of secondary target species was recorded at the end of each five-minute period during each VP watch to provide an index of flight activity for secondary target species within the Project Site, in accordance with current NS guidance.

2.3 Breeding Raptor Surveys

NS recommends that all potential breeding territories within a 2 km radius of the Project Site be surveyed throughout the breeding season. A driven transect was undertaken within this buffer, stopping at potential

raptor breeding habitats as defined by Hardey *et al.* (2013)[7] and focusing on areas not visible from the fixed vantage points. This transect was undertaken two times in May 2021 and three times in July 2021. Details of survey dates, times and observers are provided in Appendix 01 and a record of weather conditions during surveys is provided in Appendix 02.

The location, movement and behaviour of all raptor species were recorded onto the field maps using standard BTO species codes.

2.4 Feeding Distribution Surveys

NS guidance recommends that for whooper swan *Cygnus cygnus*, Greenland white-fronted goose *Anser albrifons flavirostris* and other geese species, feeding distribution surveys should be undertaken in areas of suitable habitat when the survey area lies within the core foraging distance of SPAs or other major roosts for these species, unless it can be established from existing data that the area is not utilised for feeding. Although there was no evidence of swans or geese feeding in the area, feeding distribution surveys were undertaken as a precaution.

The Project Site and a 500 m buffer was used to define the survey area for swan and geese feeding distribution surveys in accordance with NS guidance. Surveys were undertaken via driven transects once a fortnight between October 2021 to March 2022, stopping on a regular basis to check all fields for goose and swan feeding activity. No "blind spots" were present and suitable visibility of all potential swan and goose foraging areas was achieved. Survey dates are shown in Appendix 01 and weather conditions in Appendix 02.

2.5 Survey Limitations

Twenty-four flight activity survey hours during the non-breeding season were carried out in the first two days of April, which is technically the breeding season, due to inclement weather conditions in March 2022. However, as these surveys were carried out in the first two days of April, when birds are unlikely to have started breeding, and a total of 36 hours was achieved at each VP between October 2021 and April 2022, this does not present a significant limitation to the survey results. For the purposes of impact assessment, the 2017/18 winter season survey will also be used, along with the 2022/23 season, when completed.

The majority of VP surveys were undertaken in optimal weather conditions. However, during such an extensive series of surveys carried out it was inevitable that some surveys were completed in suboptimal conditions. There were 31 hours out of the total of 549 during which the visibility was recorded as "moderate", i.e. 1-3 km. This comprises 5.6% of the total survey effort but in almost all cases all of the relevant 2 km viewing arc was visible and this is not considered to significantly affect the validity of the data collected. There was also 1 hour (0.2% of the total survey effort) in which the visibility was recorded as "poor", i.e., less than 1 km. However, in no cases did visibility fall below 500 m (when the survey would have been suspended) and in many cases visibility was better than this for part of the relevant hour. As such, given the low proportion of surveys affected this is not considered to significantly affect the validity of the data collected. Further details regarding weather conditions during surveys are provided in Appendix 02.

[7] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013). Raptors: A Field Guide to Survey and Monitoring (3rd Edition). The Stationery Office, Edinburgh.

3.0 Results

3.1 Desk-based Review

3.1.1 Natura 2000 Sites

There are no Special Protection Areas (SPA) within the Project Site. However, there is one SPA within a 20 km[8] radius of the survey area.

Details of this SPA are shown in **Table 3-1**, which also shows the qualifying interests for the site.

Table 3-1
SPAs within 20 km of the proposed Coolglass Wind Farm and their qualifying interests

Site Name	Site Code	Distance / Direction from Project Site	Species of Special Conservation Interest Relevant to the Non-Breeding Season
River Nore SPA	004233	11.7 km southwest of the Project Site (18.2 km instream distance via Owveg River)	Common kingfisher *Alcedo atthis*

3.1.2 Previous Survey Data

Breeding and non-breeding bird surveys were previously carried out by Fehily Timoney at the Project Site from 2012 to 2018 (raw data available only). These surveys included flight activity, breeding wader, barn owl, and merlin surveys.

The following primary target species were observed either on-site or within the surrounding 500 m buffer during the previous surveys:

- Merlin *Falco columbarius;*
- European golden plover *Pluvialis apricaria*;
- Common kestrel *Falco tinnunculus*;
- Peregrine falcon *Falco peregrinus*;
- Hen harrier *Circus cyaneus;*
- Common snipe *Gallinago gallinago*; and
- Eurasian woodcock *Scolopax rusticola.*

Barn owl surveys were carried out in September 2013. Potentially suitable nesting sites were noted during this survey, but no confirmed nesting or roosting sites were identified.

[8] 20 km is the maximum distance typically applied when considering wildfowl ranging from roost sites to foraging sites.

No confirmed signs of breeding were identified during the merlin surveys.

The following secondary target species were observed either on-site or within the surrounding 500 m buffer during the previous surveys:

- Common buzzard *Buteo buteo*; and
- Eurasian sparrowhawk *Accipiter nisus*.

3.2 Breeding Season Flight Activity Surveys

Flight lines of primary target species recorded throughout the 2021 breeding season are presented in **Figures 2.1** to **2.2** and a summary of the survey findings are provided in Sections 3.2.1 and 3.2.2 for primary and secondary target species, respectively. Flight data for both primary and secondary target species are provided in Appendix 03.

3.2.1 Primary Target Species

In total, four primary target species were recorded flying within the study area on and around the Project Site during the six-month survey period. Flight activity recorded for primary target species is summarised in **Table 3-2.**

Table 3-2
Primary Target Species Flight Lines from the Project Site for All VPs Combined – April 2021 – September 2021

Species	Number of flight lines by month						Total number of flight lines	Time at risk height* (s)	Cumulative number of flights
	Apr	May	Jun	Jul	Aug	Sep			
Common kestrel	11	27	20	17	3	8	86	153	92
Peregrine falcon	2	2	2	2	2	0	10	120	10
Common snipe	0	0	1	0	0	2	3	0	5
Eurasian woodcock	0	0	0	3	0	0	3	0	3
Total	**13**	**29**	**23**	**22**	**5**	**10**	**102**	**273**	**110**
* precautionary risk height assumed to be between 30 m – 180 m									

A summary of flight activity by species is presented below.

Common kestrel

Eighty-six flight lines of common kestrel were recorded during the flight activity surveys (**Figure 2.1**). The largest number of flight lines was recorded in May 2021 (n=27). Flight lines were recorded across all seven VP locations, within both the Project Site and the 500 m buffer. Flight durations varied from 8 seconds to over 4 minutes.

Peregrine falcon

Ten peregrine falcon flight lines were recorded during the flight activity surveys (**Figure 2.1**). Observations were evenly distributed across all months except September 2021, where no peregrines were recorded. Peregrine falcon flight lines were recorded from all VP locations except VP3. Flight durations varied from 40 seconds to 9 minutes.

Common snipe

Three flight lines of common snipe were recorded during the flight activity surveys (**Figure 2.2**) in June and September 2021. The maximum number of flight lines (n=2) was recorded in September. These flight lines were observed within both the Project Site and the 500 m buffer, and at VP locations 4, 5, and 7. No flight lines were recorded at potential collision risk heights. Flight durations were short, with all three less than 40 seconds in duration.

Eurasian woodcock

Three flight lines of Eurasian woodcock were recorded during the flight activity surveys (**Figure 2.2**) in July 2021. These flight lines were recorded from VP locations 6 and 7, within both the Project Site and the 500 m buffer. None of these flight lines were at potential collision risk heights. Flight durations were short, all three lasting for 70 seconds or less.

3.2.2 Secondary Species

Secondary species activity at the Project Site is summarised in **Table 3-3**. There were 11 secondary species recorded throughout the breeding season. Common buzzard was the most frequently recorded secondary species (in 216 five-minute periods out of a possible 3,024). Black-headed gull *Chroicocephalus ridibundus* was the most numerous of the recorded secondary species (maximum flock size of 23).

Table 3-3
Secondary Species Activity Summary for All VPs Combined – April 2021 – September 2021

Species	Number of 5 min periods recorded	Peak count of birds recorded in any 5 min period	Comments
Black-headed gull	11	23	Activity in all months except April 2021, within the Project Site, survey buffer and beyond.
Common buzzard	216	5	Activity in all months, within the Project Site, survey buffer and beyond.
Great cormorant	3	1	Activity in May and August 2021, within the Project Site, survey buffer and beyond.
Common gull *Larus canus*	3	11	Activity in September 2021 only, within the Project Site and survey buffer.
Grey heron	17	2	Activity in all months except April 2021, within the Project Site and survey buffer.
European herring gull *Larus argentatus*	4	6	Activity in August and September 2021, within the Project Site, survey buffer and beyond.
Lesser black-backed gull *Larus fuscus*	14	15	Activity in all months, within the Project Site, survey buffer and beyond.
Mallard *Anas platyrhynchos*	10	4	Activity in all months except April 2021, within the Project Site and survey buffer.
Northern raven	93	10	Activity in all months, within the Project Site, survey buffer and beyond.

Species	Number of 5 min periods recorded	Peak count of birds recorded in any 5 min period	Comments
Eurasian sparrowhawk	14	1	Activity in all months, within the Project Site, survey buffer and beyond.
Eurasian whimbrel *Numenius phaeopus*	2	1	Activity in April 2021 only, within the survey buffer and beyond.

3.3 Non-Breeding Season Flight Activity Surveys

Flight lines of primary target species recorded throughout the 2021/22 non-breeding season (including those in early April 2022) are presented in **Figures 2.1 to 2.2** and a summary of the survey findings are provided in Sections 3.3.1 and 3.3.2 for primary and secondary target species, respectively. Flight data for both primary and secondary target species are provided in Appendix 03.

3.3.1 Primary Target Species

In total, five primary target species were recorded flying within the study area during the non-breeding season on and around the Project Site during the six-month survey period. Flight activity recorded from the Project Site by primary target species is summarised in **Table 3-4**.

Table 3-4
Primary Target Species Flight Lines from the Project Site All VPs Combined – October 2021 – April 2022

Species	Number of flight lines by month							Total number of flight lines	Time at risk height* (s)	Cumulative number of flights
	Oct	Nov	Dec	Jan	Feb	Mar	Apr			
Common kestrel	6	13	7	5	11	9	0	51	42	52
Peregrine falcon	0	3	2	0	1	1	0	7	60	7
Common snipe	2	2	0	1	2	2	1	10	0	16
European golden plover	2	0	4	0	4	2	0	12	183	4,405
Northern lapwing *Vanellus vanellus*	2	0	1	0	0	0	0	3	63	50
Total	**12**	**18**	**14**	**6**	**18**	**14**	**1**	**83**	**348**	**4530**
** precautionary risk height assumed to be between 30 m – 180 m										

A summary of flight activity by species is presented below.

Common kestrel

A total of 51 common kestrel flight lines were recorded at the Project Site during the non-breeding season flight activity surveys (**Figure 2.1**) in all months except April 2022. Kestrel flight lines were recorded across all VP locations, with the exception of VP2 and were observed both within the Project Site and the 500 m buffer. Flight durations ranged from 20 to 180 seconds.

Peregrine falcon

Seven peregrine falcon flight lines were recorded at the Project Site during the non-breeding season flight activity surveys (**Figure 2.1**) in November and December 2021, and February and March 2022. These flight lines were recorded across VPs 1, 2, 4, 6, and 7, and were located within the Project Site and the 500 m buffer. Durations varied from 10 to 140 seconds.

Common snipe

Ten common snipe flight lines were recorded at the Project site during the non-breeding season flight activity surveys (**Figure 2.2**). The flight lines were evenly distributed across all months, with the exception of December 2021 where no snipe flights were recorded. Snipe were observed flying at VPs 2, 5, 6, and 7 only, but no flight lines occurred at potential collision risk heights. Flight line durations were typically short, consisting of 70 seconds duration or less.

European golden plover

A total of 12 golden plover flight lines were recorded at the Project Site during the non-breeding season flight activity surveys (**Figure 2.2**) in October and December 2021, and February and March 2022. Flight lnes were observed at all VP locations except VP2 and VP7. Golden plovers were most numerous in February, with a

cumulative total of 4,006 flights observed in that month split over four flight lines. Golden plovers were observed flying over the Project Site as well as the 500 m buffer. Flight durations varied from 10 seconds to over 5 minutes.

Northern lapwing

Three lapwing flight lines were recorded at the Project Site during the non-breeding season flight activity surveys (**Figure 2.2**) in October and December 2021. The largest number of flight lines (n=2) were observed in October. Two of the flight lines were recorded at VP6 and the other was recorded at VP7. Lapwings were observed both at the Project Site and within the 500 m buffer. Flight line durations were typically long, between 64 and 220 seconds.

3.3.2 Secondary Species

Secondary species activity during the non-breeding season at the Project Site is summarised in **Table 3-5**. There were 11 secondary species recorded throughout the season. Common buzzard was the most frequently recorded secondary species (in 142 five-minute periods out of a possible 3,024). Black-headed gull was the most numerous of the recorded secondary species (maximum flock size of 20).

Table 3-5
Secondary Species Activity Summary for All VPs Combined – October 2021 – March 2022

Species	Number of 5 min periods recorded	Peak count of birds recorded in any 5 min period	Comments
Black-headed gull	9	20	Activity in all months except April 2022, within the Project Site, survey buffer and beyond.
Common buzzard	142	6	Activity in all months, within the Project Site, survey buffer and beyond.
Great cormorant	1	4	Activity in November 2021 only, beyond the survey buffer and Project Site.
Common gull	6	13	Activity in October, November, and December 2o21, within the Project Site, survey buffer and beyond.
Grey heron	9	1	Activity in October, November and December 2021, and February and March 2022, within the Project Site, and survey buffer.
European herring gull	6	3	Activity in December 2021, and January, February, and March 2022, within the Project Site, survey buffer and beyond.
Lesser black-backed gull	2	6	Activity in November and December 2021, within the Project Site only.
Mallard	7	2	Activity in October 2021, and February and March 2022, within the Project Site, and survey buffer.
Northern raven	84	4	Activity in all months, within the Project Site, survey buffer and beyond.

Species	Number of 5 min periods recorded	Peak count of birds recorded in any 5 min period	Comments
Eurasian sparrowhawk	32	2	Activity in all months except October 2021, within the Project Site, survey buffer and beyond.
Jack snipe *Lymnocryptes minimus*	1	1	Activity in February 2022 only, within the survey buffer.

3.4 Breeding Raptor Surveys

A total of four species of raptor was recorded during the surveys. The following species accounts provide summary details of the primary raptor species encountered during the 2021 surveys (all surveys combined). The results of the breeding raptor surveys can be seen in **Figure 3**.

3.4.1 Peregrine Falcon

Two peregrine falcons were observed during the breeding raptor surveys. An immature female peregrine falcon was observed flying over the Project Site in May 2021 and a female peregrine falcon was observed at a quarry 3.3 km from the Project Site. No evidence of breeding peregrines was recorded within 2 km of the Project Site.

3.4.2 Common Kestrel

One common kestrel was observed flying within the 500 m buffer during the breeding raptor surveys in July 2021. This individual was recorded flying over suitable breeding habitat, but no evidence of breeding was detected.

3.4.3 Secondary Target Species

Several common buzzard territories were identified on-site during the breeding raptor surveys. A pair of individuals was heard calling in suitable breeding woodland habitat. Common buzzards were observed throughout the entire Project Site during these surveys. However, no nests were identified on-site.

Eurasian sparrowhawks were identified during two of the breeding raptor surveys in July 2021. A pair of sparrowhawks were heard calling in a suitable breeding woodland habitat outside the Project Site 500 m buffer but within the 2 km survey area. Eurasian sparrowhawk was also observed flying over parts of the Project Site during these surveys. However, no nests were identified on-site.

3.4.4 Incidental Records of Other Species

No incidental records of other target species were made during breeding raptor surveys.

3.5 Feeding Distribution Surveys

No aggregations or individual observations of swans or geese were observed during the feeding distribution surveys (**Figure 4**).

3.5.1 Incidental Records of Other Species

Incidental species records during the feeding distribution surveys were:

- Wildfowl: mallard, grey heron, little grebe *Tachybaptus ruficollis and* common moorhen *Gallinula chloropus*;
- Waders: European golden plover; and
- Gulls: black-headed gull*,* common gull*,* and European herring gull*.*

4.0 Summary and Conclusions

A range of ornithology surveys were carried out at the Project Site during the 2021 breeding and 2021/22 non-breeding seasons. These were:

- Flight activity (VP) surveys;
- Breeding raptor surveys; and
- Feeding distribution surveys.

The following primary target species were recorded during flight activity surveys at the Project Site:

- European golden plover;
- Common kestrel;
- Northern lapwing;
- Peregrine falcon;
- Common snipe; and
- Eurasian woodcock.

The most frequent flight activity during the breeding season was by common kestrel (86 flight lines), with other target species activity less frequent. The next most frequently recorded species was peregrine falcon (10 flight lines). Common snipe and Eurasian woodcock were both recorded across three flight lines.

The most frequent flight activity during the non-breeding season was also by common kestrel (51 flight lines), with other target species activity less frequent. The next most frequently recorded species were European golden plover (12 flight lines) and common snipe (10 flight lines). All other species were recorded across seven flight lines or less.

Breeding raptor surveys recorded two primary target species and two secondary target species:

- Peregrine falcon: no evidence of breeding.
- Common kestrel: no evidence of breeding.
- Common buzzard: suspected breeding on-site.
- Eurasian sparrowhawk: suspected breeding on-site.

Feeding distribution surveys recorded no target species.

Incidental records were made during taxon-specific surveys of other species of conservation concern including:

- Wildfowl: mallard, grey heron, little grebe, common moorhen;
- Waders: European golden plover; and
- Gulls: black-headed gull, common gull, and European herring gull.

5.0 Legal and Conservation Status of Target Species Recorded

Table 5-1 summarises the legal and conservation status of the primary and secondary target species recorded during the range of ornithology surveys mentioned above. All Irish bird species are afforded general protection by the Wildlife Acts 2000 (as amended).

Table 5-1
Legal and Conservation Status of Target Species

Primary or Secondary Target	Species (BTO code)	Legal & Conservation Status in Ireland
Primary	European golden plover (GP)	Annex 1; BoCCI4 Red
	Common kestrel (K.)	BoCCI4 Red
	Northern lapwing (L.)	BoCCI4 Red
	Peregrine falcon (PE)	Annex 1; BoCCI4 Green
	Eurasian woodcock (WK)	BoCCI4 Red
	Common snipe (SN)	BoCCI4 Red
Secondary	Black-headed gull (BH)	BoCCI4 Amber
	Common buzzard (BZ)	BoCCI4 Green
	Great cormorant (CA)	BoCCI4 Amber
	Common gull (CM)	BoCCI4 Amber
	Grey heron (H.)	BoCCI4 Amber
	Herring gull (HG)	BoCCI4 Amber
	Lesser black-backed gull (LB)	BoCCI4 Amber
	Mallard (MA)	BoCCI4 Amber
	Northern raven (RN)	BoCCI4 Amber
	Eurasian sparrowhawk (SH)	BoCCI4 Amber
	Whimbrel (WM)	BoCCI4 Green
	Jack snipe (JS)	BoCCI4 Green
	Little grebe (LG)	BoCCI4 Green
	Moorhen (MH)	BoCCI4 Green
Key		Annex 1 – the species is listed in Annex 1 of the EC Birds Directive; and BoCCI4 status (green, amber or red) – indicates the current Birds of Conservation Concern in Ireland[4] status category.

FIGURES

650000 652000 654000 656000 658000 660000 662000 664000

690000 688000 686000 684000

N

1 2 3 4 5 6 7

0 1 2

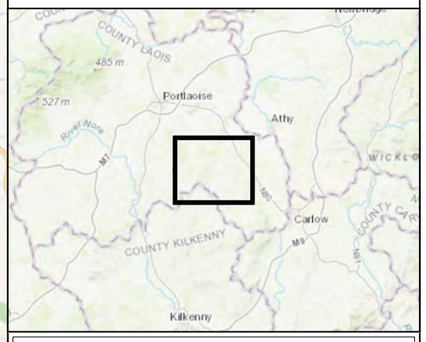
Kilometres

NOTES

1. The ZTV is calculated with a surface offset 30m & from a viewing height of 1.8m above ground level. The terrain model is derived from EU-DEM data with a vertical accuracy of ± 7m. The ZTV was calculated using ArcMAP 10.5.1 software.

LEGEND

- Site Boundary
- Site Boundary 500 m Buffer
- Proposed Turbine
- Vantage Point
- Substation Compound
- Temporary Construction Compound
- Vantage Point 2 km Viewing Arc
- Area Visible from Vantage Point 1
- Area Visible from Vantage Point 2
- Area Visible from Vantage Point 3
- Area Visible from Vantage Point 4
- Area Visible from Vantage Point 5
- Area Visible from Vantage Point 6
- Area Visible from Vantage Point 7



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SLR
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN D14 N2Y7
IRELAND
T: 0129 64667
www.slrconsulting.com

COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2021 &
NON-BREEDING SEASON 2021/22

VANTAGE POINT LOCATIONS & VIEWING ARCS

FIGURE 1

Scale	Date
1:45,000 @ A3	JULY 2022

02036.00787.00076.0 Vantage Point Locations and Viewing Arcs

652000 654000 656000 658000 660000 662000

690000 688000 686000 684000

N

LEGEND

Site Boundary

Site Boundary 500 m Buffer

Proposed Turbine

Substation Compound

Temporary Construction Compound

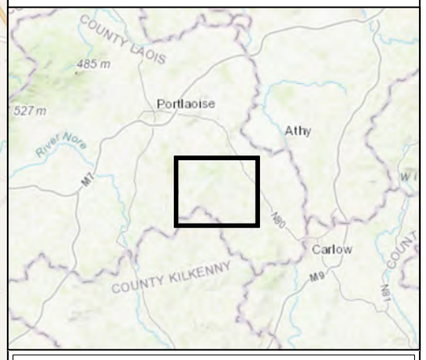
Flight Lines

Kestrel (Breeding Season 2021)

Peregrine (Breeding Season 2021)

Kestrel (Non-Breeding Season 2021/22)

Peregrine (Non-Breeding Season 2021/22)



0 1 2

Kilometres

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COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2021 &
NON-BREEDING SEASON 2021/22

FLIGHT LINES
RAPTORS

FIGURE 2.1

Scale 1:40,000 @ A3

Date JULY 2022

02036.00787.0075.0 Flight Lines Raptors

651000 652000 653000 654000 655000 656000 657000 658000 659000 660000 661000 662000 663000

691000 690000 689000 688000 687000 686000 685000 684000

N

LEGEND

Site Boundary

Site Boundary 500 m Buffer

Proposed Turbine

Substation Compound

Temporary Construction Compound

Flight Lines

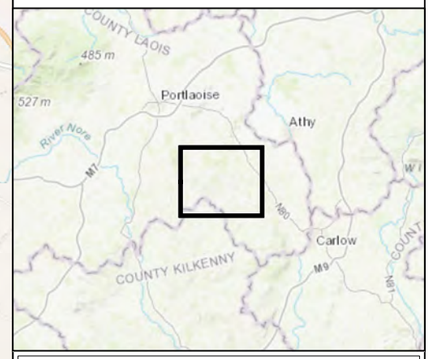
Snipe (Breeding Season 2021)

Woodcock (Breeding Season 2021)

Golden Plover (Non-Breeding Season 2021/22)

Lapwing (Non-Breeding Season 2021/22)

Snipe (Non-Breeding Season 2021/22)



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COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2021 &
NON-BREEDING SEASON 2021/22

FLIGHT LINES
WADERS

FIGURE 2.2

Scale 1:40,000 @ A3

Date JULY 2022

02036.00787.0079.0 Flight Lines Waders

652000 654000 656000 658000 660000 662000

690000 688000 686000

N

LEGEND

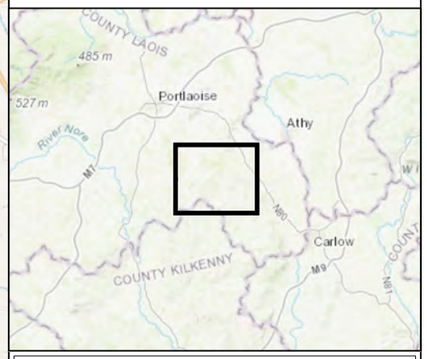
- Site Boundary
- Site Boundary 2 km Buffer
- Proposed Turbine
- Temporary Construction Compound
- Substation Compound

BTO Species Activity

- No Activity
- Male
- Female
- Calling

Raptor Species Flight Line

- Buzzard (BZ)
- Kestrel (K.)
- Peregrine (PE)
- Sparrowhawk (SH)



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COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2021 &
NON-BREEDING SEASON 2021/22

BREEDING RAPTOR DRIVEN TRANSECT SURVEY RESULTS

FIGURE 3

Scale	Date
1:40,000 @ A3	JULY 2022

0 1 2
Kilometres

02036.00787.0081.0 Breeding Raptor Driven Transect Survey Results

652000 654000 656000 658000 660000 662000

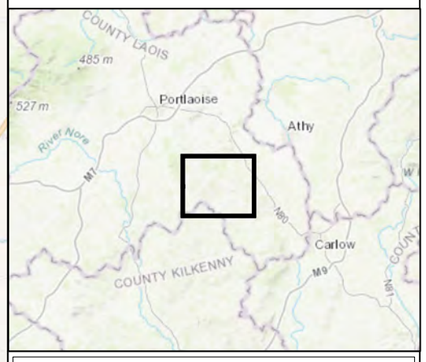
690000 688000 686000 684000

N

LEGEND

- Site Boundary
- Site Boundary 500 m Buffer
- Proposed Turbine
- Substation Compound
- Temporary Construction Compound

***No Swan or Geese Species Recorded Throughout the Season.**



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COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2021 &
NON-BREEDING SEASON 2021/22

SWAN AND GOOSE FEEDING DISTRIBUTION SURVEY RESULTS

FIGURE 4

Scale 1:35,000 @ A3

Date JULY 2022

0 1 2
Kilometres

02036.00787.0085.0 Swan and Goose Feeding Distribution

APPENDIX 01

Survey dates, times and observers

Table A1-1
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 1

Date	Surveyor	Start	End	Survey Duration
28/04/2021	PC	14:00	17:00	03:00
28/04/2021	PC	17:30	20:30	03:00
19/05/2021	PC	17:30	20:30	03:00
30/05/2021	PC	13:30	16:30	03:00
05/06/2021	PC	07:30	10:30	03:00
05/07/2021	PC	09:00	12:00	03:00
30/07/2021	PC	07:10	10:10	03:00
31/07/2021	PC	09:30	12:30	03:00
27/08/2021	PC	16:30	19:30	03:00
28/08/2021	PC	07:00	10:00	03:00
11/09/2021	PC	08:00	11:00	03:00
13/09/2021	PC	17:15	20:15	03:00
04/11/2021	PC	07:02	10:02	03:00
04/11/2021	PC	10:32	13:32	03:00
04/12/2021	PC	08:30	11:30	03:00
10/12/2021	PC	13:20	16:20	03:00
21/12/2021	PC	09:30	12:30	03:00
29/12/2021	PC	13:30	16:30	03:00
03/02/2022	PC	07:40	10:40	03:00
04/02/2022	PC	11:10	14:10	03:00
16/02/2022	PC	07:15	10:15	03:00
28/02/2022	PC	13:48	16:48	03:00
02/04/2022	PC	06:33	09:33	03:00
02/04/2022	PC	10:03	13:03	03:00
Total Hours				**72**

Table A1-2
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 2

Date	Surveyor	Start	End	Survey Duration
29/04/2021	PC	14:00	17:00	03:00
30/04/2021	PC	17:30	20:30	03:00
25/05/2021	PC	09:30	12:30	03:00
27/05/2021	PC	14:30	17:30	03:00
05/06/2021	PC	14:30	17:30	03:00
05/07/2021	PC	12:30	15:30	03:00
29/07/2021	PC	09:00	12:00	03:00
30/07/2021	PC	14:10	17:10	03:00
27/08/2021	PC	06:00	09:00	03:00
28/08/2021	PC	10:30	13:30	03:00
11/09/2021	PC	11:30	14:30	03:00
14/09/2021	PC	16:30	19:30	03:00
30/10/2021	PC	07:50	10:50	03:00
05/11/2021	PC	12:00	15:00	03:00
24/11/2021	PC	13:50	16:50	03:00
06/12/2021	PC	10:15	13:15	03:00
22/12/2021	PC	08:10	11:10	03:00
22/12/2021	PC	11:40	14:40	03:00
24/01/2022	PC	09:15	12:15	03:00
03/02/2022	PC	14:40	17:40	03:00
15/02/2022	PC	11:40	14:40	03:00
28/02/2022	PC	15:10	17:10	02:00
01/04/2022	PC	10:05	13:05	03:00
01/04/2022	PC	17:05	20:05	03:00
Total Hours				**72**

Table A1-3
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 3

Date	Surveyor	Start	End	Survey Duration
27/04/2021	PC	14:00	17:00	03:00
29/04/2021	PC	17:30	20:30	03:00
19/05/2021	PC	14:00	17:00	03:00
25/05/2021	PC	16:30	19:30	03:00
05/06/2021	PC	18:00	21:00	03:00
05/07/2021	PC	16:00	19:00	03:00
29/07/2021	PC	18:00	21:00	03:00
30/07/2021	PC	10:40	13:40	03:00
27/08/2021	PC	09:30	12:30	03:00
28/08/2021	PC	17:30	20:30	03:00
14/09/2021	PC	09:30	12:30	03:00
15/09/2021	PC	13:00	16:00	03:00
30/10/2021	PC	11:20	14:20	03:00
30/10/2021	PC	14:50	17:50	03:00
04/12/2021	PC	12:00	15:00	03:00
09/12/2021	PC	13:00	16:00	03:00
21/12/2021	PC	13:00	16:00	03:00
22/12/2021	PC	15:10	16:40	01:30
23/12/2021	PC	08:40	10:10	01:30
04/02/2022	PC	07:40	10:40	03:00
04/02/2022	PC	14:40	17:40	03:00
17/02/2022	PC	07:10	10:10	03:00
01/03/2022	PC	08:30	11:30	03:00
01/04/2022	PC	06:35	09:35	03:00
02/04/2022	PC	17:03	20:03	03:00
Total Hours				**72**

Table A1-4
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 4

Date	Surveyor	Start	End	Survey Duration
27/04/2021	PC	17:30	20:30	03:00
30/04/2021	PC	14:00	17:00	03:00
25/05/2021	PC	13:00	16:00	03:00
30/05/2021	PC	10:00	13:00	03:00
05/06/2021	PC	11:00	14:00	03:00
09/07/2021	PC	06:15	09:15	03:00
30/07/2021	PC	17:40	20:40	03:00
31/07/2021	PC	06:00	09:00	03:00
27/08/2021	PC	13:00	16:00	03:00
28/08/2021	PC	14:00	17:00	03:00
14/09/2021	PC	13:00	16:00	03:00
15/09/2021	PC	09:30	12:30	03:00
04/11/2021	PC	14:00	17:00	03:00
05/11/2021	PC	08:30	11:30	03:00
06/12/2021	PC	13:45	16:45	03:00
10/12/2021	PC	09:50	12:50	03:00
23/12/2021	PC	10:40	12:10	01:30
29/12/2021	PC	08:30	10:00	01:30
29/12/2021	PC	10:00	13:00	03:00
04/01/2022	PC	12:45	15:45	03:00
03/02/2022	PC	11:10	14:10	03:00
28/02/2022	PC	06:48	09:48	03:00
28/02/2022	PC	10:18	13:18	03:00
01/04/2022	PC	13:35	16:35	03:00
02/04/2022	PC	13:33	16:33	03:00
Total Hours				**72**

Table A1-5
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 5

Date	Surveyor	Start	End	Survey Duration
30/04/2021	NV	11:30	14:30	03:00
01/05/2021	NV	10:25	13:25	03:00
15/05/2021	NV	10:35	13:35	03:00
15/05/2021	NV	14:05	17:05	03:00
14/06/2021	NV	09:20	12:20	03:00
14/06/2021	NV	12:50	15:50	03:00
14/07/2021	NV	14:45	17:45	03:00
15/07/2021	NV	13:45	16:45	03:00
09/08/2021	NV	07:30	10:30	03:00
11/08/2021	NV	17:30	20:30	03:00
20/09/2021	NV	13:40	16:40	03:00
20/09/2021	NV	17:05	20:05	03:00
22/10/2021	NV	07:30	10:30	03:00
22/10/2021	NV	15:45	18:45	03:00
10/11/2021	NV	12:20	15:20	03:00
11/11/2021	NV	14:10	17:10	03:00
17/12/2021	NV	10:10	13:10	03:00
17/12/2021	NV	13:40	16:40	03:00
05/01/2022	NV	08:05	11:05	03:00
05/01/2022	NV	11:35	14:35	03:00
10/02/2022	NV	07:40	10:40	03:00
10/02/2022	NV	15:00	18:00	03:00
12/03/2022	NV	12:50	15:50	03:00
12/03/2022	NV	06:50	09:50	03:00
Total Hours				**72**

Table A1-6
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 6

Date	Surveyor	Start	End	Survey Duration
28/04/2021	NV	14:05	17:05	03:00
28/04/2021	NV	17:35	20:35	03:00
14/05/2021	NV	05:00	08:00	03:00
14/05/2021	NV	08:30	11:30	03:00
09/06/2021	NV	13:30	16:30	03:00
09/06/2021	NV	17:00	20:00	03:00
14/07/2021	NV	11:15	14:15	03:00
14/07/2021	NV	19:16	22:16	03:00
09/08/2021	NV	11:00	14:00	03:00
11/08/2021	NV	14:00	17:00	03:00
20/09/2021	NV	06:40	09:40	03:00
20/09/2021	NV	10:10	13:10	03:00
23/10/2021	NV	07:35	10:35	03:00
23/10/2021	NV	15:45	18:45	03:00
10/11/2021	NV	08:50	11:50	03:00
11/11/2021	NV	10:40	13:40	03:00
13/12/2021	NV	08:05	11:05	03:00
13/12/2021	NV	13:45	16:45	03:00
06/01/2022	NV	14:00	17:00	03:00
06/02/2022	NV	08:20	11:20	03:00
12/02/2022	NV	11:20	14:20	03:00
12/02/2022	NV	15:00	18:00	03:00
14/03/2022	NV	14:00	17:00	03:00
14/03/2022	NV	10:30	13:30	03:00
Total Hours				**72**

Table A1-7
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 7

Date	Surveyor	Start	End	Survey Duration
30/04/2021	NV	08:00	11:00	03:00
01/05/2021	NV	06:55	09:55	03:00
14/05/2021	NV	14:20	17:20	03:00
14/05/2021	NV	18:50	21:50	03:00
10/06/2021	NV	13:50	16:50	03:00
10/06/2021	NV	17:20	20:20	03:00
15/07/2021	NV	10:15	13:15	03:00
15/07/2021	NV	19:15	22:15	03:00
09/08/2021	NV	14:30	17:30	03:00
11/08/2021	NV	10:30	13:30	03:00
17/09/2021	NV	13:20	16:20	03:00
17/09/2021	NV	16:50	19:50	03:00
12/10/2021	NV	11:15	14:15	03:00
12/10/2021	NV	14:45	17:45	03:00
08/11/2021	NV	14:10	17:10	03:00
12/11/2021	NV	09:40	12:40	03:00
20/12/2021	NV	13:45	16:45	03:00
04/01/2022	NV	09:00	12:00	03:00
04/01/2022	NV	12:30	15:30	03:00
11/02/2022	NV	12:30	15:30	03:00
11/02/2022	NV	09:00	12:00	03:00
15/03/2022	NV	14:30	17:30	03:00
15/03/2022	NV	11:00	14:00	03:00
Total Hours				**72**

Table A1-8
Details of breeding raptor surveys undertaken at Coolglass Wind Farm

Date	Surveyor	Start	End	Survey Duration
19/05/2021	PC	10:00	14:00	04:00
27/05/2021	PC	10:30	14:30	04:00
08/07/2021	PC	13:00	17:00	04:00
29/07/2021	PC	12:00	18:00	06:00
31/07/2021	PC	12:30	19:30	07:00
Total Hours				**25**

Table A1-9
Details of feeding distribution surveys undertaken at Coolglass Wind Farm

Date	Surveyor	Start	End	Survey Duration
22/10/2021	NV	10:30	14:10	03:40
23/10/2021	NV	10:35	14:35	04:00
13/12/2021	NV	11:05	13:45	02:40
29/12/2021	NV	11:10	14:10	03:00
04/01/2022	NV	15:30	17:00	01:30
05/01/2022	NV	14:35	16:00	01:25
10/02/2022	NV	10:40	13:40	03:00
11/02/2022	NV	07:50	09:00	01:10
11/02/2022	NV	15:30	18:00	02:30
14/03/2022	NV	07:00	10:00	03:00
15/03/2022	NV	07:05	10:05	03:00
Total Hours				**28:55**

APPENDIX 02

Weather Data

Table A2-1
Weather data collected during flight activity surveys undertaken at VP1

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
28/04/2021	PC	14:00	17:00	1	3	NE	0	5	2	2	0	0	8
28/04/2021	PC	14:00	17:00	2	3	NE	0	4	2	2	0	0	8
28/04/2021	PC	14:00	17:00	3	3	NE	0	6	2	2	0	0	8
28/04/2021	PC	17:30	20:30	1	3	NE	0	5	2	2	0	0	8
28/04/2021	PC	17:30	20:30	2	3	NE	0	6	2	2	0	0	8
28/04/2021	PC	17:30	20:30	3	3	NE	0	6	2	2	0	0	8
19/05/2021	PC	17:30	20:30	1	2	W	0	4	2	2	0	0	12
19/05/2021	PC	17:30	20:30	2	2	W	0	5	2	2	0	0	12
19/05/2021	PC	17:30	20:30	3	2	W	2	8	2	2	0	0	11
30/05/2021	PC	13:30	16:30	1	2	S	0	6	2	2	0	0	17
30/05/2021	PC	13:30	16:30	2	2	S	0	5	2	2	0	0	18
30/05/2021	PC	13:30	16:30	3	2	S	0	5	2	2	0	0	18
05/06/2021	PC	07:30	10:30	1	2	S	2	7	2	2	0	0	12
05/06/2021	PC	07:30	10:30	2	2	S	2	7	2	2	0	0	14
05/06/2021	PC	07:30	10:30	3	2	S	2	8	2	2	0	0	14
05/07/2021	PC	09:00	12:00	1	2	S	0	2	2	2	0	0	15
05/07/2021	PC	09:00	12:00	2	2	S	0	4	2	2	0	0	17
05/07/2021	PC	09:00	12:00	3	2	S	0	6	2	2	0	0	14
30/07/2021	PC	07:10	10:10	1	2	NW	1	8	1	2	0	0	12

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°c)
30/07/2021	PC	07:10	10:10	2	1	NW	2	8	1	2	0	0	13
30/07/2021	PC	07:10	10:10	3	2	NW	1	8	1	2	0	0	13
31/07/2021	PC	09:30	12:30	1	2	W	1	8	1	2	0	0	13
31/07/2021	PC	09:30	12:30	2	2	W	2	8	1	2	0	0	15
31/07/2021	PC	09:30	12:30	3	2	W	0	8	1	2	0	0	15
27/08/2021	PC	16:30	19:30	1	1	E	0	1	2	2	0	0	22
27/08/2021	PC	16:30	19:30	2	1	E	0	1	2	2	0	0	22
27/08/2021	PC	16:30	19:30	3	2	E	0	1	2	2	0	0	20
28/08/2021	PC	07:00	10:00	1	1	E	0	0	0	2	0	0	11
28/08/2021	PC	07:00	10:00	2	1	E	0	0	0	2	0	0	14
28/08/2021	PC	07:00	10:00	3	1	E	0	0	0	2	0	0	15
11/09/2021	PC	08:00	11:00	1	2	NW	1	8	0	1	0	0	14
11/09/2021	PC	08:00	11:00	2	2	NW	1	7	0	2	0	0	15
11/09/2021	PC	08:00	11:00	3	2	NW	2	8	0	2	0	0	16
13/09/2021	PC	17:15	20:15	1	2	S	2	8	2	2	0	0	14
13/09/2021	PC	17:15	20:15	2	3	S	2	7	2	2	0	0	12
13/09/2021	PC	17:15	20:15	3	3	S	0	8	2	2	0	0	11
04/11/2021	PC	07:02	10:02	1	0	N	0	1	2	2	0	0	0
04/11/2021	PC	07:02	10:02	2	0	N	0	1	2	2	0	0	4
04/11/2021	PC	07:02	10:02	3	2	N	0	1	2	2	0	0	6
04/11/2021	PC	10:32	13:32	1	2	N	0	1	2	2	0	0	9

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°c)
04/11/2021	PC	10:32	13:32	2	3	N	0	1	2	2	0	0	10
04/11/2021	PC	10:32	13:32	3	3	N	0	2	2	2	0	0	10
04/12/2021	PC	08:30	11:30	1	2	N	0	8	1	2	0	0	4
04/12/2021	PC	08:30	11:30	2	2	N	0	8	1	2	0	0	5
04/12/2021	PC	08:30	11:30	3	2	N	0	8	1	2	0	0	5
10/12/2021	PC	13:20	16:20	1	3	W	0	2	2	2	0	0	4
10/12/2021	PC	13:20	16:20	2	3	W	0	2	2	2	0	0	4
10/12/2021	PC	13:20	16:20	3	3	W	0	3	2	2	0	0	4
21/12/2021	PC	09:30	12:30	1	1	SE	0	8	1	2	0	0	5
21/12/2021	PC	09:30	12:30	2	2	SE	0	8	1	2	0	0	5
21/12/2021	PC	09:30	12:30	3	2	SE	0	8	1	2	0	0	5
29/12/2021	PC	13:30	16:30	1	4	SW	0	8	1	2	0	0	14
29/12/2021	PC	13:30	16:30	2	4	SW	2	8	1	2	0	0	14
29/12/2021	PC	13:30	16:30	3	4	SW	1	8	1	2	0	0	13
03/02/2022	PC	07:40	10:40	1	3	SW	0	5	3	2	0	0	7
03/02/2022	PC	07:40	10:40	2	3	SW	0	4	3	2	0	0	9
03/02/2022	PC	07:40	10:40	3	4	SW	2	7	2	2	0	0	9
04/02/2022	PC	11:10	14:10	1	4	W	0	6	1	2	0	0	4
04/02/2022	PC	11:10	14:10	2	4	W	0	4	1	2	0	0	5
04/02/2022	PC	11:10	14:10	3	4	W	0	4	1	2	0	0	5
16/02/2022	PC	07:15	10:15	1	4	W	0	7	1	2	0	0	12

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°c)
16/02/2022	PC	07:15	10:15	2	5	W	1	8	1	2	0	0	12
16/02/2022	PC	07:15	10:15	3	5	W	4	8	1	1	0	0	12
28/02/2022	PC	13:48	16:48	1	1	W	1	8	1	2	0	0	8
28/02/2022	PC	13:48	16:48	2	1	W	0	6	2	2	0	0	8
28/02/2022	PC	13:48	16:48	3	1	W	0	5	2	2	0	0	7
02/04/2022	PC	06:33	09:33	1	2	NW	0	8	1	2	0	0	2
02/04/2022	PC	06:33	09:33	2	2	NW	0	8	1	2	0	0	3
02/04/2022	PC	06:33	09:33	3	2	NW	2	8	1	2	0	0	4
02/04/2022	PC	10:03	13:03	1	2	NW	1	8	1	2	0	0	6
02/04/2022	PC	10:03	13:03	2	1	NW	0	7	1	2	0	0	6
02/04/2022	PC	10:03	13:03	3	1	NW	0	7	1	2	0	0	6

Rain/ Precipitation

None	0
Drizzle	1
Light showers/snow	2
Heavy showers/snow	3
Heavy rain/snow	4

Cloud Cover

Expressed in oktas (n/8)

Cloud Height

Height of cloud above average height of viewshed

<150m	0
150-500m	1
>500m	2

Visibility

Poor (<1km)	0
Moderate (1-3km)	1
Good (>3km)	2

Lying Snow

None	0
On site	1
On higher ground	2

Frost

None	0
Ground	1
All day	2

Table A2-2
Weather data collected during flight activity surveys undertaken at VP2

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
29/04/2021	PC	14:00	17:00	1	2	E	3	6	2	2	0	0	9
29/04/2021	PC	14:00	17:00	2	2	E	3	7	2	2	0	0	9
29/04/2021	PC	14:00	17:00	3	2	E	0	6	2	2	0	0	10
30/04/2021	PC	17:30	20:30	1	2	N	0	6	2	2	0	0	11
30/04/2021	PC	17:30	20:30	2	2	N	0	6	2	2	0	0	10
30/04/2021	PC	17:30	20:30	3	2	N	2	6	2	2	0	0	10
25/05/2021	PC	09:30	12:30	1	3	NW	0	8	1	2	0	0	10
25/05/2021	PC	09:30	12:30	2	3	NW	2	8	1	2	0	0	10
25/05/2021	PC	09:30	12:30	3	3	NW	2	6	2	2	0	0	11
27/05/2021	PC	14:30	17:30	1	3	SE	1	8	1	2	0	0	12
27/05/2021	PC	14:30	17:30	2	3	SE	1	8	1	2	0	0	10
27/05/2021	PC	14:30	17:30	3	3	SE	1	8	1	2	0	0	9
05/06/2021	PC	14:30	17:30	1	2	S	0	8	1	2	0	0	16
05/06/2021	PC	14:30	17:30	2	2	S	0	8	1	2	0	0	16
05/06/2021	PC	14:30	17:30	3	2	S	0	7	1	2	0	0	16
05/07/2021	PC	12:30	15:30	1	2	S	2	6	1	2	0	0	15
05/07/2021	PC	12:30	15:30	2	1	S	0	6	1	2	0	0	16
05/07/2021	PC	12:30	15:30	3	1	S	2	6	1	2	0	0	16
29/07/2021	PC	09:00	12:00	1	3	W	0	6	1	2	0	0	15
29/07/2021	PC	09:00	12:00	2	3	W	0	7	1	2	0	0	16

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
29/07/2021	PC	09:00	12:00	3	3	W	0	7	1	2	0	0	16
30/07/2021	PC	14:10	17:10	1	3	NW	3	8	0	2	0	0	13
30/07/2021	PC	14:10	17:10	2	3	NW	3	6	1	2	0	0	15
30/07/2021	PC	14:10	17:10	3	4	NW	2	7	1	2	0	0	15
27/08/2021	PC	06:00	09:00	1	1	NE	0	0	0	2	0	0	11
27/08/2021	PC	06:00	09:00	2	1	NE	0	0	0	2	0	0	12
27/08/2021	PC	06:00	09:00	3	1	NE	0	0	0	2	0	0	15
28/08/2021	PC	10:30	13:30	1	1	E	0	1	1	2	0	0	16
28/08/2021	PC	10:30	13:30	2	2	E	0	1	1	2	0	0	17
28/08/2021	PC	10:30	13:30	3	1	E	0	2	1	2	0	0	18
11/09/2021	PC	11:30	14:30	1	2	NW	3	7	0	2	0	0	16
11/09/2021	PC	11:30	14:30	2	2	NW	3	7	0	2	0	0	16
11/09/2021	PC	11:30	14:30	3	2	NW	4	8	0	2	0	0	16
14/09/2021	PC	16:30	19:30	1	2	S	0	8	2	2	0	0	15
14/09/2021	PC	16:30	19:30	2	2	S	2	7	2	2	0	0	15
14/09/2021	PC	16:30	19:30	3	2	S	0	8	2	2	0	0	14
30/10/2021	PC	07:50	10:50	1	1	SW	0	0	0	2	0	0	5
30/10/2021	PC	07:50	10:50	2	1	SW	0	0	0	2	0	0	5
30/10/2021	PC	07:50	10:50	3	1	SW	0	0	0	2	0	0	6
05/11/2021	PC	12:00	15:00	1	2	W	0	8	0	2	0	0	10
05/11/2021	PC	12:00	15:00	2	3	W	0	8	0	2	0	0	10

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
05/11/2021	PC	12:00	15:00	3	2	W	0	8	0	2	0	0	10
24/11/2021	PC	13:50	16:50	1	3	NW	0	3	1	2	0	0	7
24/11/2021	PC	13:50	16:50	2	2	NW	0	3	1	2	0	0	7
24/11/2021	PC	13:50	16:50	3	2	NW	0	2	1	2	0	0	6
06/12/2021	PC	10:15	13:15	1	3	W	3	6	1	2	0	0	4
06/12/2021	PC	10:15	13:15	2	3	W	0	4	1	2	0	0	5
06/12/2021	PC	10:15	13:15	3	3	W	0	4	1	2	0	0	5
22/12/2021	PC	08:10	11:10	1	3	SE	1	8	1	2	0	0	6
22/12/2021	PC	08:10	11:10	2	3	SE	1	8	1	2	0	0	7
22/12/2021	PC	08:10	11:10	3	3	SE	2	7	1	2	0	0	7
22/12/2021	PC	11:40	14:40	1	3	SE	1	8	0	1	0	0	6
22/12/2021	PC	11:40	14:40	2	3	SE	1	8	0	1	0	0	6
22/12/2021	PC	11:40	14:40	3	3	SE	1	8	0	1	0	0	6
24/01/2022	PC	09:15	12:15	1	2	SE	0	8	1	2	0	0	5
24/01/2022	PC	09:15	12:15	2	2	SE	0	8	1	2	0	0	5
24/01/2022	PC	09:15	12:15	3	2	SE	0	8	1	2	0	0	5
03/02/2022	PC	14:40	17:40	1	4	SW	0	5	1	2	0	0	9
03/02/2022	PC	14:40	17:40	2	4	SW	0	3	2	2	0	0	9
03/02/2022	PC	14:40	17:40	3	4	SW	0	8	1	2	0	0	8
15/02/2022	PC	11:40	14:40	1	4	W	0	8	0	1	0	0	8
15/02/2022	PC	11:40	14:40	2	3	W	0	8	1	2	0	0	9

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
15/02/2022	PC	11:40	14:40	3	3	W	2	8	1	2	0	0	9
28/02/2022	PC	15:10	17:10	1	3	W	1	8	1	2	0	0	7
28/02/2022	PC	15:10	17:10	2	3	W	4	8	1	1	0	0	7
01/04/2022	PC	10:05	13:05	1	1	N	0	2	1	2	0	0	3
01/04/2022	PC	10:05	13:05	2	2	N	0	6	1	2	0	0	4
01/04/2022	PC	10:05	13:05	3	2	N	0	4	1	2	0	0	5
01/04/2022	PC	17:05	20:05	1	3	N	0	8	1	2	0	0	6
01/04/2022	PC	17:05	20:05	2	2	N	0	8	1	2	0	0	6
01/04/2022	PC	17:05	20:05	3	2	N	2	8	1	2	0	0	5

Rain/ Precipitation
None 0
Drizzle 1
Light showers/snow 2
Heavy showers/snow 3
Heavy rain/snow 4

Cloud Cover
Expressed in oktas (n/8)
Cloud Height
Height of cloud above average height of viewshed
<150m 0
150-500m 1
>500m 2

Visibility
Poor (<1km) 0
Moderate (1-3km) 1
Good (>3km) 2

Lying Snow
None 0
On site 1
On higher ground 2

Frost
None 0
Ground 1
All day 2

Table A2-3
Weather data collected during flight activity surveys undertaken at VP3

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
27/04/2021	PC	14:00	17:00	1	1	S	0	6	2	2	0	0	11
27/04/2021	PC	14:00	17:00	2	2	S	0	6	2	2	0	0	11
27/04/2021	PC	14:00	17:00	3	2	S	0	6	2	2	0	0	11
29/04/2021	PC	17:30	20:30	1	2	NE	0	4	2	2	0	0	10
29/04/2021	PC	17:30	20:30	2	1	NE	0	5	2	2	0	0	10
29/04/2021	PC	17:30	20:30	3	1	NE	0	5	2	2	0	0	9
19/05/2021	PC	14:00	17:00	1	3	W	2	6	2	2	0	0	13
19/05/2021	PC	14:00	17:00	2	2	W	0	5	2	2	0	0	13
19/05/2021	PC	14:00	17:00	3	2	W	0	4	2	2	0	0	13
25/05/2021	PC	16:30	19:30	1	3	NW	2	6	2	2	0	0	11
25/05/2021	PC	16:30	19:30	2	3	NW	2	7	2	2	0	0	10
25/05/2021	PC	16:30	19:30	3	3	NW	2	6	2	2	0	0	9
05/06/2021	PC	18:00	21:00	1	3	S	0	7	1	2	0	0	16
05/06/2021	PC	18:00	21:00	2	2	S	0	6	1	2	0	0	15
05/06/2021	PC	18:00	21:00	3	2	S	0	6	1	2	0	0	14
05/07/2021	PC	16:00	19:00	1	3	S	0	6	2	2	0	0	16
05/07/2021	PC	16:00	19:00	2	3	S	2	7	1	2	0	0	15
05/07/2021	PC	16:00	19:00	3	3	S	2	7	1	2	0	0	14
29/07/2021	PC	18:00	21:00	1	2	W	0	8	1	2	0	0	16
29/07/2021	PC	18:00	21:00	2	2	W	3	8	1	2	0	0	14

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
29/07/2021	PC	18:00	21:00	3	2	W	4	8	1	2	0	0	13
30/07/2021	PC	10:40	13:40	1	3	NW	0	8	0	2	0	0	13
30/07/2021	PC	10:40	13:40	2	3	NW	2	8	0	2	0	0	13
30/07/2021	PC	10:40	13:40	3	3	NW	2	8	0	2	0	0	13
27/08/2021	PC	09:30	12:30	1	3	NE	0	2	0	2	0	0	19
27/08/2021	PC	09:30	12:30	2	3	E	0	1	1	2	0	0	19
27/08/2021	PC	09:30	12:30	3	2	E	0	1	2	2	0	0	21
28/08/2021	PC	17:30	20:30	1	2	E	0	4	1	2	0	0	21
28/08/2021	PC	17:30	20:30	2	2	E	0	4	1	2	0	0	19
28/08/2021	PC	17:30	20:30	3	2	E	0	3	1	2	0	0	18
14/09/2021	PC	09:30	12:30	1	2	S	0	8	0	1	0	0	14
14/09/2021	PC	09:30	12:30	2	2	S	0	6	1	2	0	0	15
14/09/2021	PC	09:30	12:30	3	2	S	0	5	1	2	0	0	15
15/09/2021	PC	13:00	16:00	1	3	W	2	8	1	2	0	0	15
15/09/2021	PC	13:00	16:00	2	2	W	0	8	1	2	0	0	15
15/09/2021	PC	13:00	16:00	3	2	W	0	7	1	2	0	0	15
30/10/2021	PC	11:20	14:20	1	3	SW	0	3	1	2	0	0	10
30/10/2021	PC	11:20	14:20	2	3	SW	0	4	1	2	0	0	10
30/10/2021	PC	11:20	14:20	3	3	SW	0	4	1	2	0	0	10
30/10/2021	PC	14:50	17:50	1	3	SW	0	5	1	2	0	0	10
30/10/2021	PC	14:50	17:50	2	3	SW	0	5	1	2	0	0	10

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
30/10/2021	PC	14:50	17:50	3	3	SW	0	6	1	2	0	0	9
04/12/2021	PC	12:00	15:00	1	2	N	0	8	1	2	0	0	6
04/12/2021	PC	12:00	15:00	2	2	N	0	8	1	2	0	0	6
04/12/2021	PC	12:00	15:00	3	2	N	0	8	1	2	0	0	5
09/12/2021	PC	13:00	16:00	1	3	W	0	7	1	2	0	0	4
09/12/2021	PC	13:00	16:00	2	3	W	1	7	1	2	0	0	4
09/12/2021	PC	13:00	16:00	3	3	W	1	8	1	2	0	0	3
21/12/2021	PC	13:00	16:00	1	3	SE	0	8	1	2	0	0	5
21/12/2021	PC	13:00	16:00	2	3	SE	0	8	1	2	0	0	5
21/12/2021	PC	13:00	16:00	3	3	SE	0	8	1	2	0	0	5
22/12/2021	PC	15:10	16:40	1	3	SE	1	8	0	1	0	0	6
22/12/2021	PC	15:10	16:40	2	3	SE	1	8	0	1	0	0	5
23/12/2021	PC	08:40	10:10	1	2	SW	0	8	1	2	0	0	9
23/12/2021	PC	08:40	10:10	2	2	SW	0	7	1	2	0	0	11
04/02/2022	PC	07:40	10:40	1	3	W	0	2	2	2	0	0	0
04/02/2022	PC	07:40	10:40	2	3	W	0	2	2	2	0	0	2
04/02/2022	PC	07:40	10:40	3	3	W	0	3	2	2	0	0	4
04/02/2022	PC	14:40	17:40	1	3	W	2	5	1	2	0	0	5
04/02/2022	PC	14:40	17:40	2	3	W	0	3	2	2	0	0	5
04/02/2022	PC	14:40	17:40	3	3	NW	0	3	2	2	0	0	5
17/02/2022	PC	07:10	10:10	1	3	W	0	6	1	2	0	0	3

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
17/02/2022	PC	07:10	10:10	2	4	W	2	7	1	2	0	0	4
17/02/2022	PC	07:10	10:10	3	3	W	0	8	1	2	0	0	4
01/03/2022	PC	08:30	11:30	1	1	NE	0	2	2	2	0	1	0
01/03/2022	PC	08:30	11:30	2	1	NE	0	3	2	2	0	1	0
01/03/2022	PC	08:30	11:30	3	1	NE	0	3	2	2	0	1	2
01/04/2022	PC	06:35	09:35	1	0	N	0	0	0	2	0	1	-2
01/04/2022	PC	06:35	09:35	2	1	N	0	0	0	2	0	1	-1
01/04/2022	PC	06:35	09:35	3	1	N	0	0	0	2	0	1	0
02/04/2022	PC	17:03	20:03	1	2	N	2	5	1	2	0	0	8
02/04/2022	PC	17:03	20:03	2	1	N	0	5	1	2	0	0	6
02/04/2022	PC	17:03	20:03	3	1	N	3	7	1	2	0	0	6

Rain/ Precipitation
None 0
Drizzle 1
Light showers/snow 2
Heavy showers/snow 3
Heavy rain/snow 4

Cloud Cover
Expressed in oktas (n/8)
Cloud Height
Height of cloud above average height of viewshed
<150m 0
150-500m 1
>500m 2

Visibility
Poor (<1km) 0
Moderate (1-3km) 1
Good (>3km) 2

Lying Snow
None 0
On site 1
On higher ground 2

Frost
None 0
Ground 1
All day 2

Table A2-4
Weather data collected during flight activity surveys undertaken at VP4

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
27/04/2021	PC	17:30	20:30	1	2	S	0	5	2	2	0	0	11
27/04/2021	PC	17:30	20:30	2	2	SE	0	6	2	2	0	0	11
27/04/2021	PC	17:30	20:30	3	2	SE	0	6	2	2	0	0	10
30/04/2021	PC	14:00	17:00	1	2	N	0	3	3	2	2	0	11
30/04/2021	PC	14:00	17:00	2	2	N	0	4	4	2	2	0	11
30/04/2021	PC	14:00	17:00	3	2	N	0	5	5	2	2	0	11
25/05/2021	PC	13:00	16:00	1	3	NW	0	7	2	2	0	0	11
25/05/2021	PC	13:00	16:00	2	3	NW	2	7	2	2	0	0	11
25/05/2021	PC	13:00	16:00	3	3	NW	2	6	2	2	0	0	11
30/05/2021	PC	10:00	13:00	1	2	S	0	3	2	2	0	0	16
30/05/2021	PC	10:00	13:00	2	2	S	0	4	2	2	0	0	17
30/05/2021	PC	10:00	13:00	3	2	S	0	6	2	2	0	0	17
05/06/2021	PC	11:00	14:00	1	2	S	2	8	1	2	0	0	15
05/06/2021	PC	11:00	14:00	2	2	S	2	7	1	2	0	0	15
05/06/2021	PC	11:00	14:00	3	1	S	2	8	1	2	0	0	15
09/07/2021	PC	06:15	09:15	1	2	S	0	8	1	2	0	0	12
09/07/2021	PC	06:15	09:15	2	2	S	0	8	1	2	0	0	13
09/07/2021	PC	06:15	09:15	3	3	S	0	8	1	2	0	0	13
30/07/2021	PC	17:40	20:40	1	4	NW	2	7	1	2	0	0	15
30/07/2021	PC	17:40	20:40	2	4	NW	0	7	1	2	0	0	15

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
30/07/2021	PC	17:40	20:40	3	3	NW	0	7	1	2	0	0	14
31/07/2021	PC	06:00	09:00	1	3	W	0	8	0	2	0	0	12
31/07/2021	PC	06:00	09:00	2	3	W	0	8	0	2	0	0	13
31/07/2021	PC	06:00	09:00	3	3	W	1	8	0	2	0	0	13
27/08/2021	PC	13:00	16:00	1	2	E	0	1	2	2	0	0	21
27/08/2021	PC	13:00	16:00	2	2	E	0	1	2	2	0	0	21
27/08/2021	PC	13:00	16:00	3	2	E	0	1	2	2	0	0	21
28/08/2021	PC	14:00	17:00	1	3	E	0	3	1	2	0	0	19
28/08/2021	PC	14:00	17:00	2	2	E	0	3	1	2	0	0	21
28/08/2021	PC	14:00	17:00	3	2	E	0	4	1	2	0	0	21
14/09/2021	PC	13:00	16:00	1	2	S	0	7	2	2	0	0	15
14/09/2021	PC	13:00	16:00	2	3	S	0	7	2	2	0	0	15
14/09/2021	PC	13:00	16:00	3	2	S	0	8	2	2	0	0	15
15/09/2021	PC	09:30	12:30	1	1	W	0	8	0	0	0	0	14
15/09/2021	PC	09:30	12:30	2	1	W	0	8	1	2	0	0	15
15/09/2021	PC	09:30	12:30	3	1	W	0	8	1	2	0	0	15
04/11/2021	PC	14:00	17:00	1	3	N	0	6	1	2	0	0	9
04/11/2021	PC	14:00	17:00	2	2	N	0	7	1	2	0	0	9
04/11/2021	PC	14:00	17:00	3	3	N	0	7	1	2	0	0	7
05/11/2021	PC	08:30	11:30	1	2	W	0	8	0	2	0	0	8
05/11/2021	PC	08:30	11:30	2	2	W	0	8	0	2	0	0	9

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
05/11/2021	PC	08:30	11:30	3	2	W	0	8	0	2	0	0	9
06/12/2021	PC	13:45	16:45	1	3	W	0	4	1	2	0	0	4
06/12/2021	PC	13:45	16:45	2	3	W	0	6	1	2	0	0	4
06/12/2021	PC	13:45	16:45	3	3	W	3	7	1	2	0	0	4
10/12/2021	PC	09:50	12:50	1	2	W	0	2	1	2	0	1	2
10/12/2021	PC	09:50	12:50	2	3	W	0	3	1	2	0	1	3
10/12/2021	PC	09:50	12:50	3	3	W	0	1	1	2	0	0	4
23/12/2021	PC	10:40	12:10	1	2	SW	0	8	1	2	0	0	11
23/12/2021	PC	10:40	12:10	2	3	SW	0	3	1	2	0	0	12
29/12/2021	PC	08:30	10:00	1	4	SW	0	8	1	2	0	0	8
29/12/2021	PC	08:30	10:00	2	4	SW	0	8	1	2	0	0	9
29/12/2021	PC	10:00	13:00	1	4	SW	2	8	1	2	0	0	10
29/12/2021	PC	10:00	13:00	2	4	SW	2	8	1	2	0	0	12
29/12/2021	PC	10:00	13:00	3	4	SW	0	8	1	2	0	0	14
04/01/2022	PC	12:45	15:45	1	3	S	0	8	0	1	0	0	5
04/01/2022	PC	12:45	15:45	2	2	S	0	8	0	1	0	0	5
04/01/2022	PC	12:45	15:45	3	2	S	0	8	0	1	0	0	5
03/02/2022	PC	11:10	14:10	1	4	SW	1	8	1	1	0	0	9
03/02/2022	PC	11:10	14:10	2	4	SW	2	8	1	2	0	0	10
03/02/2022	PC	11:10	14:10	3	4	SW	0	6	1	2	0	0	10
28/02/2022	PC	06:48	09:48	1	2	W	0	8	2	1	0	0	7

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
28/02/2022	PC	06:48	09:48	2	1	W	0	8	1	1	0	0	7
28/02/2022	PC	06:48	09:48	3	1	W	0	8	1	2	0	0	8
28/02/2022	PC	10:18	13:18	1	1	W	0	8	1	2	0	0	8
28/02/2022	PC	10:18	13:18	2	2	W	2	8	1	2	0	0	8
28/02/2022	PC	10:18	13:18	3	2	W	1	8	1	2	0	0	8
01/04/2022	PC	13:35	16:35	1	3	N	0	4	1	2	0	0	6
01/04/2022	PC	13:35	16:35	2	3	N	0	5	1	2	0	0	6
01/04/2022	PC	13:35	16:35	3	3	N	0	7	1	2	0	0	6
02/04/2022	PC	13:33	16:33	1	2	NW	3	7	1	2	0	0	6
02/04/2022	PC	13:33	16:33	2	2	NW	3	5	1	2	0	0	8
02/04/2022	PC	13:33	16:33	3	2	NW	3	6	1	2	0	0	9

Rain/ Precipitation
None 0
Drizzle 1
Light showers/snow 2
Heavy showers/snow 3
Heavy rain/snow 4

Cloud Cover
Expressed in oktas (n/8)
Cloud Height
Height of cloud above average height of viewshed
<150m 0
150-500m 1
>500m 2

Visibility
Poor (<1km) 0
Moderate (1-3km) 1
Good (>3km) 2

Lying Snow
None 0
On site 1
On higher ground 2

Frost
None 0
Ground 1
All day 2

Table A2-5
Weather data collected during flight activity surveys undertaken at VP5

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
30/04/2021	NV	11:30	14:30	1	2	NE	0	6	2	2	0	0	11
30/04/2021	NV	11:30	14:30	2	3	NE	2	6	2	2	0	0	11
30/04/2021	NV	11:30	14:30	3	3	NE	2	7	2	2	0	0	10
01/05/2021	NV	10:25	13:25	1	1	SE	0	0	0	2	0	0	8
01/05/2021	NV	10:25	13:25	2	1	SE	0	0	0	2	0	0	9
01/05/2021	NV	10:25	13:25	3	1	SE	0	0	0	2	0	0	10
15/05/2021	NV	10:35	13:35	1	1	SW	0	3	2	2	0	0	11
15/05/2021	NV	10:35	13:35	2	1	SW	0	3	2	2	0	0	13
15/05/2021	NV	10:35	13:35	3	2	S	0	2	2	2	0	0	14
15/05/2021	NV	14:05	17:05	1	2	S	0	2	2	2	0	0	15
15/05/2021	NV	14:05	17:05	2	2	SE	0	1	2	2	0	0	15
15/05/2021	NV	14:05	17:05	3	2	SE	0	1	2	2	0	0	16
14/06/2021	NV	09:20	12:20	1	2	NW	0	0	2	2	0	0	16
14/06/2021	NV	09:20	12:20	2	2	W	0	0	2	2	0	0	17
14/06/2021	NV	09:20	12:20	3	1	SW	0	1	2	2	0	0	19
14/06/2021	NV	12:50	15:50	1	1	SW	0	1	2	2	0	0	19
14/06/2021	NV	12:50	15:50	2	1	SW	0	0	2	2	0	0	21
14/06/2021	NV	12:50	15:50	3	1	SW	0	0	2	2	0	0	21
14/07/2021	NV	14:45	17:45	1	1	W	0	0	2	2	0	0	22
14/07/2021	NV	14:45	17:45	2	1	W	0	0	2	2	0	0	23

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
14/07/2021	NV	14:45	17:45	3	1	W	0	1	2	2	0	0	22
15/07/2021	NV	13:45	16:45	1	2	SW	0	0	n/a	2	0	0	22
15/07/2021	NV	13:45	16:45	2	2	S	0	0	n/a	2	0	0	23
15/07/2021	NV	13:45	16:45	3	2	S	0	0	n/a	2	0	0	23
09/08/2021	NV	07:30	10:30	1	2	SW	0	1	2	2	0	0	18
09/08/2021	NV	07:30	10:30	2	2	SW	0	2	2	2	0	0	17
09/08/2021	NV	07:30	10:30	3	2	W	0	2	2	2	0	0	18
11/08/2021	NV	17:30	20:30	1	2	W	0	1	2	2	0	0	18
11/08/2021	NV	17:30	20:30	2	2	W	0	2	2	2	0	0	18
11/08/2021	NV	17:30	20:30	3	1	W	0	1	2	2	0	0	17
20/09/2021	NV	13:40	16:40	1	3	W	0	6	1	2	0	0	15
20/09/2021	NV	13:40	16:40	2	2	W	2	7	1	2	0	0	15
20/09/2021	NV	13:40	16:40	3	2	NW	2	7	1	2	0	0	15
20/09/2021	NV	17:05	20:05	1	2	NW	2	6	1	2	0	0	15
20/09/2021	NV	17:05	20:05	2	2	NW	0	6	1	2	0	0	15
20/09/2021	NV	17:05	20:05	3	2	NW	0	5	1	2	0	0	14
22/10/2021	NV	07:30	10:30	1	3	W	1	6	1	2	0	0	7
22/10/2021	NV	07:30	10:30	2	3	W	0	7	1	2	0	0	8
22/10/2021	NV	07:30	10:30	3	3	W	0	7	1	2	0	0	9
22/10/2021	NV	15:45	18:45	1	2	W	0	6	1	2	0	0	9
22/10/2021	NV	15:45	18:45	2	2	W	0	6	1	2	0	0	8

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
22/10/2021	NV	15:45	18:45	3	1	SW	0	5	1	2	0	0	8
10/11/2021	NV	12:20	15:20	1	1	SW	0	7	1	2	0	0	10
10/11/2021	NV	12:20	15:20	2	2	SW	0	6	1	2	0	0	10
10/11/2021	NV	12:20	15:20	3	2	SW	0	6	1	2	0	0	10
11/11/2021	NV	14:10	17:10	1	3	SE	0	6	2	2	0	0	11
11/11/2021	NV	14:10	17:10	2	3	SE	0	8	1	2	0	0	12
11/11/2021	NV	14:10	17:10	3	4	SE	3	8	1	2	0	0	11
17/12/2021	NV	10:10	13:10	1	2	SE	0	5	1	2	0	0	8
17/12/2021	NV	10:10	13:10	2	2	SE	0	6	1	2	0	0	8
17/12/2021	NV	10:10	13:10	3	2	SE	0	5	1	2	0	0	7
17/12/2021	NV	13:40	16:40	1	2	SE	0	8	1	2	0	0	8
17/12/2021	NV	13:40	16:40	2	2	SE	0	7	1	2	0	0	7
17/12/2021	NV	13:40	16:40	3	1	SE	0	7	1	2	0	0	7
05/01/2022	NV	08:05	11:05	1	3	W	0	3	2	2	0	1	-1
05/01/2022	NV	08:05	11:05	2	2	WNW	0	4	2	2	0	1	0
05/01/2022	NV	08:05	11:05	3	2	WNW	0	3	2	2	0	0	0
05/01/2022	NV	11:35	14:35	1	2	WNW	0	5	2	2	0	0	2
05/01/2022	NV	11:35	14:35	2	2	WNW	0	3	2	2	0	0	2
05/01/2022	NV	11:35	14:35	3	1	W	0	3	2	2	0	0	2
10/02/2022	NV	07:40	10:40	1	3	W	0	8	1		1	0	9
10/02/2022	NV	07:40	10:40	2	4	W	1	8	1		1	0	10

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
10/02/2022	NV	07:40	10:40	3	4	WNW	1	8	1		1	0	10
10/02/2022	NV	15:00	18:00	1	2	W	0	5	1	1	0	0	7
10/02/2022	NV	15:00	18:00	2	2	W	0	6	1	2	0	0	7
10/02/2022	NV	15:00	18:00	3	3	WNW	2	6	1	1	0	0	6
12/03/2022	NV	06:50	09:50	1	2	WSW	0	3	1	2	0	0	7
12/03/2022	NV	06:50	09:50	2	2	WSW	0	4	1	2	0	0	8
12/03/2022	NV	06:50	09:50	3	2	SW	1	6	1	1	0	0	9
12/03/2022	NV	12:50	15:50	1	2	WSW	0	5	1	2	0	0	8
12/03/2022	NV	12:50	15:50	2	2	SW	0	6	1	2	0	0	9
12/03/2022	NV	12:50	15:50	3	1	SW	0	6	1	2	0	0	9

Rain/ Precipitation
None 0
Drizzle 1
Light showers/snow 2
Heavy showers/snow 3
Heavy rain/snow 4

Cloud Cover
Expressed in oktas (n/8)
Cloud Height
Height of cloud above average height of viewshed
<150m 0
150-500m 1
>500m 2

Visibility
Poor (<1km) 0
Moderate (1-3km) 1
Good (>3km) 2

Lying Snow
None 0
On site 1
On higher ground 2

Frost
None 0
Ground 1
All day 2

Table A2-6
Weather data collected during flight activity surveys undertaken at VP6

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
28/04/2021	NV	14:05	17:05	1	1	NE	0	3	2	2	0	0	12
28/04/2021	NV	14:05	17:05	2	1	NE	0	3	2	2	0	0	13
28/04/2021	NV	14:05	17:05	3	1	NE	0	4	2	2	0	0	12
28/04/2021	NV	17:35	20:35	1	1	NE	0	4	2	2	0	0	12
28/04/2021	NV	17:35	20:35	2	2	NE	0	5	2	2	0	0	11
28/04/2021	NV	17:35	20:35	3	2	NE	0	4	2	2	0	0	11
14/05/2021	NV	05:00	08:00	1	1	SW	0	3	2	2	0	0	8
14/05/2021	NV	05:00	08:00	2	1	SW	0	3	2	2	0	0	11
14/05/2021	NV	05:00	08:00	3	2	SE	0	4	2	2	0	0	14
14/05/2021	NV	08:30	11:30	1	1	SE	0	2	2	2	0	0	13
14/05/2021	NV	08:30	11:30	2	1	SE	0	1	2	2	0	0	14
14/05/2021	NV	08:30	11:30	3	1	S	0	1	2	2	0	0	15
09/06/2021	NV	13:30	16:30	1	3	SW	0	5	2	2	0	0	15
09/06/2021	NV	13:30	16:30	2	3	SW	0	5	2	2	0	0	15
09/06/2021	NV	13:30	16:30	3	3	SW	0	6	2	2	0	0	16
09/06/2021	NV	17:00	20:00	1	3	SW	0	6	2	2	0	0	10
09/06/2021	NV	17:00	20:00	2	2	SW	0	5	2	2	0	0	16
09/06/2021	NV	17:00	20:00	3	2	SW	0	5	2	2	0	0	15
14/07/2021	NV	11:15	14:15	1	1	NW	0	1	2	2	0	0	19
14/07/2021	NV	11:15	14:15	2	0	n/a	0	0	n/a	2	0	0	21

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
14/07/2021	NV	11:15	14:15	3	1	NW	0	0	n/a	2	0	0	22
14/07/2021	NV	19:16	22:16	1	1	W	0	1	2	2	0	0	21
14/07/2021	NV	19:16	22:16	2	1	W	0	1	2	2	0	0	20
14/07/2021	NV	19:16	22:16	3	1	NW	0	2	2	2	0	0	20
09/08/2021	NV	11:00	14:00	1	2	SW	0	2	2	2	0	0	18
09/08/2021	NV	11:00	14:00	2	1	SW	0	2	2	2	0	0	19
09/08/2021	NV	11:00	14:00	3	1	SW	2	3	2	2	0	0	19
11/08/2021	NV	14:00	17:00	1	3	SW	0	3	2	2	0	0	19
11/08/2021	NV	14:00	17:00	2	3	SW	0	3	2	2	0	0	19
11/08/2021	NV	14:00	17:00	3	3	SW	0	2	2	2	0	0	18
20/09/2021	NV	06:40	09:40	1	1	SW	1	8	1	2	0	0	13
20/09/2021	NV	06:40	09:40	2	2	SW	0	8	1	2	0	0	15
20/09/2021	NV	06:40	09:40	3	2	SW	0	8	1	2	0	0	16
20/09/2021	NV	10:10	13:10	1	2	SW	0	6	1	2	0	0	16
20/09/2021	NV	10:10	13:10	2	3	W	0	7	1	2	0	0	16
20/09/2021	NV	10:10	13:10	3	3	W	0	6	1	2	0	0	15
23/10/2021	NV	07:35	10:35	1	1	S	0	5	1	2	0	0	10
23/10/2021	NV	07:35	10:35	2	3	S	0	5	1	2	0	0	11
23/10/2021	NV	07:35	10:35	3	3	SW	0	7	1	2	0	0	13
23/10/2021	NV	15:45	18:45	1	3	SW	0	6	1	2	0	0	12
23/10/2021	NV	15:45	18:45	2	3	SW	0	6	2	2	0	0	10

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
23/10/2021	NV	15:45	18:45	3	2	SW	0	5	2	2	0	0	10
10/11/2021	NV	08:50	11:50	1	1	W	0	7	1	1	0	0	6
10/11/2021	NV	08:50	11:50	2	1	W	0	8	1	2	0	0	7
10/11/2021	NV	08:50	11:50	3	1	SW	0	8	1	2	0	0	7
11/11/2021	NV	10:40	13:40	1	2	SE	1	8	1	2	0	0	10
11/11/2021	NV	10:40	13:40	2	2	SE	0	8	1	2	0	0	10
11/11/2021	NV	10:40	13:40	3	3	SE	1	8	1	2	0	0	10
13/12/2021	NV	08:05	11:05	1	0	N/A	0	6	2	2	0	0	6
13/12/2021	NV	08:05	11:05	2	1	VAR	0	7	2	2	0	0	6
13/12/2021	NV	08:05	11:05	3	1	NW	0	7	2	2	0	0	6
13/12/2021	NV	13:45	16:45	1	1	W	0	8	2	2	0	0	7
13/12/2021	NV	13:45	16:45	2	1	W	0	8	2	2	0	0	6
13/12/2021	NV	13:45	16:45	3	1	W	0	8	2	2	0	0	6
06/01/2022	NV	14:00	17:00	1	3	WSW	2	6	1	2	0	0	7
06/01/2022	NV	14:00	17:00	2	2	WSW	0	5	1	2	0	0	7
06/01/2022	NV	14:00	17:00	3	2	SW	0	5	1	2	0	0	5
06/02/2022	NV	08:20	11:20	1	3	S	1	8	1	2	0	0	6
06/02/2022	NV	08:20	11:20	2	3	SW	1	8	1	2	0	0	7
06/02/2022	NV	08:20	11:20	3	2	SW	1	8	1	2	0	0	7
12/02/2022	NV	11:20	14:20	1	3	SSW	0	7	1	2	0	0	8
12/02/2022	NV	11:20	14:20	2	3	SSW	2	7	1	1	0	0	8

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
12/02/2022	NV	11:20	14:20	3	3	SW	0	6	1	2	0	0	9
12/02/2022	NV	15:00	18:00	1	3	SW	0	6	1	2	0	0	10
12/02/2022	NV	15:00	18:00	2	2	SSW	0	5	1	2	0	0	9
12/02/2022	NV	15:00	18:00	3	2	SSW	0	6	1	2	0	0	9
14/03/2022	NV	10:30	13:30	1	1	SW	1	7	1	1	0	0	7
14/03/2022	NV	10:30	13:30	2	1	SW	0	6	1	1	0	0	8
14/03/2022	NV	10:30	13:30	3	2	SW	0	6	2	2	0	0	10
14/03/2022	NV	14:00	17:00	1	2	SSW	0	6	2	2	0	0	11
14/03/2022	NV	14:00	17:00	2	2	S	0	5	2	2	0	0	12
14/03/2022	NV	14:00	17:00	3	1	S	0	5	2	2	0	0	12

Rain/ Precipitation
None 0
Drizzle 1
Light showers/snow 2
Heavy showers/snow 3
Heavy rain/snow 4

Cloud Cover
Expressed in oktas (n/8)
Cloud Height
Height of cloud above average height of viewshed
<150m 0
150-500m 1
>500m 2

Visibility
Poor (<1km) 0
Moderate (1-3km) 1
Good (>3km) 2

Lying Snow
None 0
On site 1
On higher ground 2

Frost
None 0
Ground 1
All day 2

Table A2-7
Weather data collected during flight activity surveys undertaken at VP7

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
30/04/2021	NV	08:00	11:00	1	2	NE	0	3	2	2	0	0	9
30/04/2021	NV	08:00	11:00	2	2	NE	0	3	2	2	0	0	11
30/04/2021	NV	08:00	11:00	3	2	NE	0	4	2	2	0	0	12
01/05/2021	NV	06:55	09:55	1	0	n/a	0	0	2	2	0	0	1
01/05/2021	NV	06:55	09:55	2	1	NE	0	1	2	2	0	0	3
01/05/2021	NV	06:55	09:55	3	1	NE	0	1	2	2	0	0	8
14/05/2021	NV	14:20	17:20	1	1	SE	0	2	2	2	0	0	14
14/05/2021	NV	14:20	17:20	2	2	SE	0	2	2	2	0	0	15
14/05/2021	NV	14:20	17:20	3	1	S	0	3	2	2	0	0	15
14/05/2021	NV	18:50	21:50	1	2	SW	0	2	2	2	0	0	15
14/05/2021	NV	18:50	21:50	2	1	SW	0	3	2	2	0	0	13
14/05/2021	NV	18:50	21:50	3	1	S	0	2	2	2	0	0	13
10/06/2021	NV	13:50	16:50	1	3	SW	2	6	1	2	0	0	15
10/06/2021	NV	13:50	16:50	2	3	SW	0	5	1	2	0	0	15
10/06/2021	NV	13:50	16:50	3	2	SW	0	5	1	2	0	0	16
10/06/2021	NV	17:20	20:20	1	2	SW	0	5	1	2	0	0	16
10/06/2021	NV	17:20	20:20	2	2	S	0	4	1	2	0	0	16
10/06/2021	NV	17:20	20:20	3	2	S	0	2	2	2	0	0	15
15/07/2021	NV	10:15	13:15	1	1	SW	0	1	2	2	0	0	17
15/07/2021	NV	10:15	13:15	2	2	SW	0	1	2	2	0	0	18

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
15/07/2021	NV	10:15	13:15	3	2	SW	0	0	n/a	2	0	0	21
15/07/2021	NV	19:15	22:15	1	1	S	0	0	n/a	2	0	0	21
15/07/2021	NV	19:15	22:15	2	1	SW	0	0	n/a	2	0	0	20
15/07/2021	NV	19:15	22:15	3	1	SW	0	0	n/a	2	0	0	18
09/08/2021	NV	14:30	17:30	1	1	SW	0	2	2	2	0	0	20
09/08/2021	NV	14:30	17:30	2	1	SW	0	2	2	2	0	0	20
09/08/2021	NV	14:30	17:30	3	1	SW	0	1	2	2	0	0	19
11/08/2021	NV	10:30	13:30	1	4	NW	0	5	2	2	0	0	15
11/08/2021	NV	10:30	13:30	2	3	W	0	3	2	2	0	0	16
11/08/2021	NV	10:30	13:30	3	3	W	0	3	2	2	0	0	16
17/09/2021	NV	13:20	16:20	1	1	W	2	6	1	1	0	0	16
17/09/2021	NV	13:20	16:20	2	1	W	0	5	1	2	0	0	17
17/09/2021	NV	13:20	16:20	3	2	W	0	5	1	2	0	0	17
17/09/2021	NV	16:50	19:50	1	2	W	0	6	1	2	0	0	17
17/09/2021	NV	16:50	19:50	2	2	WSW	0	7	1	2	0	0	17
17/09/2021	NV	16:50	19:50	3	2	WSW	0	6	1	2	0	0	16
12/10/2021	NV	11:15	14:15	1	2	W	0	3	2	2	0	0	12
12/10/2021	NV	11:15	14:15	2	2	W	0	2	2	2	0	0	12
12/10/2021	NV	11:15	14:15	3	2	W	0	3	2	2	0	0	14
12/10/2021	NV	14:45	17:45	1	2	W	0	3	2	2	0	0	12
12/10/2021	NV	14:45	17:45	2	2	NW	0	2	2	2	0	0	12

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
12/10/2021	NV	14:45	17:45	3	1	NW	0	2	2	2	0	0	11
08/11/2021	NV	14:10	17:10	1	2	SW	0	6	1	2	0	0	13
08/11/2021	NV	14:10	17:10	2	2	SW	0	5	1	2	0	0	13
08/11/2021	NV	14:10	17:10	3	2	SW	0	7	1	2	0	0	13
12/11/2021	NV	09:40	12:40	1	3	SW	2	8	1	2	0	0	11
12/11/2021	NV	09:40	12:40	2	3	SW	2	8	1	2	0	0	12
12/11/2021	NV	09:40	12:40	3	3	SW	0	8	1	2	0	0	12
20/12/2021	NV	13:45	16:45	1	2	NE	0	7	2	2	0	0	5
20/12/2021	NV	13:45	16:45	2	2	NE	0	7	2	2	0	0	5
20/12/2021	NV	13:45	16:45	3	1	E	0	6	2	2	0	0	3
04/01/2022	NV	09:00	12:00	1	2	WNW	0	3	2	2	2	0	1
04/01/2022	NV	09:00	12:00	2	2	W	0	2	2	2	0	0	1
04/01/2022	NV	09:00	12:00	3	2	W	0	2	2	2	0	0	1
04/01/2022	NV	12:30	15:30	1	3	W	0	2	2	2	0	0	2
04/01/2022	NV	12:30	15:30	2	3	W	0	0	NA	2	0	0	3
04/01/2022	NV	12:30	15:30	3	3	W	0	0	NA	2	0	0	3
11/02/2022	NV	09:00	12:00	1	1	W	0	3	2	2	2	1	-1
11/02/2022	NV	09:00	12:00	2	2	WNW	0	3	2	2	2	0	-1
11/02/2022	NV	09:00	12:00	3	2	W	0	2	2	2	2	0	0
11/02/2022	NV	12:30	15:30	1	2	WNW	0	3	2	2	2	0	1
11/02/2022	NV	12:30	15:30	2	2	W	0	2	2	2	0	0	1

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
11/02/2022	NV	12:30	15:30	3	2	W	0	2	2	2	0	0	1
15/03/2022	NV	11:00	14:00	1	1	Var	0	0		2	0	0	9
15/03/2022	NV	11:00	14:00	2	1	S	0	0		2	0	0	9
15/03/2022	NV	11:00	14:00	3	2	SSW	0	2	2	2	0	0	10
15/03/2022	NV	14:30	17:30	1	2	SSW	0	3	2	2	0	0	11
15/03/2022	NV	14:30	17:30	2	2	SSW	0	3	2	2	0	0	11
15/03/2022	NV	14:30	17:30	3	2	SSW	0	4	2	2	0	0	11

Rain/ Precipitation

None	0
Drizzle	1
Light showers/snow	2
Heavy showers/snow	3
Heavy rain/snow	4

Cloud Cover

Expressed in oktas (n/8)

Cloud Height

Height of cloud above average height of viewshed

<150m	0
150-500m	1
>500m	2

Visibility

Poor (<1km)	0
Moderate (1-3km)	1
Good (>3km)	2

Lying Snow

None	0
On site	1
On higher ground	2

Frost

None	0
Ground	1
All day	2

APPENDIX 03

Flight activity survey data

Table A3-1
Primary target species recorded during flight activity surveys undertaken at VP1

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
28/04/2021	PC	1	K.	1	Ad	M	14:27	120
28/04/2021	PC	2	K.	3	Ad	2M, 1F	14:32	165
28/04/2021	PC	1	K.	1	U	U	19:08	110
28/04/2021	PC	2	PE	1	Ad	F	19:14	40
19/05/2021	PC	1	PE	1	U	U	18:16	90
19/05/2021	PC	2	K.	1	Ad	M	18:25	30
19/05/2021	PC	3	K.	1	Ad	M	18:46	210
19/05/2021	PC	4	K.	1	U	U	19:01	260
19/05/2021	PC	5	PE	1	U	U	19:26	540
30/05/2021	PC	1	K.	1	Ad	M	14:39	40
05/07/2021	PC	1	K.	2	Ad	M&F	11:43	120
04/11/2021	PC	2	PE	1	Imm	U	12:26	140
04/11/2021	PC	3	K.	1	U	U	12:28	50
04/11/2021	PC	4	K.	1	U	U	13:36	35
04/12/2021	PC	1	K.	1	U	U	09:52	30
04/12/2021	PC	2	K.	1	U	U	10:41	40
04/02/2022	PC	1	K.	1	U	U	12:51	110
04/02/2022	PC	2	K.	1	U	U	12:57	50
28/02/2022	PC	1	GP	2,000	U	U	14:46	330

Table A3-2
Primary target species recorded during flight activity surveys undertaken at VP2

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
29/04/2021	PC	1	PE	1	U	M	14:56	210
25/05/2021	PC	1	K.	1	Ad	M	09:43	150
25/05/2021	PC	2	K.	1	U	U	09:48	30
05/06/2021	PC	1	K.	1	Ad	M	15:59	265
05/06/2021	PC	2	K.	1	Ad	M	16:35	25
29/07/2021	PC	1	PE	1	U	U	11:57	50
04/01/2022	NV	1	SN	2	U	U	13:41	47
03/02/2022	PC	1	PE	1	Ad	F	14:49	35
01/04/2022	PC	1	SN	1	U	U	17:33	25

Table A3-3
Primary target species recorded during flight activity surveys undertaken at VP3

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
27/04/2021	PC	1	K.	1	U	U	15:07	18
19/05/2021	PC	1	K.	1	U	U	15:49	55
19/05/2021	PC	2	K.	1	U	U	15:53	80
19/05/2021	PC	3	K.	1	Ad	M	15:59	170
19/05/2021	PC	5	K.	1	Ad	M	16:20	35
19/05/2021	PC	6	K.	1	Ad	F	16:20	10
19/05/2021	PC	7	K.	1	Ad	M	16:31	25
19/05/2021	PC	8	K.	1	U	U	16:35	60
25/05/2021	PC	1	K.	1	Ad	M	17:26	40
25/05/2021	PC	2	K.	1	Ad	M	18:14	70
05/06/2021	PC	1	K.	1	Ad	M	18:36	40
05/06/2021	PC	2	K.	1	Ad	M	18:39	70
05/07/2021	PC	1	K.	1	U	U	18:01	180
05/07/2021	PC	2	K.	1	U	U	18:07	30
15/09/2021	PC	1	K.	1	U	U	14:04	35
15/09/2021	PC	2	K.	1	Imm	M	14:11	70
30/10/2021	PC	1	K.	1	Ad	M	11:56	85
30/10/2021	PC	2	K.	1	Ad	M	12:25	20
30/10/2021	PC	1	K.	1	Ad	M	15:13	30
04/11/2021	PC	1	K.	1	U	U	14:09	35
04/11/2021	PC	2	K.	1	U	U	14:17	30
04/11/2021	PC	3	K.	1	U	U	14:55	50
06/12/2021	PC	1	GP	5	U	U	10:55	30
06/12/2021	PC	2	GP	19	U	U	12:49	50
04/02/2022	PC	1	GP	3	U	U	15:54	10
04/02/2022	PC	2	GP	3	U	U	15:55	25
01/03/2022	PC	1	GP	9	U	U	09:36	25

Table A3-4
Primary target species recorded during flight activity surveys undertaken at VP4

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
27/04/2021	PC	1	K.	1	Ad	M	17:35	15
27/04/2021	PC	2	K.	2	U	U	17:56	48
05/06/2021	PC	1	K.	1	U	U	11:25	25
09/07/2021	PC	1	K.	1	Imm	M	08:50	120
30/07/2021	PC	1	K.	1	U	U	19:24	8
30/07/2021	PC	2	K.	1	Juv	U	19:29	65
27/08/2021	PC	1	PE	1	U	U	13:18	55
28/08/2021	PC	1	K.	1	U	U	15:13	270
14/09/2021	PC	1	K.	1	Ad	M	14:03	65
14/09/2021	PC	2	K.	1	Juv	U	14:09	60
14/09/2021	PC	3	K.	1	Juv	U	14:14	95
15/09/2021	PC	1	SN	1	U	U	10:23	8
06/12/2021	PC	1	K.	1	U	U	13:55	20
06/12/2021	PC	2	K.	1	Ad	F	14:07	50
06/12/2021	PC	3	K.	1	Ad	F	14:52	20
06/12/2021	PC	4	GP	41	U	U	15:11	40
06/12/2021	PC	5	GP	23	U	U	15:33	35
06/12/2021	PC	6	PE	1	U	U	15:35	10
29/12/2021	PC	1	PE	1	U	U	09:46	19
03/02/2022	PC	1	K.	1	Ad	F	13:23	35
03/02/2022	PC	2	K.	1	Ad	F	13:27	30
03/02/2022	PC	3	K.	1	Ad	F	13:43	40
28/02/2022	PC	1	K.	1	Ad	M	12:08	40
28/02/2022	PC	2	K.	1	Ad	M	12:09	55

Table A3-5
Primary target species recorded during flight activity surveys undertaken at VP5

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
15/05/2021	NV	1	K.	1	Ad	M	11:14	90
15/05/2021	NV	2	K.	1	Ad	M	12:28	30
14/06/2021	NV	1	PE	1	U	U	09:55	68
14/06/2021	NV	2	K.	1	Ad	M	10:31	55
14/06/2021	NV	3	K.	1	Ad	M	10:48	85
15/07/2021	NV	1	K.	1	Ad	M	14:08	145
15/07/2021	NV	2	K.	1	Ad	F	15:23	121
20/09/2021	NV	1	SN	2	U	U	15:12	36
20/09/2021	NV	2	K.	1	Ad	M	16:36	16
22/10/2021	NV	1	GP	16	U	U	08:11	145
11/11/2021	NV	1	K.	1	Ad	F	15:26	102
11/11/2021	NV	2	K.	1	Ad	F	15:55	78
05/01/2022	NV	1	K.	1	Ad	M	12:18	82
10/02/2022	NV	1	K.	1	Ad	M	15:27	
10/02/2022	NV	2	SN	2	U	U	16:14	
12/03/2022	NV	1	SN	2	U	U	07:05	67
12/03/2022	NV	2	GP	250	U	U	08:16	170

Table A3-6
Primary target species recorded during flight activity surveys undertaken at VP6

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
28/04/2021	NV	1	K.	1	Ad	M	15:06	160
28/04/2021	NV	2	K.	1	Ad	M	15:52	140
28/04/2021	NV	1	K.	1	Ad	M	17:55	115
28/04/2021	NV	2	K.	1	Ad	M	18:41	190
14/05/2021	NV	1	K.	1	Ad	M	06:38	170
14/05/2021	NV	2	K.	1	Ad	M	07:20	140
14/05/2021	NV	1	K.	1	Ad	M	08:48	90
14/05/2021	NV	2	K.	1	Ad	M	09:41	120
14/05/2021	NV	3	K.	1	Ad	F	11:02	270
14/05/2021	NV	4	K.	1	Ad	M	11:21	45
09/06/2021	NV	1	K.	1	Ad	M	13:34	51
09/06/2021	NV	2	PE	1	Ad	M	14:07	42

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
09/06/2021	NV	3	K.	1	Ad	M	14:16	16
09/06/2021	NV	4	K.	1	Ad	M	14:42	94
09/06/2021	NV	5	K.	1	Ad	M	15:28	80
09/06/2021	NV	6	K.	1	Ad	M	16:09	47
09/06/2021	NV	1	K.	1	Ad	M	17:16	110
09/06/2021	NV	2	K.	1	Ad	M	17:42	52
09/06/2021	NV	3	K.	1	Ad	M	18:21	64
09/06/2021	NV	4	K.	1	Ad	M	18:55	31
14/07/2021	NV	1	K.	1	Ad	M	11:47	175
14/07/2021	NV	2	K.	2	Ad	M&F	12:31	41
14/07/2021	NV	3	K.	1	Ad	F	13:04	68
14/07/2021	NV	1	K.	1	Ad	F	19:52	126
14/07/2021	NV	2	WK	1	Ad	U	21:40	70
14/07/2021	NV	3	WK	1	Ad	U	21:53	48
09/08/2021	NV	1	K.	2	Juv	U	13:04	31
20/09/2021	NV	1	K.	1	Imm	U	08:42	94
20/09/2021	NV	2	K.	1	Imm	U	09:05	32
23/10/2021	NV	1	GP	36	U	U	08:04	70
23/10/2021	NV	2	K.	1	Ad	M	08:52	140
23/10/2021	NV	3	L.	18	U	U	09:38	85
23/10/2021	NV	4	SN	1	U	U	10:22	35
23/10/2021	NV	1	K.	1	Ad	M	16:01	170
23/10/2021	NV	2	L.	22	U	U	18:06	64
10/11/2021	NV	1	K.	1	Ad	M	09:41	125
10/11/2021	NV	2	PE	1	Imm	M	11:04	52
11/11/2021	NV	1	K.	1	Imm	M	11:07	92
11/11/2021	NV	2	K.	1	Imm	M	11:52	63
11/11/2021	NV	4	K.	1	Ad	F	13:32	130
13/12/2021	NV	1	K.	1	Ad	M	14:12	108
06/01/2022	NV	1	K.	1	Ad	F	15:32	
06/01/2022	NV	2	K.	2	U	U	16:08	
12/02/2022	NV	1	SN	2	U	U	16:07	51
14/03/2022	NV	1	K.	1	Ad	M	14:09	71
14/03/2022	NV	2	K.	1	Ad	F	15:02	33
14/03/2022	NV	3	SN	2	U	U	15:12	58
14/03/2022	NV	4	PE	1	Yr1	M	16:14	87

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
14/03/2022	NV	5	K.	1	Ad	M	16:29	45
14/03/2022	NV	1	K.	1	Ad	M	10:51	
14/03/2022	NV	2	K.	1	Ad	M	11:26	
14/03/2022	NV	3	K.	1	Ad	M	11:50	
14/03/2022	NV	4	K.	1	Ad	M	12:18	

Table A3-7
Primary target species recorded during flight activity surveys undertaken at VP7

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
30/04/2021	NV	1	K.	1	Ad	M	09:26	95
01/05/2021	NV	1	K.	1	Ad	M	08:32	100
01/05/2021	NV	2	K.	1	Ad	M	09:18	55
14/05/2021	NV	1	K.	1	Ad	M	19:03	82
14/05/2021	NV	2	K.	1	Ad	M	20:08	30
10/06/2021	NV	1	K.	1	Ad	F	14:23	130
10/06/2021	NV	2	K.	1	Ad	M	14:58	71
10/06/2021	NV	3	K.	1	Ad	M	16:31	34
10/06/2021	NV	1	K.	1	Ad	M	17:38	125
10/06/2021	NV	2	SN	2	U	U	20:02	28
15/07/2021	NV	1	PE	1	Ad	U	11:17	162
15/07/2021	NV	2	K.	1	Ad	M	13:02	126
15/07/2021	NV	1	K.	1	Ad	M	19:18	110
15/07/2021	NV	2	K.	1	Ad	M	19:37	48
15/07/2021	NV	3	K.	1	Ad	F	20:01	18
15/07/2021	NV	4	WK	1	Ad	U	21:41	63
31/07/2021	PC	1	K.	1	Imm	M	09:35	120
11/08/2021	NV	1	PE	1	Juv	U	19:06	95
11/08/2021	NV	1	K.	1	Juv	U	11:08	82
12/10/2021	NV	1	SN	1	U	U	13:18	35
12/10/2021	NV	2	K.	1	Ad	M	16:17	95
08/11/2021	NV	1	K.	1	Ad	F	14:32	65
08/11/2021	NV	2	SN	1	U	U	16:41	18
12/11/2021	NV	1	SN	2	U	U	10:08	18
12/11/2021	NV	2	PE	1	Imm	U	11:32	85
12/11/2021	NV	3	K.	1	Ad	F	12:04	170

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight time (s)
20/12/2021	NV	1	K.	1	Ad	M	14:12	82
20/12/2021	NV	2	L.	10	Ad	U	16:11	220
04/01/2022	NV	1	K.	1	Ad	M	13:02	80
04/01/2022	NV	2	K.	1	Ad	F	13:58	110
11/02/2022	NV	1	K.	1	Ad	M	13:02	80
11/02/2022	NV	2	K.	1	Ad	F	13:58	110
11/02/2022	NV	1	K.	1	Ad	M	09:53	52
15/03/2022	NV	1	K.	1	Ad	M	11:29	103
15/03/2022	NV	2	K.	1	Ad	M	13:48	160

Table A3-8
Secondary target species recorded during flight activity surveys undertaken at VP1

Date	Survey Start	Survey End	Species	Count	5 Min Period
28/04/2021	14:00	17:00	BZ	2	14:20
28/04/2021	14:00	17:00	BZ	2	14:35
28/04/2021	14:00	17:00	BZ	2	14:35
28/04/2021	14:00	17:00	BZ	2	14:40
28/04/2021	14:00	17:00	BZ	2	15:15
28/04/2021	14:00	17:00	BZ	4	15:30
28/04/2021	14:00	17:00	BZ	3	15:45
28/04/2021	14:00	17:00	BZ	1	15:45
28/04/2021	14:00	17:00	BZ	2	16:05
28/04/2021	14:00	17:00	BZ	2	16:10
28/04/2021	14:00	17:00	BZ	2	16:10
28/04/2021	14:00	17:00	RN	2	16:15
28/04/2021	14:00	17:00	BZ	4	16:55
28/04/2021	17:30	20:30	RN	1	17:45
28/04/2021	17:30	20:30	BZ	1	17:45
28/04/2021	17:30	20:30	SH	1	17:50
28/04/2021	17:30	20:30	BZ	1	18:05
28/04/2021	17:30	20:30	BZ	1	18:30
28/04/2021	17:30	20:30	BZ	1	19:35
19/05/2021	17:30	20:30	BZ	1	17:40
19/05/2021	17:30	20:30	BZ	1	17:40
19/05/2021	17:30	20:30	LB	1	17:45
19/05/2021	17:30	20:30	BZ	1	18:00

Date	Survey Start	Survey End	Species	Count	5 Min Period
19/05/2021	17:30	20:30	BZ	1	18:00
19/05/2021	17:30	20:30	BZ	1	18:05
19/05/2021	17:30	20:30	BZ	2	18:15
19/05/2021	17:30	20:30	BZ	1	18:20
19/05/2021	17:30	20:30	LB	1	18:20
19/05/2021	17:30	20:30	RN	2	18:20
19/05/2021	17:30	20:30	BZ	1	18:25
19/05/2021	17:30	20:30	RN	1	18:25
19/05/2021	17:30	20:30	BZ	1	18:25
19/05/2021	17:30	20:30	BZ	2	18:45
19/05/2021	17:30	20:30	BZ	1	18:45
19/05/2021	17:30	20:30	BZ	1	19:05
19/05/2021	17:30	20:30	BZ	1	19:05
19/05/2021	17:30	20:30	BZ	1	19:35
19/05/2021	17:30	20:30	BZ	1	19:45
30/05/2021	13:30	16:30	BZ	1	13:35
30/05/2021	13:30	16:30	BZ	1	13:40
30/05/2021	13:30	16:30	BZ	1	14:10
30/05/2021	13:30	16:30	BZ	2	14:20
30/05/2021	13:30	16:30	BZ	1	14:30
30/05/2021	13:30	16:30	BZ	1	14:30
30/05/2021	13:30	16:30	BZ	1	14:55
30/05/2021	13:30	16:30	BZ	1	15:10
30/05/2021	13:30	16:30	BZ	1	15:45
30/05/2021	13:30	16:30	BZ	1	15:55
30/05/2021	13:30	16:30	BZ	2	16:05
30/05/2021	13:30	16:30	BZ	1	16:15
05/06/2021	07:30	10:30	RN	1	07:45
05/06/2021	07:30	10:30	BZ	1	07:55
05/06/2021	07:30	10:30	BZ	1	08:15
05/06/2021	07:30	10:30	BZ	1	08:40
05/07/2021	09:00	12:00	BZ	1	10:00
05/07/2021	09:00	12:00	SH	1	10:30
05/07/2021	09:00	12:00	SH	1	11:05
05/07/2021	09:00	12:00	BZ	2	11:05
05/07/2021	09:00	12:00	BZ	1	11:30

Date	Survey Start	Survey End	Species	Count	5 Min Period
30/07/2021	07:10	10:10	RN	2	09:20
31/07/2021	09:30	12:30	LB	3	10:35
31/07/2021	09:30	12:30	RN	1	11:20
31/07/2021	09:30	12:30	BZ	1	11:40
31/07/2021	09:30	12:30	RN	2	11:40
31/07/2021	09:30	12:30	BZ	1	12:15
31/07/2021	09:30	12:30	BZ	2	12:25
27/08/2021	16:30	19:30	RN	2	17:05
27/08/2021	16:30	19:30	SH	1	17:35
27/08/2021	16:30	19:30	BZ	1	18:55
27/08/2021	16:30	19:30	BZ	1	18:55
27/08/2021	16:30	19:30	RN	2	19:00
28/08/2021	07:00	10:00	SH	1	07:25
11/09/2021	08:00	11:00	RN	2	08:55
11/09/2021	08:00	11:00	LB	4	09:50
11/09/2021	08:00	11:00	RN	1	10:05
11/09/2021	08:00	11:00	LB	8	10:25
11/09/2021	08:00	11:00	RN	1	10:25
13/09/2021	17:15	20:15	RN	2	17:35
13/09/2021	17:15	20:15	RN	3	17:55
13/09/2021	17:15	20:15	RN	1	18:45
13/09/2021	17:15	20:15	RN	2	18:55
13/09/2021	17:15	20:15	RN	1	19:20
04/11/2021	07:02	10:02	LB	5	09:00
04/11/2021	07:02	10:02	RN	1	09:45
04/11/2021	07:02	10:02	RN	2	09:45
04/11/2021	07:02	10:02	SH	1	09:55
04/11/2021	10:32	13:32	SH	1	10:55
04/11/2021	10:32	13:32	RN	2	11:10
04/11/2021	10:32	13:32	BZ	1	11:30
04/11/2021	10:32	13:32	RN	1	11:40
04/11/2021	10:32	13:32	BZ	1	11:40
04/11/2021	10:32	13:32	RN	2	11:45
04/11/2021	10:32	13:32	BZ	1	12:10
04/11/2021	10:32	13:32	SH	1	13:05
04/11/2021	10:32	13:32	BZ	1	13:10

Date	Survey Start	Survey End	Species	Count	5 Min Period
04/11/2021	10:32	13:32	BZ	1	13:20
04/11/2021	10:32	13:32	BZ	3	13:25
04/11/2021	10:32	13:32	RN	2	13:25
04/11/2021	10:32	13:32	RN	1	13:25
04/11/2021	10:32	13:32	RN	1	13:25
04/12/2021	08:30	11:30	RN	2	10:55
04/12/2021	08:30	11:30	RN	2	11:10
04/12/2021	08:30	11:30	BZ	1	11:10
04/12/2021	08:30	11:30	BZ	2	11:15
04/12/2021	08:30	11:30	BZ	1	11:20
10/12/2021	13:20	16:20	BZ	2	13:40
10/12/2021	13:20	16:20	SH	1	14:10
10/12/2021	13:20	16:20	RN	1	15:25
21/12/2021	09:30	12:30	RN	2	11:15
21/12/2021	09:30	12:30	RN	2	11:25
21/12/2021	09:30	12:30	RN	2	11:50
29/12/2021	13:30	16:30	RN	2	13:40
29/12/2021	13:30	16:30	RN	2	13:50
29/12/2021	13:30	16:30	RN	1	14:10
29/12/2021	13:30	16:30	BZ	1	14:20
29/12/2021	13:30	16:30	BZ	1	15:20
29/12/2021	13:30	16:30	BZ	1	15:30
29/12/2021	13:30	16:30	SH	1	15:40
29/12/2021	13:30	16:30	RN	2	15:55
03/02/2022	07:40	10:40	SH	1	09:10
04/02/2022	11:10	14:10	SH	1	12:00
04/02/2022	11:10	14:10	BZ	1	12:40
04/02/2022	11:10	14:10	BZ	1	12:45
04/02/2022	11:10	14:10	RN	4	13:00
04/02/2022	11:10	14:10	SH	1	13:00
04/02/2022	11:10	14:10	BZ	1	13:05
04/02/2022	11:10	14:10	BZ	1	13:05
04/02/2022	11:10	14:10	BZ	2	13:05
04/02/2022	11:10	14:10	BZ	1	13:10
04/02/2022	11:10	14:10	BZ	3	13:15
04/02/2022	11:10	14:10	BZ	1	13:15

Date	Survey Start	Survey End	Species	Count	5 Min Period
04/02/2022	11:10	14:10	BZ	6	13:20
04/02/2022	11:10	14:10	BZ	1	13:30
16/02/2022	07:15	10:15	BZ	1	07:50
16/02/2022	07:15	10:15	SH	1	08:25
28/02/2022	13:48	16:48	BZ	1	14:35
28/02/2022	13:48	16:48	BZ	1	14:55
28/02/2022	13:48	16:48	SH	1	15:00
28/02/2022	13:48	16:48	BZ	1	15:20
28/02/2022	13:48	16:48	BZ	1	15:25
28/02/2022	13:48	16:48	RN	2	16:05
28/02/2022	13:48	16:48	BZ	1	16:25
02/04/2022	06:33	09:33	BZ	1	07:35
02/04/2022	06:33	09:33	BZ	2	07:40
02/04/2022	06:33	09:33	BZ	1	08:10
02/04/2022	06:33	09:33	BZ	1	08:35
02/04/2022	06:33	09:33	SH	1	08:35
02/04/2022	06:33	09:33	BZ	1	08:45
02/04/2022	10:03	13:03	RN	1	09:40
02/04/2022	10:03	13:03	BZ	1	11:45
02/04/2022	10:03	13:03	BZ	1	12:05
02/04/2022	10:03	13:03	BZ	1	12:55

Table A3-9
Secondary target species recorded during flight activity surveys undertaken at VP2

Date	Survey Start	Survey End	Species	Count	5 Min Period
29/04/2021	14:00	17:00	BZ	1	14:50
29/04/2021	14:00	17:00	BZ	2	16:05
30/04/2021	17:30	20:30	BZ	1	17:45
30/04/2021	17:30	20:30	BZ	1	18:10
30/04/2021	17:30	20:30	BZ	1	18:15
30/04/2021	17:30	20:30	BZ	1	18:40
30/04/2021	17:30	20:30	BZ	2	18:45
30/04/2021	17:30	20:30	BZ	1	19:25
30/04/2021	17:30	20:30	BZ	1	19:35
30/04/2021	17:30	20:30	BZ	1	20:05
25/05/2021	09:30	12:30	RN	1	09:35

Date	Survey Start	Survey End	Species	Count	5 Min Period
25/05/2021	09:30	12:30	BZ	1	09:50
25/05/2021	09:30	12:30	BZ	1	10:00
25/05/2021	09:30	12:30	BZ	1	10:05
25/05/2021	09:30	12:30	BZ	1	12:20
25/05/2021	09:30	12:30	BZ	1	12:25
27/05/2021	14:30	17:30	BZ	1	14:55
27/05/2021	14:30	17:30	RN	1	15:45
05/06/2021	14:30	17:30	BZ	1	15:15
05/06/2021	14:30	17:30	BZ	2	15:45
05/06/2021	14:30	17:30	BZ	1	16:05
05/06/2021	14:30	17:30	BZ	1	16:20
05/06/2021	14:30	17:30	BZ	1	17:10
05/06/2021	14:30	17:30	BZ	2	17:15
05/06/2021	14:30	17:30	BZ	1	17:15
05/06/2021	14:30	17:30	BZ	1	17:25
05/07/2021	12:30	15:30	LB	1	14:25
05/07/2021	12:30	15:30	BZ	1	14:30
05/07/2021	12:30	15:30	BZ	1	14:50
29/07/2021	09:00	12:00	RN	2	10:25
29/07/2021	09:00	12:00	RN	1	10:30
29/07/2021	09:00	12:00	BZ	1	11:05
29/07/2021	09:00	12:00	RN	1	11:55
30/07/2021	14:10	17:10	BZ	1	16:35
27/08/2021	06:00	09:00	RN	1	08:35
28/08/2021	10:30	13:30	RN	2	12:20
28/08/2021	10:30	13:30	RN	2	12:35
11/09/2021	11:30	14:30	RN	1	13:15
11/09/2021	11:30	14:30	RN	2	13:20
14/09/2021	16:30	19:30	RN	1	17:15
14/09/2021	16:30	19:30	RN	2	17:35
14/09/2021	16:30	19:30	BZ	1	18:15
14/09/2021	16:30	19:30	BZ	1	18:55
30/10/2021	07:50	10:50	RN	2	09:00
30/10/2021	07:50	10:50	RN	1	09:55
30/10/2021	07:50	10:50	BZ	1	10:10
05/11/2021	12:00	15:00	RN	3	12:55

Date	Survey Start	Survey End	Species	Count	5 Min Period
05/11/2021	12:00	15:00	BZ	1	13:15
05/11/2021	12:00	15:00	BZ	1	13:30
05/11/2021	12:00	15:00	BZ	1	13:45
05/11/2021	12:00	15:00	BZ	1	13:50
24/11/2021	13:50	16:50	BZ	1	14:10
24/11/2021	13:50	16:50	BZ	1	15:55
24/11/2021	13:50	16:50	BZ	1	16:25
22/12/2021	08:10	11:10	RN	1	09:15
22/12/2021	08:10	11:10	RN	2	10:10
22/12/2021	08:10	11:10	LB	6	10:15
22/12/2021	08:10	11:10	BZ	1	10:40
22/12/2021	11:40	14:40	RN	2	12:10
22/12/2021	11:40	14:40	RN	1	13:40
22/12/2021	11:40	14:40	SH	1	13:55
24/01/2022	09:15	12:15	BZ	1	10:55
24/01/2022	09:15	12:15	BZ	1	12:10
03/02/2022	14:40	17:40	SH	1	14:45
01/04/2022	10:05	13:05	SH	1	10:40
01/04/2022	10:05	13:05	SH	1	10:45
01/04/2022	10:05	13:05	SH	1	11:25
01/04/2022	10:05	13:05	SH	1	11:45
01/04/2022	10:05	13:05	BZ	2	11:50
01/04/2022	10:05	13:05	BZ	1	12:25
01/04/2022	10:05	13:05	BZ	1	12:45
01/04/2022	17:05	20:05	BZ	1	18:20
01/04/2022	17:05	20:05	BZ	1	18:55

Table A3-10
Secondary target species recorded during flight activity surveys undertaken at VP3

Date	Survey Start	Survey End	Species	Count	5 Min Period
27/04/2021	14:00	17:00	BZ	1	14:35
27/04/2021	14:00	17:00	BZ	1	14:55
27/04/2021	14:00	17:00	SH	1	14:55
27/04/2021	14:00	17:00	BZ	1	15:25
27/04/2021	14:00	17:00	BZ	2	15:55
27/04/2021	14:00	17:00	LB	1	15:55
27/04/2021	14:00	17:00	BZ	1	16:10
27/04/2021	14:00	17:00	BZ	1	16:10
27/04/2021	14:00	17:00	BZ	1	16:35
27/04/2021	14:00	17:00	BZ	1	16:45
29/04/2021	17:30	20:30	BZ	1	18:55
19/05/2021	14:00	17:00	BZ	1	14:10
19/05/2021	14:00	17:00	BZ	1	14:15
19/05/2021	14:00	17:00	BZ	1	14:30
19/05/2021	14:00	17:00	BZ	1	15:05
19/05/2021	14:00	17:00	BZ	1	15:15
19/05/2021	14:00	17:00	BZ	1	16:15
19/05/2021	14:00	17:00	H.	1	16:15
19/05/2021	14:00	17:00	BZ	1	16:35
25/05/2021	16:30	19:30	BZ	1	16:55
25/05/2021	16:30	19:30	BZ	1	17:50
25/05/2021	16:30	19:30	BZ	1	17:55
25/05/2021	16:30	19:30	BZ	1	18:10
25/05/2021	16:30	19:30	BZ	1	18:35
25/05/2021	16:30	19:30	BZ	1	18:45
05/06/2021	18:00	21:00	BZ	1	18:30
05/06/2021	18:00	21:00	BZ	1	19:10
05/06/2021	18:00	21:00	BZ	1	19:15
05/06/2021	18:00	21:00	BZ	1	19:40
05/06/2021	18:00	21:00	BZ	2	20:00
05/06/2021	18:00	21:00	RN	1	20:10
05/07/2021	16:00	19:00	BZ	2	16:15
05/07/2021	16:00	19:00	BZ	1	16:30
29/07/2021	18:00	21:00	BZ	2	18:25

Date	Survey Start	Survey End	Species	Count	5 Min Period
29/07/2021	18:00	21:00	BZ	1	19:20
30/07/2021	10:40	13:40	LB	11	11:34
30/07/2021	10:40	13:40	RN	2	12:15
30/07/2021	10:40	13:40	BZ	1	12:25
30/07/2021	10:40	13:40	BZ	1	12:45
30/07/2021	10:40	13:40	RN	1	12:50
30/07/2021	10:40	13:40	BZ	1	13:15
30/07/2021	10:40	13:40	RN	1	13:30
27/08/2021	09:30	12:30	BZ	1	10:20
27/08/2021	09:30	12:30	RN	4	10:50
27/08/2021	09:30	12:30	RN	2	11:00
27/08/2021	09:30	12:30	RN	2	11:05
27/08/2021	09:30	12:30	BZ	1	11:25
27/08/2021	09:30	12:30	BZ	1	11:30
27/08/2021	09:30	12:30	BZ	1	11:30
27/08/2021	09:30	12:30	BZ	1	12:05
14/09/2021	09:30	12:30	RN	1	09:55
14/09/2021	09:30	12:30	RN	1	09:55
14/09/2021	09:30	12:30	BZ	1	11:20
14/09/2021	09:30	12:30	BZ	1	11:25
14/09/2021	09:30	12:30	BZ	1	12:10
15/09/2021	13:00	16:00	RN	2	13:05
15/09/2021	13:00	16:00	RN	3	13:50
15/09/2021	13:00	16:00	BZ	2	13:50
15/09/2021	13:00	16:00	RN	1	13:55
15/09/2021	13:00	16:00	RN	2	14:20
15/09/2021	13:00	16:00	BZ	2	14:50
15/09/2021	13:00	16:00	BZ	3	15:15
15/09/2021	13:00	16:00	LB	2	15:20
15/09/2021	13:00	16:00	BZ	2	15:35
15/09/2021	13:00	16:00	BZ	1	15:45
15/09/2021	13:00	16:00	RN	5	15:50
30/10/2021	11:20	14:20	RN	2	11:35
30/10/2021	11:20	14:20	RN	1	11:45
30/10/2021	11:20	14:20	BZ	1	13:20
30/10/2021	11:20	14:20	BZ	1	14:10

Date	Survey Start	Survey End	Species	Count	5 Min Period
30/10/2021	14:50	17:50	BZ	1	15:40
30/10/2021	14:50	17:50	BZ	1	15:55
30/10/2021	14:50	17:50	BZ	1	17:10
04/11/2021	14:00	17:00	BZ	1	14:50
04/11/2021	14:00	17:00	BZ	1	16:15
04/12/2021	12:00	15:00	RN	3	12:55
04/12/2021	12:00	15:00	RN	2	13:15
04/12/2021	12:00	15:00	BZ	1	14:30
04/12/2021	12:00	15:00	BZ	1	14:55
09/12/2021	13:00	16:00	BZ	1	13:00
09/12/2021	13:00	16:00	BZ	1	13:25
09/12/2021	13:00	16:00	BZ	1	13:30
09/12/2021	13:00	16:00	RN	1	14:10
09/12/2021	13:00	16:00	RN	2	15:05
09/12/2021	13:00	16:00	BZ	2	15:40
21/12/2021	13:00	16:00	SH	1	13:25
21/12/2021	13:00	16:00	BZ	1	14:10
21/12/2021	13:00	16:00	BZ	1	15:10
21/12/2021	13:00	16:00	BZ	1	15:15
21/12/2021	13:00	16:00	BZ	1	15:40
22/12/2021	15:10	16:40	BZ	1	16:05
23/12/2021	08:40	10:10	BZ	2	09:30
23/12/2021	08:40	10:10	BZ	1	09:35
23/12/2021	08:40	10:10	BZ	1	09:55
04/02/2022	14:40	17:40	RN	2	14:50
04/02/2022	14:40	17:40	RN	1	15:15
17/02/2022	07:10	10:10	BZ	1	08:05
17/02/2022	07:10	10:10	SH	2	08:25
17/02/2022	07:10	10:10	SH	2	08:35
17/02/2022	07:10	10:10	SH	1	08:40
17/02/2022	07:10	10:10	BZ	2	08:40
17/02/2022	07:10	10:10	BZ	2	08:45
17/02/2022	07:10	10:10	SH	1	09:00
17/02/2022	07:10	10:10	RN	1	09:00
17/02/2022	07:10	10:10	SH	1	09:20
01/03/2022	08:30	11:30	BZ	2	10:25

Date	Survey Start	Survey End	Species	Count	5 Min Period
01/03/2022	08:30	11:30	BZ	1	10:45
01/03/2022	08:30	11:30	BZ	2	10:50
01/03/2022	08:30	11:30	BZ	2	10:55
01/03/2022	08:30	11:30	BZ	2	11:05
01/03/2022	08:30	11:30	BZ	1	11:25
01/04/2022	06:35	09:35	BZ	1	09:05
02/04/2022	17:03	20:03	BZ	2	17:10
02/04/2022	17:03	20:03	BZ	1	17:50
02/04/2022	17:03	20:03	BZ	1	18:25
02/04/2022	17:03	20:03	BZ	1	19:10

Table A3-11
Secondary target species recorded during flight activity surveys undertaken at VP4

Date	Survey Start	Survey End	Species	Count	5 Min Period
27/04/2021	17:30	20:30	BZ	1	18:10
27/04/2021	17:30	20:30	BZ	1	18:45
27/04/2021	17:30	20:30	RN	1	18:45
27/04/2021	17:30	20:30	RN	1	19:40
30/04/2021	14:00	17:00	SH	1	15:55
30/04/2021	14:00	17:00	BZ	1	16:05
30/04/2021	14:00	17:00	WM	1	16:05
30/04/2021	14:00	17:00	BZ	1	16:10
30/04/2021	14:00	17:00	WM	1	16:11
25/05/2021	13:00	16:00	RN	1	14:20
25/05/2021	13:00	16:00	RN	1	14:30
25/05/2021	13:00	16:00	BZ	1	14:55
25/05/2021	13:00	16:00	BZ	1	15:20
25/05/2021	13:00	16:00	BZ	3	15:35
25/05/2021	13:00	16:00	BZ	3	15:40
30/05/2021	10:00	13:00	BZ	1	10:40
30/05/2021	10:00	13:00	BZ	1	10:55
30/05/2021	10:00	13:00	BZ	2	11:25
30/05/2021	10:00	13:00	BZ	2	11:45
30/05/2021	10:00	13:00	RN	1	12:00
30/05/2021	10:00	13:00	BZ	1	12:45
30/05/2021	10:00	13:00	BZ	1	12:55

Date	Survey Start	Survey End	Species	Count	5 Min Period
05/06/2021	11:00	14:00	BZ	1	11:35
05/06/2021	11:00	14:00	BZ	1	13:35
09/07/2021	06:15	09:15	RN	1	06:55
09/07/2021	06:15	09:15	SH	1	07:20
30/07/2021	17:40	20:40	LB	15	17:50
30/07/2021	17:40	20:40	BZ	1	18:20
30/07/2021	17:40	20:40	BZ	1	19:20
30/07/2021	17:40	20:40	RN	1	19:35
31/07/2021	06:00	09:00	SH	1	07:25
31/07/2021	06:00	09:00	RN	1	08:20
27/08/2021	13:00	16:00	RN	2	13:05
27/08/2021	13:00	16:00	RN	2	13:10
27/08/2021	13:00	16:00	RN	1	13:25
27/08/2021	13:00	16:00	RN	1	13:25
27/08/2021	13:00	16:00	RN	2	13:25
27/08/2021	13:00	16:00	RN	5	13:35
27/08/2021	13:00	16:00	BZ	1	13:45
27/08/2021	13:00	16:00	LB	2	13:55
27/08/2021	13:00	16:00	BZ	1	14:05
27/08/2021	13:00	16:00	BZ	2	14:05
28/08/2021	14:00	17:00	RN	2	14:00
28/08/2021	14:00	17:00	RN	10	14:35
28/08/2021	14:00	17:00	SH	1	14:40
28/08/2021	14:00	17:00	BZ	1	15:10
28/08/2021	14:00	17:00	BZ	1	15:20
28/08/2021	14:00	17:00	RN	2	15:20
28/08/2021	14:00	17:00	RN	2	15:25
28/08/2021	14:00	17:00	BZ	1	15:30
28/08/2021	14:00	17:00	RN	4	15:55
28/08/2021	14:00	17:00	BZ	1	16:40
28/08/2021	14:00	17:00	BZ	1	16:45
14/09/2021	13:00	16:00	RN	2	13:25
14/09/2021	13:00	16:00	BZ	1	13:50
14/09/2021	13:00	16:00	BZ	1	13:55
14/09/2021	13:00	16:00	BZ	1	14:10
14/09/2021	13:00	16:00	BZ	3	14:45

Date	Survey Start	Survey End	Species	Count	5 Min Period
14/09/2021	13:00	16:00	BZ	5	14:50
14/09/2021	13:00	16:00	BZ	4	14:55
14/09/2021	13:00	16:00	BZ	1	15:10
15/09/2021	09:30	12:30	GS	2	11:05
05/11/2021	08:30	11:30	SH	1	09:35
05/11/2021	08:30	11:30	RN	1	09:55
05/11/2021	08:30	11:30	RN	2	10:15
05/11/2021	08:30	11:30	BZ	1	10:25
05/11/2021	08:30	11:30	BZ	1	10:40
05/11/2021	08:30	11:30	RN	2	11:05
05/11/2021	08:30	11:30	BZ	2	11:20
06/12/2021	13:45	16:45	BZ	1	14:00
06/12/2021	13:45	16:45	BZ	1	14:05
06/12/2021	13:45	16:45	BZ	1	14:15
06/12/2021	13:45	16:45	BZ	2	14:45
06/12/2021	13:45	16:45	RN	1	14:50
06/12/2021	13:45	16:45	BZ	1	14:55
06/12/2021	13:45	16:45	SH	1	15:10
06/12/2021	13:45	16:45	BZ	1	15:25
06/12/2021	13:45	16:45	RN	2	15:25
06/12/2021	13:45	16:45	RN	1	15:50
10/12/2021	09:50	12:50	RN	2	10:25
10/12/2021	09:50	12:50	RN	2	10:30
10/12/2021	09:50	12:50	BZ	1	11:15
10/12/2021	09:50	12:50	RN	1	12:40
23/12/2021	10:40	12:10	RN	2	11:20
23/12/2021	10:40	12:10	RN	1	11:20
23/12/2021	10:40	12:10	RN	2	11:25
23/12/2021	10:40	12:10	BZ	1	11:45
23/12/2021	10:40	12:10	BZ	1	12:00
29/12/2021	08:30	10:00	RN	1	09:45
29/12/2021	08:30	10:00	RN	1	09:55
29/12/2021	10:00	13:00	RN	2	10:10
29/12/2021	10:00	13:00	BZ	1	11:25
29/12/2021	10:00	13:00	BZ	2	12:10
29/12/2021	10:00	13:00	BZ	1	12:15

Date	Survey Start	Survey End	Species	Count	5 Min Period
29/12/2021	10:00	13:00	BZ	1	12:35
29/12/2021	10:00	13:00	BZ	1	12:40
04/01/2022	12:45	15:45	RN	2	14:35
03/02/2022	11:10	14:10	BZ	3	13:05
03/02/2022	11:10	14:10	BZ	1	13:30
03/02/2022	11:10	14:10	BZ	1	13:35
03/02/2022	11:10	14:10	BZ	1	13:55
03/02/2022	11:10	14:10	RN	2	13:55
28/02/2022	10:18	13:18	RN	1	11:25
28/02/2022	10:18	13:18	BZ	1	12:35
01/04/2022	13:35	16:35	SH	1	14:05
01/04/2022	13:35	16:35	BZ	1	15:20
01/04/2022	13:35	16:35	BZ	2	15:25
01/04/2022	13:35	16:35	BZ	2	15:45
01/04/2022	13:35	16:35	BZ	1	15:45
02/04/2022	13:33	16:33	BZ	1	13:35
02/04/2022	13:33	16:33	RN	1	13:35
02/04/2022	13:33	16:33	BZ	2	15:10
02/04/2022	13:33	16:33	BZ	1	15:20
02/04/2022	13:33	16:33	BZ	2	15:25

Table A3-12
Secondary target species recorded during flight activity surveys undertaken at VP5

Date	Survey Start	Survey End	Species	Count	5 Min Period
30/04/2021	11:30	14:30	RN	2	13:20
30/04/2021	11:30	14:30	BZ	1	13:50
30/04/2021	11:30	14:30	BZ	1	13:55
30/04/2021	11:30	14:30	RN	1	14:15
01/05/2021	10:25	13:25	BH	1	10:40
01/05/2021	10:25	13:25	BZ	2	11:10
01/05/2021	10:25	13:25	BZ	2	11:15
01/05/2021	10:25	13:25	BZ	1	11:50
01/05/2021	10:25	13:25	BH	2	12:40
15/05/2021	10:35	13:35	CA	1	11:05
15/05/2021	10:35	13:35	RN	2	11:10
15/05/2021	10:35	13:35	MA	1	12:10

Date	Survey Start	Survey End	Species	Count	5 Min Period
15/05/2021	10:35	13:35	BZ	2	12:30
15/05/2021	10:35	13:35	BZ	2	12:35
15/05/2021	10:35	13:35	BZ	2	13:10
15/05/2021	10:35	13:35	BZ	2	13:15
15/05/2021	14:05	17:05	BZ	2	14:05
15/05/2021	14:05	17:05	BZ	2	14:10
15/05/2021	14:05	17:05	BZ	1	15:30
15/05/2021	14:05	17:05	MA	2	16:05
15/05/2021	14:05	17:05	BZ	1	16:30
14/06/2021	09:20	12:20	H.	1	09:55
14/06/2021	09:20	12:20	LB	1	10:40
14/06/2021	09:20	12:20	BZ	2	11:10
14/06/2021	09:20	12:20	BZ	2	11:15
14/06/2021	12:50	15:50	RN	2	13:10
14/06/2021	12:50	15:50	H.	1	14:35
14/07/2021	14:45	17:45	BZ	1	15:25
14/07/2021	14:45	17:45	BZ	2	16:10
14/07/2021	14:45	17:45	BZ	2	16:15
14/07/2021	14:45	17:45	RN	2	17:00
15/07/2021	13:45	16:45	RN	1	13:45
15/07/2021	13:45	16:45	BH	1	14:45
15/07/2021	13:45	16:45	H.	1	15:15
15/07/2021	13:45	16:45	BZ	1	16:05
09/08/2021	07:30	10:30	LB	2	07:50
09/08/2021	07:30	10:30	BZ	3	08:40
09/08/2021	07:30	10:30	BZ	4	08:45
09/08/2021	07:30	10:30	CA	1	09:25
09/08/2021	07:30	10:30	BZ	1	09:45
09/08/2021	07:30	10:30	RN	2	09:45
11/08/2021	17:30	20:30	BZ	1	19:05
20/09/2021	13:40	16:40	BH	23	15:05
20/09/2021	13:40	16:40	CM	11	15:05
20/09/2021	13:40	16:40	HG	6	15:05
20/09/2021	13:40	16:40	H.	1	15:20
20/09/2021	17:05	20:05	RN	3	17:40
20/09/2021	17:05	20:05	BH	12	18:10

Date	Survey Start	Survey End	Species	Count	5 Min Period
20/09/2021	17:05	20:05	H.	2	19:10
20/09/2021	17:05	20:05	MA	2	19:30
22/10/2021	07:30	10:30	H.	1	08:05
22/10/2021	07:30	10:30	RN	3	09:25
22/10/2021	07:30	10:30	RN	1	10:05
22/10/2021	15:45	18:45	BZ	1	16:30
22/10/2021	15:45	18:45	BZ	1	17:20
22/10/2021	15:45	18:45	BZ	1	17:25
10/11/2021	12:20	15:20	RN	2	12:40
10/11/2021	12:20	15:20	RN	2	12:45
10/11/2021	12:20	15:20	BZ	1	13:30
10/11/2021	12:20	15:20	BZ	1	13:50
10/11/2021	12:20	15:20	BH	12	14:40
10/11/2021	12:20	15:20	CM	6	14:40
11/11/2021	14:10	17:10	CA	4	15:00
11/11/2021	14:10	17:10	BZ	2, 4	15:40
11/11/2021	14:10	17:10	BZ	3	16:10
17/12/2021	10:10	13:10	HG	3	11:05
17/12/2021	10:10	13:10	HG	3	11:10
17/12/2021	10:10	13:10	RN	2	12:00
17/12/2021	13:40	16:40	H.	1	14:10
17/12/2021	13:40	16:40	RN	4	16:05
05/01/2022	08:05	11:05	RN	2	09:10
05/01/2022	08:05	11:05	SH	1	10:05
05/01/2022	11:35	14:35	HG	2	12:30
05/01/2022	11:35	14:35	RN	2	13:15
10/02/2022	07:40	10:40	H.	1	09:10
10/02/2022	07:40	10:40	RN	2	10:20
10/02/2022	15:00	18:00	RN	1	16:05
10/02/2022	15:00	18:00	JS	1	16:10
10/02/2022	15:00	18:00	HG	3	16:55
12/03/2022	06:50	09:50	RN	1	08:05
12/03/2022	06:50	09:50	RN	2	08:45
12/03/2022	06:50	09:50	MA	2	09:35
12/03/2022	12:50	15:50	H.	1	13:40
12/03/2022	12:50	15:50	SH	1	15:05

Table A3-13
Secondary target species recorded during flight activity surveys undertaken at VP6

Date	Survey Start	Survey End	Species	Count	5 Min Period
28/04/2021	14:05	17:05	RN	2	15:10
28/04/2021	14:05	17:05	RN	2	15:15
28/04/2021	14:05	17:05	BZ	1	16:00
28/04/2021	14:05	17:05	RN	4	16:40
28/04/2021	14:05	17:05	RN	4	16:45
28/04/2021	17:35	20:35	RN	2	18:10
28/04/2021	17:35	20:35	BZ	1	19:10
28/04/2021	17:35	20:35	BZ	1	19:15
28/04/2021	17:35	20:35	BZ	2	19:40
28/04/2021	17:35	20:35	BZ	2	19:45
14/05/2021	05:00	08:00	RN	2	05:40
14/05/2021	05:00	08:00	RN	1	06:30
14/05/2021	05:00	08:00	BZ	1	07:10
14/05/2021	08:30	11:30	RN	1	09:40
14/05/2021	08:30	11:30	H.	1	10:20
09/06/2021	13:30	16:30	H.	1	15:05
09/06/2021	13:30	16:30	MA	1	16:00
09/06/2021	17:00	20:00	BZ	1	18:10
09/06/2021	17:00	20:00	BH	1	19:10
09/06/2021	17:00	20:00	MA	2	19:50
14/07/2021	11:15	14:15	H.	1	13:20
14/07/2021	11:15	14:15	BH	2	13:50
14/07/2021	19:16	22:16	MA	1	20:06
14/07/2021	19:16	22:16	BZ	1	20:31
14/07/2021	19:16	22:16	BZ	1	21:16
09/08/2021	11:00	14:00	MA	1	12:05
09/08/2021	11:00	14:00	RN	2	12:10
09/08/2021	11:00	14:00	H.	2	13:25
11/08/2021	14:00	17:00	BH	2	14:50
11/08/2021	14:00	17:00	SH	1	15:25
11/08/2021	14:00	17:00	RN	2	16:00
20/09/2021	06:40	09:40	RN	2	06:55
20/09/2021	06:40	09:40	HG	2	07:40
20/09/2021	06:40	09:40	RN	1	08:35

Date	Survey Start	Survey End	Species	Count	5 Min Period
20/09/2021	10:10	13:10	BZ	1	10:45
20/09/2021	10:10	13:10	HG	1	11:40
20/09/2021	10:10	13:10	RN	1	12:10
23/10/2021	07:35	10:35	MA	2	08:10
23/10/2021	07:35	10:35	BZ	1	08:40
23/10/2021	07:35	10:35	BZ	2	09:15
23/10/2021	15:45	18:45	MA	2	17:10
23/10/2021	15:45	18:45	BH	18	17:30
23/10/2021	15:45	18:45	CM	9	17:30
23/10/2021	15:45	18:45	MA	2	18:05
10/11/2021	08:50	11:50	BH	20	09:10
10/11/2021	08:50	11:50	CM	13	09:10
10/11/2021	08:50	11:50	RN	2	10:20
10/11/2021	08:50	11:50	BH	12	11:00
10/11/2021	08:50	11:50	SH	1	11:10
11/11/2021	10:40	13:40	H.	1	10:55
11/11/2021	10:40	13:40	CM	5	12:05
11/11/2021	10:40	13:40	SH	1	13:00
13/12/2021	08:05	11:05	RN	1	08:45
13/12/2021	13:45	16:45	RN	2	14:50
06/01/2022	14:00	17:00	BH	12	16:05
06/02/2022	08:20	11:20	H.	1	08:35
06/02/2022	08:20	11:20	RN	2	09:30
06/02/2022	08:20	11:20	RN	1	10:00
12/02/2022	11:20	14:20	RN	2	13:05
12/02/2022	11:20	14:20	BZ	1	14:00
12/02/2022	15:00	18:00	HG	3	15:25
12/02/2022	15:00	18:00	SH	1	16:10
12/02/2022	15:00	18:00	H.	1	17:20
12/02/2022	15:00	18:00	MA	2	17:35
14/03/2022	10:30	13:30	BZ	1	10:50
14/03/2022	10:30	13:30	BZ	1	10:55
14/03/2022	10:30	13:30	BZ	1	12:05
14/03/2022	10:30	13:30	HG	3	12:40
14/03/2022	10:30	13:30	BZ	1	13:10
14/03/2022	14:00	17:00	BZ	1	14:25

Date	Survey Start	Survey End	Species	Count	5 Min Period
14/03/2022	14:00	17:00	BZ	1	14:30
14/03/2022	14:00	17:00	BZ	1	15:20
14/03/2022	14:00	17:00	SH	1	16:10

Table A3-14
Secondary target species recorded during flight activity surveys undertaken at VP7

Date	Survey Start	Survey End	Species	Count	5 Min Period
30/04/2021	08:00	11:00	BZ	1	09:25
30/04/2021	08:00	11:00	RN	4	10:05
30/04/2021	08:00	11:00	RN	4	10:10
01/05/2021	06:55	09:55	RN	2	07:20
01/05/2021	06:55	09:55	H.	1	08:10
01/05/2021	06:55	09:55	BZ	1	09:00
01/05/2021	06:55	09:55	BZ	1	09:05
14/05/2021	14:20	17:20	LB	2	15:05
14/05/2021	14:20	17:20	BZ	1	15:30
14/05/2021	14:20	17:20	CA	1	16:40
14/05/2021	14:20	17:20	BZ	1	17:10
14/05/2021	14:20	17:20	BZ	1	17:15
14/05/2021	18:50	21:50	BZ	2	19:05
14/05/2021	18:50	21:50	BZ	2	19:10
14/05/2021	18:50	21:50	SH	1	20:10
14/05/2021	18:50	21:50	RN	2	20:40
10/06/2021	13:50	16:50	H.	2	14:20
10/06/2021	13:50	16:50	BZ	2	14:35
10/06/2021	13:50	16:50	RN	4	14:55
10/06/2021	13:50	16:50	BZ	1	15:50
10/06/2021	13:50	16:50	BZ	1	15:55
10/06/2021	13:50	16:50	SH	1	16:30
10/06/2021	17:20	20:20	MA	1	19:10
15/07/2021	10:15	13:15	MA	2	10:35
15/07/2021	10:15	13:15	RN	3	12:15
15/07/2021	10:15	13:15	BZ	3	13:00
15/07/2021	10:15	13:15	BZ	3	13:05
15/07/2021	19:15	22:15	BZ	1	19:30
15/07/2021	19:15	22:15	H.	1	20:50

Date	Survey Start	Survey End	Species	Count	5 Min Period
09/08/2021	14:30	17:30	H.	1	15:40
09/08/2021	14:30	17:30	RN	4	16:05
09/08/2021	14:30	17:30	RN	2	16:30
09/08/2021	14:30	17:30	MA	4	17:10
11/08/2021	10:30	13:30	H.	1	11:10
11/08/2021	10:30	13:30	BZ	1	12:05
11/08/2021	10:30	13:30	HG	3	13:00
17/09/2021	13:20	16:20	H.	1	14:40
17/09/2021	13:20	16:20	SH	1	15:05
17/09/2021	13:20	16:20	BZ	1	15:20
17/09/2021	13:20	16:20	BH	11	15:40
17/09/2021	13:20	16:20	CM	4	15:40
17/09/2021	16:50	19:50	BZ	1	17:10
17/09/2021	16:50	19:50	BH	18	17:40
17/09/2021	16:50	19:50	BZ	1	18:05
17/09/2021	16:50	19:50	BZ	1	18:10
17/09/2021	16:50	19:50	H.	1	18:50
17/09/2021	16:50	19:50	BH	14	19:30
17/09/2021	16:50	19:50	CM	6	19:35
12/10/2021	14:45	17:45	CM	5	16:00
12/10/2021	14:45	17:45	RN	2	16:40
12/10/2021	14:45	17:45	RN	2	16:45
12/10/2021	14:45	17:45	MA	2	17:10
08/11/2021	14:10	17:10	RN	2	14:50
08/11/2021	14:10	17:10	RN	2	14:55
08/11/2021	14:10	17:10	H.	1	16:35
12/11/2021	09:40	12:40	BZ	1	09:40
12/11/2021	09:40	12:40	RN	3	10:20
12/11/2021	09:40	12:40	BH	10	11:30
20/12/2021	13:45	16:45	RN	2	14:10
20/12/2021	13:45	16:45	BZ	1	15:20
20/12/2021	13:45	16:45	BH	7	16:10
20/12/2021	13:45	16:45	CM	5	16:10
04/01/2022	12:30	15:30	RN	1	13:10
04/01/2022	09:00	12:00	BZ	1	14:05
04/01/2022	12:30	15:30	RN	2	15:05

Date	Survey Start	Survey End	Species	Count	5 Min Period
11/02/2022	09:00	12:00	H.	1	10:25
11/02/2022	09:00	12:00	RN	2	10:55
11/02/2022	09:00	12:00	BH	6	11:20
11/02/2022	12:30	15:30	BZ	1	14:05
15/03/2022	11:00	14:00	BH	4	11:50
15/03/2022	11:00	14:00	RN	2	13:05
15/03/2022	14:30	17:30	BZ	1	15:00
15/03/2022	14:30	17:30	BZ	2	15:05
15/03/2022	14:30	17:30	BZ	2	15:10
15/03/2022	14:30	17:30	MA	1	16:20

EUROPEAN OFFICES

United Kingdom

AYLESBURY
T: +44 (0)1844 337380

BELFAST
belfast@slrconsulting.com

BRADFORD-ON-AVON
T: +44 (0)1225 309400

BRISTOL
T: +44 (0)117 906 4280

CARDIFF
T: +44 (0)29 2049 1010

CHELMSFORD
T: +44 (0)1245 392170

EDINBURGH
T: +44 (0)131 335 6830

EXETER
T: + 44 (0)1392 490152

GLASGOW
glasgow@slrconsulting.com

GUILDFORD
guildford@slrconsulting.com

LONDON
T: +44 (0)203 805 6418

MAIDSTONE
T: +44 (0)1622 609242

MANCHESTER (Denton)
T: +44 (0)161 549 8410

MANCHESTER (Media City)
T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE
T: +44 (0)191 261 1966

NOTTINGHAM
T: +44 (0)115 964 7280

SHEFFIELD
T: +44 (0)114 245 5153

SHREWSBURY
T: +44 (0)1743 23 9250

STIRLING
T: +44 (0)1786 239900

WORCESTER
T: +44 (0)1905 751310

Ireland

DUBLIN
T: + 353 (0)1 296 4667

France

GRENOBLE
T: +33 (0)6 23 37 14 14

BIRD SURVEY REPORT
BREEDING SEASON 2022

Coolglass Wind Farm

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BASIS OF REPORT

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1.0 Introduction

SLR Consulting Ireland (SLR) was previously commissioned to carry out bird surveys for the breeding bird period in 2021 and non-breeding bird period in 2021/22. SLR was then commissioned by Statkraft in April 2022 to carry out a bird survey programme for the proposed Coolglass Wind Farm, Co. Laois (hereafter 'the Project') during the breeding period 2022 and non-breeding bird period in 2022/23. The non-breeding 2022/23 report will be provided at a later date.

1.1 Background to the Commission

No previous planning permission has been sought on the application site (hereafter 'the Project Site') for the development of wind farms by Statkraft or any other party. Breeding and non-breeding bird surveys were previously carried out by Fehily Timoney and Company on the Project Site from 2012 to 2018. These surveys included flight activity, breeding wader, barn owl, and merlin surveys. This data is available in raw format but has not been reported on.

1.2 Project Site Description

The Project Site is located within the townlands of Brennanshill, Coolglass, Crissard, Fallowbeg Upper, Coolglass Upper, Gorreelagh Kylenabehy and Scotland in Co. Laois. The dominant habitats within the boundaries of the Project Site are conifer plantation and improved agricultural grassland. There are also numerous eroding/upland rivers including the Fallowbeg Upper, Owveg [Nore], Clogh 15 and Brennanshill. The north of the Project Site is focused on Fossy Mountain, which is a small hill, 323 m above sea level in height.

1.3 Scope of Work

The scope of survey work was based on existing knowledge of the area and took into account current NatureScot (NS) (formerly Scottish Natural Heritage; SNH) guidance[1]. This survey methods guidance is recognised as standard best practice guidance throughout the UK and Ireland for surveying birds to inform impact assessment for onshore wind farms. The same suite of surveys was undertaken as in the breeding 2021 season, with the addition of breeding wader surveys. Breeding wader surveys were included in the 2022 season as wader flight lines were recorded in the breeding 2021 and non-breeding 2021/22 season.

The scope of survey work undertaken is provided in **Table 1-1**. Further details are provided in Sections 2.2.2 to 2.2.5.

[1] Scottish Natural Heritage (2017). *Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms V2.* Scottish Natural Heritage, Inverness.

Table 1-1
Scope of Ornithological Survey Work, Breeding Season 2022

Survey Type	Summary Methodology (see Section 2 for further details)
Vantage Point (VP) surveys	36 hours of surveys were carried out from VPs 1, 2, 4 and 7 from May to August 2022.
Breeding raptor surveys	Five surveys were undertaken from May to July 2022 to search for any raptors breeding within 2 km of the Project Site.
Breeding wader surveys	Three surveys were carried out from May to June 2022 to search for any waders breeding within the Project Site.

1.4 Target Species

Target species for the surveys were defined by legal and/or conservation status and vulnerability to impacts caused by wind turbines, as defined in NS guidance.

1.4.1 Primary Target Species

Primary target species was limited to species upon which effects are most likely to be potentially significant in EIA and Appropriate Assessment (AA) terms e.g., species forming qualifying features for nearby Special Protection Areas (SPAs) or species listed on Annex 1 of the Birds Directive[2]. This enabled recording to focus on the species of greatest importance without the distraction of having to record detailed flight data for a larger number of more common species.

Primary target species included the following bird species:

- All Annex 1 raptor/owl species;
- Qualifying interest species for nearby SPAs[3]; and
- Other raptors, waders or wildfowl red-listed on the latest Birds of Conservation Concern in Ireland (BoCCI)[4] scheme.

1.4.2 Secondary Species

Local circumstances may indicate that survey information should also be acquired on other species, especially those of regional conservation concern. Such species are termed secondary species. Recording of secondary species is subsidiary to recording of primary target species.

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[2] Annex 1 of the Birds Directive (Directive 2009/147/EC)
[3] The relevant SPAs are listed in Section 3.1.
[4] Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 2020–2026. Irish Birds 43: 1–22

Secondary target species included:

- Any other wildfowl and wader species;
- Common buzzard *Buteo buteo;*
- Eurasian sparrowhawk *Accipiter nisus*;
- Northern raven *Corvus corax*;
- Grey heron *Ardea cinerea;*
- Great cormorant *Phalacrocorax carbo;* and
- Gulls *Larus* and *Chroicocephalus sp*.

1.5 Terminology

For this report, "flight line" refers to the line drawn to record avian movement during a VP survey. A single flight line may be used indicate the collective movement of a flock of birds. Each individual bird moving within the same flight line is referred to as "a flight". Note that the "cumulative number of birds recorded in flight" reflects the occupancy of the study area by a particular species. It is not equivalent to the number of unique individuals and should not be used to infer abundance.

1.6 Purpose of the Report

The aim of this report is to provide robust baseline ornithological survey data for the breeding period in 2022. These data will be used to inform a separate ecological impact assessment and appropriate assessment for the Project. The assessment of potential impacts is beyond the scope of this report.

2.0 Methodology

2.1 Desk-based Review

The desk-based review collated available information collected to date on the bird movements in and around the Project Site. The websites of the National Parks and Wildlife Service (NPWS) www.npws.ie, the National Biodiversity Data Centre (NBDC) http://maps.biodiversityireland.ie/#/Map, and the UK and Ireland Bird Atlas 2007-2011 https://app.bto.org/mapstore/StoreServlet were also accessed for information on sites designated for nature conservation in the vicinity of the Project Site and notable bird species in the local area.

2.2 Field Surveys

2.2.1 Field Survey Team: Evidence of Technical Competence and Experience

Jonathon Dunn (JD) – Project Manager and Lead Ornithologist

Jonathon is a Senior Ecologist with SLR and holds a BA (Hons) in Natural Sciences from the University of Cambridge, an MSc in Ecology Evolution and Conservation from Imperial College London and a PhD in Avian Ecology from Newcastle University. He is a Full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Jonathon is a highly skilled and experienced bird surveyor with six years' post graduate experience as a professional consultant ecologist. Jonathon managed this project through liaison with the client, coordination of the survey team, supervision of the health and safety of the team, collating, quality controlling and assessing the survey data.

Maeve Maher-McWilliams (MMW)

Maeve is a freelance ecologist with a BSc in Biological Sciences from Queen's University Belfast and an MSc in Evolutionary and Behavioural Ecology from the University of Exeter. She is an Associate member of CIEEM and has ten years of experience as a professional consultant ecologist. Maeve carried out vantage point surveys, breeding wader and breeding raptor surveys at Coolglass wind farm during the 2022 breeding season.

Faolán Linnane (FL) – Project Ecologist

Faolán is a Project Ecologist with SLR and holds a BSc in Zoology and an MSc in Marine Biology from University College Cork. He has experience in vantage point surveys and is also involved in data input and the drafting of bird survey reports. Faolán carried out vantage point surveys at Coolglass wind farm in May 2022.

Darragh Nagle (DN) – Graduate Ecologist

Darragh Nagle is a Graduate Ecologist with SLR and a qualifying member of CIEEM. Darragh graduated from University College Cork in 2020 with a BSc degree in Ecology and Environmental Ecology. Since joining SLR Darragh's field experience includes multiple bird surveys on windfarm sites across Ireland including onshore windfarm vantage point surveys, breeding wader surveys, breeding raptor surveys and intertidal bird surveys for landfall locations for offshore wind projects. Darragh undertook surveys for this project in April 2022.

Alice Magee (AM) – Graduate Ecologist

Alice is a Graduate Ecologist with a BSc in Zoology from University College Dublin and an MSc in Ecological Management and Conservation Biology from Queen's University Belfast. She carried out vantage point surveys at Coolglass wind farm in June 2022.

2.2.2 Flight Activity Surveys

Seven vantage point (VP) locations were used for surveys during the 2021 breeding and 2021/22 non-breeding seasons. Following these two survey seasons, the Project Site was reduced in size. Consequently, for the 2022 breeding season surveys only five vantage point (VP) locations were retained to provide visibility of the remaining

optioned lands and a 500 m buffer surrounding the same. The adequacy of these VPs was checked by carrying out a desk-based viewshed analysis using a bespoke GIS tool for calculating the visible area from each vantage point (VP). The Zones of Theoretical Visibility (ZTV) from each VP were calculated using ArcMAP 10.5.1 Spatial Analyst using a terrain model derived from EU-DEM data with a vertical accuracy of ± 7 m. The ZTVs have been calculated using a surface offset of 30 m, to match the lowest point swept by the rotors of the proposed turbines. The ZTVs are based on a viewing height of 1.8 m above ground level. VP locations, viewing arcs and viewsheds are shown in **Figure 1**.

During the breeding season (monthly visits May-August inclusive), a total of 36 hours of watches were undertaken at VPs 1-3 and at VP4 and VP7. The VP survey effort undertaken during the breeding season of 2022 is summarised in **Table 2-1** with full details of survey dates, times and observers provided in Appendix 01 and details of weather conditions during the surveys provided in Appendix 02.

Table 2-1
VP survey effort undertaken at the Project Site from May 2022 to August 2022

Month	VP1 (hours)	VP2 (hours)	VP3 (hours)	VP4 (hours)	VP7 (hours)
May	12:00	12:00	12:00	03:00	09:00
June	06:00	06:00	06:00	09:00	03:00
July	12:00	12:00	12:00	12:00	12:00
August	06:00	06:00	06:00	12:00	12:00
Total hrs	**36:00**	**36:00**	**36:00**	**36:00**	**36:00**
VP Locations ITM (**Figure 1**)	654390, 690092	656470, 687421	654877, 687955	657231, 685790	655847, 683304

VP surveys aimed to quantify the flight activity of primary and secondary target species (as defined in Section 1.4) within the study area.

The main purpose of VP watches is to collect data on primary target species that will enable estimates to be made of:

- The time spent flying over the site;
- The relative use by birds of different parts of the site;
- The proportion of flying time spent within the provisional upper and lower risk height limits as determined by the potential rotor diameter and rotor hub height; and
- Ultimately, the analysis of the potential risk of collision of birds with rotating turbines.

For each primary target species observation, the following details were recorded:

- Time of observation;
- Duration of flying bout;
- Species, age and sex (where determinable);
- Time spent within each height band and;
- Notes on observation.

In the absence of detailed information regarding turbine specifications at the time of commencing surveys, a precautionary approach was taken in relation to recording height bands. Height bands were determined allowing for the maximum rotor tip height of 180 m and a lowest rotor swept height of 30 m. Flight heights were attributed to five distinct height bands as follows:

- 1 = < 15 m (below the likely rotor swept area);
- 2 = 15 m to 30m (below the likely rotor swept area);
- 3 = 30 m to 150 m (within the likely rotor swept area);
- 4 = 150 m to 200 m (within the likely rotor swept area, at least in part); and
- 5 = >200 m (above the likely rotor swept area).

In addition, a summary of observations of secondary target species was recorded at the end of each five-minute period during each VP watch to provide an index of flight activity for secondary target species within the Project Site, in accordance with current NS guidance.

2.3 Breeding Wader Surveys

Breeding wader surveys followed the methodology described in O'Brien and Smith (1992)[5]. The survey involved a walked transect, which covered all habitat potentially suitable for breeding waders within the wind farm site. Access to the 500 m buffer surrounding the wind farm was not possible. The same transect was repeated three times across the 2022 breeding season twice in May and once in June 2022.

There are large plantations of mature conifer forestry which comprise the majority of the site. These habitats are not suitable for breeding waders[6] and so were excluded from the survey. As such, the transect was restricted to

[5] O'Brien, M. and Smith, K. W. (1992) Changes in the status of waders breeding on wet lowland grasslands in England and Wales between 1982 and 1989, Bird Study, 39:3, 165-176

[6] Apart from potentially for woodcock, which were not the target of surveys here.

potentially suitable habitat within the north-western section of the site near turbine T1 where several wet, improved agricultural grassland fields are present.

The location, movement and behaviour of all wader species were to be recorded onto field maps using standard BTO species codes (had any waders been recorded). The following criteria were to be recorded for each species:

- Northern lapwing *Vanellus vanellus* – the total numbers of birds seen from the transect;
- Common snipe *Gallinago gallinago* – the number of drumming plus chipping birds heard or seen from the transect; and
- Other species – the number of pairs (where 'pairs' = (paired individuals/2), displaying birds, nests or broods and other single birds not in flocks).

Birds were considered to be confirmed breeding if:

- They were observed displaying or singing on more than one visit;
- Nests, eggs, or young were located;
- Adults repeatedly alarm called;
- Distraction displays were seen; and/ or
- Territorial disputes were observed.

Birds were considered to be probably or possibly (i.e. unconfirmed) breeding if:

- They were observed displaying or singing on one visit (i.e. possibly breeding) or more than one visit (i.e. probably breeding) (with the exception of obvious passage migrants in spring); or
- A pair of birds was observed in suitable habitat for nesting. Other records were considered to be of non-breeding birds, failed breeders, birds loafing, feeding or on passage to other areas

Details of survey dates, times and observers are provided in Appendix 01 and a record of weather conditions during surveys is provided in Appendix 02.

2.4 Breeding Raptor Surveys

NS recommends that all potential breeding territories within a 2 km radius of the Project Site be surveyed throughout the breeding season. A driven transect was undertaken within this buffer, stopping at potential raptor breeding habitats as defined by Hardey *et al.* (2013)[7] and focusing on areas which were not visible from the fixed vantage points. This transect was undertaken two times in May 2022, two times in June 2022 and once in July 2022. Details of survey dates, times and observers are provided in Appendix 01 and a record of weather conditions during surveys is provided in Appendix 02.

The location, movement and behaviour of all raptor species were recorded onto the field maps using standard BTO species codes.

2.5 Survey Limitations

The majority of VP surveys were undertaken in optimal weather conditions. However, during such an extensive series of surveys carried out it was inevitable that some surveys were completed in suboptimal conditions. There were 9 hours out of the total of 180 during which the visibility was recorded as “moderate”, i.e. 1-3 km. This comprises 5% of the total survey effort but in almost all cases all of the relevant 2 km viewing arc was visible and

[7] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013). Raptors: A Field Guide to Survey and Monitoring (3rd Edition). The Stationery Office, Edinburgh.

this is not considered to significantly affect the validity of the data collected. In no cases did visibility fall below 1 km, and in many cases visibility was better than this for part of the relevant hour. As such, given the low proportion of surveys affected this is not considered to significantly affect the validity of the data collected. Further details regarding weather conditions during surveys are provided in Appendix 02.

No surveys were carried during April. However, the survey effort was doubled in May and again in July at VPs 1-3, resulting in a total of 36 hours being achieved at each VP. The survey effort was doubled in July and also in August at VP4 and VP7, resulting in a total of 36 hours being achieved at each VP. The surveys are in accordance with NS guidelines, which does not specify surveys in each month, just the effort for the season.

3.0 Results

3.1 Desk-based Review

3.1.1 Natura 2000 Sites

There are no Special Protection Areas (SPA) within the Project Site. However, there is one SPA within a 20 km[8] radius of the survey area.

Details of this SPA are shown in **Table 3-1**, which also shows the qualifying interests for the site.

Table 3-1
SPAs within 20 km of the proposed Coolglass Wind Farm and their qualifying interests

Site Name	Site Code	Distance / Direction from Project Site	Species of Special Conservation Interest Relevant to the Breeding Season
River Nore SPA	004233	11.7 km southwest of the Project Site (18.2 km instream distance via Owveg River)	Common kingfisher *Alcedo atthis*

3.1.2 Previous Survey Data

Breeding and non-breeding bird surveys were previously carried out by Fehily Timoney at the Project Site from 2012 to 2018. These surveys included flight activity, breeding wader, barn owl, and merlin surveys.

The following primary target species were observed either on-site or within the surrounding 500 m buffer during the previous surveys:

- Merlin *Falco columbarius;*
- European golden plover *Pluvialis apricaria*;
- Common kestrel *Falco tinnunculus*;
- Peregrine falcon *Falco peregrinus*;
- Hen harrier *Circus cyaneus;*
- Common snipe *Gallinago gallinago*; and
- Eurasian woodcock *Scolopax rusticola.*

Barn owl surveys were carried out in September 2013. Potentially suitable nesting sites were noted during this survey, but no confirmed nesting or roosting sites were identified.

No confirmed signs of breeding were identified during the merlin surveys.

[8] 20 km is the maximum distance typically applied when considering wildfowl ranging from roost sites to foraging sites.

The following secondary target species were observed either on-site or within the surrounding 500 m buffer during the previous surveys:

- Common buzzard *Buteo buteo*; and
- Eurasian sparrowhawk *Accipiter nisus*.

3.2 Breeding Season Flight Activity Surveys

Flight lines of primary target species recorded throughout the 2022 breeding season are presented in **Figures 2.1** to **2.2** and a summary of the survey findings are provided in Sections 3.2.1 and 3.2.2 for primary and secondary target species, respectively. Flight data for both primary and secondary target species are provided in Appendix 03.

3.2.1 Primary Target Species

In total, five primary target species were recorded flying within the study area on and around the Project Site during the survey period. Flight activity recorded for primary target species is summarised in Table 3-2.

Table 3-2
Number of Primary Target Species Flights from the Project Site for All VPs Combined – May - August 2022

Species	Number of flight lines by month				Total number of flight lines	Time at risk height* (s)	Cumulative number of birds recorded in flight
	May	June	July	August			
Common kestrel	15	14	64	6	99	570	102
Northern lapwing	0	2	0	0	2	0	3
Peregrine falcon	0	0	2	4	6	126	6
Common snipe	0	0	3	0	3	0	3
Eurasian woodcock	0	1	0	0	1	0	1
Total					**112**	**696**	**116**
* precautionary risk height assumed to be between 30 m – 180 m							

A summary of flight activity by species is presented below.

Common kestrel

Ninety-nine flight lines of common kestrel were recorded during the flight activity surveys. The maximum number of flight lines was recorded in July 2022 (n=64). Flight lines were recorded across all VP locations, within both the Project Site and the 500 m buffer. Most flights were observed at an average height of 20 metres.

Northern lapwing

Two flight lines of northern lapwing were recorded from VP1 in June 2022. Both were below potential rotor swept heights.

Peregrine falcon

Peregrine falcons were recorded in July and August 2022 only, with all flight lines consisting of single birds. These flight lines were recorded at VP locations 1, 2 and 3 within both the Project Site and the 500 m buffer. Flights were observed at average heights of between 18 and 150 metres.

Common snipe

Three flight lines of common snipe were recorded from VP2 in July 2022, with all flight lines consisting of single birds. These flight lines were observed within the Project Site at average heights of between 15 and 20 metres. Flight durations were long, ranging from 15 to 88 minutes. The birds were adult males drumming, which is confirmation of breeding as they were recorded on more than one visit.

Eurasian woodcock

One Eurasian woodcock flight line was recorded from VP3 in June 2022. The single bird was observed flying within the north-western portion of the Project Site at an average height of 20 metres. This bird was not roding and was commuting only.

3.2.2 Secondary Species

Secondary species activity at the Project Site is summarised in

Table 3-3. There were nine secondary species recorded throughout the breeding season. Common buzzard was the most frequently recorded secondary species (in 438 five-minute periods out of a possible 2,100). Lesser black-backed gull *Larus fuscus* was the most numerous of the recorded secondary species (maximum flock size of 23).

Table 3-3
Secondary Species Activity Summary for All VPs Combined – April 2021 – September 2021

Species	Number of 5 min periods recorded	Peak count of birds recorded in any 5 min period	Comments
Black-headed gull	2	4	Activity in July and August only, within the Project Site, survey buffer and beyond.
Common buzzard	438	5	Activity in all months, within the Project Site, survey buffer and beyond.
Common swift *Apus apus*	1	1	Activity in June 2022 only, within the survey buffer and beyond.
Great black-backed gull *Larus marinus*	2	1	Activity in July and August 2022, within the Project Site and survey buffer.
Grey heron	2	1	Activity in May and July 2022, within the Project Site.
European herring gull *Larus argentatus*	14	17	Activity in all months, within the Project Site, survey buffer and beyond.
Lesser black-backed gull	37	23	Activity in all months, within the Project Site, survey buffer and beyond.
Northern raven	56	8	Activity in all months, within the Project Site, survey buffer and beyond.
Eurasian sparrowhawk	17	3	Activity in all months, within the Project Site, survey buffer and beyond.

3.3 Breeding Raptor Surveys

A total of four species of raptor was recorded during the surveys. The following species accounts provide summary details of the primary raptor species encountered during the 2022 surveys (all surveys combined). The results of the breeding raptor surveys can be seen in **Figure 3**.

3.3.1 Common buzzard

A total of sixteen sightings of common buzzard were recorded during breeding raptor surveys in May, June, and July 2022. Most birds were recorded either foraging or soaring. It is likely that at least one pair held a territory to the north of the Project Site, and one bird was recorded dropping into the forestry with prey within the site. No nests were identified on site or within the 2 km survey area.

3.3.2 Common kestrel

A total of six sightings of common kestrel were recorded during breeding raptor surveys in June and July 2022. All birds were recorded foraging and no evidence of breeding was detected within 2 km of the Project Site. However, a disused quarry to the north of the Project Site was recorded as a potential (but unconfirmed) kestrel roost.

3.3.3 Eurasian sparrowhawk

A total of two sightings of Eurasian sparrowhawk were recorded during breeding raptor surveys in May and July 2022. It was suspected that there was a potential territory to the north of the Project Site but no other evidence of breeding was detected within 2 km of the Project Site.

3.3.4 Peregrine Falcon

One peregrine falcon was observed during a breeding raptor survey in May 2022. The bird was observed soaring and circling at a height of 150 metres. No evidence of breeding peregrines was recorded within 2 km of the Project Site. However, a disused quarry to the north of the Project Site was recorded as a potential (but unconfirmed) peregrine falcon roost.

3.3.5 Incidental Records of Other Species

There was one incidental record of northern lapwing during a breeding raptor survey in June 2022. The bird was observed in an agricultural field to the west of the Project Site (no evidence of breeding was recorded). No other non-raptor species of conservation concern were recorded during surveys.

3.4 Breeding wader surveys

No wader species were recorded during the 2022 breeding wader surveys; however, the flight activity surveys showed common snipe was breeding c. 400 m southwest of turbine T6. No incidental records other species were made during these surveys.

4.0 Summary and Conclusions

A range of ornithology surveys were carried out at the Project Site during the 2022 breeding season. These were:

- Flight activity (VP) surveys;
- Breeding raptor surveys; and
- Breeding wader surveys.

The following primary target species were recorded during flight activity surveys at the Project Site:

- Common kestrel*;*
- Northern lapwing*;*
- Peregrine falcon;
- Common snipe; and
- Eurasian woodcock.

The most frequent flight activity during the breeding season was by common kestrel (99 flight lines), with other target species activity less frequent. The next most frequently recorded species was peregrine falcon (six flight lines). Common snipe was recorded three times, northern lapwing was recorded two times, and Eurasian woodcock were recorded once.

Breeding raptor surveys recorded two primary target species and two secondary target species:

- Peregrine falcon: no evidence of breeding;
- Common kestrel: no evidence of breeding;
- Common buzzard: suspected territory within 2 km of Project Site; and
- Eurasian sparrowhawk: suspected territory within 2 km of Project Site.

One incidental record of northern lapwing was recorded during breeding raptor surveys.

Breeding wader surveys recorded no target species and no incidental records were made. However, confirmed evidence was recorded of common snipe breeding c. 400 m to the southwest of turbine T6 during flight activity surveys.

5.0 Legal and Conservation Status of Target Species Recorded

Table 5-1 summarises the legal and conservation status of the primary and secondary target species recorded during the range of ornithology surveys mentioned above. All Irish bird species are afforded general protection by the Wildlife Acts 2000 (as amended).

Table 5-1
Legal and Conservation Status of Target Species

Primary or Secondary Target	Species (BTO code)	Legal & Conservation Status in Ireland
Primary	Common kestrel	BoCCI4 Red
	Northern lapwing	BoCCI4 Red
	Peregrine falcon	Annex 1; BoCCI4 Green
	Eurasian woodcock	BoCCI4 Red
	Common snipe	BoCCI4 Red
Secondary	Black-headed gull	BoCCI4 Amber
	Common buzzard	BoCCI4 Green
	Common swift	BoCCI4 Red
	Great black-backed gull	BoCCI4 Green
	Grey heron	BoCCI4 Green
	Herring gull	BoCCI4 Amber
	Lesser black-backed gull	BoCCI4 Amber
	Northern raven	BoCCI4 Green
	Eurasian sparrowhawk	BoCCI4 Green
	Key	Annex 1 – the species is listed in Annex 1 of the EC Birds Directive; and
		BoCCI4 status (green, amber or red) – indicates the current Birds of Conservation Concern in Ireland[4] status category.

FIGURES

650000 655000 660000

690000 685000

N

T1 T2 T3 T4 T5 T6 T7 T9 T10 T11 T12 T13 T14

1 2 3 4 5 6 7

0 1 2

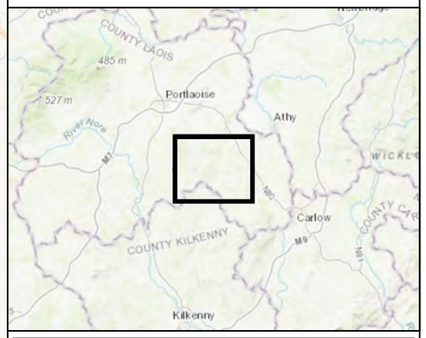
Kilometres

NOTES

1. The ZTV is calculated with a surface offset 30m & from a viewing height of 1.8m above ground level. The terrain model is derived from EU-DEM data with a vertical accuracy of ± 7m. The ZTV was calculated using ArcMAP 10.5.1 software.
2. Vantage Points 5 & 6 Cover an area of the site which was included as part of a previous design iteration but has since been removed.

LEGEND

- Wind Farm Site Boundary
- Wind Farm Site Boundary 500 m Buffer
- Proposed Turbine Layout
- Vantage Point
- Vantage Point 2 km Viewing Arc
- Area Visible from VP1
- Area Visible from VP2
- Area Visible from VP3
- Area Visible from VP4
- Area Visible from VP5
- Area Visible from VP6
- Area Visible from VP7



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7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN D14 N2Y7
IRELAND
T: 0129 64667
www.slrconsulting.com

COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2022

VANTAGE POINT LOCATIONS & VIEWING ARCS

FIGURE 1

Scale 1:45,000 @ A3

Date NOVEMBER 2022

02036.00787.0123.0 Vantage Point Locations and Viewing Arcs

650000
655000
660000
690000
685000

N

T1
T2
T3
T4
T5
T6
T7
T9
T10
T11
T12
T13
T14

0
1
2
Kilometres

LEGEND

Wind Farm Site Boundary

Wind Farm Site Boundary 500 m Buffer

Proposed Turbine Layout

Species

Kestrel

BTO Code:
K. - Kestrel

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IRELAND
T: 0129 64667
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COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2022

FLIGHT LINES
RAPTORS - KESTREL

FIGURE 2.1A

Scale 1:45,000 @ A3

Date NOVEMBER 2022

6i 02036.00787.0125.0 Flight Lines Raptors

650000
655000
660000
690000
685000

N

T1
T2
T3
T4
T5
T6
T7
T9
T10
T11
T12
T13
T14

0
1
2
Kilometres

LEGEND

Wind Farm Site Boundary

Wind Farm Site Boundary 500 m Buffer

Proposed Turbine Layout

Species

Peregrine

BTO Code:
PE - Peregrine

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IRELAND
T: 0129 64667
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BIRD SURVEY REPORT
BREEDING SEASON 2022

FLIGHT LINES
RAPTORS - PEREGRINE

FIGURE 2.1B

Scale 1:45,000 @ A3

Date NOVEMBER 2022

6: 02036.00787.0125.0 Flight Lines Raptors

652000 656000 660000 664000

688000

684000

N

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14

0 1 2

Kilometres

LEGEND

Wind Farm Site Boundary

Wind Farm Site Boundary 500 m Buffer

Proposed Turbine Layout

Species

Lapwing

Snipe

Woodcock

BTO Code:
L. - Lapwing
SN - Snipe
WK - Woodcock

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T: 0129 64667
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COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2022

FLIGHT LINES
WADERS

FIGURE 2.2

Scale 1:45,000 @ A3

Date NOVEMBER 2022

02036.00787.0124.0 Flight Lines Waders

652000 656000 660000 664000

688000

684000

T1 T2 T3 T4 T5 T6 T7 T10 T9 T11 T13 T14 T12

N

0 1 2

Kilometres

LEGEND

Wind Farm Site Boundary

Wind Farm Site Boundary 500 m Buffer

Proposed Turbine Layout

Note::
No Breeding Wader Bird Species Recorded Throughout the Season.

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IRELAND
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COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2022

BREEDING WADER WALKED TRANSECT SURVEY RESULTS

FIGURE 3

Scale 1:45,000 @ A3

Date NOVEMBER 2022

02036.00787.0126.0 Breeding Wader Walked Transect Survey Results

652500 657000 661500

688500

684000

N

T1 T2 T3 T4 T5 T6 T7 T9 T10 T11 T12 T13 T14

PE SH Bz L

0 1 2

Kilometres

LEGEND

Wind Farm Site Boundary

Wind Farm Site Boundary 2 km Buffer

Proposed Turbine Layout

Raptor Species Record

Bz Buzzard

PE Peregrine

SH Sparrowhawk

Raptor Species Flight Line

Buzzard

Kestrel

Peregrine

Incidental Species Record

L Lapwing

BTO Code:
BZ - Buzzard
L. - Lapwing
K. - Kestrel
PE - Peregrine
SH - Sparrowhawk

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DUBLIN D14 N2Y7
IRELAND
T: 0129 64667
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COOLGLASS WIND FARM

BIRD SURVEY REPORT
BREEDING SEASON 2022

BREEDING RAPTOR DRIVEN TRANSECT SURVEY RESULTS

FIGURE 4

Scale 1:45,000 @ A3

Date NOVEMBER 2022

02036.00787.0127.0 Breeding Raptor Driven Transect Survey Results

APPENDIX 01

Survey dates, times and observers[9]

[9] Surveyor initials are listed in Section 2.2.1

Table A1-1
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 1

Date	Surveyor	Start	End	Survey Duration
16/05/22	DN	10:05	13:05	03:00
20/05/22	DN	13:25	16:25	03:00
30/05/22	MMW	13:30	16:30	03:00
31/05/22	MMW	10:00	13:00	03:00
20/06/22	MMW	18:45	21:45	03:00
22/06/22	MMW	10:00	13:00	03:00
04/07/22	MMW	15:10	18:10	03:00
05/07/22	MMW	06:45	09:45	03:00
28/07/22	MMW	18:30	21:30	03:00
28/07/22	MMW	11:15	14:15	03:00
15/08/22	MMW	14:30	17:30	03:00
17/08/22	MMW	14:00	17:00	03:00
Total Hours				**36**

Table A1-2
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 2

Date	Surveyor	Start	End	Survey Duration
16/05/22	DN	13:20	16:20	03:00
20/05/22	DN	10:15	13:15	03:00
27/05/22	MMW	10:45	13:45	03:00
31/05/22	MMW	13:45	16:45	03:00
21/06/22	MMW	14:30	17:30	03:00
22/06/22	MMW	06:20	09:20	03:00
05/07/22	MMW	18:45	21:45	03:00
06/07/22	MMW	11:40	14:40	03:00
26/07/22	MMW	06:35	09:35	03:00
27/07/22	MMW	10:10	13:10	03:00
15/08/22	MMW	18:00	19:25	01:25
16/08/22	MMW	19:30	21:05	01:35
16/08/22	MMW	10:30	13:30	03:00
Total Hours				**36**

Table A1-3
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 3

Date	Surveyor	Start	End	Survey Duration
18/05/22	FL	12:00	15:00	03:00
19/05/22	FL	14:35	17:35	03:00
27/05/22	MMW	14:20	17:20	03:00
30/05/22	MMW	09:40	12:40	03:00
20/06/22	MMW	15:00	18:00	03:00
21/06/22	MMW	19:20	22:20	03:00
04/07/22	MMW	18:40	21:40	03:00
05/07/22	MMW	10:45	13:45	03:00
26/07/22	MMW	10:10	13:10	03:00
27/07/22	MMW	06:40	09:40	03:00
16/08/22	MMW	07:00	10:00	03:00
17/08/22	MMW	10:15	13:15	03:00
Total Hours				**36**

Table A1-4
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 4

Date	Surveyor	Start	End	Survey Duration
13/05/22	DN	10:30	13:30	03:00
20/06/22	DN	10:07	13:07	03:00
24/06/22	AM	10:45	13:45	03:00
24/06/22	AM	14:20	17:20	03:00
14/07/22	DN	09:40	12:40	03:00
15/07/22	DN	12:35	15:35	03:00
21/07/22	DN	09:30	12:30	03:00
22/07/22	DN	11:45	14:45	03:00
08/08/22	JD	11:00	14:00	03:00
12/08/22	JD	18:30	21:30	03:00
29/08/22	DN	13:40	16:40	03:00
30/08/22	DN	11:15	14:15	03:00
Total Hours				**36**

Table A1-5
Details of VP surveys undertaken from Coolglass Wind Farm Vantage Point 7

Date	Surveyor	Start	End	Survey Duration
13/05/22	DN	13:40	16:40	03:00
18/05/22	FL	15:30	18:30	03:00
19/05/22	FL	11:15	14:15	03:00
20/06/22	DN	13:17	16:17	03:00
14/07/22	DN	12:50	15:50	03:00
15/07/22	DN	09:25	12:25	03:00
21/07/22	DN	12:41	15:41	03:00
22/07/22	DN	08:34	11:34	03:00
08/08/22	JD	14:30	17:40	03:00
12/08/22	JD	15:00	18:00	03:00
29/08/22	DN	10:30	13:30	03:00
30/08/22	DN	08:00	11:00	03:00
Total Hours				**36**

Table A1-6
Details of breeding raptor surveys undertaken at Coolglass Wind Farm

Date	Surveyor	Start	End	Survey Duration
06/05/22	JD	12:00	18:00	06:00
23/05/22	JD	14:30	18:30	04:00
22/06/22	MMW	18:00	21:00	03:00
23/06/22	MMW	07:20	12:30	05:10
25/07/22	MMW	14:00	22:00	08:00
Total Hours				**26:10**

Table A1-7
Details of breeding wader surveys undertaken at Coolglass Wind Farm

Date	Surveyor	Start	End	Survey Duration
06/05/22	JD	18:06	18:40	00:34
23/05/22	JD	18:33	20:33	02:00
23/06/22	MMW	06:00	06:50	00:50
Total Hours				**03:24**

APPENDIX 02

Weather Data

Table A2-1
Weather data collected during flight activity surveys undertaken at VP1

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
16/05/2022	DN	10:05	13:05	1	3	S	0	5	2	2	0	0	14
16/05/2022	DN	10:05	13:05	2	3	S	0	6	2	2	0	0	14
16/05/2022	DN	10:05	13:05	3	3	S	0	5	2	2	0	0	16
20/05/2022	DN	13:25	16:25	1	2	SW	0	7	2	2	0	0	12
20/05/2022	DN	13:25	16:25	2	2	SW	0	5	2	2	0	0	12
20/05/2022	DN	13:25	16:25	3	2	SW	0	5	2	2	0	0	12
30/05/2022	MMW	13:30	16:30	1	3	W	2	8	1	2	0	0	11
30/05/2022	MMW	13:30	16:30	2	3	W	2	8	1	2	0	0	12
30/05/2022	MMW	13:30	16:30	3	2	W	0	8	1	2	0	0	12
31/05/2022	MMW	10:00	13:00	1	2	SW	0	5	2	2	0	0	13
31/05/2022	MMW	10:00	13:00	2	1	SW	0	5	2	2	0	0	14
31/05/2022	MMW	10:00	13:00	3	2	SW	0	8	1	2	0	0	14
20/06/2022	MMW	18:45	21:45	1	1	W	0	0	2	2	0	0	22
20/06/2022	MMW	18:45	21:45	2	0	W	0	0	2	2	0	0	22
20/06/2022	MMW	18:45	21:45	3	1	W	0	1	2	2	0	0	22
22/06/2022	MMW	10:00	13:00	1	1	NW	0	8	1	2	0	0	17
22/06/2022	MMW	10:00	13:00	2	1	NW	0	8	1	2	0	0	19
22/06/2022	MMW	10:00	13:00	3	0	NW	0	8	1	2	0	0	18
04/07/2022	MMW	15:10	18:10	1	2	SW	0	7	1	2	0	0	16

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
04/07/2022	MMW	15:10	18:10	2	2	SW	0	5	2	2	0	0	17
04/07/2022	MMW	15:10	18:10	3	3	SW	0	5	2	2	0	0	16
05/07/2022	MMW	06:45	09:45	1	3	SW	1	8	1	1	0	0	14
05/07/2022	MMW	06:45	09:45	2	2	SW	0	7	1	1	0	0	14
05/07/2022	MMW	06:45	09:45	3	2	SW	0	7	1	1	0	0	15
28/07/2022	MMW	18:30	21:30	1	1	SW	0	7	2	2	0	0	17
28/07/2022	MMW	18:30	21:30	2	1	SW	0	7	2	2	0	0	17
28/07/2022	MMW	18:30	21:30	3	0	SW	0	7	2	2	0	0	16
28/07/2022	MMW	11:15	14:15	1	4	SW	1	7	1	2	0	0	17
28/07/2022	MMW	11:15	14:15	2	3	SW	1	7	1	2	0	0	17
28/07/2022	MMW	11:15	14:15	3	2	SW	1	7	1	2	0	0	18
15/08/2022	MMW	14:30	17:30	1	0	NA	0	6	2	2	0	0	22
15/08/2022	MMW	14:30	17:30	2	1	N	0	5	2	2	0	0	23
15/08/2022	MMW	14:30	17:30	3	2	N	0	7	1	2	0	0	21
17/08/2022	MMW	14:00	17:00	1	3	NW	0	6	1	2	0	0	19
17/08/2022	MMW	14:00	17:00	2	4	NW	0	8	2	2	0	0	17
17/08/2022	MMW	14:00	17:00	3	3	NW	0	8	2	2	0	0	17

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°c)
Rain/ Precipitation None 0 Drizzle 1 Light showers/snow 2 Heavy showers/snow 3 Heavy rain/snow 4		**Cloud Cover** Expressed in oktas (n/8) **Cloud Height** Height of cloud above average height of viewshed <150m 0 150-500m 1 >500m 2			**Visibility** Poor (<1km) 0 Moderate (1-3km) 1 Good (>3km) 2			**Lying Snow** None 0 On site 1 On higher ground 2			**Frost** None 0 Ground 1 All day 2	

Table A2-2
Weather data collected during flight activity surveys undertaken at VP2

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
16/05/2022	DN	13:20	16:20	1	2	S	0	7	2	2	0	0	16
16/05/2022	DN	13:20	16:20	2	2	S	0	7	2	2	0	0	16
16/05/2022	DN	13:20	16:20	3	2	S	0	5	2	2	0	0	16
20/05/2022	DN	10:15	13:15	1	2	S	2	8	1	1	0	0	11
20/05/2022	DN	10:15	13:15	2	1	S	2	8	1	1	0	0	11
20/05/2022	DN	10:15	13:15	3	3	S	2	7	1	1	0	0	11
27/05/2022	MMW	10:45	13:45	1	3	SW	0	4	2	2	0	0	12
27/05/2022	MMW	10:45	13:45	2	3	SW	0	5	2	2	0	0	14
27/05/2022	MMW	10:45	13:45	3	2	SW	0	3	2	2	0	0	14
31/05/2022	MMW	13:45	16:45	1	3	SW	0	7	2	2	0	0	12
31/05/2022	MMW	13:45	16:45	2	3	SW	0	5	2	2	0	0	12
31/05/2022	MMW	13:45	16:45	3	3	SW	0	6	2	2	0	0	11
21/06/2022	MMW	14:30	17:30	1	2	SW	0	5	1	2	0	0	18
21/06/2022	MMW	14:30	17:30	2	1	SW	0	7	1	2	0	0	18
21/06/2022	MMW	14:30	17:30	3	1	SW	0	7	1	2	0	0	18
22/06/2022	MMW	06:20	09:20	1	0	NW	0	8	1	2	0	0	15
22/06/2022	MMW	06:20	09:20	2	1	NW	0	8	1	2	0	0	16
22/06/2022	MMW	06:20	09:20	3	1	NW	0	8	1	2	0	0	16
05/07/2022	MMW	18:45	21:45	1	3	W	3	7	1	2	0	0	17
05/07/2022	MMW	18:45	21:45	2	2	SW	0	8	1	2	0	0	16

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
05/07/2022	MMW	18:45	21:45	3	2	SW	0	8	1	2	0	0	16
06/07/2022	MMW	11:40	14:40	1	2	SW	1	8	1	2	0	0	14
06/07/2022	MMW	11:40	14:40	2	3	SW	0	8	1	2	0	0	14
06/07/2022	MMW	11:40	14:40	3	2	SW	0	7	1	2	0	0	14
26/07/2022	MMW	06:35	09:35	1	3	SW	0	7	2	2	0	0	12
26/07/2022	MMW	06:35	09:35	2	2	SW	1	8	1	2	0	0	11
26/07/2022	MMW	06:35	09:35	3	2	SW	0	7	1	2	0	0	13
27/07/2022	MMW	10:10	13:10	1	1	S	0	8	2	2	0	0	14
27/07/2022	MMW	10:10	13:10	2	1	S	0	8	2	2	0	0	15
27/07/2022	MMW	10:10	13:10	3	1	S	0	7	2	2	0	0	17
15/08/2022	MMW	18:00	19:25	1	3	NE	3	8	1	1	0	0	18
16/08/2022	MMW	19:30	21:05	2	3	NW	0	7	2	2	0	0	17
16/08/2022	MMW	19:30	21:05	3	3	NW	0	7	2	2	0	0	15
16/08/2022	MMW	10:30	13:30	1	4	NW	0	5	1	2	0	0	15
16/08/2022	MMW	10:30	13:30	2	3	NW	0	4	2	2	0	0	17
16/08/2022	MMW	10:30	13:30	3	3	NW	0	5	2	2	0	0	18

Rain/ Precipitation
None 0
Drizzle 1
Light showers/snow 2
Heavy showers/snow 3
Heavy rain/snow 4

Cloud Cover
Expressed in oktas (n/8)
Cloud Height
Height of cloud above average height of viewshed
<150m 0

Visibility
Poor (<1km) 0
Moderate (1-3km) 1
Good (>3km) 2

Lying Snow
None 0
On site 1
On higher ground 2

Frost
None 0
Ground 1
All day 2

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
			150-500m >500m	1 2									

Table A2-3
Weather data collected during flight activity surveys undertaken at VP3

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
18/05/2022	FL	12:00	15:00	1	4	N	0	7	2	2	0	0	15
18/05/2022	FL	12:00	15:00	2	5	N	0	8	2	2	0	0	15
18/05/2022	FL	12:00	15:00	3	4	N	0	8	2	2	0	0	15
19/05/2022	FL	14:35	17:35	1	3	N	0	6	2	2	0	0	16
19/05/2022	FL	14:35	17:35	2	3	N	0	6	2	2	0	0	16
19/05/2022	FL	14:35	17:35	3	3	N	0	7	2	2	0	0	16
27/05/2022	MMW	14:20	17:20	1	2	W	0	3	2	2	0	0	16
27/05/2022	MMW	14:20	17:20	2	3	W	0	2	2	2	0	0	16
27/05/2022	MMW	14:20	17:20	3	2	W	0	2	2	2	0	0	15
30/05/2022	MMW	09:40	12:40	1	4	W	0	7	2	2	0	0	12
30/05/2022	MMW	09:40	12:40	2	4	W	0	8	2	2	0	0	11
30/05/2022	MMW	09:40	12:40	3	3	W	2	7	1	2	0	0	11
20/06/2022	MMW	15:00	18:00	1	2	W	0	1	2	2	0	0	23
20/06/2022	MMW	15:00	18:00	2	1	NW	0	1	2	2	0	0	23
20/06/2022	MMW	15:00	18:00	3	2	NW	0	1	2	2	0	0	23
21/06/2022	MMW	19:20	22:20	1	1	W	0	7	1	2	0	0	18
21/06/2022	MMW	19:20	22:20	2	2	W	0	8	1	2	0	0	17
21/06/2022	MMW	19:20	22:20	3	1	W	0	8	1	2	0	0	17
04/07/2022	MMW	18:40	21:40	1	4	W	0	4	2	2	0	0	15
04/07/2022	MMW	18:40	21:40	2	4	W	0	3	2	2	0	0	14

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
04/07/2022	MMW	18:40	21:40	3	4	W	0	2	2	2	0	0	14
05/07/2022	MMW	10:45	13:45	1	4	W	1	8	1	2	0	0	15
05/07/2022	MMW	10:45	13:45	2	3	SW	0	8	1	2	0	0	15
05/07/2022	MMW	10:45	13:45	3	3	SW	0	8	1	2	0	0	15
26/07/2022	MMW	10:10	13:10	1	2	SW	0	8	2	2	0	0	14
26/07/2022	MMW	10:10	13:10	2	2	SW	0	7	2	2	0	0	16
26/07/2022	MMW	10:10	13:10	3	2	SW	0	7	2	2	0	0	16
27/07/2022	MMW	06:40	09:40	1	2	E	0	8	2	2	0	0	12
27/07/2022	MMW	06:40	09:40	2	2	SE	0	8	2	2	0	0	12
27/07/2022	MMW	06:40	09:40	3	2	SE	0	8	2	2	0	0	14
16/08/2022	MMW	07:00	10:00	1	4	N	0	3	2	2	0	0	10
16/08/2022	MMW	07:00	10:00	2	4	N	0	2	2	2	0	0	12
16/08/2022	MMW	07:00	10:00	3	3	N	0	3	2	2	0	0	15
17/08/2022	MMW	10:15	13:15	1	1	NW	0	6	1	2	0	0	19
17/08/2022	MMW	10:15	13:15	2	1	NW	0	5	2	2	0	0	20
17/08/2022	MMW	10:15	13:15	3	1	NW	0	4	2	2	0	0	20

Rain/ Precipitation
None 0
Drizzle 1
Light showers/snow 2
Heavy showers/snow 3
Heavy rain/snow 4

Cloud Cover
Expressed in oktas (n/8)
Cloud Height
Height of cloud above average height of viewshed
<150m 0

Visibility
Poor (<1km) 0
Moderate (1-3km) 1
Good (>3km) 2

Lying Snow
None 0
On site 1
On higher ground 2

Frost
None 0
Ground 1
All day 2

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
			150-500m >500m	1 2									

Table A2-4
Weather data collected during flight activity surveys undertaken at VP4

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
13/05/2022	DN	10:30	13:30	1	4	W	0	4	2	2	0	0	13
13/05/2022	DN	10:30	13:30	2	4	W	0	5	2	2	0	0	14
13/05/2022	DN	10:30	13:30	3	3	W	0	6	2	2	0	0	16
20/06/2022	DN	10:07	13:07	1	1	NW	0	1	2	2	0	0	16
20/06/2022	DN	10:07	13:07	2	2	NW	0	1	2	2	0	0	17
20/06/2022	DN	10:07	13:07	3	2	NW	0	2	2	2	0	0	17
24/06/2022	AM	10:45	13:45	1	4	S	2	8	1	2	0	0	15
24/06/2022	AM	10:45	13:45	2	4	S	2	8	1	1	0	0	16
24/06/2022	AM	10:45	13:45	3	4	S	2	8	1	1	0	0	16
24/06/2022	AM	14:20	17:20	1	4	S	1	8	1	2	0	0	16
24/06/2022	AM	14:20	17:20	2	4	SE	0	8	1	2	0	0	16
24/06/2022	AM	14:20	17:20	3	4	SE	0	8	1	2	0	0	16
14/07/2022	DN	09:40	12:40	1	3	W	0	4	2	2	0	0	16
14/07/2022	DN	09:40	12:40	2	3	W	0	6	2	2	0	0	16
14/07/2022	DN	09:40	12:40	3	3	W	0	7	2	2	0	0	17
15/07/2022	DN	12:35	15:35	1	3	NW	0	6	2	2	0	0	18
15/07/2022	DN	12:35	15:35	2	3	NW	0	7	2	2	0	0	18
15/07/2022	DN	12:35	15:35	3	3	NW	0	6	2	2	0	0	18
21/07/2022	DN	09:30	12:30	1	2	N	0	8	2	2	0	0	16
21/07/2022	DN	09:30	12:30	2	2	N	0	8	2	2	0	0	16

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
21/07/2022	DN	09:30	12:30	3	3	N	0	8	2	2	0	0	17
22/07/2022	DN	11:45	14:45	1	3	W	0	5	2	2	0	0	18
22/07/2022	DN	11:45	14:45	2	2	W	0	6	2	2	0	0	19
22/07/2022	DN	11:45	14:45	3	2	W	0	6	2	2	0	0	19
08/08/2022	JD	11:00	14:00	1	1	NW	0	3	1	2	0	0	17
08/08/2022	JD	11:00	14:00	2	1	NW	0	3	1	2	0	0	19
08/08/2022	JD	11:00	14:00	3	1	NW	0	4	1	2	0	0	20
12/08/2022	JD	18:30	21:30	1	1	NE	0	6	1	2	0	0	20
12/08/2022	JD	18:30	21:30	2	1	NE	0	6	1	2	0	0	18
12/08/2022	JD	18:30	21:30	3	1	NE	0	7	1	2	0	0	16
29/08/2022	DN	13:40	16:40	1	2	SE	0	5	2	2	0	0	24
29/08/2022	DN	13:40	16:40	2	3	SE	0	5	2	2	0	0	24
29/08/2022	DN	13:40	16:40	3	3	SE	0	5	2	2	0	0	22
30/08/2022	DN	11:15	14:15	1	2	E	0	3	2	2	0	0	19
30/08/2022	DN	11:15	14:15	2	2	E	0	3	2	2	0	0	21
30/08/2022	DN	11:15	14:15	3	3	E	0	3	2	2	0	0	21

Rain/ Precipitation
None 0
Drizzle 1
Light showers/snow 2
Heavy showers/snow 3
Heavy rain/snow 4

Cloud Cover
Expressed in oktas (n/8)
Cloud Height
Height of cloud above average height of viewshed
<150m 0

Visibility
Poor (<1km) 0
Moderate (1-3km) 1
Good (>3km) 2

Lying Snow
None 0
On site 1
On higher ground 2

Frost
None 0
Ground 1
All day 2

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
			150-500m >500m	1 2									

Table A2-5
Weather data collected during flight activity surveys undertaken at VP7

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
13/05/2022	DN	13:40	16:40	1	4	W	0	3	2	2	0	0	16
13/05/2022	DN	13:40	16:40	2	4	W	0	3	2	2	0	0	16
13/05/2022	DN	13:40	16:40	3	5	W	0	4	2	2	0	0	16
18/05/2022	FL	15:30	18:30	1	5	N	0	6	2	2	0	0	14
18/05/2022	FL	15:30	18:30	2	5	N	0	5	2	2	0	0	14
18/05/2022	FL	15:30	18:30	3	4	N	2	8	2	2	0	0	13
19/05/2022	FL	11:15	14:15	1	3	N	0	4	2	2	0	0	15
19/05/2022	FL	11:15	14:15	2	3	N	0	4	2	2	0	0	15
19/05/2022	FL	11:15	14:15	3	3	N	0	4	2	2	0	0	15
20/06/2022	DN	13:17	16:17	1	2	N	0	2	2	2	0	0	19
20/06/2022	DN	13:17	16:17	2	1	N	0	3	2	2	0	0	19
20/06/2022	DN	13:17	16:17	3	1	N	0	3	2	2	0	0	19
14/07/2022	DN	12:50	15:50	1	2	NW	0	7	2	2	0	0	18
14/07/2022	DN	12:50	15:50	2	2	NW	0	7	2	2	0	0	18

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
14/07/2022	DN	12:50	15:50	3	2	NW	0	7	2	2	0	0	18
15/07/2022	DN	09:25	12:25	1	3	W	0	7	2	2	0	0	17
15/07/2022	DN	09:25	12:25	2	3	W	0	8	2	2	0	0	17
15/07/2022	DN	09:25	12:25	3	3	W	0	8	2	2	0	0	17
21/07/2022	DN	12:41	15:41	1	2	N	0	8	2	2	0	0	16
21/07/2022	DN	12:41	15:41	2	2	N	0	8	2	2	0	0	16
21/07/2022	DN	12:41	15:41	3	2	N	0	8	2	2	0	0	16
22/07/2022	DN	08:34	11:34	1	2	N	0	4	2	2	0	0	16
22/07/2022	DN	08:34	11:34	2	2	N	0	5	2	2	0	0	18
22/07/2022	DN	08:34	11:34	3	2	N	0	6	2	2	0	0	18
08/08/2022	JD	14:30	17:30	1	1	NW	0	4	1	2	0	0	20
08/08/2022	JD	14:30	17:30	2	1	NW	0	3	1	2	0	0	21
08/08/2022	JD	14:30	17:30	3	1	NW	0	3	1	2	0	0	22
12/08/2022	JD	15:00	18:00	1	1	NE	0	6	1	2	0	0	24
12/08/2022	JD	15:00	18:00	2	1	NE	0	6	1	2	0	0	23
12/08/2022	JD	15:00	18:00	3	1	NE	0	6	1	2	0	0	22
29/08/2022	DN	10:30	13:30	1	3	SE	0	2	2	2	0	0	23
29/08/2022	DN	10:30	13:30	2	3	SE	0	4	2	2	0	0	22
29/08/2022	DN	10:30	13:30	3	4	SE	0	5	2	2	0	0	23
30/08/2022	DN	08:00	11:00	1	2	E	0	3	2	2	0	0	15
30/08/2022	DN	08:00	11:00	2	2	E	0	4	2	2	0	0	17

Date	Surveyor	Start	End	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Snow	Frost	Temp (°C)
30/08/2022	DN	08:00	11:00	3	2	E	0	3	2	2	0	0	18

Rain/ Precipitation		**Cloud Cover**	**Visibility**	**Lying Snow**	**Frost**
None	0	Expressed in oktas (n/8)	Poor (<1km) 0	None 0	None 0
Drizzle	1	**Cloud Height**	Moderate (1-3km) 1	On site 1	Ground 1
Light showers/snow	2	Height of cloud above average height of viewshed	Good (>3km) 2	On higher ground 2	All day 2
Heavy showers/snow	3	<150m 0			
Heavy rain/snow	4	150-500m 1			
		>500m 2			

APPENDIX 03

Flight activity survey data[10]

[10] Species codes are given in Section 5.0. Age categories: U = unidentified, Ad = adult and Juv = juvenile. Sex categories: M = male, F = female and U = unidentified.

Table A3-1
Primary target species recorded during flight activity surveys undertaken at VP1

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight Duration (s)
20/05/2022	DN	1	K.	1	U	U	14:40	85
20/06/2022	MMW	1	K.	1	Ad	U	19:19	242
20/06/2022	MMW	2	K.	1	Ad	U	19:24	12
20/06/2022	MMW	3	K.	1	Ad	U	19:56	168
20/06/2022	MMW	4	K.	1	Ad	U	20:11	91
20/06/2022	MMW	5	K.	1	Ad	U	20:15	86
20/06/2022	MMW	6	L.	2	Ad	U	20:31	72
20/06/2022	MMW	7	K.	1	Ad	U	20:57	61
20/06/2022	MMW	8	K.	1	Ad	U	20:59	35
20/06/2022	MMW	9	K.	1	Ad	U	21:01	218
22/06/2022	MMW	1	L.	1	Ad	U	10:41	8
22/06/2022	MMW	2	K.	1	Ad	U	11:13	55
22/06/2022	MMW	3	K.	1	Ad	M	11:19	846
22/06/2022	MMW	4	K.	1	Ad	U	12:42	250
04/07/2022	MMW	1	K.	1	Ad	U	15:17	34
04/07/2022	MMW	2	K.	1	Ad	U	15:21	331
04/07/2022	MMW	3	K.	1	Ad	U	15:36	50
04/07/2022	MMW	4	K.	1	Ad	U	15:57	67
04/07/2022	MMW	5	K.	1	Ad	U	15:53	4
04/07/2022	MMW	6	K.	1	Ad	U	15:58	8
04/07/2022	MMW	7	K.	1	Ad	U	16:08	241
04/07/2022	MMW	8	K.	1	Ad	U	16:12	185
04/07/2022	MMW	9	K.	1	Ad	U	16:13	16
04/07/2022	MMW	10	K.	1	Ad	U	16:14	49
04/07/2022	MMW	11	K.	1	Ad	U	16:21	32
04/07/2022	MMW	12	K.	1	Ad	U	16:22	66
04/07/2022	MMW	13	K.	1	Ad	U	16:26	128
04/07/2022	MMW	14	K.	1	Ad	U	16:30	347
04/07/2022	MMW	16	K.	1	Ad	U	17:24	31
04/07/2022	MMW	1	K.	1	Ad	U	17:50	137
05/07/2022	MMW	1	K.	1	U	U	08:47	155
05/07/2022	MMW	2	K.	1	U	U	08:52	9
05/07/2022	MMW	3	K.	3	U	U	09:05	79
05/07/2022	MMW	4	K.	1	U	U	09:04	16

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight Duration (s)
05/07/2022	MMW	5	K.	1	U	U	09:18	31
05/07/2022	MMW	6	K.	1	U	U	09:26	197
05/07/2022	MMW	7	K.	1	U	U	09:29	315
05/07/2022	MMW	8	K.	1	U	U	09:42	229
28/07/2022	MMW	1	K.	1	Ad	U	19:02	7
28/07/2022	MMW	2	K.	1	Ad	U	19:04	5
28/07/2022	MMW	3	K.	1	Ad	U	19:56	20
28/07/2022	MMW	4	K.	1	Ad	U	19:39	16
28/07/2022	MMW	5	K.	1	Ad	U	19:55	6
28/07/2022	MMW	6	K.	1	Ad	U	19:44	8
28/07/2022	MMW	1	K.	1	U	U	11:48	289
28/07/2022	MMW	2	K.	1	Ad	U	12:26	207
28/07/2022	MMW	3	K.	1	Ad	U	12:37	96
28/07/2022	MMW	4	K.	1	Ad	U	12:49	357
28/07/2022	MMW	5	K.	1	U	U	13:21	344
28/07/2022	MMW	6	K.	1	U	U	13:23	126
28/07/2022	MMW	7	K.	1	U	U	13:31	41
28/07/2022	MMW	8	K.	1	U	U	13:39	178
28/07/2022	MMW	9	K.	1	U	U	13:45	102
28/07/2022	MMW	10	K.	1	U	U	13:56	66
28/07/2022	MMW	11	K.	1	U	U	14:01	39
28/07/2022	MMW	12	K.	1	U	U	14:08	322
15/08/2022	MMW	1	PE	1	Ad	U	15:30	324
17/08/2022	MMW	1	K.	1	Ad	U	15:17	698
17/08/2022	MMW	2	PE	1	Ad	U	16:42	181

Table A3-2
Primary target species recorded during flight activity surveys undertaken at VP2

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight Duration (s)
20/05/2022	DN	1	K.	1	U	U	10:40	25
20/05/2022	DN	2	K.	1	U	U	12:30	55
21/06/2022	MMW	1	K.	1	U	U	15:44	64
05/07/2022	MMW	1	SN	1	Ad	M	19:11	5309
06/07/2022	MMW	1	SN	1	Ad	U	11:57	937
06/07/2022	MMW	2	SN	1	Ad	U	13:46	1523
27/07/2022	MMW	1	K.	1	Ad	U	11:43	152
27/07/2022	MMW	2	K.	1	Ad	U	12:02	188
27/07/2022	MMW	3	PE	1	Ad	U	12:56	314

Table A3-3
Primary target species recorded during flight activity surveys undertaken at VP3

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight Duration (s)
30/05/2022	MMW	1	K.	1	Ad	F	10:19	312
30/05/2022	MMW	2	K.	1	Ad	F	11:20	67
30/05/2022	MMW	3	K.	1	Ad	F	12:04	41
30/05/2022	MMW	4	K.	1	Ad	U	12:12	4
21/06/2022	MMW	1	K.	1	Ad	M	19:40	63
21/06/2022	MMW	2	K.	1	Ad	M	19:54	132
21/06/2022	MMW	3	WK	1	Ad	U	21:39	48
04/07/2022	MMW	1	K.	1	Ad	M	19:31	180
04/07/2022	MMW	2	K.	1	Ad	M	19:45	73
04/07/2022	MMW	3	K.	1	Ad	M	19:47	57
04/07/2022	MMW	4	K.	1	Ad	F	20:15	39
05/07/2022	MMW	1	K.	1	Ad	F	10:46	136
05/07/2022	MMW	2	K.	1	Ad	F	11:22	108
05/07/2022	MMW	3	K.	1	Ad	F	11:43	206
05/07/2022	MMW	4	K.	1	Ad	F	11:50	3
05/07/2022	MMW	5	K.	1	Ad	F	12:04	87
05/07/2022	MMW	6	K.	1	Ad	U	12:31	14
05/07/2022	MMW	7	K.	1	Ad	U	12:59	63
05/07/2022	MMW	8	K.	1	Ad	U	13:05	355
05/07/2022	MMW	9	K.	1	Ad	F	13:33	52

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight Duration (s)
26/07/2022	MMW	1	K.	1	Ad	U	10:46	59
26/07/2022	MMW	2	K.	2	Ad	U + F	11:12	111
26/07/2022	MMW	3	K.	1	Ad	U	11:14	63
26/07/2022	MMW	4	K.	1	Ad	U	11:52	92
26/07/2022	MMW	5	K.	1	Ad	U	12:57	87
26/07/2022	MMW	6	PE	1	Ad	U	13:02	14
16/08/2022	MMW	1	K.	1	Ad	F	08:54	166
16/08/2022	MMW	2	K.	1	Ad	F	09:26	81
16/08/2022	MMW	3	K.	1	Ad	F	09:35	78
16/08/2022	MMW	4	K.	1	Ad	F	09:39	49
16/08/2022	MMW	5	K.	1	Ad	F	09:50	93
17/08/2022	MMW	1	PE	1	Ad	U	12:03	89
17/08/2022	MMW	2	PE	1	Ad	U	12:42	372

Table A3-4
Primary target species recorded during flight activity surveys undertaken at VP4

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight Duration (s)
13/05/2022	DN	1	K.	1	U	U	11:50	60
13/05/2022	DN	2	K.	1	U	U	12:30	85
13/05/2022	DN	3	K.	1	U	U	13:10	20
14/07/2022	DN	1	K.	1	Ad	U	12:05	35
22/07/2022	DN	1	K.	1	Ad	U	12:40	85

Table A3-5
Primary target species recorded during flight activity surveys undertaken at VP7

Date	Surveyor	Flight ID	Species	Num. Birds	Age	Sex	Obs. Time	Flight Duration (s)
13/05/2022	DN	1	K.	1	U	U	15:07	18
18/05/2022	FL	1	K.	1	U	U	13:55	130
18/05/2022	FL	2	K.	1	U	U	14:20	60
18/05/2022	FL	3	K.	1	U	U	15:00	190
18/05/2022	FL	4	K.	1	U	U	15:20	40

Table A3-6
Secondary target species recorded during flight activity surveys undertaken at VP1

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
16/05/2022	10:05	13:05	BZ	1	12:50
20/05/2022	13:25	16:25	BZ	1	14:50
30/05/2022	13:30	16:30	BZ	3	13:20
30/05/2022	13:30	16:30	BZ	2	13:30
30/05/2022	13:30	16:30	BZ	3	13:30
30/05/2022	13:30	16:30	BZ	3	13:35
30/05/2022	13:30	16:30	BZ	2	13:35
30/05/2022	13:30	16:30	BZ	3	13:40
30/05/2022	13:30	16:30	BZ	2	14:10
30/05/2022	13:30	16:30	BZ	2	14:15
30/05/2022	13:30	16:30	BZ	3	14:30
30/05/2022	13:30	16:30	BZ	3	14:35
30/05/2022	13:30	16:30	BZ	2	14:50
30/05/2022	13:30	16:30	BZ	2	14:55
30/05/2022	13:30	16:30	BZ	2	15:00

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
30/05/2022	13:30	16:30	BZ	3	15:05
30/05/2022	13:30	16:30	SH	2	15:05
30/05/2022	13:30	16:30	BZ	2	15:10
30/05/2022	13:30	16:30	BZ	3	15:10
30/05/2022	13:30	16:30	BZ	3	15:15
30/05/2022	13:30	16:30	BZ	3	15:15
30/05/2022	13:30	16:30	BZ	2	15:20
30/05/2022	13:30	16:30	BZ	3	15:25
30/05/2022	13:30	16:30	BZ	2	15:25
30/05/2022	13:30	16:30	BZ	3	15:30
30/05/2022	13:30	16:30	SH	3	15:30
30/05/2022	13:30	16:30	BZ	3	15:35
30/05/2022	13:30	16:30	SH	3	15:45
30/05/2022	13:30	16:30	BZ	2	15:45
30/05/2022	13:30	16:30	BZ	3	15:50
30/05/2022	13:30	16:30	BZ	3	15:50
30/05/2022	13:30	16:30	BZ	2	15:55
30/05/2022	13:30	16:30	BZ	2	15:55
30/05/2022	13:30	16:30	BZ	2	16:00
30/05/2022	13:30	16:30	BZ	2	16:00
30/05/2022	13:30	16:30	SH	1	16:00
30/05/2022	13:30	16:30	BZ	2	16:05
30/05/2022	13:30	16:30	BZ	2	16:05
30/05/2022	13:30	16:30	SH	1	16:10
30/05/2022	13:30	16:30	BZ	2	16:10
30/05/2022	13:30	16:30	BZ	2	16:10
30/05/2022	13:30	16:30	BZ	2	16:15
30/05/2022	13:30	16:30	BZ	2	16:15
30/05/2022	13:30	16:30	SH	1	16:15
31/05/2022	10:00	13:00	BZ	2	10:00
31/05/2022	10:00	13:00	BZ	2	10:00
31/05/2022	10:00	13:00	BZ	2	10:05
31/05/2022	10:00	13:00	BZ	2	10:05
31/05/2022	10:00	13:00	BZ	3	10:10
31/05/2022	10:00	13:00	BZ	3	10:10
31/05/2022	10:00	13:00	BZ	2	10:15

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
31/05/2022	10:00	13:00	BZ	2	10:20
31/05/2022	10:00	13:00	BZ	4	10:25
31/05/2022	10:00	13:00	BZ	4	10:25
31/05/2022	10:00	13:00	BZ	3	10:30
31/05/2022	10:00	13:00	BZ	1	10:35
31/05/2022	10:00	13:00	BZ	3	10:40
31/05/2022	10:00	13:00	BZ	3	10:40
31/05/2022	10:00	13:00	BZ	2	10:45
31/05/2022	10:00	13:00	BZ	5	10:50
31/05/2022	10:00	13:00	BZ	5	10:50
31/05/2022	10:00	13:00	BZ	5	10:50
31/05/2022	10:00	13:00	BZ	1	11:00
31/05/2022	10:00	13:00	BZ	1	11:05
31/05/2022	10:00	13:00	BZ	2	11:10
31/05/2022	10:00	13:00	BZ	2	11:10
31/05/2022	10:00	13:00	LB	1	11:10
31/05/2022	10:00	13:00	BZ	2	11:15
31/05/2022	10:00	13:00	BZ	1	11:20
31/05/2022	10:00	13:00	BZ	2	11:25
31/05/2022	10:00	13:00	BZ	2	11:30
31/05/2022	10:00	13:00	BZ	2	11:35
31/05/2022	10:00	13:00	BZ	3	11:40
31/05/2022	10:00	13:00	BZ	2	11:45
31/05/2022	10:00	13:00	BZ	2	11:45
31/05/2022	10:00	13:00	BZ	2	11:50
31/05/2022	10:00	13:00	BZ	2	11:55
31/05/2022	10:00	13:00	BZ	2	11:55
31/05/2022	10:00	13:00	BZ	2	12:00
31/05/2022	10:00	13:00	BZ	3	12:00
31/05/2022	10:00	13:00	BZ	2	12:05
31/05/2022	10:00	13:00	BZ	2	12:05
31/05/2022	10:00	13:00	BZ	2	12:05
31/05/2022	10:00	13:00	BZ	2	12:10
31/05/2022	10:00	13:00	BZ	2	12:15
31/05/2022	10:00	13:00	BZ	2	12:15
31/05/2022	10:00	13:00	BZ	2	12:20

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
31/05/2022	10:00	13:00	BZ	4	12:20
31/05/2022	10:00	13:00	BZ	4	12:25
31/05/2022	10:00	13:00	BZ	4	12:25
31/05/2022	10:00	13:00	BZ	2	12:30
31/05/2022	10:00	13:00	BZ	3	12:30
31/05/2022	10:00	13:00	HG	3	12:30
31/05/2022	10:00	13:00	BZ	2	12:35
31/05/2022	10:00	13:00	BZ	2	12:40
31/05/2022	10:00	13:00	BZ	2	12:40
31/05/2022	10:00	13:00	BZ	2	12:45
31/05/2022	10:00	13:00	BZ	2	12:45
31/05/2022	10:00	13:00	BZ	2	12:50
31/05/2022	10:00	13:00	BZ	1	12:50
31/05/2022	10:00	13:00	BZ	1	12:55
20/06/2022	18:45	21:45	RN	5	18:45
20/06/2022	18:45	21:45	RN	5	18:50
20/06/2022	18:45	21:45	RN	3	19:05
20/06/2022	18:45	21:45	RN	3	19:05
20/06/2022	18:45	21:45	LB	1	19:05
20/06/2022	18:45	21:45	BZ	1	19:15
20/06/2022	18:45	21:45	BZ	1	19:25
20/06/2022	18:45	21:45	RN	1	19:25
20/06/2022	18:45	21:45	BZ	1	19:30
20/06/2022	18:45	21:45	LB	1	19:45
20/06/2022	18:45	21:45	BZ	1	21:25
22/06/2022	10:00	13:00	SH	1	10:10
22/06/2022	10:00	13:00	BZ	2	10:15
22/06/2022	10:00	13:00	RN	4	10:15
22/06/2022	10:00	13:00	BZ	2	10:15
22/06/2022	10:00	13:00	LB	2	10:20
22/06/2022	10:00	13:00	RN	4	10:20
22/06/2022	10:00	13:00	BZ	1	10:25
22/06/2022	10:00	13:00	HG	2	10:35
22/06/2022	10:00	13:00	HG	2	10:55
22/06/2022	10:00	13:00	BZ	1	11:15
22/06/2022	10:00	13:00	RN	4	11:20

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
22/06/2022	10:00	13:00	BZ	1	11:25
22/06/2022	10:00	13:00	BZ	1	11:30
22/06/2022	10:00	13:00	BZ	2	11:30
22/06/2022	10:00	13:00	HG	3	11:35
22/06/2022	10:00	13:00	LB	1	11:45
22/06/2022	10:00	13:00	BZ	3	11:50
22/06/2022	10:00	13:00	BZ	3	11:50
22/06/2022	10:00	13:00	BZ	3	11:50
22/06/2022	10:00	13:00	RN	2	11:50
22/06/2022	10:00	13:00	BZ	1	11:55
22/06/2022	10:00	13:00	RN	1	11:55
22/06/2022	10:00	13:00	BZ	1	12:10
22/06/2022	10:00	13:00	BZ	2	12:25
22/06/2022	10:00	13:00	BZ	2	12:30
22/06/2022	10:00	13:00	BZ	2	12:40
22/06/2022	10:00	13:00	BZ	2	12:40
22/06/2022	10:00	13:00	BZ	1	12:45
22/06/2022	10:00	13:00	BZ	1	12:55
04/07/2022	15:10	18:10	HG	1	15:10
04/07/2022	15:10	18:10	BZ	1	15:15
04/07/2022	15:10	18:10	BZ	2	15:20
04/07/2022	15:10	18:10	BZ	1	15:25
04/07/2022	15:10	18:10	SH	1	15:30
04/07/2022	15:10	18:10	BZ	1	15:30
04/07/2022	15:10	18:10	BZ	1	15:35
04/07/2022	15:10	18:10	BZ	1	15:45
04/07/2022	15:10	18:10	RN	3	15:50
04/07/2022	15:10	18:10	BZ	1	15:55
04/07/2022	15:10	18:10	BZ	3	16:00
04/07/2022	15:10	18:10	BZ	3	16:00
04/07/2022	15:10	18:10	BZ	3	16:00
04/07/2022	15:10	18:10	BZ	2	16:05
04/07/2022	15:10	18:10	BZ	1	16:25
04/07/2022	15:10	18:10	BZ	1	16:35
04/07/2022	15:10	18:10	BZ	2	16:40
04/07/2022	15:10	18:10	BZ	2	16:45

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
04/07/2022	15:10	18:10	BZ	3	16:50
04/07/2022	15:10	18:10	BZ	3	16:50
04/07/2022	15:10	18:10	SH	1	17:00
04/07/2022	15:10	18:10	LB	1	17:05
04/07/2022	15:10	18:10	BZ	1	17:05
04/07/2022	15:10	18:10	BZ	3	17:10
04/07/2022	15:10	18:10	BZ	3	17:10
04/07/2022	15:10	18:10	BZ	3	17:10
04/07/2022	15:10	18:10	BZ	2	17:15
04/07/2022	15:10	18:10	BZ	3	17:20
04/07/2022	15:10	18:10	BZ	3	17:20
04/07/2022	15:10	18:10	BH	1	14:25
04/07/2022	15:10	18:10	BZ	2	17:30
04/07/2022	15:10	18:10	BZ	2	17:30
04/07/2022	15:10	18:10	LB	2	17:30
04/07/2022	15:10	18:10	BZ	1	17:40
04/07/2022	15:10	18:10	HG	9	17:40
04/07/2022	15:10	18:10	BZ	3	17:45
04/07/2022	15:10	18:10	BZ	3	17:45
04/07/2022	15:10	18:10	BZ	3	17:45
04/07/2022	15:10	18:10	LB	5	17:45
04/07/2022	15:10	18:10	BZ	3	17:55
04/07/2022	15:10	18:10	BZ	3	17:55
04/07/2022	15:10	18:10	BZ	2	18:00
04/07/2022	15:10	18:10	BZ	3	18:05
04/07/2022	15:10	18:10	BZ	3	18:05
04/07/2022	15:10	18:10	BZ	3	18:05
05/07/2022	06:45	09:45	LB	2	07:30
05/07/2022	06:45	09:45	SH	1	08:30
05/07/2022	06:45	09:45	BZ	1	08:55
05/07/2022	06:45	09:45	RN	7	08:55
05/07/2022	06:45	09:45	HG	8	09:10
05/07/2022	06:45	09:45	HG	8	09:15
05/07/2022	06:45	09:45	BZ	2	09:15
05/07/2022	06:45	09:45	BZ	2	09:15
05/07/2022	06:45	09:45	HG	13	09:20

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
05/07/2022	06:45	09:45	HG	17	09:40
28/07/2022	18:30	21:30	BZ	1	18:35
28/07/2022	18:30	21:30	BZ	1	18:45
28/07/2022	18:30	21:30	RN	2	18:45
28/07/2022	18:30	21:30	BZ	1	18:55
28/07/2022	18:30	21:30	SH	1	19:20
28/07/2022	18:30	21:30	BZ	1	19:50
28/07/2022	11:15	14:15	BZ	2	11:25
28/07/2022	11:15	14:15	BZ	2	11:30
28/07/2022	11:15	14:15	BZ	2	11:35
28/07/2022	11:15	14:15	BZ	3	11:35
28/07/2022	11:15	14:15	BZ	2	11:40
28/07/2022	11:15	14:15	BZ	2	11:40
28/07/2022	11:15	14:15	RN	2	12:00
28/07/2022	11:15	14:15	BZ	1	12:05
28/07/2022	11:15	14:15	BZ	1	12:10
28/07/2022	11:15	14:15	LB	4	12:10
28/07/2022	11:15	14:15	HG	7	12:15
28/07/2022	11:15	14:15	BZ	1	12:15
28/07/2022	11:15	14:15	RN	1	12:15
28/07/2022	11:15	14:15	BZ	1	12:20
28/07/2022	11:15	14:15	BZ	1	12:30
28/07/2022	11:15	14:15	BZ	1	12:35
28/07/2022	11:15	14:15	BZ	2	12:40
28/07/2022	11:15	14:15	BZ	2	12:40
28/07/2022	11:15	14:15	BZ	2	12:45
28/07/2022	11:15	14:15	BZ	2	12:45
28/07/2022	11:15	14:15	BZ	1	12:55
28/07/2022	11:15	14:15	BZ	1	13:00
28/07/2022	11:15	14:15	BZ	3	13:10
28/07/2022	11:15	14:15	BZ	3	13:10
28/07/2022	11:15	14:15	BZ	3	13:10
28/07/2022	11:15	14:15	BZ	2	13:15
28/07/2022	11:15	14:15	BZ	2	13:15
28/07/2022	11:15	14:15	BZ	1	13:20
28/07/2022	11:15	14:15	BZ	1	13:25

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
28/07/2022	11:15	14:15	BZ	1	13:30
28/07/2022	11:15	14:15	BZ	2	13:35
28/07/2022	11:15	14:15	RN	2	13:35
28/07/2022	11:15	14:15	BZ	1	13:40
28/07/2022	11:15	14:15	BZ	1	13:45
28/07/2022	11:15	14:15	BZ	1	13:55
28/07/2022	11:15	14:15	BZ	2	14:05
28/07/2022	11:15	14:15	BZ	2	14:05
28/07/2022	11:15	14:15	BZ	2	14:10
28/07/2022	11:15	14:15	BZ	2	14:10
15/08/2022	14:30	17:30	BZ	1	14:55
15/08/2022	14:30	17:30	BZ	1	15:35
15/08/2022	14:30	17:30	BZ	1	15:50
15/08/2022	14:30	17:30	BZ	1	15:55
15/08/2022	14:30	17:30	LB	3	16:00
15/08/2022	14:30	17:30	BZ	1	16:15
15/08/2022	14:30	17:30	LB	4	16:20
15/08/2022	14:30	17:30	LB	7	16:25
15/08/2022	14:30	17:30	LB	10	16:55
15/08/2022	14:30	17:30	LB	10	16:55
15/08/2022	14:30	17:30	GB	1	17:05
15/08/2022	14:30	17:30	BZ	1	17:20
17/08/2022	14:00	17:00	BZ	1	14:25
17/08/2022	14:00	17:00	LB	3	14:35
17/08/2022	14:00	17:00	LB	1	14:40
17/08/2022	14:00	17:00	SH	1	14:50
17/08/2022	14:00	17:00	BZ	1	15:05
17/08/2022	14:00	17:00	BZ	1	15:10
17/08/2022	14:00	17:00	BZ	1	15:35
17/08/2022	14:00	17:00	BZ	1	15:40
17/08/2022	14:00	17:00	BZ	1	15:45
17/08/2022	14:00	17:00	BZ	2	15:50
17/08/2022	14:00	17:00	BZ	2	15:50
17/08/2022	14:00	17:00	BZ	1	15:55
17/08/2022	14:00	17:00	RN	1	16:15
17/08/2022	14:00	17:00	HG	5	16:20

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
17/08/2022	14:00	17:00	BZ	1	16:30
17/08/2022	14:00	17:00	RN	2	16:35
17/08/2022	14:00	17:00	BZ	3	16:40
17/08/2022	14:00	17:00	RN	2	16:50

Table A3-7
Secondary target species recorded during flight activity surveys undertaken at VP2

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
16/05/2022	13:20	16:20	SH	1	15:00
16/05/2022	13:20	16:20	BZ	2	15:25
27/05/2022	10:45	13:45	BZ	1	10:45
27/05/2022	10:45	13:45	BZ	2	11:00
27/05/2022	10:45	13:45	BZ	2	11:05
27/05/2022	10:45	13:45	BZ	1	11:05
27/05/2022	10:45	13:45	BZ	1	11:15
27/05/2022	10:45	13:45	BZ	2	11:20
27/05/2022	10:45	13:45	BZ	1	11:35
27/05/2022	10:45	13:45	BZ	2	11:45
27/05/2022	10:45	13:45	BZ	1	11:50
27/05/2022	10:45	13:45	BZ	1	11:55
27/05/2022	10:45	13:45	BZ	2	12:00
27/05/2022	10:45	13:45	BZ	1	12:10
27/05/2022	10:45	13:45	BZ	1	12:15
27/05/2022	10:45	13:45	BZ	2	12:20
27/05/2022	10:45	13:45	BZ	1	12:40
27/05/2022	10:45	13:45	BZ	1	13:05
27/05/2022	10:45	13:45	RN	1	13:25
27/05/2022	10:45	13:45	RN	2	13:35
31/05/2022	13:45	16:45	BZ	1	14:30
31/05/2022	13:45	16:45	BZ	2	14:55
31/05/2022	13:45	16:45	BZ	1	15:45
31/05/2022	13:45	16:45	BZ	1	15:50
31/05/2022	13:45	16:45	BZ	1	16:15
31/05/2022	13:45	16:45	BZ	1	16:20
31/05/2022	13:45	16:45	BZ	1	16:25

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
31/05/2022	13:45	16:45	H.	1	16:25
21/06/2022	14:30	17:30	BZ	1	14:45
21/06/2022	14:30	17:30	BZ	1	15:00
21/06/2022	14:30	17:30	LB	1	15:20
21/06/2022	14:30	17:30	LB	1	16:25
21/06/2022	14:30	17:30	BZ	1	16:50
21/06/2022	14:30	17:30	RN	1	17:15
05/07/2022	18:45	21:45	BZ	1	19:50
05/07/2022	18:45	21:45	BZ	1	20:55
05/07/2022	18:45	21:45	BZ	1	21:05
06/07/2022	11:40	14:40	RN	3	11:40
06/07/2022	11:40	14:40	BZ	1	12:30
06/07/2022	11:40	14:40	BZ	1	12:35
06/07/2022	11:40	14:40	RN	2	12:50
06/07/2022	11:40	14:40	BZ	1	13:05
06/07/2022	11:40	14:40	BZ	1	13:25
06/07/2022	11:40	14:40	BZ	2	13:40
06/07/2022	11:40	14:40	BZ	2	13:45
06/07/2022	11:40	14:40	BZ	3	14:25
06/07/2022	11:40	14:40	BZ	3	14:25
06/07/2022	11:40	14:40	BZ	1	14:35
26/07/2022	06:35	09:35	LB	2	07:55
26/07/2022	06:35	09:35	RN	1	08:45
26/07/2022	06:35	09:35	BZ	1	08:55
26/07/2022	06:35	09:35	RN	1	09:05
26/07/2022	06:35	09:35	RN	1	09:10
26/07/2022	06:35	09:35	SH	1	09:30
27/07/2022	10:10	13:10	BZ	1	10:10
27/07/2022	10:10	13:10	H.	1	10:25
27/07/2022	10:10	13:10	BZ	1	10:35
27/07/2022	10:10	13:10	BZ	1	10:40
27/07/2022	10:10	13:10	BZ	1	11:05
27/07/2022	10:10	13:10	BZ	1	11:15
27/07/2022	10:10	13:10	BZ	2	12:10
27/07/2022	10:10	13:10	BZ	2	12:15
15/08/2022	18:00	19:25	BZ	1	18:25

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
15/08/2022	18:00	19:25	BZ	1	18:50
16/08/2022	19:30	21:05	BZ	1	19:20
16/08/2022	19:30	21:05	BZ	1	19:25
16/08/2022	19:30	21:05	BZ	1	19:30
16/08/2022	19:30	21:05	BZ	1	19:55
16/08/2022	19:30	21:05	LB	2	20:10
16/08/2022	10:30	13:30	BZ	1	10:30
16/08/2022	10:30	13:30	BZ	1	10:50
16/08/2022	10:30	13:30	RN	2	11:05
16/08/2022	10:30	13:30	BZ	1	11:10
16/08/2022	10:30	13:30	BZ	1	11:15
16/08/2022	10:30	13:30	RN	2	11:35
16/08/2022	10:30	13:30	LB	3	12:05
16/08/2022	10:30	13:30	BZ	1	12:20
16/08/2022	10:30	13:30	RN	2	12:30
16/08/2022	10:30	13:30	RN	2	12:40
16/08/2022	10:30	13:30	BZ	2	13:20
16/08/2022	10:30	13:30	BZ	2	13:20

Table A3-8
Secondary target species recorded during flight activity surveys undertaken at VP3

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
18/05/2022	12:00	15:00	BZ	1	12:00
18/05/2022	12:00	15:00	BZ	1	12:05
18/05/2022	12:00	15:00	BZ	1	13:25
18/05/2022	12:00	15:00	BZ	1	14:40
19/05/2022	14:35	17:35	BZ	1	15:25
19/05/2022	14:35	17:35	BZ	1	15:45
19/05/2022	14:35	17:35	BZ	1	16:15
19/05/2022	14:35	17:35	BZ	1	16:30
19/05/2022	14:35	17:35	BZ	2	16:40
27/05/2022	14:20	17:20	BZ	1	14:25
27/05/2022	14:20	17:20	BZ	3	14:50
27/05/2022	14:20	17:20	BZ	3	14:50
27/05/2022	14:20	17:20	RN	2	15:05
27/05/2022	14:20	17:20	BZ	1	15:10
27/05/2022	14:20	17:20	RN	2	15:10
27/05/2022	14:20	17:20	BZ	2	15:20
27/05/2022	14:20	17:20	BZ	1	15:25
27/05/2022	14:20	17:20	BZ	2	15:30
27/05/2022	14:20	17:20	BZ	2	15:35
27/05/2022	14:20	17:20	BZ	1	15:40
27/05/2022	14:20	17:20	BZ	1	16:40
27/05/2022	14:20	17:20	BZ	1	16:45
27/05/2022	14:20	17:20	BZ	1	16:55
27/05/2022	14:20	17:20	BZ	3	17:05
27/05/2022	14:20	17:20	BZ	1	17:15
30/05/2022	09:40	12:40	BZ	1	09:50
30/05/2022	09:40	12:40	BZ	1	10:05
30/05/2022	09:40	12:40	BZ	1	10:30
30/05/2022	09:40	12:40	RN	2	10:55
30/05/2022	09:40	12:40	BZ	1	10:55
30/05/2022	09:40	12:40	BZ	3	11:00
30/05/2022	09:40	12:40	BZ	2	11:05
30/05/2022	09:40	12:40	BZ	1	11:10
30/05/2022	09:40	12:40	BZ	1	11:20

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
30/05/2022	09:40	12:40	BZ	2	11:25
30/05/2022	09:40	12:40	BZ	4	11:25
30/05/2022	09:40	12:40	BZ	1	11:45
30/05/2022	09:40	12:40	BZ	1	11:50
30/05/2022	09:40	12:40	BZ	2	11:55
30/05/2022	09:40	12:40	BZ	3	12:10
30/05/2022	09:40	12:40	BZ	1	12:30
30/05/2022	09:40	12:40	RN	1	12:30
30/05/2022	09:40	12:40	BZ	2	12:35
30/05/2022	09:40	12:40	BZ	2	12:35
20/06/2022	15:00	18:00	BZ	1	15:00
20/06/2022	15:00	18:00	BZ	1	15:05
20/06/2022	15:00	18:00	BZ	1	15:35
20/06/2022	15:00	18:00	BZ	1	15:40
20/06/2022	15:00	18:00	BZ	1	15:45
20/06/2022	15:00	18:00	BZ	1	15:50
20/06/2022	15:00	18:00	BZ	2	15:55
20/06/2022	15:00	18:00	BZ	2	15:55
20/06/2022	15:00	18:00	BZ	2	16:00
20/06/2022	15:00	18:00	BZ	1	16:05
20/06/2022	15:00	18:00	BZ	1	16:20
20/06/2022	15:00	18:00	BZ	1	16:25
20/06/2022	15:00	18:00	BZ	1	16:35
20/06/2022	15:00	18:00	RN	5	16:35
20/06/2022	15:00	18:00	RN	6	16:40
20/06/2022	15:00	18:00	BZ	1	16:55
20/06/2022	15:00	18:00	BZ	1	17:00
20/06/2022	15:00	18:00	LB	1	17:10
20/06/2022	15:00	18:00	LB	1	17:15
20/06/2022	15:00	18:00	BZ	1	17:20
20/06/2022	15:00	18:00	BZ	2	17:40
20/06/2022	15:00	18:00	BZ	2	17:45
20/06/2022	15:00	18:00	BZ	3	17:50
20/06/2022	15:00	18:00	BZ	3	17:50
20/06/2022	15:00	18:00	BZ	1	17:55
21/06/2022	19:20	22:20	RN	2	20:35

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
04/07/2022	18:40	21:40	BZ	1	18:40
04/07/2022	18:40	21:40	BZ	1	18:50
04/07/2022	18:40	21:40	BZ	2	18:55
04/07/2022	18:40	21:40	BZ	1	19:00
04/07/2022	18:40	21:40	BZ	1	19:05
04/07/2022	18:40	21:40	BZ	1	20:50
05/07/2022	10:45	13:45	LB	1	11:10
05/07/2022	10:45	13:45	BZ	1	11:40
05/07/2022	10:45	13:45	HG	1	11:40
05/07/2022	10:45	13:45	LB	1	11:45
05/07/2022	10:45	13:45	BZ	1	11:50
05/07/2022	10:45	13:45	BZ	1	12:00
05/07/2022	10:45	13:45	BZ	1	12:05
05/07/2022	10:45	13:45	BZ	1	12:15
05/07/2022	10:45	13:45	BZ	1	12:40
05/07/2022	10:45	13:45	RN	8	13:10
05/07/2022	10:45	13:45	BZ	1	13:25
05/07/2022	10:45	13:45	RN	5	13:35
26/07/2022	10:10	13:10	BZ	1	10:25
26/07/2022	10:10	13:10	SH	1	11:10
26/07/2022	10:10	13:10	RN	3	11:50
26/07/2022	10:10	13:10	BZ	1	12:00
26/07/2022	10:10	13:10	BZ	3	12:05
26/07/2022	10:10	13:10	GB	1	12:05
26/07/2022	10:10	13:10	BZ	1	12:35
26/07/2022	10:10	13:10	BZ	1	12:40
26/07/2022	10:10	13:10	BZ	2	12:45
26/07/2022	10:10	13:10	BZ	2	12:45
26/07/2022	10:10	13:10	BZ	1	13:00
27/07/2022	06:40	09:40	BZ	1	08:35
16/08/2022	07:00	10:00	RN	1	07:20
16/08/2022	07:00	10:00	BZ	1	07:35
16/08/2022	07:00	10:00	RN	1	07:55
16/08/2022	07:00	10:00	RN	3	09:00
16/08/2022	07:00	10:00	BZ	1	09:50
17/08/2022	10:15	13:15	RN	1	10:30

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
17/08/2022	10:15	13:15	RN	1	10:50
17/08/2022	10:15	13:15	RN	2	10:55
17/08/2022	10:15	13:15	BZ	1	11:45
17/08/2022	10:15	13:15	RN	1	11:45
17/08/2022	10:15	13:15	SH	1	11:55
17/08/2022	10:15	13:15	RN	2	12:00
17/08/2022	10:15	13:15	RN	5	12:05
17/08/2022	10:15	13:15	BZ	1	12:15
17/08/2022	10:15	13:15	BZ	1	12:25
17/08/2022	10:15	13:15	RN	2	12:30
17/08/2022	10:15	13:15	BZ	1	12:30
17/08/2022	10:15	13:15	RN	2	12:35
17/08/2022	10:15	13:15	HG	17	12:55

Table A3-9
Secondary target species recorded during flight activity surveys undertaken at VP4

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
13/05/2022	10:30	13:30	BZ	2	12:10
20/06/2022	10:07	13:07	BZ	1	12:15
24/06/2022	10:45	13:45	BZ	1	10:45
24/06/2022	10:45	13:45	LB	23	11:05
24/06/2022	10:45	13:45	BZ	1	11:05
24/06/2022	10:45	13:45	LB	1	11:25
24/06/2022	10:45	13:45	LB	1	12:00
24/06/2022	10:45	13:45	LB	2	12:20
24/06/2022	10:45	13:45	BZ	1	12:25
24/06/2022	10:45	13:45	BZ	1	12:30
24/06/2022	10:45	13:45	BZ	1	12:50
24/06/2022	10:45	13:45	LB	2	13:00
24/06/2022	10:45	13:45	LB	9	13:20
24/06/2022	10:45	13:45	BZ	1	13:25
24/06/2022	14:20	17:20	LB	1	14:35
24/06/2022	14:20	17:20	SI	1	14:50
24/06/2022	14:20	17:20	BZ	2	14:55
24/06/2022	14:20	17:20	BZ	2	15:00

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
24/06/2022	14:20	17:20	BZ	2	15:05
24/06/2022	14:20	17:20	BZ	1	15:15
24/06/2022	14:20	17:20	BZ	1	15:20
24/06/2022	14:20	17:20	BZ	1	15:25
24/06/2022	14:20	17:20	BZ	2	15:30
24/06/2022	14:20	17:20	BZ	2	15:35
24/06/2022	14:20	17:20	BZ	4	15:40
24/06/2022	14:20	17:20	BZ	2	16:10
24/06/2022	14:20	17:20	BZ	1	16:15
24/06/2022	14:20	17:20	BZ	3	16:20
24/06/2022	14:20	17:20	BZ	4	16:25
24/06/2022	14:20	17:20	BZ	1	16:30
24/06/2022	14:20	17:20	LB	13	16:30
24/06/2022	14:20	17:20	LB	5	16:35
24/06/2022	14:20	17:20	BZ	1	16:50
24/06/2022	14:20	17:20	BZ	2	16:55
24/06/2022	14:20	17:20	LB	2	16:55
24/06/2022	14:20	17:20	BZ	1	17:00
24/06/2022	14:20	17:20	BZ	1	17:05
24/06/2022	14:20	17:20	BZ	2	17:10
24/06/2022	14:20	17:20	BZ	1	17:15
14/07/2022	09:40	12:40	BZ	1	11:20
14/07/2022	09:40	12:40	BZ	1	11:35
15/07/2022	12:35	15:35	BZ	1	13:35
21/07/2022	09:30	12:30	BZ	2	13:45
21/07/2022	09:30	12:30	BZ	1	14:10
21/07/2022	09:30	12:30	BZ	1	15:05
22/07/2022	11:45	14:45	BZ	1	13:25
08/08/2022	11:00	14:00	BZ	1	12:05
08/08/2022	11:00	14:00	BZ	1	13:40
29/08/2022	13:40	16:40	BZ	1	14:00
29/08/2022	13:40	16:40	BZ	1	14:50
30/08/2022	11:15	14:15	SH	1	11:35
30/08/2022	11:15	14:15	BZ	1	12:05
30/08/2022	11:15	14:15	RN	1	12:40

Table A3-10
Secondary target species recorded during flight activity surveys undertaken at VP7

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
13/05/2022	13:40	16:40	BZ	1	14:15
13/05/2022	13:40	16:40	BZ	1	14:30
13/05/2022	13:40	16:40	BZ	1	15:00
18/05/2022	15:30	18:30	BZ	1	15:50
18/05/2022	15:30	18:30	BZ	1	15:55
18/05/2022	15:30	18:30	BZ	1	16:15
18/05/2022	15:30	18:30	RN	2	17:30
18/05/2022	15:30	18:30	BZ	1	17:50
18/05/2022	15:30	18:30	BZ	1	18:15
19/05/2022	11:15	14:15	BZ	1	12:25
19/05/2022	11:15	14:15	BZ	1	12:45
19/05/2022	11:15	14:15	BZ	1	12:50
19/05/2022	11:15	14:15	BZ	2	13:00
19/05/2022	11:15	14:15	BZ	1	13:05
19/05/2022	11:15	14:15	BZ	1	13:55
19/05/2022	11:15	14:15	BZ	1	14:05
20/06/2022	13:17	16:17	BZ	1	13:45
20/06/2022	13:17	16:17	BZ	1	14:20
20/06/2022	13:17	16:17	RN	1	14:40
20/06/2022	13:17	16:17	BZ	1	15:25
14/07/2022	12:50	15:50	BZ	1	13:35
14/07/2022	12:50	15:50	BZ	1	13:50
14/07/2022	12:50	15:50	BZ	1	14:10
15/07/2022	09:25	12:25	BZ	1	09:55
15/07/2022	09:25	12:25	BZ	2	10:05
15/07/2022	09:25	12:25	BZ	1	10:15
15/07/2022	09:25	12:25	BZ	1	11:40
15/07/2022	09:25	12:25	BZ	1	12:05
22/07/2022	08:34	11:34	BZ	1	10:30
22/07/2022	08:34	11:34	RN	1	10:50
22/07/2022	08:34	11:34	BZ	1	11:10
08/08/2022	14:30	17:30	BZ	1	15:10
08/08/2022	14:30	17:30	BZ	1	15:15
08/08/2022	14:30	17:30	BH	3	17:05

Date	Survey Start	Survey End	Species	Max Count	5 Min Period Start
12/08/2022	15:00	18:00	BZ	1	16:00
29/08/2022	10:30	13:30	BZ	1	11:00
29/08/2022	10:30	13:30	BZ	2	11:05
29/08/2022	10:30	13:30	LB	3	11:25
29/08/2022	10:30	13:30	BZ	4	12:30
30/08/2022	08:00	11:00	BZ	1	09:00
30/08/2022	08:00	11:00	BZ	1	09:55
30/08/2022	08:00	11:00	BZ	1	10:05
30/08/2022	08:00	11:00	BZ	1	10:10
30/08/2022	08:00	11:00	BZ	1	10:35
30/08/2022	08:00	11:00	BZ	4	10:40

EUROPEAN OFFICES

United Kingdom

AYLESBURY
T: +44 (0)1844 337380

BELFAST
belfast@slrconsulting.com

BRADFORD-ON-AVON
T: +44 (0)1225 309400

BRISTOL
T: +44 (0)117 906 4280

CARDIFF
T: +44 (0)29 2049 1010

CHELMSFORD
T: +44 (0)1245 392170

EDINBURGH
T: +44 (0)131 335 6830

EXETER
T: + 44 (0)1392 490152

GLASGOW
glasgow@slrconsulting.com

GUILDFORD
guildford@slrconsulting.com

LONDON
T: +44 (0)203 805 6418

MAIDSTONE
T: +44 (0)1622 609242

MANCHESTER (Denton)
T: +44 (0)161 549 8410

MANCHESTER (Media City)
T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE
T: +44 (0)191 261 1966

NOTTINGHAM
T: +44 (0)115 964 7280

SHEFFIELD
T: +44 (0)114 245 5153

SHREWSBURY
T: +44 (0)1743 23 9250

STIRLING
T: +44 (0)1786 239900

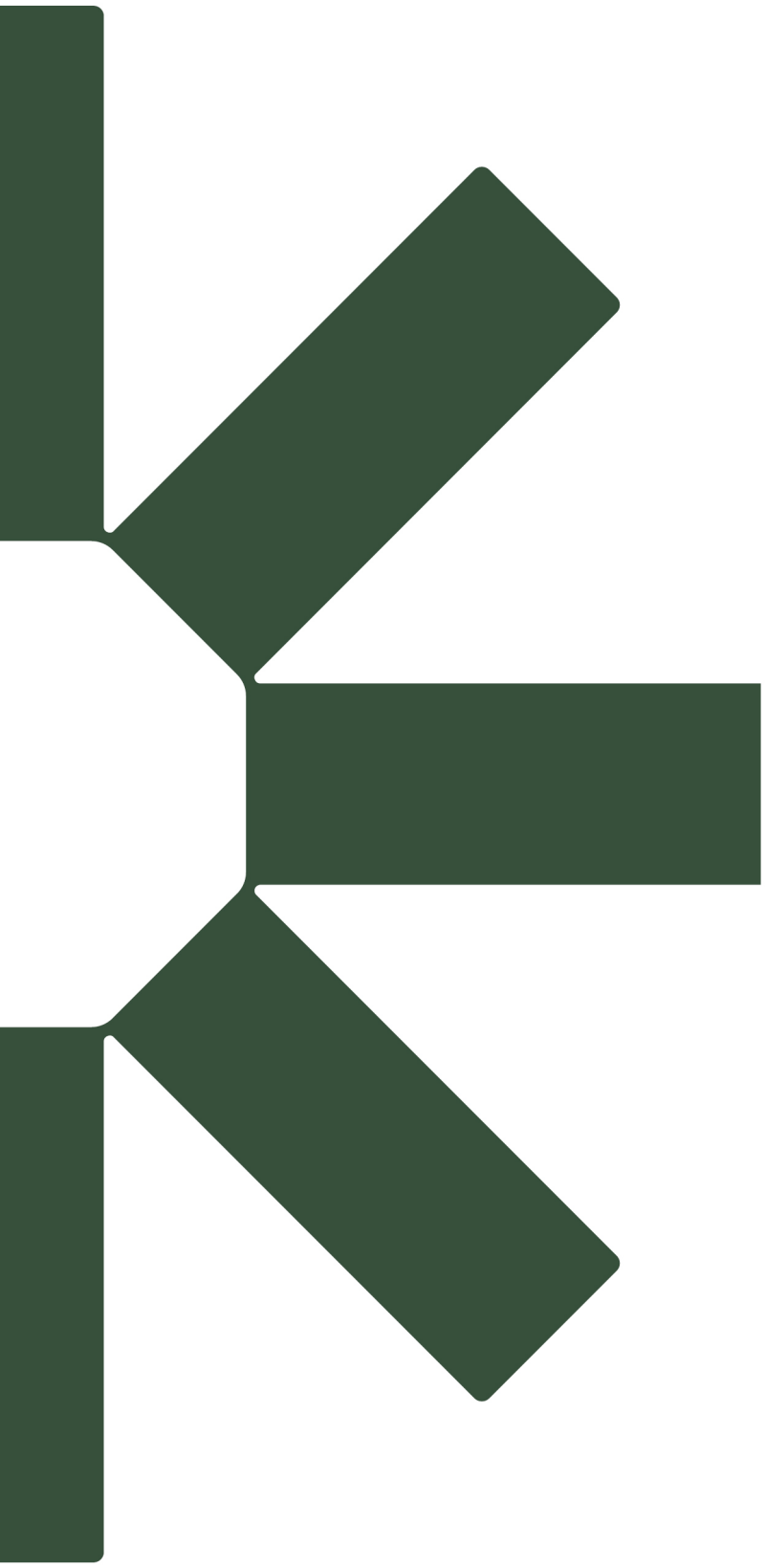
WORCESTER
T: +44 (0)1905 751310

Ireland

DUBLIN
T: + 353 (0)1 296 4667

France

GRENOBLE
T: +33 (0)6 23 37 14 14



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